

User Guide | PUBLIC
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SAP Business Client

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1 SAP Business Client

SAP Business Client is a user interface (UI) that presents a single entry point to different SAP business applications and technologies. It is a high-fidelity shell that integrates various UI technologies and design generations aimed at a more efficient, intuitive, and complete user experience over different UI technologies, such as Web Dynpro ABAP/FPM, SAP GUI transactions, and SAP Fiori apps.

Offering different connection types, the SAP Business Client supports the following set-ups:

- System connection type *Fiori launchpad*
  The SAP Business Client acts as a Windows-based desktop browser for the SAP Fiori launchpad with the ability to launch classic Dynpro applications (SAP GUI transactions) using an embedded SAP GUI for Windows.
- System connection type *SAP Business Client*
  The SAP Business Client provides role-based access to applications in an ABAP back-end system using PFCG roles which centrally hold SAP GUI, Web Dynpro, Fiori, and various Web content applications.
- System connection type *SAP Logon*
  The SAP Business Client embeds pure SAP GUI system connections, allowing you to connect to any SAP NetWeaver AS ABAP release. However, no usability enhancements such as role-based navigation or search are available.

> ⓘ Note
>
> The graphics in the following documentation are examples of prototypes only. The design of SAP Business Client is constantly developing. For this reason, the user interfaces may vary for different versions of SAP Business Client.

More Information

> ⚠ Caution
>
> For **security** aspects, please read the chapter *SAP Business Client Administration Guide* in the SAP Help Portal (*SAP Business Client* > *SAP Business Client Administration Guide* > *Security Aspects*).

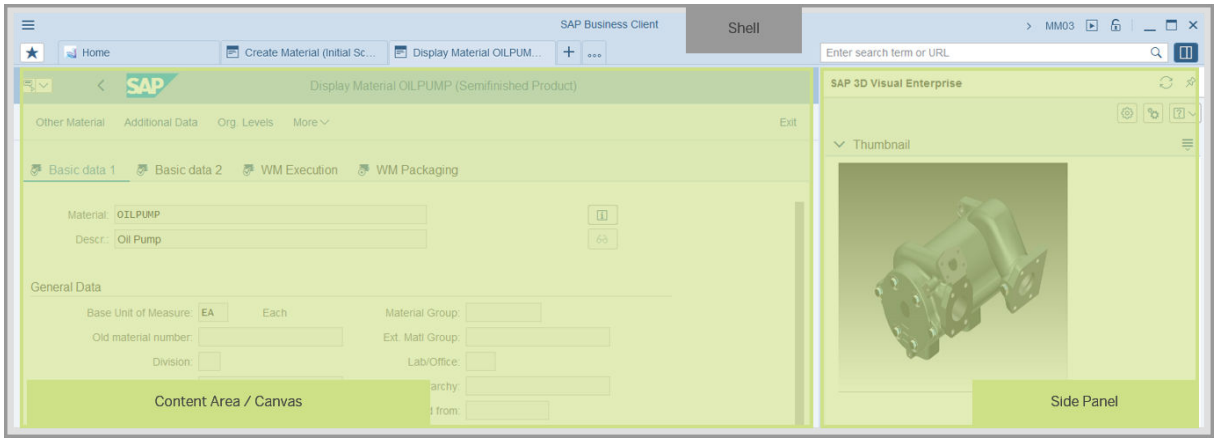
For release prerequisites and known issues, see SAP Note 3220574.

1.1 Overview

Use

The desktop version of SAP Business Client has a modern and simple look and feel, and implements an easy-to-use, web-browser-like user experience coupled with easy navigation and a focus on content (tabbed browsing).

The figure below illustrates the main screen areas of SAP Business Client, comprising the shell, content area (or canvas), and the side panel:



Screen areas of SAP Business Client

The desktop version allows you to adjust the appearance and settings of the business client to meet your personal and technical requirements, for example by selecting your theme or branding options.

The shell aims at reducing the space consumed by the client in favor of applications running in the content area where users do their actual work. They can use the side panel to display additional context-sensitive information that relates to the main application. Users can open the menu from the icon in the header area (☰) and make system settings, customize view and personalization options, and access the help and support functions, including the product documentation. The presentation of the menu as a dropdown menu also helps to save screen space at the top of the shell.

The shell design is intentionally neutral to frame content from diverse applications and technologies, be it Web Dynpro or SAP GUI transactions. The shell for the desktop client is rendered in the Quartz design by default. Depending on your OS settings, either Quartz Light or Dark is selected per default. The user can customize the appearance of the shell and content area by switching the theme in the personal settings. It is possible to select either a dark or light flavor, which only affects the header area. There are three high contrast themes available, which trigger a theme change in the client, Web Dynpro, and SAP GUI pages. All content except for content embedded as Web URL is displayed with the high contrast theme.

With a tab-based navigation model (tabbed browsing), users are able to work on multiple tabs in parallel. They can load any content into the tab rather than into a new window. Users can switch between the tabs easily without terminating the sessions; each new tab hosts a new session. If users are working with many applications in one window at the same time, they can get an overview of all the tabs in the tab bar by displaying the tab list or with the help of the tab previews in the task bar. The tab list displays all the tab titles. If more tabs are open than can be displayed in the tab bar, users can display the complete list of open tabs and quickly navigate to a selected tab by choosing the button (•••) in the tab bar.

It is possible to personalize a user's navigation structure by adding pages for frequently used transactions or applications to the Favorites or by pinning tabs so they are available when the users logs on to a system the next time.

Users have many different options to find and launch applications, and the powerful search and quick launch capabilities of the desktop client are combined in a single type-ahead field.

1.1.1 What's New in SAP Business Client 8.00

A summary of the changes in SAP Business Client 8.00.

- **Inplace Navigation**
  Using an FLP connection in the SAP Business Client offers the best from both worlds. UI5 apps are rendered in the chosen browser control and transactions are rendered natively within the embedded SAPGUI for Windows. In the past, those natively rendered transactions had always to be shown in a new tab. Compared to the FLP running in a standalone browser with SAPGUI for HTML transactions inplace (if configured accordingly), this has been an obvious user experience gap.
  With the SAP Business Client 8.00, it is now possible to perform the same navigations inplace while still using the native SAPGUI for Windows rendering.
- **Separate Theming for Shell and System Selector**
  With SAP Business Client 8.00, it is now possible to separately theme the system connection dialog (System Selector) and the connection-related main windows (Shell windows).
- **Edge (and IE) only**
  With Microsoft's Edge WebView2 browser control, an up-to-date chromium-based browser control alternative to the CEF Chromium browser control has been established.
  Updates are made available on OS level in time. By that fact, customers are always up to date regarding security updates and are no longer depending on the Business Client to provide browser control updates via patch.
- **SAP WorkZone Integration**
  The SAP Business Client 8.00 integrates SAP WorkZone. Thus, the Business Client provides a single point of access for different UI technologies and application types.
  Similar to using the SAP Launchpad Service, a given SAP GUI for HTML transaction will be launched as a native SAP GUI for Windows transaction, if possible.
- **History**
  With the latest update of 8.00, we are also introducing our approach of a history. The History UI can be accessed by the main window menu or via the keygesture "Ctrl+H".
  In the History UI, you will see a listing of connection-related applications and transactions and unrelated browser URLs. The history can be easily filtered, searched and deleted partly or completely.
- **Favorites Export**
  With SAP Business Client 8.00, you can export the favorites of one user and import them with another user or machine.
- **Settings UI moved to main window**
  Similar to standalone browsers and according to recent UX expectations, we have moved the Settings UI into the Business Client's main window. Changes to the settings are directly saved now, except for file paths, which have to be applied first.
  If there is no main window available, e.g. accessing the settings from the System Selector, the common dialog approach is used.

- **News for Administrators**
  Analog to SAP Launchpad Service, administrators can define templates for Fiori Launchpad connections to SAP Work Zone that can later be consumed by end users.

1.1.2 Business Client Versions

SAP Business Client 8.00 is the latest child in the Business Client family.

For more information on how the Business Client has developed over the last few years, see Evolution of SAP Business Client [page 10].

Release Versions and Related Patches

The following table outlines the release versions and the related patches:

Client Version	SAP Business Client Server Runtime Patch
SAP Business Client 8.00 For more information and relevant prerequisites, see SAP Note 3220574.	Apply the highest patch level of SAP Note 1353538.
SAP Business Client 7.70 For more information and relevant prerequisites, see SAP Note 2928874.	

SAP Business Client 8.00 can also run with the back-end systems supported by former versions. However, some features supported by SAP Business Client depend on functionality in the SAP NetWeaver 7.0 EHP3/7.31, 7.40 and 7.50 back end respectively, or in the user interface add-on for SAP NetWeaver, and are not available when you connect to an older system.

Which AS ABAP Release do I need to connect with SAP Business Client?

The release requirements depend on the connection type that is being used:

Connection Type	System Requirements

SAP Business Client	For a more advanced user experience offering role-based access to SAP applications including web-based applications, search provider integration in Quick Launch, navigation-resolving services, and so on, SAP Business Client requires a server runtime that is a bundle of all the services that the system uses in the Application Server ABAP (AS ABAP).
	
	The following two server runtimes are available with different minimum system requirements:
	
	1. Server runtime for SAP NetWeaver user interface services
	The server runtime for SAP NetWeaver user interface services (UI services) is a newer, enhanced runtime, and is available as of SAP User Interface add-on 1.0 SPS 04 for SAP NetWeaver and SAP NetWeaver 7.4 SPS 03.
	2. The SAP Business Client-server runtime is available in AS ABAP in the following software components:
	• SAP_BASIS
	  • 700 (SP28 or higher),
	  • 701 (SP12 or higher),
	  • 702 (SP12 or higher),
	  • 711 (SP11 or higher),
	  • 730 (SP09 or higher),
	  • 731
	• SAP_UI
	  • 740 (SP10 or higher),
	  • 750,
	  • 751
	  • 752 or higher
	
	For more information on the server runtimes, see chapter *Server Connection* of the Administration Guide.

SAP Fiori Launchpad	For full functionality of the SAP Fiori launchpad within SAP Business Client, the following are required: User Interface Add-on 2.0 (SP01) for SAP NetWeaver or component SAP_UI 750 SP01. Newer SAP Fiori app front-end components always require an SAP Fiori front-end server based on NW AS ABAP. Older SAP Fiori apps allow the use of the SAP User Interface Add-On for SAP NetWeaver, based on NetWeaver AS ABAP 7.31. The SAP UI Add-on is available in version 1.0 and 2.0. A successor version of UI Add-on 2.0 is not planned. SAP UI Add-on 1.0 can be upgraded to FES 2.0, UI Add-on 2.0 can be migrated to FES 2.0. SAP UI Add-on 1.0 can be upgraded to FES 2.0, UI Add-on 2.0 can be migrated to FES 2.0.

Connection Type	System Requirements
SAP Logon	With SAP Business Client embedding pure SAP GUI system connections, you can connect to any AS ABAP release.

For more information, see System Connections [page 13].

Which Features are Available for Which AS ABAP?

Some features in SAP Business Client depend on functionality in the back end. They are disabled when running with back ends that are not suitable. Not all SAP NetWeaver releases support the SAP Business Client runtime that is required to use a specific feature, and not all SAP Fiori front-end server (FES) releases support the SAP Business Client for all SAP Fiori launchpad integration features.

The following table provides an overview of the features that are available for SAP BC connection types with each AS ABAP version:

Connection Type SAP Business Client

Feature	Required AS ABAP
Context-specific side panel and usage of data context	SAP NetWeaver 7.0 EHP3 = SAP NetWeaver 7.3 EHP1 or higher
PFCG/Launch Application	SAP NetWeaver 7.0 EHP3 = SAP NetWeaver 7.3 EHP1 or higher
PFCG/Visibility	SAP NetWeaver 7.0 EHP3 = SAP NetWeaver 7.3 EHP1 or higher
Support of Custom Themes	SAP BC Server version 3.6 or higher runs on Server runtime for SAP NetWeaver user interface services (see also chapter *Server Connection* of the Administration Guide)
PFCG/SAP Fiori integration	• User Interface Add-On 2.0 SP00 or higher for SAP NetWeaver or • Component SAP_UI 750 SP00 or higher (see also chapter *SAP Fiori Integration into PFCG* of the Administration Guide)

Connection Type SAP Fiori Launchpad

Feature	System Requirements

Render transactions with SAP GUI for Windows	• ABAP frontend server:
	  • User Interface Add-On 2.0 or higher for SAP NetWeaver
	or
	  • component SAP_UI 7.50 SP01 or higher
	• SAP Enterprise Portal: SAP NetWeaver 7.5 SP4 or higher

Intent-based navigation in classic Dynpro applications	Application Server: SAP_UI 752 or higher
SAP Launchpad service integration	FLP version: SAPUI5 1.77
Session management	FLP version: SAPUI5 1.77

SAP NetWeaver Business Client for HTML (NWBC for HTML)

NWBC for HTML is a browser-based shell for which a desktop installation is not needed. NWBC for HTML runs as a program on the AS ABAP generating HTML code; it is therefore related to the AS for ABAP server on which it is running. NWBC for HTML version 3.5 is available on AS ABAP with NWBC Server Version 3.5, NWBC for HTML version 3.6 is available with the server runtime for SAP NetWeaver user interface services as of SAP User Interface Add-On 1.0 SPS 04 for SAP NetWeaver and SAP NetWeaver 7.4 SPS 03. For more information about system release requirements and supported versions of NWBC for HTML, refer to SAP Note 1620576.

Related Information

Side Panel [page 48]
Integrating the Context-Sensitive Side Panel [page 257]
Navigation Tree [page 191]
Definition of Configuration Parameters with Table NWBC_CFG [page 171]
Allowlist [page 297]
Server Configuration [page 129]
System Connections [page 13]

1.1.2.1 Evolution of SAP Business Client

A brief description of the development of SAP Business Client.

The following table outlines the evolution of SAP Business Client:

Client Version	Description
SAP NetWeaver Business Client 3.0 and SAP NetWeaver Business Client for HTML	Builds on the Signature Design, reintroducing SAP GUI support, and is available for all SAP business lines as one product providing universal access to SAP applications. With NWBC 3.0, a light-weight HTML-based version is also available, specifically for single AS ABAP/ABAP system scenarios.
SAP NetWeaver Business Client 3.5	Comes with enhanced navigation features, new menus, and a side panel that shows additional context information relating to the main application.
SAP NetWeaver Business Client 4.0	Released with the *User Interface Add-on 1.0 SPS01 for SAP NetWeaver* for SAP NetWeaver 7.0/7.01/7.02/7.03/7.31 (a direct shipment). It follows the tabbed browsing paradigm known from modern browsers.
SAP NetWeaver Business Client 5.0	Provides a much tighter integration with SAP GUI for Windows 7.40, supporting a common system connection infrastructure and enabling the access of systems regardless of their release.
SAP Business Client 6.0	Integrates the SAP Fiori launchpad; it acts as a Windows-based desktop browser for the SAP Fiori launchpad with the ability to launch classic Dynpro applications by using an embedded SAP GUI for Windows.
SAP Business Client 6.5	Provides the SAP Belize theme, an SAP Fiori-inspired UI to harmonize with the UI for SAP S/4HANA on-premise 1610 systems. Integrates a Chromium-based web browser control as alternative rendering engine.
SAP Business Client 7.0	Provides numerous enhancements for end users and administrators in the areas of themes, favorites, system connection definition and more.
SAP Business Client 7.70	Provides the Quartz themes, an Edge-based browser control and a 64bit version. Further enhancements are available for end users and administrators in the areas of header design, system connection definition, multiple browser controls and more.
SAP Business Client 8.00	Offers Inplace-navigation with Fiori Launchpad and SAP GUI for Windows and a navigation history. Besides that, theming, favorites management and the general storage concept have been enhanced.

1.1.3 Technology Block Diagram

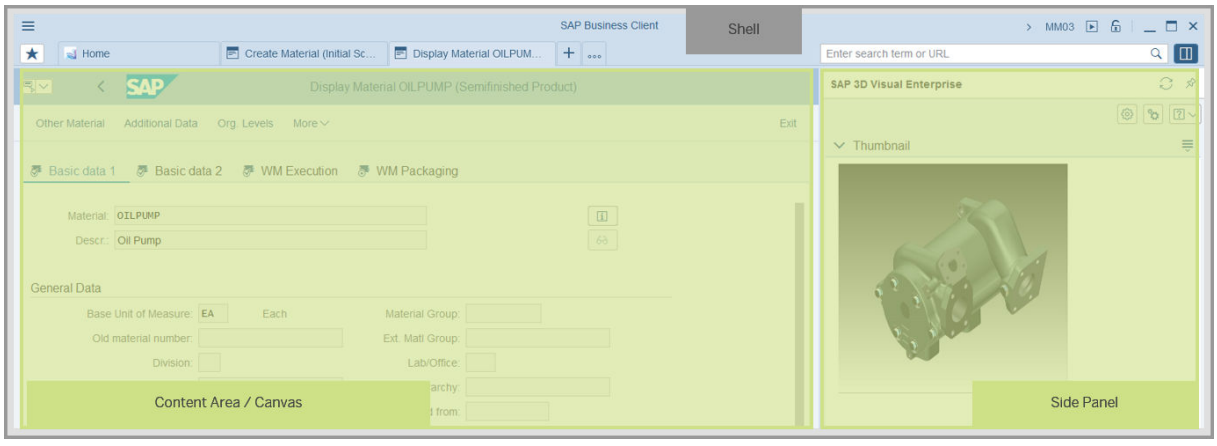
SAP Business Client consists of a shell and a content (or canvas) area. The main goal of the shell is to enable navigation through business processes based on the roles assigned to the user.

Depending on the connection type, navigation menus, entry and overview pages are derived from the logon system and roles assigned to a user, and displayed in different areas as the following table shows:

System Connection Type	Repository containing navigation information	Navigation from Content Area: Entry and Overview Pages	Navigation from Shell Area
SAP Fiori launchpad	Catalogs and Groups, defined in the Launchpad Designer and assigned to users in the ABAP role repository	SAP Fiori launchpad home page Overview pages	Quick launch Favorites panel
SAP Business Client	Role menus in ABAP role repository (PFCG) or Portal role repository (PCD)	Index page New Tab page Service Map	Navigation panel Quick launch Favorites panel
SAP Logon	SAP Menu and user menu (ABAP role repository, PFCG)	SAP Easy Access	Quick launch = SAP GUI command field Favorites panel

Additionally, the shell can open any number of tabs, each with its own content area in which users can run a specific transaction as part of a business process. The side panel is an additional content area that can be used to display context-sensitive information that relates to the main application, and is available in SAP Business Client and Fiori launchpad connections.

The figure below illustrates the main screen areas of a SAP Business Client comprising the shell, content (canvas) area, and the side panel:



The content area can display applications that are based on different types of technology, according to the required business process. For end users, the content area is the main area where they do their actual work.

The type of application running in the content area can be as follows:

- Dynpro-based (embedded SAP GUI for Windows) with protocol DYNP/DIAG
- Web-based in a browser control with protocols HTTP/HTTPS
  This includes in particular Web Dynpro, UI development toolkit for HTML5 (SAPUI5), and Business Server Pages (BSP).

> **Note**
>
> The side panel can only render Web-based content.

With this approach, SAP Business Client, as the shell, links the different application technologies by combining various content area types. Consequently, SAP Business Client forms a connection between classic SAP GUI transactions and more recent UI technologies such as WDA and FPM-based applications and SAP Fiori apps.

1.2 SAP Business Client End User Guide

Use

This documentation provides a starting point for end users for the optimal use of SAP Business Client for Desktop. It contains specific information about the tabbed browsing navigation model and procedures how to navigate and to perform your everyday work in the business client. This section also provides information about end user configuration options such as configuring search providers, support information, and personalization settings.

1.2.1 Starting SAP Business Client for Desktop

Context

To log on to SAP Business Client for Desktop, you need an SAP Business Client shortcut on your desktop. Once your system administrator has installed the business client on your machine, you can make your own settings and start performing your daily tasks. Change your password the first time you log on and at regular intervals. You must configure SAP Business Client on your client the first time you log on.

Procedure

1. To start SAP Business Client, double-click the icon on your desktop.

   Depending on your personal settings for system connections, either a logon or a system selection screen is displayed, or SAP Business Client opens directly with the roles configured for your user.
2. Proceed as follows:
   - If a logon screen is displayed, enter your user name and password.

SAP Business Client starts and connects to the last active system connection defined in your system configuration.

> **Note**
>
> The logon screen is displayed the first time you open SAP Business Client if the following applies:
>
> - You have configured a system connection.
> - You have selected the *Hide System Selector on Start-Up* checkbox in the personalization settings dialog (activated by default).

- If a system selection screen is displayed, select the corresponding entry in the list and choose *Log On*. The last active connection is highlighted.

> **Note**
>
> The system selection screen is displayed if you have deselected the *Hide System Selector on Startup* checkbox in the personalization settings dialog. You can log on to a system connection, or add, change, and delete it.

Next Steps

Configuring System Connections [page 15]

1.2.2 System Connections

System Selector

The SAP Business Client system selector (*System Selection* dialog box) provides a single entry point to SAP Business Client connections, SAP GUI (SAP Logon) connections and shortcuts, and SAP Fiori launchpad connections.

The system selector provides the following views:

- List view
- List view together with explorer view

The explorer view is useful if you have many entries and want to structure them hierarchically.

To show or hide the explorer view, choose the following pushbutton: 

Filtering and Structuring of Connections

You can filter and sort the system connections independently from the system selector view that you use. In the explorer view, you can order system connections in a hierarchical folder structure.

Workspaces are an additional option to structure and filter connections.

Using the dropdown menu in the top bar, you select a workspace or create a workspace by choosing *New Workspace...*.

> **Note**
>
> Users can locally create their personal workspaces. Nevertheless, the administrator can also predefine workspaces that cannot be changed.

System Connection Type SAP Business Client

A connection contains all relevant data required to instruct a server to retrieve all the relevant roles for a user. Since SAP Business Client, as the shell, uses HTTP connections for its server communications, the connection data is also defined as a URL. The connection data is usually provided by the system administrator and must be configured.

Other Connection Types

SAP Business Client allows you to make other connections:

- *New System Connection (Fiori Launchpad)*
  This option allows you to create a connection to an SAP Fiori launchpad.
- *New System Connection (SAP Logon)*
  This option allows you to create a connection to an SAP Logon (SAP GUI) system/application.
- *New Shortcut (SAP Logon)*
  This option allows you to create a shortcut to transactions, system commands, and reports in a specified system.

SAP GUI and shortcut connection types can be established in the same way as for SAP Logon. For more information, choose the *Customize Local Layout* button on the toolbar of an SAP GUI system, choose, and *SAP GUI Help* see the topics *2.2.2.1 Adding a New Entry to the Connections Folder* and *2.2.3.1 Adding a New Entry to the Shortcuts Folder*.

You can have several connections open at the same time. If you start a connection to another system, a new instance of SAP Business Client is started.

More Information

- Configuring System Connections [page 15]
- Connecting to Different Systems [page 22]

1.2.2.1 Configuring System Connections

Context

You must configure a system connection on your client the first time you start SAP Business Client. In the *System Selection* dialog box you can log on to a system connection, or add, change, and delete it. If system connections are already configured and you deselect the *Hide System Selector on Startup* checkbox in the *Personalization* settings, the *System Selection* dialog box opens on start-up and remains available in the background, allowing you to easily select another system.

Procedure

1. Display the *System Selection* dialog box if it is not already visible.

   From the main menu choose *Connections* > *Systems...* .

2. Select the *New System Connection* button and choose a connection type. For a connection to an ABAP system, choose the system first; for all others, choose *User-specified system*.

   You can choose from the following connection types:

   - *New System Connection (Fiori Launchpad)*
   - *New System Connection (SAP Business Client)*
   - *New System Connection (SAP Logon)*
   - *New Shortcut (SAP Logon)*

   > **Note**
   >
   > In the SAP BC system selector, end users can create system connections from scratch by selecting a system, or they can choose a system connection template which was provided by the administrator.
   >
   > Templates can be distinguished by the icon in the Description column of the system list. Templates are availabe only for Fiori Launchpad connections.

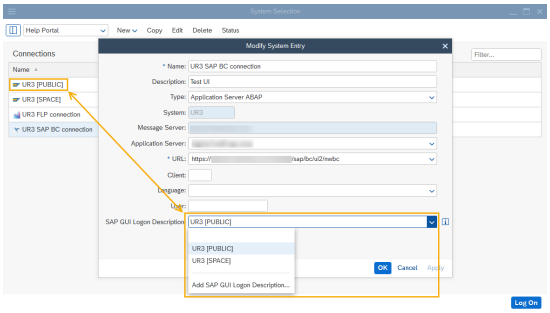
3. If you start from the scratch, configure a system connection, by entering the required data. If you start with a template you can extend/modify the properties coming with the selected template. (The new system connection will not have any relationship to the template it was created from).

   The tables explain the system connection settings for each connection type:

   - Settings for Connection Type: *SAP Business Client*

Setting	Description
Name (mandatory)	The name for the system connection **Note** Connections names must be unique names.
Description	Description of the system connection
Type	You can connect with SAP Business Client either • directly to a single ABAP server (type *Application Server ABAP*), • to an ABAP system via a web dispatcher (type *Application Server ABAP with Web Dispatcher*). • to a portal server (type *Portal*, only for user-specified system connections) **Note** If a *Web Dispatcher* was configured by the system administrator this connection type will automatically be preselected.
System ID	ID of the system. **Note** The System ID helps determine the message server and application servers and, consequently building the connection URL.
Message Server	Server with which the system communicates **Note** This field is prefilled and **cannot** be changed by the end user.
Application Server/ *Web Dispatcher*	Application server/web dispatcher with which the system is connected

Setting	Description
URL (mandatory)	**Note** This field is prefilled. The HTTP URL that is needed to connect to the server. It consists of the protocol, the server, and the SAP Fiori launchpad URL which the administrator set up. The path is usually either `/sap/bc/ui2/nwbc` or `/sap/bc/nwbc` for an ABAP-based connection. For SAP Enterprise Portal, the path is usually `/irj/portal/flp`. The complete syntax for the URL is as follows: **`http(s)://<server>.<domain>.<ext>:<port>/<path>`**
Client (only visible for a connection to an ABAP system)	3-digit client for the connection, for example, **`000`**
Language (only visible for a connection to an ABAP system)	The system logon language
User	The user name, which should be entered by default in a logon dialog. This setting is available only if option *Remember user name for system logon* is active. See Data Privacy Settings [page 31].

Setting	Description
SAP GUI Logon Description (only visible for a connection to an ABAP system)	**Note** If there are SAP GUI connections for the system specified in the System ID, SAP BC proposes these connections. An SAP Logon/SAP GUI system connection referring to the same system ID can be linked here. The settings of this connection, in particular SAProuter, group selection, and SNC, are then used for transactions running in this system. The figure below is an example showing you how to reference the SAP GUI system connection in the maintenance of the SAP Business Client connection:  For more information about load balancing, see *Using SAP Business Client with a Load Balancer*.
Filter ID (only visible for a connection to a Portal system)	A grouping of specific settings that control what kinds of data are displayed in the system you are logging on to.
Use Display Rules (only visible for a connection to a Portal system)	For example, set a dedicated Portal desktop (usually containing a framework page and theme) for a user, alias, or device. If this option is selected, SAP Business Client loads the framework page instead of the *Index* and *New Tab* page. This is of particular interest when combining with the SAP Fiori framework page. For more information on this, search for *Fiori Framework Page* in the SAP NetWeaver library (Help Portal).

- Settings for Connection Type: *Fiori Launchpad*

Setting	Description
Name (mandatory)	The name for the system connection **Note** Connections names must be unique names.
Description	Description of the system connection
Type	You can connect either • directly to a single ABAP server (type *Application Server ABAP*) or • via a web dispatcher (type *Web Dispatcher*). **Note** If a *Web Dispatcher* was configured by the system administrator this connection type will automatically be preselected.
System ID	ID of the frontend server. (Only relevant for ABAP frontend server). **Note** System ID helps determining the message server and application servers of the ABAP Frontend Server system, and in consequence building the connection URL.
Message Server	Server with which the system communicates **Note** This field is prefilled and **cannot** be changed by the end user.
Application Server/ *Web Dispatcher*	Application server/web dispatcher with which the system is connected

Setting	Description
URL (mandatory)	**Note** This field is prefilled. The HTTP URL that is needed to connect to the SAP Fiori launchpad. It consists of • the protocol, • the server and • the SAP Fiori launchpad URL the administrator set up. For more information, refer to the following documents on SAP Help Portal: • **UI Technology Guide for SAP S/4HANA 1809**, chapter *Setup of SAP Fiori Launchpad* • **SAP Fiori Launchpad**, chapter *SICF Services* • **SAP Fiori Launchpad**, chapter *Customizing the Launchpad URL*
Client	3-digit client for the connection, for example, `000` . (Only relevant for ABAP frontend server).
Language	The system log on language
SAP GUI Type	• SAP GUI for Windows with fallback If SAP GUI for Windows cannot be started because it is not installed or launch parameters are not sufficient, SAP BC will use SAP GUI for HTML instead without displaying information about the fallback to the user. • SAP GUI for Windows If SAP GUI for Windows cannot be started because it is not installed or launch parameters are not sufficient, SAP BC will display this information and use SAP GUI for HTML after the user has confirmed. • SAP GUI for HTML SAP GUI for HTML will be used. • SAP GUI for Windows with connectivity check This type should be selected to make sure SAP GUI for Windows is used wherever it is possible (e.g. SAP Launchpad Service and SAP WorkZone).

Setting	Description
SAP GUI Logon Description	**Note** If there are SAP GUI connections for the system specified in the System ID, SAP BC proposes these connections. Only relevant for ABAP frontend server. An SAP Logon/SAP GUI system connection referring to the same system ID can be linked here. The settings of this connection, in particular SAProuter, group selection and SNC, are then used for transactions started from SAP Fiori launchpad and running on the ABAP frontend server.

- Settings for Connection Type *New System Connection (SAP Logon)* and *New Shortcut (SAP Logon)*
  For more information about SAP GUI connection configuration, select *Help* in an SAP Logon window to display the documentation. SAP Logon windows are used to display or maintain the properties of an SAP GUI connection or SAP shortcut.

4. To access a system connection, select the corresponding entry in the list and choose *Log On*. You can also log on to a system using a quick selection option for selecting a system. Choose the *Log On* menu option. This menu shows a selection of the last used system connections. The currently active connection is highlighted. If you want to use other system connections, you can also use the system selection dialog box as this remains open. Connecting to a system this way starts a session in a new window without closing the current system connection.

   Note

   You can view the system information in the status bar in SAP Business Client. This helps you to keep an overview of the systems you are currently using when you have multiple windows open in parallel. The system information in SAP Business Client is synchronized with the SAP GUI for Windows status bar. It can be activated or deactivated either in the personalization settings dialog or in the SAP GUI status bar. With SAP Fiori launchpad connections, no information is displayed in the status bar of the launchpad. However, information is displayed in the status bar for those systems that are accessed from within the launchpad.

   You also have the following options:

   - To create a system connection, choose *New*. The usual system connection dialog is displayed where you can make your entries for a new system connection.
   - To change a system connection, select the corresponding connection and choose *Edit*. The usual system connection dialog is displayed where you can change the entries for a given system connection.
   - To delete a system connection, select the corresponding connection and choose *Delete*. A confirmation dialog is displayed. If you choose *Delete*, the system connection is deleted both from the system selection and from the system configuration screen.
   - To copy a system connection, select the corresponding connection and choose *Copy*.

> **Note**
>
> This option is relevant especially when system connections are predefined by the administrator and are therefore read-only for end users.

Related Information

Using SAP Business Client with a Load Balancer [page 117]

1.2.2.2 Connecting to Different Systems

Procedure

You can select the system to which you want to connect if you have configured it beforehand. These are the alternatives to connect to a different system if SAP Business Client has already been started:

- **Alternative 1** - The *System Selector* remains open after the Business Client startup
  Proceed as follows:
  1. Switch to the *System Selector* window.
  2. Select the system you want to connect to and choose the *Log On* pushbutton or double-click the system entry.
     A new SAP Business Client instance is started with this system connection.
- **Alternative 2**
  Use the quick selection in the Business Client *Log On* menu option that displays the last five systems you were connected to. A new SAP Business Client instance is started for the system connection you choose.
- **Alternative 3**
  Proceed as follows:
  1. Open the system selector by choosing *Logon System Selector...* or *Settings* > *Connections* > *Systems...*
  2. Select the system you want to connect to and choose the *Log On* pushbutton or double-click the system entry. A new SAP Business Client instance is started with this system connection.

For SAP GUI connections, you can select a specific logon mode using the context menu of the system connection. The choice depends on system and frontend configurations, as mentioned in SAP Note 2138335 (SAP Logon 7.40: Logon possibilities for a connection entry defined with SNC turned on).

- SNC Logon with Single Sign-On
- SNC Logon without Single Sign-On (SNC logon using user/password)
- Logon with neither SNC nor Single Sign On

Choose a Default Connection

You can configure one connection to be your default connection. This means that this connection will be preselected every time you start SAP Business Client. To choose a default connection, you have to perform the following steps:

1. Open the *Settings* dialog on tab *Logon* (see Logon & Browser [page 28].)
2. Select the option *Use default connection on startup* and click *Ok*.
3. Open the connection list from which you want to choose the default connection.
4. Select the respective entry and open its context menu.
5. Select *Set as Default Connection*.

The selected connection now is displayed with an asterisk heading its description.

Related Information

Starting SAP Business Client for Desktop [page 12]

1.2.2.3 SAP Shortcuts

SAP Shortcuts are mapped to SAP Business Client. Depending on a registry entry that is set during installation, it is possible to start an SAP GUI connection directly in SAP Business Client.

SAP Business Client shortcuts are based on URLs. Applications addressed in SAP Business Client start-up URLs are opened within an existing SAP Business Client window provided that the connection matches the system, client, and user.

A new shortcut is opened in a new window. If you reopen a shortcut, it is opened on a new tab within the same window.

For more information, see section *Administrator Configuration Tips*.

Related Information

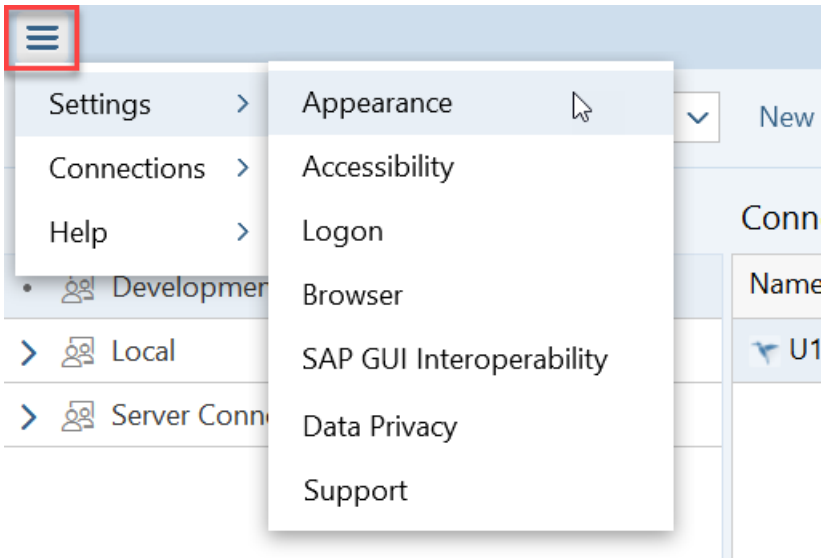
Administrator Configuration Tips [page 108]

1.2.3 Personalization Settings

Use

You can make different settings to personalize the appearance and the navigation structure of the desktop client. The various Settings views can directly be accessed via the window menu of the main window or *System*

Selection window. The *Settings* dialog opens directly in a new tab, when accessed via menu in the main window. In this case, the dialog does not contain dialog buttons to apply changed settings. Each setting is applied directly, when you change the current value.



More Information about the various Settings Categories:

- Personalization of Navigation Structure [page 34]

1.2.3.1 Appearance

Tab Visual Design

Setting	Description
Theme	Depending on the connection type, you can choose the standard or one of the high contrast themes. For the standard theme, you can choose between different flavors: • *Dark* • *Light* • *SAP Blue Crystal* • *SAP Belize* • *SAP Quartz Light* • *SAP Quartz Dark* • *High Contrast (SAP Signature)* • *SAP High Contrast Black* • *SAP High Contrast White* The high contrast theme applies to the shell as well as to Web Dynpro applications, SAP GUI transactions, and service maps loaded in the content area. Content embedded as Web URL is not displayed with the *High Contrast* theme. If you change the theme for an SAP GUI transaction, the change takes effect with the next SAP GUI session you start. **Note** The list of available themes depends on what the system administrator has configured. For SAP Business Client connections, the three High Contrast themes are always available. **Note** A theme chosen once for a certain connection will be kept for future logins. For an SAP Business Client connection: Any theme listed earlier can be selected, additionally also custom themes if available. For an SAP GUI connection: Any theme listed earlier can be selected. For an FLP connection: The theme used in an FLP connection is defined by the theme selection in the FLP settings. You cannot change the theme using the theme settings in SAP Business Client.
System Selection Theme	Use this setting to apply a theme for the *System Selection* window independent of the applied theme in the main window. You can choose between all standard themes listed above. If the *System Selection* window should apply the same theme as the main window, choose *Use Shell Theme*, which is the default value. This setting is only available if dialog opens from the *System Selection* window.

Setting	Description
Zoom	Use the slider to increase or decrease the page zoom. **Note** This setting is only applicable for browser pages which are rendered inside SAP Business Client. SAP GUI for Windows does not support zoom settings.
Font Size	Select a font size.
Window Decoration	You can choose the settings for the window frame: • *Dropshadow* • *Glow*

Tab Interaction Design

Setting	Description
Open side panel with new tab	Select this checkbox to display an application and, additionally, its associated side panels. If there is more than one side panel, the system displays the last one that the user selected. By default, this setting is not selected.
Show tab previews in taskbar	This option is selected by default. Display tab previews in the taskbar for all tabs that are currently open.
Show tabs on a separate row	Users can display the elements in the header area in one row, including the pushbuttons to display the favorites and navigation panels, tabs, and the type-ahead field for the quick launch. This setting helps users to increase the space for the content area by reducing the header height.
Show back button	The back button is shown by default. It can be hidden by unchecking this option.
Show animations for tabs	This checkbox is selected by default. A circular loading bar is displayed when the content of a tab is loading.

Setting	Description
Show system information in status bar	Display the system information in the following ways: • In the SAP Business Client status bar as <system> (<client>) | <user> [<language<] • In the title of the tab preview as <system> (<client>) This helps users to keep an overview of the systems they are currently using when they have multiple windows open in parallel. **Note** The system information in SAP Business Client is synchronized with the SAP GUI for Windows status bar. You can activate or deactivate it either in the personalization settings dialog or in the SAP GUI status bar. **Note** When using SAP Belize theme, the system information is displayed in the Window header. Different system information details can be displayed in a dropdown list and can be selected for the header display.
Show system information in tab title	Select this checkbox to display the system/client information as a prefix in the tab title; this is valid for SAP GUI transactions (*system_id*, *session_nr/client*), Web Dynpro ABAP applications, service maps, and SAP Business Client overview pages (*system_id*, *client*).
Show work center links on index page	This checkbox is selected by default. A link appears when you hover over a work center title on the index page. Clicking the work center title opens the default page.
Start Navigation from Quicklaunch / Search Bar	Default launch mode for applications is the same tab (in-place), when launched from the Quick Launch. This setting activates alternative launch mode *New Tab*, if checkbox is selected.

1.2.3.2 Accessibility

Setting	Description
Tab *Accessibility Mode*	Activate the accessibility mode for applications embedded in the SAP Business Client to provide input for screen readers that read the Web Dynpro and HTML screens. The rendered HTML pages contain additional HTML coding. **Note** Be aware that the SAP GUI theme is switched from Corbu or SAP Blue Crystal to SAP Belize after you have activated the accessibility mode. Alternatively you can choose the High Contrast Black or High Contrast White theme (both based on theme Belize).

Setting	Description
Tab *Keyboard Shortcuts*	This tab offers a list of all available keyboard shortcuts. You can change every single shortcut to adapt it to your personal needs. Every changing dialog shows the respective default value, if you want to switch back to it you have to do this manually.

1.2.3.3 Logon & Browser

Configure the Logon Procedure

You can configure the logon procedure of SAP Business Client regarding various aspects:

Setting	Description
Entry Page *	Select your entry page from the following selection: • *First Pinned Tab* (Default) • *Index Page* • *New Tab Page* • *First Work Center Page*
Client Language	Select a different language as the client language (the language with which SAP Business Client is started). If no language is specified here, the language defined in Microsoft Windows *Region and Language (Format)* settings is used.
Use client language on system logon screen	Select this checkbox to ensure that system logon screens use the same language as the client language (see above). This setting overrules a language predefined in a system connection. It allows you to log on in a different language (than is the default) when authenticating through Single Sign-On; without this, there is no possibility to change the language in the system logon screen.
Administrator Configuration File	Change the source file for administrator-defined connection configuration settings.
User Configuration File (Path)	Change the path for your own self-defined connection configuration settings.
Hide system selector on startup	This option is activated by default. SAP Business Client logs on automatically to the last used system connection. If you deselect this checkbox, SAP Business Client displays a system selection screen, just like the normal logon screen, where you can select all the systems that have been configured, change or delete existing connections, and create ones.

Setting	Description
Use default connection on startup	With this option, you can allow one connection to be set as the preselected connection on startup.
Default Connection	After having checked this option, you can select one connection from your connection lists and mark it as your default connection by opening its context menu and choosing the respective menu option. Afterwards the chosen default connection is displayed in the respective tab field.

* SAP Business Client connections only

Choose Browser Control

Browser

Setting	Description
Browser Control	Select the browser control you want to use.
Dynamic Browser Control Selection File (Path)	Choose the configuration file for multiple browser use.

Edge-specific Options:

- *Offer to save passwords*
- *Display suggestions for form fields*
- *Ask where to save each file before downloading*
- *Download Location (Path)*
- *Ask what to do with each download*
- When this option is activated, you are always asked, if you want to save a file or open it without saving.

> **Note**
>
> Your administrator can configure a list of file extensions that are automatically executed after downloading and that are saved in SAP Business Client. While the download option *Ask what to do with each download* is enabled, that list will be ignored.

> **Note**
>
> These options are available only for the Edge control.

1.2.3.4 SAP GUI Interoperability

SAP GUI Interoperability

Setting	Description
Easy Access Favorites in favorites panel *	Display the Favorites that you have defined in the *SAP Easy Access* menu in SAP GUI.
Easy Access Favorites as work center *	Display your *SAP Easy Access* Favorites as a work center.
Use SAP Menu instead of user menu *	Display the SAP menu instead of the menu defined for your role in PFCG.
Use SAP GUI theme	If you want to use a theme for your SAP GUI screens that is different from SAP Quartz, you can set this theme in the SAP GUI options and define that this theme is kept by SAP Business Client. For example, you can use different colors for different systems. **Note** Using a different color is a feature that is only available for for some older themes.
Start transaction without validation check *	When the user enters a transaction and then presses ENTER, the transaction opens in a new tab. The system does not validate if the transaction exists in the user menu or in the back end. By default, this setting is not selected.
Do not close tabs	Prevent SAP Business Client from closing tabs with SAP GUI transactions when you or a program navigates back to the SAP GUI entry screen. By default, this setting is not selected.
Open session in new window	Select this checkbox to open new SAP GUI sessions in new windows instead of new tabs, which is the default setting.
Show transaction codes *	Display the transaction codes (technical names) in addition to the transaction names in the navigation panel.
Enable SAP GUI OK code	Display this command field for SAP GUI transactions that run in SAP Business Client.
Merge system function bar and application bar	Merge the system function bar and the application bar.
Show menu in SAP GUI toolbar	Deselect this option to display the main menu on top of the SAP GUI content area. The option is available as of SAP GUI for Windows 7.70.
Show title bar	Display the SAP GUI title bar of an application in the content area. However, to avoid unnecessary consumption of screen space, the title bar can be hidden. Note that the application title is always shown on SAP Business Client tabs. When using Fiori themes such as SAP Belize or SAP Quartz, only the application title is hidden in the title bar. The title bar itself is not removed since in Fiori themes, the essential Back button (F3) is placed here. This option is selected by default.

Setting	Description
Evaluate transaction launch mode from Fiori	Launch mode for transactions launched from Fiori launchpad is evaluated by Business Client by default. Transactions are started according to configured launch mode. Deselect this option to start transactions always in a new tab.

* SAP Business Client connections only

1.2.3.5 Data Privacy & Support

As of SAP Business Client 6.5 PL7 you can control the data saved by SAP Business Client on your desktop PC in a much more simplified manner than before. Personalization data is stored in the user's directory of the desktop PC only. You can change the settings for data privacy by choosing *Settings* > *Data Privacy*.

Data Privacy

History

By default, SAP Business Client stores a history of the pages which are called in an SAP BC system connection. These pages are displayed on the *New Tab* page of a system connection of type SAP Business Client in section *Frequently Used* and *Last Opened* as well as in the Windows jump list e.g., shown for SAP Business Client in the Windows taskbar. A separate history is stored for every system connection. You have the following options for this history:

Setting	Description
Mode *Remember*	*New Tab* page and Windows jump list show links to pages previously called in SAP Business Client.
Mode *Never remember*	SAP Business Client does not capture a history of used pages. Neither history data is stored on the desktop PC nor history information is captured in a running SAP Business Client process. With this mode, the *New Tab* page does not show any links to pages previously called in SAP Business Client. The Windows jump list will not display recent items in a *Frequent* section, nor will there be history entries in the *Favorites* and *Recent Items* section of the quick launch dropdown menu.
Mode *Clear history on log off*	This mode captures a history of used pages in SAP Business Client, but does not store the entries on the desktop PC. The *New Tab* page shows links to pages which were called since the SAP Business Client connection was started. As soon as SAP Business Client connection is closed, history information is not available anymore and additionally history data, which was stored before changing the setting to *Clear history on Log off*, is deleted too.
Retention time	This value defines how long the history is stored by the SAP Business Client. Default value is **90** days.

To delete all history information of applications and pages launched in all SAP Business Client system connections, click button *Clear History*.

Tabs

In SAP Business Client, tabs can be pinned to be available the next time you connect to a system. Pinned tabs are stored in SAP Business Client per system connection. They can be unpinned individually using the tab's context menu function *Unpin Tab*. To unpin all tabs in all system connections, click button *Remove all Pinned Tabs*. This functionality does not impact the *Index Page* in system connections of type SAP Business Client as well as the *Home* tab in system connections of type Fiori Launchpad.

Favorites

In SAP Business Client pages can be set as favorites related to the system connection, or as web favorites, which are then available in all system connections. These favorites are stored on the desktop PC. Single favorite entries can be deleted from the favorites panel, see Favorites [page 50]. To delete all favorites stored by SAP Business Client for all system connections, click button *Remove All Favorites*.

Local Cache

SAP Business Client caches various data for performance reasons, like available system connections, connection-specific navigation menus or custom themes.

Please be aware that the data loaded and cached by web browser controls within SAP Business Client is not impacted here. Web-based content is rendered in SAP Business Client via web browser controls. These web browser controls store data of web pages, like a copy of the web page, images, etc. in their own cache for faster browsing experience. To delete such content, SAP Business Client provides the possibility to easily access the deletion mechanism in the web browser control itself.

Setting	Description
Location	Location where your personal cache content is stored
Open Cache Folder	Click here to open your cache folder
Clear SAP Business Client Cache	SAP Business Client caches various data for performance reasons, like available system connections, connection-specific navigation menus or custom themes. You can inspect the data cached by SAP Business Client by clicking button *Open Cache Folder*. To delete the data cached by SAP Business Client, click button *Clear Cached Data*.
Clear Internet Explorer Cache	Opens the dialog window *Delete Browsing History* of Internet Explorer.
Clear Edge Cache	Cached data of the Edge WebView2 browser control in SAP Business Client is stored in a separate location of SAP Business Client, which is completely independent from the Edge standalone installation. Such data can be deleted by clicking the button *Clear Edge Cache*.

History

Setting	Description
Location	Path where the SAP Business Client stores the history data.
Delete database content	Delete all data stored in the Business Client's database.

Traces

A trace file contains information about errors occurring during SAP Business Client runtime. Depending on the trace level, the trace file also contains additional information that can help developers isolate a specific problem.

For support and error analysis purposes, SAP Business Client provides the option for appropriate tracing options. Per default traces are switched off. When enabled, traces are stored on the desktop PC and might contain navigation data as well as user IDs. The following trace levels are available:

Trace Level

Setting	Description
Off	No trace files are written
Error	Only errors files are written (this trace level is set by default)
Warning	Exceptions, which might occur, but do not have a serious impact on program execution
Information	General information files are written
Verbose	Highest trace level

Trace Level 'Verbose' can be enhanced with extra information via the checkboxes *Enable HTTP trace* and *Enable SQLite Trace*.

Traces are stored in folder `%LOCALAPPDATA%\SAP\NWBC\Traces`, which is related to your Windows user.

SAP Business Client can notify the user if a trace is taken. The following notification options can be selected:

Notification

Setting	Description
Off	No notifications are shown
Message window	The notification appears in a message window within SAP Business Client
Windows notification	The notification is forwarded to the Windows operating system and is displayed according to your Windows settings, e.g. within the Windows Action Center or as Windows Message Balloon

To inspect the traces, stored click *Open Traces Folder*.

To delete all trace files of SAP Business Client on this desktop PC, click *Clear Traces*.

Other

SAP Business Client provides the option to store the user name for a logon to a system connection on the desktop PC, so that the user field on logon dialogs is automatically populated for every logon to a connection after a first logon. To disable the storage of your user name, deactivate the setting *Remember user name for system logon*.

To delete all stored user names for connections, click *Remove User Names*.

Support

You can also use the *Support* dialog to set the trace settings, see above.

Additionally this dialog offers a button to easily create a support report.

1.2.3.6 Personalization of Navigation Structure

Use

You can personalize the navigation structure relevant for your user in many different ways:

- You can add pages to your Favorites in the favorites panel.
- You can pin tabs (choose *Pin Tab* from the tab title's context menu). The pinned pages are available the next time you log on to the system.
- You can change the order of tabs within a window using the context menu (right mouse click the tab title) or drag and drop. The order of pinned tabs is reconstructed the next time you log on to the system.
- You can change the icon of the tab by choosing *Change Icon* from the context menu for this tab.
- You can rename the tab (choose *Edit Title* from the tab title's context menu, or double-click the tab's title itself). The tooltip consists of both the modified and the original titles, separated by a dash, for example, *Create sales order - XXX/115 Create Sales Order: Initial Screen*. Both the taskbar and the overflow menu display the renamed tab title.
  If you change your mind whilst editing the title, you can choose the `Escape` keyboard key, and leave edit mode without making the changes.
  To reset the title, move to edit mode (double-click the tab title), delete the title, and choose the `Enter` keyboard key.

The behavior of favorites and pinned tabs can be managed using settings and functions available in the data privacy settings dialog.

More Information

Favorites [page 50]

1.2.4 Quick Launch

Use

You can use this search option to search for entries within the navigation tree and start ABAP transactions or Web Dynpro applications using a type-ahead field. The figure below illustrates where the quick launch is located in the upper part of the screen:



Example of Quick Launch

Using the quick launch within an SAP Business Client connection you have the following options for a direct action:

- **Search**
  You can search for specific terms.
- **Start a transaction or application**
  As soon as you enter the name of a transaction or an application, the dropdown menu of the quick launch automatically opens, which is divided into different categories. In this dropdown menu, you can directly start a transaction or an application.
- **Navigate to URLs**
  If you enter a URL into the type-ahead field without adding `http://`, the system automatically adds `https://`, or `file://`, `http://`.

> **Note**
>
> If you use an SAP Fiori launchpad connection or an SAP GUI for Windows connection, the direct actions may behave differently or may be not available. For more information, refer to Direct Actions [page 36].

Features

Direct Actions [page 36]

Dropdown Menu of the Quick Launch [page 38]

Search Types [page 40]

Search Provider Configuration [page 42]

Search Result Page [page 44]

1.2.4.1 Direct Actions

Use

Direct actions are displayed at the top of the dropdown menu of the quick launch. The following actions are available:

- *Search for 'ABC' with 'xyz'*
- *Start transaction 'ABC'*
- *Navigate to Web Address*

Search for 'ABC' with 'xyz'

As soon as you enter a search term, the dropdown menu of the quick launch automatically opens. It is divided into different categories, in which you can choose between the search suggestions of different search providers.

You can use mnemonic search against your predefined search providers. Using mnemonic search, you can also start the desktop search function. Per default, [d] is configured as mnemonic for Windows Desktop Search.

If the query starts with a mnemonic followed by a search term (separated by a blank), this action is displayed at the top in the dropdown menu as the default action.

> ⓘ Note
>
> If you use an SAP Fiori launchpad connection or an SAP GUI for Windows connection, the option Search may behave differently or may be not available:

Search Option	SAP Fiori launchpad Connection	SAP GUI for Windows Connection
Enter search term/ Search for 'ABC' with 'xyz'	available/limited You can search with search providers defined with SAP Business Client.	not available
Enter search term/ Search for transactions	available/limited You can search for transactions and applications if the system information for the relevant remote system has been made available, either by transaction code or a term in the transaction description. Results are displayed in the Transactions and Applications section of the dropdown menu and refer to the system of the current transaction. On other tabs, use the SAP Fiori Search in the SAP Fiori launchpad header or the App Finder instead.	not available

You also have to consider that not all search providers are available for the connection types SAP Fiori launchpad and SAP GUI for Windows. For more information, refer to chapter Search Provider Configuration [page 42].

Start Transaction 'ABC'

You have the following options:

- **`/n`**
  Ends the current application, closes the tab, and opens a new tab, in which the new SAP GUI transaction is started
- **`/o`**
  Opens the transaction in a new window
- **`/t`**
  Opens the transaction in a new tab
- Insert transaction code without prefix
  When you enter a transaction code without prefix, the system validates if the transaction exists in the user menu or in the back end.
  - If the transaction exists, it appears as the first entry in the dropdown menu of the quick launch and you can directly start it from there.
  - Until the system finds the transaction, the last used search appears as the first entry in the suggestion list and is selected when you press ENTER.

  You can also start the transaction immediately without having it validated. In the personalization settings, select the *Start Transaction Without Validation Check* checkbox. When the user enters a transaction and then presses ENTER, the transaction opens in a new tab. The system does not validate if the transaction exists in the user menu or in the back end. By default, this personalization setting is deactivated.
  You can stop a transaction by choosing *Stop Transaction* in the tab context menu.

If you enter a search term into the type-ahead field that contains blanks (for example, if you type in multiple words), this action is disabled.

> ⓘ Note
>
> If you use an SAP Fiori launchpad connection or an SAP GUI for Windows connection, the option *Start Transaction* may behave differently:

	SAP Fiori launchpad Connection	SAP GUI for Windows Connection
Start Transaction 'ABC'	available/limited You can start a transaction if you are on a SAP GUI transaction tab. The transaction is launched in the system of the current transaction. On other tabs, use the SAP Fiori launchpad techniques such as SAP Fiori Search or App Finder to identify and start transactions.	available The quick launch reflects the command field. You can enter transaction codes and commands as for SAP GUI stand-alone. Prefix /t and validation check are not available.

Navigate to Web Address

If the query starts with a URL protocol, this action is displayed at the top in the dropdown menu as the default action.

> **Note**
>
> If you use an SAP Fiori launchpad connection or an SAP GUI for Windows connection, the option Navigate to Web Address may be not available:

	SAP Fiori launchpad Connection	SAP GUI for Windows Connection
Navigate to Web Address/ Enter URL	available	not available

Related Information

Personalization Settings [page 23]

1.2.4.2 Dropdown Menu of the Quick Launch

Use

As soon as you start typing into the type-ahead field, the dropdown menu of the quick launch automatically opens (see figure *Example of a Search*). This dropdown menu is divided into different categories, which gives you several options to conduct a search. You can either conduct a search with one of the search providers that have been configured, or start a transaction directly in the ABAP system or a Web Dynpro application available in the SAP Netweaver Application Server.

> **Note**
>
> If you add **/n**, **/o**, and **/t** as a prefix to your search term, the direct action *Start Transaction 'ABC'* is listed at the top in the dropdown menu as the default action.

By default, SAP Business Client loads a list of search providers from the server, if configured. However, you can also configure additional search providers locally, which can be used in exactly the same way as the other already integrated search providers such as *Desktop Search*. The search providers that are displayed in the dropdown menu must be configured in advance in the *Search Providers* settings for the client and in PFCG for the server.

Features

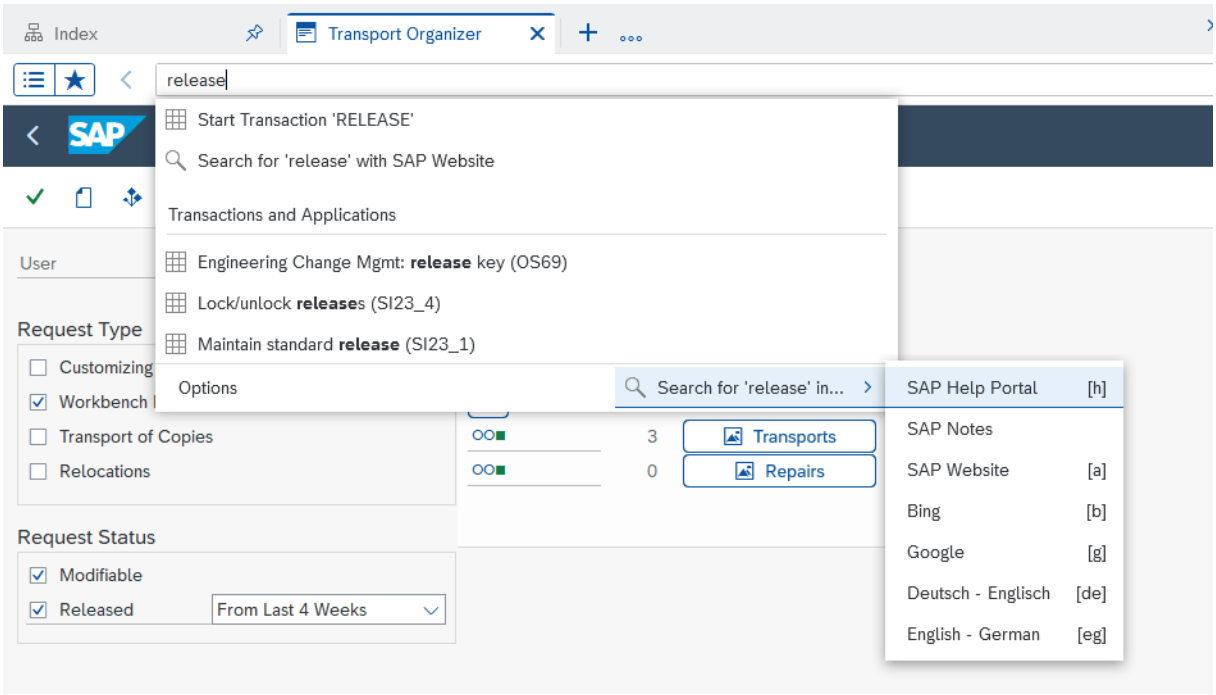
The following table shows the different categories for “direct actions” that are displayed in the dropdown menu and the options for each of them:

Direct Action	Options
Search for 'ABC' with 'xyz'	Conduct a search with the last used search provider
Start Transaction 'ABC'	Directly start a transaction or a Web Dynpro application available in the SAP Netweaver Application Server
Navigate to Web Address	Navigate to a specified web address

The following table shows the different categories for search providers that are displayed in the dropdown menu and the options for each of them:

Search Provider	Options
Favorites and Recent Items	Recently opened items and *Favorites* entries
My Work Area	Search results for ABAP transactions and Web Dynpro applications available in the SAP Netweaver Application Server specific to the user's menu (PFCG role)
Desktop Search	Conduct a search with the search provider *Desktop Search*. In this category, you see search suggestions that are sorted and prioritized. To see all search results, choose *Search for 'ABC' in...* > *Desktop Search*. All search results are then displayed in a new window.
Transactions and Applications	Search results for ABAP transactions and Web Dynpro applications available in the SAP Netweaver Application Server If you are logged on to a system using a *Fiori Launchpad* connection, you can search for apps by using the quick launch bar and for transactions and applications within a remote system, that is, one that you call up by clicking a tile from within the *Fiori Launchpad*. If you are logged on to a system using a *SAP Business Client* connection, you can search for transactions and applications within the logon system and within a remote system that you call up. The category headings in the dropdown menu of the quick launch bar indicate in which system or systems the search occurs.
Search for 'ABC' in...	Conduct a search with a configured search provider (in general)

The figure below is an example of the dropdown menu of the quick launch:



> **Note**
>
> Depending on your search term, not all search providers mentioned in the table above are displayed in the dropdown menu.

1.2.4.3 Search Types

Use

To conduct a search using the Quick Launch bar, you can use different types of search providers. These providers can be built-in providers such as Windows *Desktop Search* or *Transactions and Applications*, search providers defined in the *Role Maintenance* (PFCG) transaction as well as search providers defined in the front end of the client.

The availability of a search type is dependent on the type of connection; for example, not all the search types that are available in NWBC connections are available in SAP GUI connections. For more information, see the section *Connection Types and Search Type Availability*.

Search Types

The following search types are available in SAP Business Client

- **Enterprise Search**

SAP Netweaver Application Server are automatically offered as search providers when conducting a search in SAP Business Client for Desktop.

- **External Search**
  SAP Business Client has a built-in search functionality using search providers that have been configured in advance in one of the following ways:
  - Centrally using the *Role Maintenance* (`PFCG`) transaction
    For more information, see *Menu*.
  - Locally in the *Search Provider* settings (using SAP Business Client's *Search Providers* dialog box)

  A search provider is defined by a URL. There are two types of URLs:
  - A **direct search URL** that contains a placeholder for the query string that results in an HTML page with search results. The URL can be any URL that contains a string **`{0}`** as the placeholder. This placeholder is replaced with the query the user enters and the URL directly navigates to the specified HTML search result page.
    Example: **`http://www.sap.com/search/index.epx?q1={0}`**
  - An **OpenSearch URL** that points to an OpenSearch metadata description (see http:// www.opensearch.org).
    The metadata is an XML file that can contain multiple search services in the following flavors:
    - As HTML search result page
    - As suggest providers whose result is a list of search suggestions that are displayed in the dropdown menu of the quick launch

    Example: **`http://en.wikipedia.org/w/opensearch_desc.php`**
- **Desktop search**
  The Windows Desktop Search is an embedded standard Microsoft search option that is always available.

Connection Types and Search Type Availability

The following table outlines the search types that are available for each type of connection:

Connection Type	Available Search Types
SAP Business Client	• Enterprise Search • External Search • Desktop Search
SAP Fiori Launchpad	• External Search - configured locally in the *Search Providers* dialog box. • Desktop Search
SAP Logon/SAP GUI	No search is possible in this type of connection, only direct actions are possible.

1.2.4.4 Search Provider Configuration

Use

Administrators can configure search providers in the *Role Maintenance* (PFCG) transaction under the *@SEARCH@* node, or by using the administrator configuration file; end users can use the *Search Providers* configuration dialog box.

> **Note**
>
> If you use an SAP Fiori Launchpad connection or an SAP GUI for Windows connection, several search provider options may be not available:

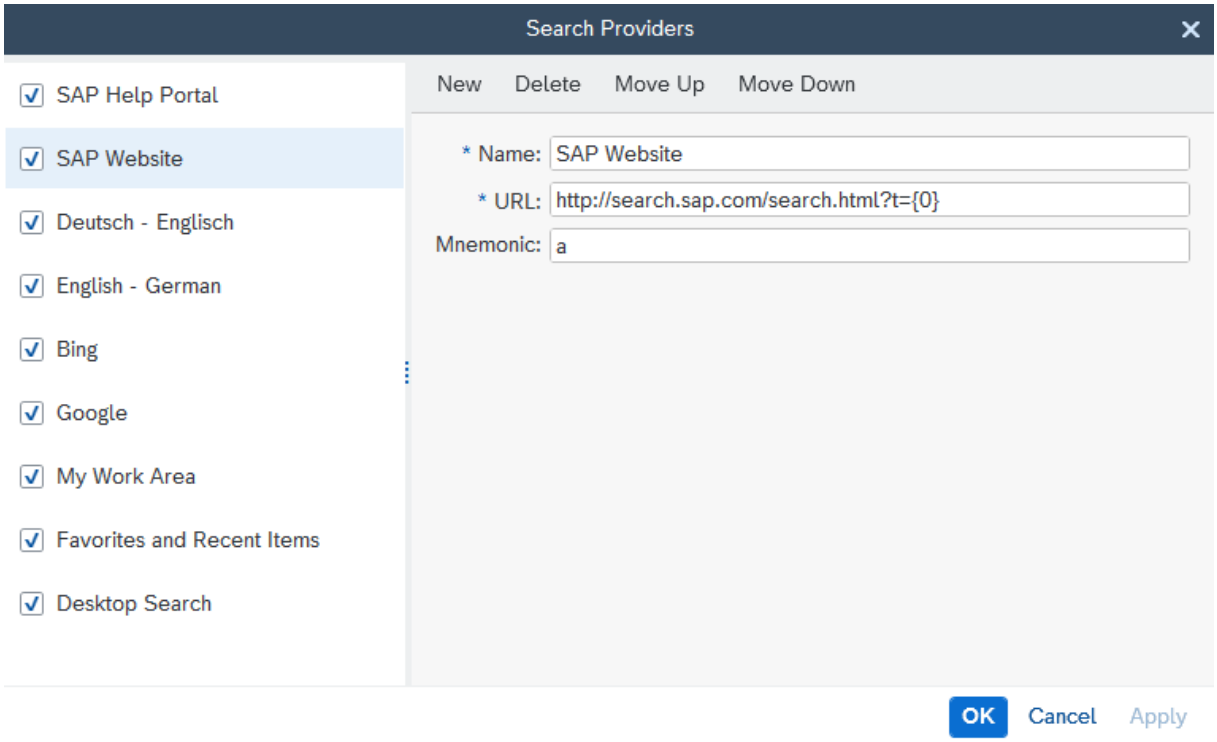
Search Provider	SAP Fiori Launchpad Connection	SAP GUI for Windows Connection
Desktop Search	available	not available
Favorites and Recent Items	not available	not available
My Work Area	not available	not available
Transactions and Applications	available/limited SAP GUI transaction tabs	not available
Search for 'ABC' in...	available/limited You can search with search providers defined with SAP Business Client	not available

More information on search provider configuration for administrators can be found in the *Administrator Guide* for SAP Business Client.

Activities

Configure Search Providers

To add, configure, and delete a search provider using the *Search Providers* configuration dialog, choose *Settings* > *Connections* > *Search Providers* or choose *Options* in the lower part of the dropdown menu of the quick launch.



Add Search Providers.

To add a search provider, choose and enter the required data. For each search provider, you can define the start-up URL that is to be called with the search term.

The table specifies the data required to add a search provider:

Name	Description
Name	The name of the integrated search provider. This is the name that is displayed in the list of all search providers.
URL	The URL that is used to conduct the search with the search provider. It must be the full URL as it would usually also be entered in a browser to conduct the search. Use the sequence `{0}` within the URL to mark the position where the search string should be placed. **Example** `http://search.sap.com/search.html?t={0}`

Name	Description
Mnemonic	Optional shorthand symbol, for example, a letter that you can configure as mnemonic for a selected search provider, followed by the search string. The search is then carried out directly in the search provider configured for this letter. For example, [a] is configured as mnemonic for search on the SAP homepage (as in the example of a search providers dialog shown above). When you enter **a** in the quick launch followed by the search string, the search is carried out on the SAP homepage. **Note** You can configure the mnemonic search function only in the front end.

Sort Search Providers

You can change the order in which your search providers are displayed in the quick launch dropdown menu and its submenu by choosing the move up and move down buttons.

Activate/Deactivate Search Providers

You can activate or deactivate the checkboxes to specify which search providers should be available when conducting a search.

Delete Search Providers.

To delete an existing search provider, choose .

Caution

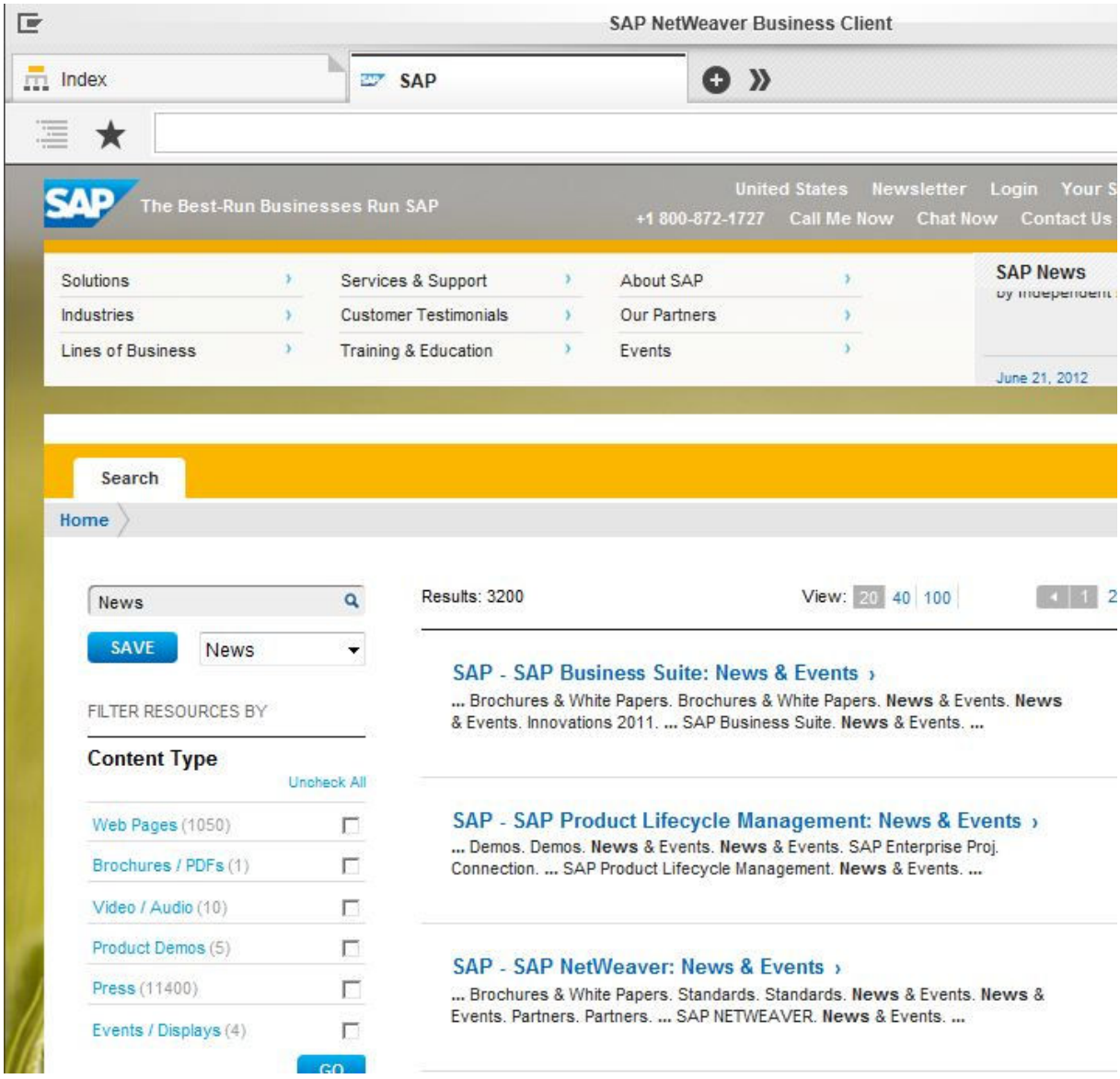
You cannot locally delete search providers that were configured centrally in the `PFCG` (for example *Desktop Search* and *ABAP Transactions*). On the front end, you can only delete locally configured search providers. For more information, see section Search Types [page 40].

1.2.4.5 Search Result Page

Use

Depending on, whether you conduct a search with the Windows Desktop Search or a search provider, the search result page opens in a new window or on a new tab. On the search result page, you can see all the results of your search query.

The figure below is an example of a search result page that is displayed after conducting a search with a search provider:



Example of a Search Result Page

1.2.4.6 How to Search Using Quick Launch

Use

To conduct a search using quick launch, follow the steps below.

Procedure

1. Type a search term into the type-ahead field.
   All matches in all roles are displayed in the dropdown menu of the quick launch.
2. To refine the search, select *Search for 'xyz' in...* in the dropdown menu of the quick launch.
3. The search is now conducted with the specified search provider.

> **Note**
>
> If you enter the search term without specifying a search provider and press the `Return` key, the search is conducted with the search provider last used.

The search results are now listed on the search result page on a new tab or in a new window (see figure *Example of a Search Result Page* in Search Result Page [page 44]).

1.2.5 Navigation

Use

As an end user, you navigate from your start page to a business application to perform your typical tasks. You have many different options to navigate the shell and content area and to find and launch applications. You can combine different navigation options according to your preferences. This includes overview pages, the quick launch, or the navigation panel and makes navigating within SAP Business Client very flexible.

To perform your day-to-day tasks, you can work on multiple tabs in parallel. With tabbed browsing, you have several options to select a tab. For example, you can select a tab from the tab bar, the tab list, and from the taskbar. You can personalize the navigation structure relevant for your user by adding pages to the favorites or by pinning tabs. The pinned pages are available the next time this user logs on to the system.

Concepts

This is an overview of the elements of the user interface with respect to the tabbed browsing navigation concept.

The availability of a navigation concept depends on the connection type. The following table gives an overview.

Navigation Concept	SAP Business Client Connection	SAP GUI Connection	SAP Fiori Launchpad (FLP) Connection
Navigation Panel [page 47]	Available	--	--
Side Panel [page 48]	Available	--	Available for SAP GUI transactions
Overview Pages [page 49]	Available	--	--

Navigation Concept	SAP Business Client Connection	SAP GUI Connection	SAP Fiori Launchpad (FLP) Connection
Favorites [page 50]	Available	Available, except for Easy Access favorites	Available, except for Easy Access favorites
Taskbar [page 52]	Available	Available	Available
Jump List [page 53]	Available	Available, except for *Frequent* section	Available, except for *Frequent* section
Back button	Available only for classic web navigation. Disabled for Web Dynpro and Dynpro transactions.	--	Available only for classic web navigation. Disabled for Web Dynpro, Dynpro, and SAP Fiori applications.
Home button	Available - opens Index page in the same tab	--	Available - opens SAP Fiori launchpad homepage in the same tab.

1.2.5.1 Navigation Panel

Use

> ⓘ Note
>
> This navigation concept is only available for the SAP Business Client connection type.

You can navigate from the navigation panel. This panel is displayed by the side of the content area for each tab and gives access to the navigation tree specific to the user's roles. It serves to structure a large number of navigation targets. In addition to the navigation structure exposed in the content area using the *Index* page, the navigation panel is used for detailed navigation. It is displayed by the side of the content area for each tab.

The navigation panel is contextual to the content and also displays the link collections related to the current page. When you select an entry in the tree, the detailed navigation levels, for example, for a specific work center, are displayed both in the navigation panel and in the content area. The lower section of the detailed navigation, for example *Create*, contains a collection of typical tasks for a specific work center. Click any of these entries to start the task. Clicking an entry in the lower-left section opens a new window.

More Information

Navigating from the Navigation Panel [page 57]

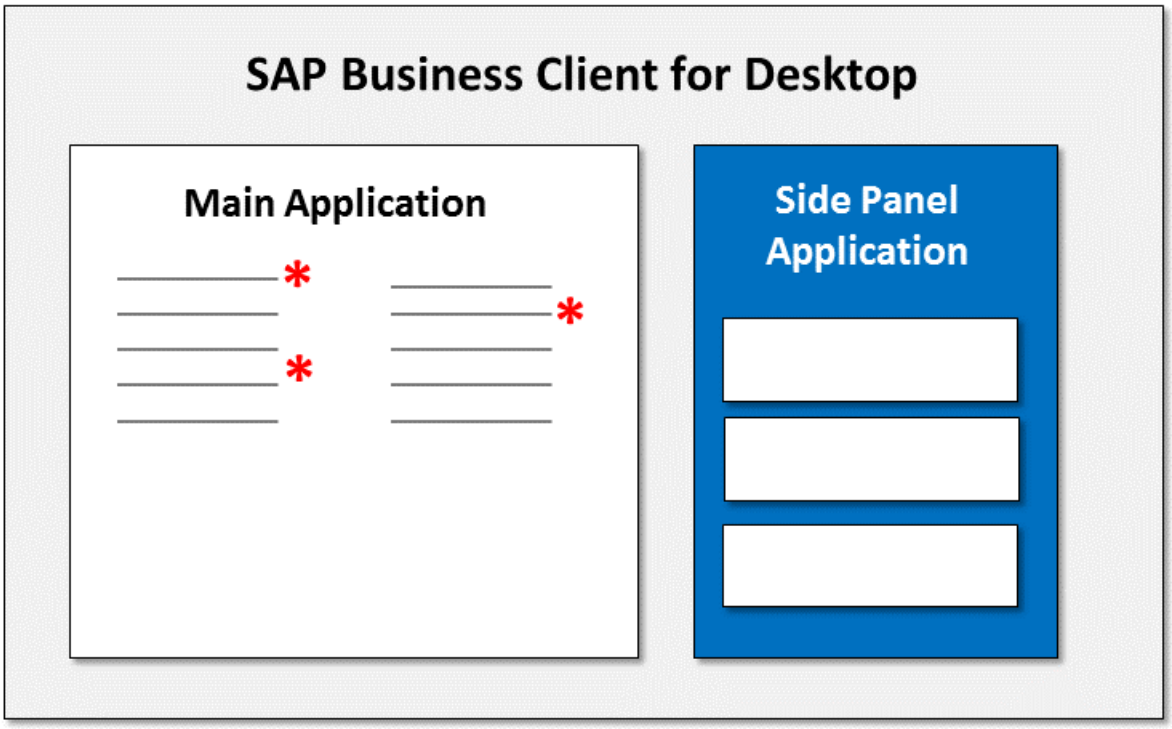
1.2.5.2 Side Panel

The overall structure of the screen areas of SAP Business Client consists of the shell, the content area with the main application, and the side panel application.

You can use the side panel to display additional context-sensitive information related to the main application in a separate screen area (a container by the side of the content area of SAP Business Client). The role definition determines which side panel application is shown for a certain application.

> ⓘ Note
>
> Side panels are not available with SAP GUI connections.

The screen areas of SAP Business Client described above are depicted in the following figure:



Screen Areas of SAP Business Client

You can open and close the side panel area by choosing the toggle button in the shell header. If there are multiple side panel applications available, you can switch between them by choosing .

If you choose , the side panel applications are informed about changes in the application. Usually, this happens automatically, except in special cases, for example when selecting table lines in SAP List Viewer (ALV) tables.

If you choose , the side panel application does not react to changes within the current main application. It is frozen and remains unchanged even if other main applications are started that do not have this side panel application assigned.

1.2.5.3 Overview Pages

Use

> **Note**
>
> This navigation concept is only available for the SAP Business Client connection type.

These pages serve as the central point of entry for users from where they can navigate to their most relevant navigation targets specific to their roles.

The following types of overview pages are available:

- **Index Page**
  This page displays the entire navigation structure for this user in a hierarchical form. The *Index* page is displayed as the initial tab when a user logs on to a system for the first time. It is pinned to the tab bar by default. If they want to see a different page as their home page, users can unpin and close it.
- **New Tab Page**
  The user can add *New Tab* pages that display their most useful navigation options. Each *New Tab* page the user opens displays the last opened and most frequently used navigation targets specific to the user's roles. The navigation options are not displayed if the setting in *Settings* → *Data Privacy* → *History Mode* is set to *Never remember*. If *Clear history on log off* is set, then only a limited set of navigation options is shown that are opened in the current SAP Business Client session. From the *New Tab* page, the user can access the *Index* page.
- **Service Map**
  This page displays the navigation targets of a work center or folder down to the third level. This allows the user to get a good overview of the business process represented by the folder (configured in PFCG).

More Information

Index Page [page 49]

New Tab Page [page 50]

1.2.5.3.1 Index Page

Use

The *Index* page provides an overview of the business content and tasks specific to a user's roles. On the entry level, this content is organized in work centers. A work center comprises the navigation options to the applications this user needs to perform his or her typical tasks.

In case the navigation structure is more complex and spans several navigation levels (up to three levels), the content for this work center can be organized in folders. This introduces an additional level of navigation.

When a user starts to navigate inside a work center on the folder level, the navigation targets of this folder are exposed in a new column to the side of this folder, indicated by an ›. This way, users can navigate several levels of navigation entries for each work center like in an explorer. When the user selects an entry for an application or transaction, which appears as a link, the content opens in a new tab.

If the entry page is set to *First pinned tab*, the *Index* page is displayed as the initial tab when a user logs on to a system for the first time. It is pinned to the tab bar by default. Users can unpin and close it if they want to see a different page as their home page.

> ⓘ Note
>
> Users can choose the option to display their *Easy Access Favorites* as a work center on the *Index* page in their personalization settings.

1.2.5.3.2 New Tab Page

Use

On this page, users get an overview of their most useful navigation targets. This page is displayed each time the user adds a tab. From here, users can access the *Index* page from a hyperlink, open their frequently used and last opened content, and open the work centers relevant to their typical tasks. In *Settings* › *Data Privacy...* ›, there is an option to delete the history or change the mode of the history, the frequently used and last opened navigation options can be adapted. For further information, please see Data Privacy Settings [page 31].

Users can make a tab permanently available by pinning it to the tab bar, for example, if they want to use it in a way like their home page. This pinned tab is available the next time the user logs on to the system.

Users can rearrange tabs or drag them into separate windows by using drag and drop or the tab context menu.

> ⓘ Note
>
> The context menu depends on the function of the tab.

1.2.5.4 Favorites

Use

Within a system, favorites allow you to start an application or a transaction without having to select them in the navigation tree. You can also open web pages from your *Favorites* list. You can add applications, transactions, and web pages that you use frequently to your favorites. This list is displayed in the *Favorites* panel by the side of the system content area when you choose the ★ pushbutton in the toolbar. You can use this panel to organize, add, display, rename, and delete your favorites.

Features

The *Favorites* panel is divided into sections and displays the following types of favorites:

- **System Favorites:**
  Applications or transaction codes saved by the user as favorites

  > ⓘ Note
  >
  > Transactions and applications are system-dependent. The *Favorites* list can therefore vary depending on your system connection.

  Imported Easy Access favorites are also saved here (see below).
- **Web Favorites:**
  Internal or external web pages are stored here. The folder will be created as soon as you create the first favorite or import one or more web favorites from other systems - e.g your local browser (see below).
- Optional: *Easy Access Favorites (read-only)*
  Favorites defined by the user in the *SAP Easy Access* menu of the SAP system you are connected to are displayed in this folder. They are only displayed as they are defined in the system and cannot be deleted or changed here.

  > ⓘ Note
  >
  > This option is only relevant for SAP Business Client connection type. Prerequisite: You must select the *Easy Access Favorites in favorites panel* option under *Settings* > *SAP GUI Interoperability*.

Activities

You have the following options in the Favorites panel:

- *Add to Favorites*: To add a screen that is currently displayed in the content area to the favorites list, go to the favorites panel and choose the pushbutton at the top of the favorites panel.
  You can add favorites to folders that you can order hierarchically.

  > ⚠ Caution
  >
  > Folders created on the same hierarchy level must have unique names.

  By using your cursor, you can choose where to add the Favorites item to the list.
  - Place your cursor on a node. Your new item is added above this node.
- *Open, Edit, Delete*: You can display a favorite in a new tab or window. You can rename or delete an entry in your Favorites list. To open a favorite, edit, or delete it, right-click it in your Favorites list and select the appropriate option from the context menu.
- *Import favorites to your favorites panel*

  Choose button on the panel header to open the *Manage Favorites* panel. In this panel, you can import and export favorites. Be aware that
  - imported web favorites are saved in folder *Web Favorites*. This folder will be created if it is not yet available.

- imported Easy Access or System favorites are saved in folder *System Favorites*. Imported Easy Access favorites technically are copies of the respective favorites in the SAP system. They may be changed or deleted in this folder without any impact to the original favorites in the SAP system.

- *Export favorites for a given user*
  At first, log on to the desired system with the user you want to export the favorites from. You can choose, if you want to export the system-independent Web Favorites, too, or only system-related ones.
  Then press the *Export* button to create the Business Client Export File.
  Then, log on to the same system again, but with the user with which you want to import those favorites.
  Go to the *Manage Favorites* panel and select the import source *Business Client Export File*. Press the *Import* button to add the favorites to your existing favorites hierarchy.

  > **Note**
  >
  > The export/import mechanism works system-wise, so it is not possible to do an export for multiple systems and users at once due to lack of assignment information. If the favorites are exported from one to another machine and user, the import is only possible if both users are using the same client and connection URL.

For more information about personalization options, see Personalization Settings [page 23] and Data Privacy Settings [page 31].

1.2.5.5 Taskbar

Use

SAP Business Client implements a tab-based navigation model (tabbed browsing) and provides support for tab previews in the taskbar for a better overview of all tabs that are currently open. You can easily switch between tabs by selecting a tab from the tab bar, from the tab list, or in the taskbar. If you have several tabs open, the


taskbar icon displays a stacked symbol and a tab preview is displayed for any open tab.

The *Show Tab Previews in Taskbar* option is activated by default. You can deselect it in your personalization settings by choosing *Settings* > *Appearance* > *Interaction Design*. In this dialog, deselect the *Show Tab Previews in Taskbar* checkbox. The SAP Business Client taskbar button is now displayed in a normal state (not as a stacked symbol). When you hover over it, you see only one preview for the whole window.

Features

You can use the tab preview in the taskbar to select, close, and preview tabs as follows:

- You can select a tab directly from the taskbar.
- You can view a quick preview of the tabs that are currently open without navigating away from your active tab.
- You can pin tabs to make them available when you restart SAP Business Client and connect to the same system. If you have pinned more than one tab, a tab preview is displayed only for the first tab after starting

SAP Business Client. SAP Business Client displays previews of the other pinned tabs only when you select these tabs.
To pin a tab, right-click the tab title and choose the *Pin Tab* option.

- You can close any tab directly from the taskbar.
- You can use the SAP Business Client jump list to quickly access important applications, recently used items, or some special functions of the current application process.
  For more information, see Jump List [page 53].

1.2.5.6 Jump List

Use

You can use the SAP Business Client jump list to quickly access important applications, a list of your recently used navigation items, or some special functions of the current application process. To open the SAP Business Client jump list, restart SAP Business Client and log on to a system. The jump list, which looks like a context menu, is displayed when you right-click the SAP Business Client taskbar icon. While SAP Business Client is running, the jump list is also shown in the start menu. The entries in the jump list can be impacted by changing the history settings in *Settings* -> *Data Privacy...*. For more information, see Data Privacy Settings [page 31].

Features

The SAP Business Client jump list consists of the following sections:

- *Frequent*
  You can quickly open your recently used items, which are the same as in *New Tab* page.

  > **Note**
  >
  > The *Frequent* section is only available for the SAP Business Client connection type.

- *Tasks*
  - *Open New Window*
    Select this option to open a tab in a new window.
  - *Open New Tab*
    Select this option to open a tab in the last used shell window.

  If more than one window is open, a navigation target you select from the jump list opens in the last used window.
- The items at the bottom of the jump list are basic entries provided by the operation system. They exist for every application with a taskbar icon.

1.2.5.7 Keyboard Shortcuts

You can display the shortcuts and hotkeys available for SAP Business Client for Desktop by choosing *Help* > *Show Keyboard Shortcuts*.

To change the key combination for a specific action, go to *Settings* > *Accessibility* to tab *Keyboard Shortcuts*.

The following shortcuts and hotkeys are relevant for SAP Business Client for Desktop:

Shortcut / Hotkey	Action
CTRL + ALT + L	*Focus on Quick Launch*
CTRL + W	*Close Tab*
CTRL + T	*New Tab*
CTRL + Left	*Move Left*
CTRL + Right	*Move Right*
F5	*Refresh Content Area* For Web content: refresh For SAP GUI transactions: as defined in the standard for function keys
CTRL + Shift + I	*Favorites*
CTRL + Shift + N	*Navigation Panel*
CTRL + Shift + P	*Side Panel*
CTRL + ALT + F11	*Full Screen*
F6 / SHIFT + F6	*Focus on Next Area/ Focus on Previous Area* For Web content: navigation between groups (that is, between menu, top-level navigation, navigation panel, content area) For SAP GUI transactions: as defined in the standard for function keys
CTRL + ALT + M	*Focus on Menu*
ALT + 0	*Focus on Tabs*
ALT + 1	*Focus on Navigation Panel*
ALT + 2	*Focus on Content Area*

Shortcut / Hotkey	Action
ALT + 3	*Focus on Side Panel*
ALT + Left	Navigate Backwards
CTRL + ALT + K	*Show Shortcuts*
CTRL + R	*Refresh Side Panel* The side panel applications are informed about changes in the application. This happens automatically, except in special cases, when selecting table lines in SAP List Viewer (ALV) tables, for example.
CTRL + D	*Disconnect Side Panel* The side panel application does not react to changes within the current application. It is frozen and it remains unchanged even if other applications are started that do not have this side panel application assigned.
CTRL + Shift + D	*Connect Side Panel* The side panel applications are informed about changes in the application and react to them.

Administrators can change keyboard shortcuts using the admin configuration XML file to clearly distinguish them from custom ABAP transaction shortcuts.

> ⓘ Note
>
> Some shortcuts are shared with the SAP GUI for Windows, e.g. CTRL + TAB. At runtime, it depends on where the focus is at who handles the given key gesture.

1.2.5.8 Navigating Content (SAP Business Client Connection)

Use

This section provides examples of how you can navigate to a business application to do some tasks here.

More Information

Navigating from the Index Page [page 56]

Navigating from the New Tab Page [page 57]

Navigating from the Navigation Panel [page 57]

Working with SAP GUI Sessions (SAP Business Client Connection) [page 58]

1.2.5.8.1 Navigating from the Index Page

Context

Using the *Index* page you can find and launch applications.

Procedure

1. Start SAP Business Client and log on to a system.

   SAP Business Client opens and the *Index* page is displayed as the first tab.

   > ⓘ Note
   >
   > The *Index* page is pinned to the tab bar by default. It can be unpinned and closed if the user wants to see a different page as the home page.

2. To start navigation from the *Index* page, click a work center.

   The work center expands and shows the navigation entries on the first level for this work center.

3. Proceed as follows:
   - Click the *Overview Work Center* link to go to an overview of the content for this work center. It opens in a new tab from where you can start any navigation target for this work center.
   - To navigate to the content of a folder that is shown on the first level, click the › next to the folder name. A new column opens next to the folder name that shows the content of this folder.
   - To launch an application or a transaction, click its name.
     The content opens in a new tab where you can view and edit it.

1.2.5.8.2 Navigating from the New Tab Page

Context

You can add *New Tab* pages. From here, you can quickly navigate to your most useful navigation targets and access the *Index* page.

Procedure

1. Start SAP Business Client and log on to a system.

   SAP Business Client opens and the *Index* page is displayed as the first tab.

   The *Index* page is pinned to the tab bar by default. It can be unpinned and closed if the user wants to see a different page as the home page.
2. To add a *New Tab* page, choose the ••• *Plus icon* pushbutton in the tab bar.

   This adds a tab to the tab bar that displays the *New Tab* page.
3. To navigate from the *New Tab* page, select a navigation target. You have the following options:
   - Select an entry from the list of your work centers.
   - Select an entry from the list of your frequently used navigation targets.
   - Select an entry from the list of your last used navigation targets.
   - Go to the *Index* page.

   > ⓘ Note
   >
   > When you navigate on the *New Tab* page, the target opens within the main window (in-place). For example, if users select an entry from the list of their frequently used navigation targets or navigate to the *Index* page, the content is displayed in the content area of this tab in the same window by default.
4. Optional: Add as many tabs as needed to perform your business tasks.
5. Optional: To view a list of all open tabs, choose the ••• pushbutton in the tab bar.

1.2.5.8.3 Navigating from the Navigation Panel

Context

Use the navigation panel for detailed navigation in the navigation tree relevant for your role.

Procedure

1. Start SAP Business Client and log on to a system.

   SAP Business Client opens and an overview page is displayed as the first tab.
2. Launch an application or a transaction.

   The content opens in a new tab.
3. Navigate to an application or a transaction.

   The content opens in a new tab where you can view and edit it.
4. To display the navigation panel, choose the  pushbutton in the toolbar at the top of the screen.

1.2.5.8.4 Working with SAP GUI Sessions (SAP Business Client Connection)

In addition to the navigation from Index or New Tab pages and the navigation panel, SAP Business Client provides the option to seamlessly open SAP GUI sessions.

> **Note**
>
> The availability of the SAP GUI command field depends on the setting *Enable SAP GUI OK Code*. This setting can be enabled or disabled by an administrator for all users, or it can be set in the user-specific settings.

New SAP GUI Session

New SAP GUI sessions are always opened in SAP Business Client. To open a session, you have the following options:

- Enter **`/o`** or **`/t`** as a prefix to a transaction code in the quick launch.
- Enter **`/o`** as a prefix to a transaction code in the SAP GUI command field.
- Choose the icon with quick info text *Creates New Session* in the standard toolbar.
- Choose *System* > *Create Session* in the SAP GUI dropdown menu.
- Use dynamic links in transactions.

By default, a session opens in a new tab. To change this behavior, choose *Settings* > *Personalize* > *Open Session in New Window*.

> **Note**
>
> To use SAP GUI for Windows transactions within the SAP Business Client, the relevant system has to be made available via the Internet Explorer zone model or via allowlist.

Displaying a List of All Sessions

To display a list of all SAP GUI sessions for a system, enter **/o** in the SAP GUI command field and confirm. All your sessions are displayed in a dialog box. You can also create and end sessions from here.

Closing SAP GUI Sessions

You can close an SAP GUI session as follows:

- Close the tab.
- Choose *System* > *End Sessions*.
- Enter **/i** in the SAP GUI command field of the session you want to close.
- To close a specific SAP GUI session, enter followed by the number of the session, **/i** you want to close in the command field of any of the sessions. For example, enter **/i3** to close the third session.

You can close all SAP GUI sessions belonging to the same system and client at once as follows:

- Enter **/nend** in the SAP GUI command field. **/nend** prompts you to confirm that you want to close all the sessions.
- Enter **/nex** in the SAP GUI command field. **/nex** closes all the sessions without prompting.
- Choose *System* > *Log Off*.

> **Note**
>
> The above actions close the SAP GUI sessions. The Web Dynpro ABAP applications or SAPUI5 apps, for example, remain open.
>
> To close all sessions, proceed as follows:
>
> - In the SAP Business Client menu, choose *Window* > *Close All Windows and Log Off*. The system closes all sessions that are opened in the SAP Business Client connection, even if they are distributed across several SAP Business Client windows.
> - In the upper right corner of the SAP Business Client window, choose *Windows Close*. The system closes all sessions in the current window.

1.2.5.9 Navigating Content (SAP GUI Connection)

With SAP Business Client, users can seamlessly open SAP GUI sessions.

> **Note**
>
> The availability of the SAP GUI command field depends on the setting *Enable SAP GUI OK Code*. This setting can be enabled or disabled by an administrator for all users, or it can be set in the user-specific settings.

New SAP GUI Session

After logging on to an SAP system, the SAP GUI start screen is displayed, for example, the SAP Easy Access menu. From the start screen, you can open SAP GUI sessions hosting transactions or reports.

New SAP GUI sessions are always opened in SAP Business Client. To open a session, you have the following options:

- Enter **/o** in the quick launch or the SAP GUI command field. A new tab page with the SAP GUI start screen opens.
- Enter **/o** as a prefix to a transaction code in the quick launch or the SAP GUI command field.
- Choose the icon with quick info text *Creates New Session* in the standard toolbar. A new tab page with the SAP GUI start screen opens.
- Choose *System* > *Create Session* in the SAP GUI dropdown menu. A new tab page with the SAP GUI start screen opens.
- Use dynamic links in transactions.
- Add a tab page. The new tab page displays the SAP GUI start screen.

By default, a session opens in a new tab. To change this behavior, choose *Settings* > *SAP GUI Interoperability* > *Open session in new window*.

Displaying a List of All Sessions

To display a list of all SAP GUI sessions for a system, enter **/o** in the quick launch or in the SAP GUI command field and confirm. All your sessions are displayed in a dialog box. You can also create and end sessions from here.

Closing SAP GUI Sessions

You can close an SAP GUI session as follows:

- Close the tab page.
- Choose *System* > *End Session*.
- Enter **/i** in the SAP GUI command field of the session you want to close.
- Enter **/i** in the quick launch for closing the SAP GUI session of the active tab page.
- To close a specific SAP GUI session, enter followed by the number of the session,**/i** you want to close in the command field of any of the sessions. For example, enter **/i3** to close the third session.

You can close all SAP GUI sessions at once as follows:

- Enter **/nend** in the quick launch or the SAP GUI command field. **/nend** prompts you to confirm that you want to close all the sessions.
- Enter **/nex** in the quick launch or the SAP GUI command field. **/nex** closes all the sessions without prompting.

- Choose *System* > *Log Off*.
- In the SAP Business Client menu, choose *Window* > *Close All Windows and Log Off*. The system closes all sessions that are opened in the SAP Business Client connection, even if they are distributed across several SAP Business Client windows.
- In the upper right corner of the SAP Business Client window, choose *Windows Close*. The system closes all sessions in the current window.

1.2.5.10 Navigating Content (SAP Fiori Launchpad Connection)

The SAP Business Client acts as a Windows-based desktop browser for the SAP Fiori launchpad with the ability to launch classic Dynpro applications (SAP GUI transactions) using an embedded SAP GUI for Windows.

- The start page of an SAP Fiori launchpad connection is always the SAP Fiori launchpad home page; if you add a new tab, the SAP Fiori launchpad home page is also displayed.
- Using the Quick Launch bar, you can search only for search terms using the client-defined search providers. To search for transactions and applications, you can use the SAP Fiori launchpad search bar.
- Classic Dynpro applications launched by SAP Fiori launchpad open in the same tab (in-place) by default. A different launch mode may be configured and provided by Fiori launchpad. In this case applications open according to the launch mode, which can be *New Tab*, *New Window* or the same tab (in-place). This behavior can be changed to always open Dynpro applications in a new tab by deactivating evaluation of the launch mode, see alsoSAP GUI Interoperability [page 29] (setting *Evaluate transaction launch mode from Fiori*).
- Using the Quick Launch bar, you can search for search terms using the client-defined search providers and for classic Dynpro transactions in the system, which the current application in the tab refers to. To search for transactions and applications, you can also use the SAP Fiori launchpad search bar.
- All navigations from the Quick Launch bar open in the same tab by default. You can change this behavior by selecting the setting *Start navigation from Quick Launch in a new tab* in the *Appearance* > *Interaction Design* personalization settings, see also Appearance [page 24].
- Home button opens SAP Fiori launchpad homepage in the same tab.

More Information

For more information on the SAP Fiori launchpad navigation and personalization concepts, see the topic *Using the Launchpad* in the documentation **SAP Fiori Launchpad** on the SAP Help Portal.

For additional navigation options in tabs containing SAP GUI sessions, see Working with SAP GUI Sessions (SAP Fiori Launchpad Connection) [page 62].

1.2.5.10.1 Working with SAP GUI Sessions (SAP Fiori Launchpad Connection)

If you open an SAP GUI transaction from the SAP Fiori launchpad, the SAP Business Client opens the transaction in the same or in the new tab page according to provided navigation mode by default.

> ⓘ Note
>
> The availability of the SAP GUI command field depends on the setting *Enable SAP GUI OK Code*. This setting can be enabled or disabled by an administrator for all users, or it can be set in the user-specific settings.

New SAP GUI Session

New SAP GUI sessions are always opened in SAP Business Client. To open a session, you have the following options:

- Enter **/o** as a prefix to a transaction code in the quick launch or the SAP GUI command field.
- Choose the icon with quick info text *Creates New Session* in the standard toolbar. A new tab page with the SAP GUI start screen opens.
- Choose ▶ *System* ▶ *Create Session* ▶ in the SAP GUI dropdown menu. A new tab page with the SAP GUI start screen opens.
- Use dynamic links in transactions.

By default, transaction launch mode provided by Fiori launchpad is evaluated and session opens either in the same tab (in-place), in a new tab or in a new window. To change this behavior to open new sessions in a new tab, choose ▶ *Settings* ▶ *SAP GUI Interoperability* ▶.

> ⓘ Note
>
> To use SAP GUI for Windows transactions within the SAP Business Client, the relevant system has to be made available via the Internet Explorer zone model or via allowlist.

Displaying a List of All Sessions

To display a list of all SAP GUI sessions for a system, enter **/o** in the SAP GUI command field and confirm. All your sessions will be displayed in a dialog box. You can also create and end sessions from here.

Closing SAP GUI Sessions

You can close an SAP GUI session as follows:

- Close the tab page.
- Choose *System* > *End Session*.
- Enter **/i** in the SAP GUI command field of the session you want to close.
- Enter **/i** in the quick launch for closing the SAP GUI session of the active tab page.
- To close a specific SAP GUI session, enter followed by the number of the session,**/i** you want to close in the command field of any of the sessions. For example, enter **/i3** to close the third session.

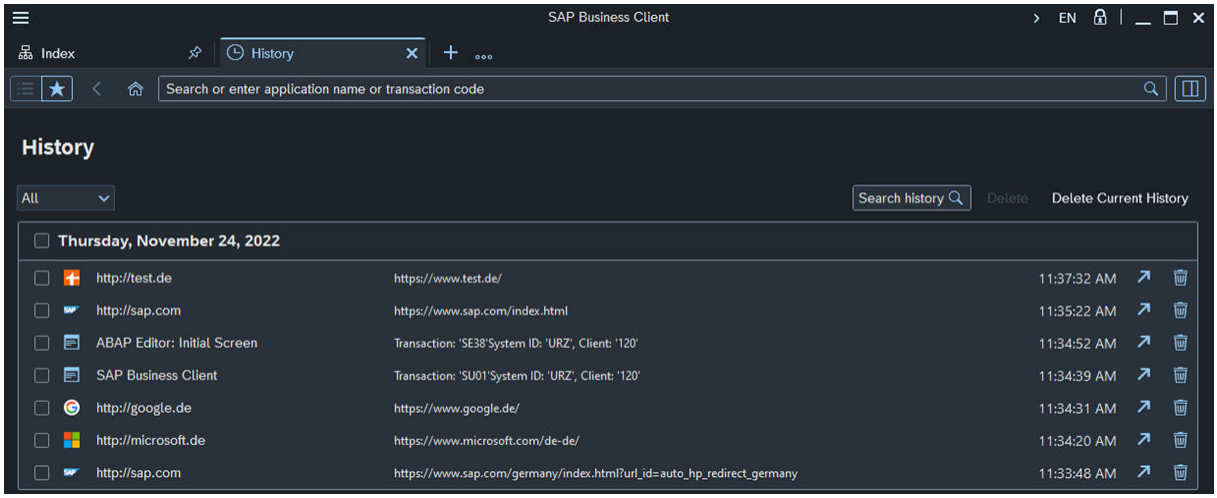
You can close all SAP GUI sessions at once as follows:

- Enter **/nend** in the quick launch or the SAP GUI command field. **/nend** prompts you to confirm that you want to close all the sessions.
- Enter **/t** as a prefix to a transaction code in the Quick Launch.
- Enter **/nex** in the quick launch or the SAP GUI command field. **/nex** closes all the sessions without prompting.
- Choose *System* > *Log Off*.
- In the SAP Business Client menu, choose *Window* > *Close All Windows and Log Off*. The system closes all sessions that are opened in the SAP Business Client connection, even if they are distributed across several SAP Business Client windows.
- In the upper right corner of the SAP Business Client window, choose *Windows Close*. The system closes all sessions in the current window.

1.2.5.11 Navigation History

The SAP Business Client stores the navigation data and provides a History UI to access and manage those past navigations.

To show the History UI, either press the keys CTRL + H or navigate via *Menu* > *History*.



The past navigations are listed chronologically grouped by days. The entries are a combination of connection-related navigations and Web URLs without any relation.

Like in a typical modern browser, you can select a given timeframe for the visualization, search for specific search terms or delete single, grouped or even all entries.

To navigate an entry, just click on each link or press the launch button on the right.

> ⓘ Note
>
> The navigation data is stored in an integrated database. In the *Settings UI* > *Data Privacy*, it is possible to define the retention time of the navigation history and also to delete all data.

1.2.6 Logging Off

Logging Off from SAP Business Client for Desktop

When you have finished working in SAP Business Client for Desktop, log off using one of the following methods:

- Choose the icon ✕ in the corner at the top of the screen
- Choose the menu options *Window* > *Close All and Log Off*

With both methods, all sessions are terminated, and all active windows and applications are closed in SAP Business Client.

In an SAP Fiori launchpad connection, you can also log off using the *Sign Out* (Fiori 2.0, *Me* area) or *Log Off* (Fiori 1.0) function.

Logging Off from SAP NetWeaver Business Client 3.6 for HTML

When you have finished working with SAP Business Client for HTML, log off using the *Log Off* button.

With this method, all sessions are terminated, and all active windows and applications are closed in SAP NetWeaver Business Client 3.6 for HTML.

> ⚠ Caution
>
> Be careful to distinguish between authentication (which allows the browser to interact with the server) and a logoff sequence (which terminates all sessions on the server). Depending on the authentication method that is used within the browser, it is possible to log off from the server and consequently have all sessions terminated while having the authentication information available within the browser (for example, when using browser-supported basic authentication or when using digital certificates). For example, if digital certificates are used and the browser interacts with the server again, a new session is automatically started. **Therefore, we highly recommend that you close the browser window after logging off.**

1.3 SAP Business Client Administration Guide

Use

This documentation provides a starting point for administrators for the optimal operation and use of SAP Business Client for Desktop. It contains specific information about the installation and various administration and configuration tasks while the system is running, and lists the tools that you can use to implement them.

1.3.1 Installation and Client Configuration

Use

As an administrator, you perform several installation and configuration steps to ensure that SAP Business Client fully operates in an ABAP or a portal environment. Some configuration settings are relevant in particular for end users, such as personalization and data privacy settings, and these are described in the end user documentation.

End users must have a local installation of the business client, or they access an installation on a Windows Terminal Server (WTS). Another option is to install the SAP Business Client front end in an automated process without any end user interaction. This unified procedure allows administrators to do the following:

- Set up an installation server with SAP GUI for Windows and SAP Business Client
- Collect many SAP front-end components (or front-end products) on an installation server, and then perform installations, updates, or de-installations on workstations via a network

This chapter covers all aspects concerning the installation of SAP Business Client, either stand-alone or together with SAP GUI for Windows.

More Information

Personalization [page 23]

1.3.1.1 SAP Business Client for Desktop Installation

Details for the installation, update, upgrade, and uninstallation of the SAP Business Client.

Installation

The SAP Business Client 8.00 software is part of the *SAP Front End Package 8.00 Compilation DVD*. You can download it from SAP ONE Support Launchpad (https://launchpad.support.sap.com/#/softwarecenter),

select ▶ *INSTALLATIONS AND UPGRADES* ▶ *Select N (under By Alphabetical Index)* ▶ *NETWEAVER BUSINESS CLIENT* ▶.

Using dedicated parts of this package, you have the following installation options:

- SAP Business Client for Desktop (stand-alone)
- SAP Business Client with SAP GUI for Windows

Please refer to the *SAP Front End Installation Guide* for detailed installation information. You can find it

- on the *SAP Front End Package 8.00 Compilation DVD*
- on the SAP Help Portal (https://www.help.sap.com): Search for product *SAP GUI for Windows*
- or within SAP Note 26417

Depending on the platform architecture of the operating system, an appropriate SAP Business Client 8.00 will be installed. On 32 bit (x86) Windows operating systems a 32 bit version of SAP Business Client will be installed. On 64 bit (x64) Windows operating systems a 64 bit version of SAP Business Client will be installed.

A 32 bit on 64 bit Windows operating systems can be enforced by launching the standalone installer executable of SAP Business Client with the command line argument **`/NWBC800ForceX86`**. See also the standalone installer download section on SMP.

The following table describes the prerequisites and other important information necessary for installation:

Prerequisites

Operating System

SAP Business Client supports Microsoft operating systems which are listed within the SAP PAM (Product Availability Matrix).

> **Note**
>
> SAP Business Client is released for Microsoft Windows 8.1 and 10 desktop mode. Usage with keyboard and mouse is fully supported; SAP Business Client is touch-enabled.

Hardware

Hardware must meet the requirements of the following:

- Microsoft .NET 4.8 (for example, .NET Framework System Requirements).
- Microsoft Internet Explorer 11 (for example, System requirements and language support for Internet Explorer 11 (IE11)).
- SAP GUI for Windows (see SAP Note 26417).

> **Note**
>
> With version 8.00, for the first time the SAP GUI for Windows is available as a 32bit and a 64bit version. The SAP Business Client 32bit is not able to integrate the SAP GUI for Windows 64bit. Any other combination is supported.

SAP Business Client Specific Hardware Requirements

- Disk space
  The SAP Business Client 8.00 installation requires a disk size of 30 MB.
- Display
  The specifications in the table below result from the requirement to display a typical `SAP GUI for Windows` transaction in the content area plus the shell areas at the top and bottom.

	Belize Theme	Belize Theme	Other Themes	Other Themes
	Minimum Requirements	Recommended	Minimum Requirements	Recommended
Colors	64 K	64 K	64 K	64 K
Resolution	1280 x 800	1920 x 1200	1280 x 800	1600 x 1200

Recommended takes into account the display of a `SAP GUI for Windows` transaction without a scroll bar (if possible), plus an expanded panel (navigation panel, favorites panel, or side panel) and the shell areas at the top and bottom.
For detailed `SAP GUI for Windows` specifications, please refer to SAP Note 26417.

- Processor
  When combining the processor requirements of SAP Business Client with requirements for other products, take the maximum of all individual specifications.

	Minimum Requirement	Recommended
Processor	1+ GHz	2+ GHz

Minimum Requirement means the resources required for using 1 SAP BC connection with Index page and 1 tab containing an SAP GUI or browser canvas. However, this is not a typical scenario but rather the absolute minimum.

- Memory
  When combining the memory requirements of SAP Business Client with requirements for other products, take the total of all individual specifications. Futhermore consider the requirement of the operating system and other applications running in parallel. The actual memory consumption depends on the number of open windows and tabs with applications. The SAP BC shell has a rather lean footprint, but you need to add the application footprint which is very individual and also differs according to the UI technology (for example, Web Dynpro / FPM or SAP UI5). Please also consider that the SAP BC shell (excluding the application footprint) in its 64 bit version consumes about 40% more memory than its 32 bit version.
  We recommend the following resources for an agreeable user experience:

	Required	Recommended
Windows 8.1 Windows 10	4+ GB	8 GB

Software

- Microsoft .NET 4.8
  If not available on the client PC you can download it from https://dotnet.microsoft.com/download/dotnet-framework/net48 .
- Microsoft Visual C++ Redistributable for Visual Studio 2019
  This is included in the SAP Business Client installation; if you do not have this, it is automatically installed with SAP Business Client.
- If you intend to use Internet Explorer web browser, you need Microsoft Internet Explorer 11 for the desktop.
- In case you want to use the Microsoft Edge browser control based on Chromium within SAP Business Client, you need to install Microsoft Edge WebView2 Runtime as prerequisite. This can be obtained from Mircosoft under https://developer.microsoft.com/en-us/microsoft-edge/webview2 . Updates for this runtime will be retrieved directly from Microsoft similarly to the standalone Microsoft Edge web browser. Each SAP Business Client patch requires a minimal version of this Microsoft Edge WebView2 Runtime. For guidance on which version of this runtime to use, consult SAP Note 3054060.
- SAP GUI for Windows 8.00

Installation Path for Desktop Installation	Default installation path is always **`C:\Program Files\SAP\NWBC800`**. In case a 32 bit SAP Business Client installation is enforced on an 64 bit Windows operating system (via command line argument **`/NWBC800ForceX86`**), then the default installation path will be **`C:\Program Files (x86)\SAP\NWBC800`**. **Note** It is possible to change the installation path. However, SAP strongly recommends that you install SAP Business Client into protected folders of the operating system (like the %ProgramFiles%). This can protect you from attacks which try to exchange components used by SAP Business Client.
Application Data	The personal settings of a user are located in *%APPDATA%\SAP\NWBC*. Administrator configuration, such as user settings are located in the following folder: • **`%ALLUSERSPROFILE%\SAP\NWBC`** Global landscape data and predefined system connections are stored in a local landscape repository or in a remote landscape repository. For more details about landscape data, see *Connection Configuration*. User-defined connection data is stored in file *%APPDATA%\SAP\Common\SAPUILandscape.xml*. The path can be changed by users or administrators, and is then persisted in the registry (key name *PathConfigFileLocal*, *HCU/HLM\Software\SAP\SAPLogon\Options, REG_DWORD*. Traces and cache are located in the following folder: • *%LOCALAPPDATA%\SAP\NWBC* The cached data comprises: • Navigation data for SAP Application Server ABAP as well as SAP Portal (navigation tree, object based navigation data, SAP UI Landscape, SAP Menu Tree, RFC destination data, remote system info) • Tagging data for the side panel • Remotely defined administrator configuration • Icon fonts • Theming data for custom themes **Note** Application data remains when SAP Business Client is uninstalled.
WTS Installation	Yes
Installation with SAP GUI Possible	Yes

Update

Corrections are shipped on SAP Service Marketplace, assembled in patches. In SAP ONE Support Launchpad, choose *SUPPORT PACKAGES AND PATCHES* > *Select B (under By Alphabetical Index)* > *NETWEAVER BUSINESS CLIENT* >.

Note that patches are:

- Cumulative, that is, they contain all corrections from previous patches. Therefore, to get all the latest corrections you only need to apply the latest available patch.
- Independent from SAP GUI for Windows patches.

Upgrade

The installation of a new SAP Business Client release does not upgrade an older one, but is installed in parallel. By starting the installer with command line arguments */product:NWBC800+NWBC800_UninstOldNWBC/MaintenanceMode*, a second package to uninstall all previous releases of SAP Business Client is shown. So you can e.g. uninstall all previous SAP Business Client releases and install SAP Business Client 8.00 in one command by running the following installer command:

NWBC800_0.EXE

/product:NWBC800+NWBC800_UninstOldNWBC /MaintenanceMode /noDlg

For your end users' workstations or a WTS installation, it is recommended to offer just one release version.

> **Note**
>
> The installation procedure should consist of an uninstallation of the old release plus an installation of the new release.

Uninstallation of SAP Business Client

Please refer to the *SAP Front End Installation Guide* for detailed information. Removing SAP Business Client does not delete application data as mentioned in the table above.

Related Information

Connection Configuration [page 74]

1.3.1.1.1 Copyright Notices for Included 3rd Party Components

Copyright Notices for the WebView2Loader.dll

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1.3.1.1.2 Workstation Installation

Installation scenarios for SAP Business Client are the same as for SAP GUI for Windows. You have the following options:

- Workstation installation from a server
  The administrator sets up an installation server, from which the installation of the SAP front-end software is run on many different clients.
  All the necessary files are copied from the server to the client during installation.
- Workstation installation from a distribution medium such as a DVD
  The administrator takes the distribution medium from PC to PC. This is mainly for testing or for standalone computers and is not to be used for software distribution.

> → Tip
>
> We recommend that you use **workstation installation from a server** because of its greater flexibility, especially if many workstations are involved.

Please refer to the *SAP Front End Installation Guide* for detailed installation information. You can find it

- on the *SAP Front End Package 8.00 Compilation DVD*
- on the SAP Help Portal (https://help.sap.com/docs/): Search for product *SAP GUI for Windows*
- or within SAP Note 26417

1.3.1.1.3 Windows Terminal Server Installation

Use

You can install SAP Business Client centrally on Windows Terminal Server (WTS) farms that end users can access.

You have to log on to the WTS as local administrator to perform the installation. The installation is always done in **install mode**. If you switch the WTS into install mode, additional registry entries are maintained during the installation process, and the environment is prepared for multi-user environments. For more information, see https://docs.microsoft.com/en-us/troubleshoot/windows-server/performance/toggle-terminal-services-application-server-mode .

For end users, SAP Business Client works only after a **domain user** has logged on as administrator via Independent Computing Architecture (ICA) and has started the SAP Business Client in install mode at least once. Usually, the local administrator can do this. As an administrator, you can install SAP Business Client via Remote Desktop Protocol (RDP).

The number of SAP Business Client sessions that can be supported on a WTS server is dependent on the typical usage pattern, for example, whether SAP GUI or Web Dynpro applications are run, and on the number of open windows. SAP Business Client also makes extensive use of graphics, which can cause an additional load on the WTS servers.

After SAP Business Client is installed, the administrator makes the configuration settings. For more information, see Administrator Configuration [page 72].

Prerequisites

You have local administrator rights on the WTS to perform an installation.

1.3.1.2 Administrator Configuration

Use

As an administrator of SAP Business Client, you can use both the former configuration files and the new administrator configuration file (in the SAP UI landscape format) to define user settings and connection configurations (landscape settings) respectively.

The following table details the files available to you for this purpose:

File Name	Description
Administrator configuration file, e.g. `SAPUILandscapeGlobal.xml` **Note** The name of this file can be changed. In this documentation, it is always referred to as `SAPUILandscapeGlobal.xml`.	Use this file to **predefine connection configurations (landscape settings)** that the end user cannot change such as a set of possible system connections, side panels, or search providers.
XML template `NwbcOptions.xml.800template`	Use this template to create the `NwbcOptions.xml` file that you can use to **predefine SAP Business Client settings for all end users**. Adapt the XML template found under the following path, and save it as an XML file: • **`%PROGRAMDATA%\SAP\NWBC\NwbcOptions.xml.800template`**
Link file template `NwbcRemoteOptions.xml.800template`	In this file you can specify a reference to a server (for example, **`http://my.central.server.com:8080/somepath/NwbcOptions.xml`**) or a reference to a share in the internal network (for example, **`file:///myfileshare/somepath/NwbcOptions.xml`**). If an administrator has defined a reference path with attribute **`cacheable="true"`** (e.g. **`<Path cacheable="true"> \\myfileshare\somepath\NwbcOptions.xml </Path>`**), then the file will be cached. If that file is temporarily not available (for example, when the server cannot be reached), then the cached file will be used. If cacheable is set to "false" (e.g. **`<Path cacheable="false"> \\myfileshare\somepath\NwbcOptions.xml </Path>`**) or the attribute is not set at all (e.g. **`<Path> \\myfileshare\somepath\NwbcOptions.xml </Path>`**) and the file is not available, then the system displays an error message for end users and SAP Business Client for Desktop cannot be started. Use this template to create the *NwbcRemoteOptions.xml* file.
XML schema `NwbcOptions70.xsd`	This file contains a set of rules to which the `NwbcOptions.xml`, that contains the administrator settings, must conform. As an administrator, you can use the XML schema to validate the `NwbcOptions.xml` against it.

Configuration with Administrator Configuration File

Further information about configuration with this file is found in Connection Configuration [page 74].

Configuration with NwbcOptions.xml

Further information about configuration with this file is found in SAP Business Client Settings [page 106].

Note that you have the following options to **distribute** the `NwbcOptions.xml` file or the XML 'link' file `NwbcRemoteOptions.xml` to the end users:

- Use the RCP (remote copy) function.
- Adapt the SAP Business Client installer to enable the link to the server where you store the central XML file for all end users.
  For more information, see SAP Service Marketplace at **`http://service.sap.com/instguidesnw70`** ▶ *<relevant release>* ▶ *Installation* ▶ *4 - Installation Clients* ▶ *SAP Front End Installation Guide* ▶.

1.3.1.2.1 Connection Configuration

Starting with SAP NetWeaver Business Client 5.0, both the **administrator configuration file** and the **user configuration file** appear in the new SAP UI landscape format. You use the administrator configuration file to define connection configurations (landscape settings).

What is the Administrator Configuration File?

The administrator configuration file replaces former SAP Business Client configuration settings for system connections and search providers in `%ALLUSERSPROFILE%\SAP\NWBC\NwbcOptions.xml`. This file can be provided to the end-users either by pull request or by push request. For more information, see *Provision of Configuration Files*.

> **Note**
>
> The SAP Business Client client configuration that is reflected in the following locations remains in the `NwbcOptions.xml` file:
>
> - *Personalize* and *Support* dialogs
> - SingleOptions
> - WebbrowserFeatures
> - NwbcCommands sections
> - Elements in `%ALLUSERSPROFILE%\SAP\NWBC\NwbcOptions.xml`

> ⚠ Caution
>
> When modifying the administrator configuration file, the UUIDs contained in this file **must not** be changed! Otherwise, the references from connections contained in the user configuration files to the administrator configuration file are disrupted.

What is the User Configuration File?

The user configuration file contains all user-specific configuration settings made by the user himself/herself. For example, new folders or connections created by a user would be recorded in this file.

Related Information

SAP UI Landscape [page 75]

1.3.1.2.1.1 SAP UI Landscape

As an administrator, you can use the same infrastructure to define and distribute system connections for usage by SAP GUI for Windows and SAP Business Client.

SAP UI landscape covers:

- SAP Fiori launchpad connections
- SAP Business Client Web AS ABAP or Portal connections
- SAP GUI connections
- SAP Shortcuts

SAP Business Client can read, write, and parse the new landscape format. Thus, the system selection dialog is based on the landscape files `SAPUILandscapeGlobal.xml` and `SAPUILandscape.xml`, and the `NwbcOptions.xml` file is reduced to single options only. If no landscape files exist, SAP Business Client performs a migration as described in *Migration of Configuration Data*.

> → Tip
>
> Find more information in the **SAP UI Landscape Configuration Guide** on the product page of SAP GUI for Windows on the Help Portal.

SAP UI Landscape XML Description

This section describes the SAP UI Landscape XML format. This file format is used in the SAP GUI configuration with SAP Business Client. The following code shows the basic elements of the xml file:

```
<?xml version="1.0" encoding="UTF-8"?>
<Landscape updated="2015-07-06T12:13:46Z">
    <Messageservers>
        <Messageserver port="1234" host="ms1server.mycorp.com" name="MS1"
            uuid="3b764f2a-edba-493e-a470-2ad33b57f429"/>
        <Messageserver port="2345" host="ms2server.mycorp.com" name="MS2"
            uuid="0dfd524e-a4cb-4534-8c44-2e5bcd39b3f0"/>
    </Messageservers>

    <Routers>
        <Router name="MyCorp Router" uuid="c63af9a6-47db-4a5b-a632-359c09465fdf"
            router="/H/sapgateway.mycorp.com/S/3456/H/"/>
    </Routers>
    <Webdispatchers>
        <Webdispatcher uuid="aab20ae3-cf48-4224-8a1b-565d3b882b74" name="Web
Dispatcher ACME 01"
            description="Web Dispatcher to MS2 client 010"
            url="https://webdisp01.acme.com" msid="0dfd524e-
a4cb-4534-8c44-2e5bcd39b3f0" client="010"/>
    </Webdispatchers>
    <ServiceTemplates>
        <ServiceTemplate uuid="e5ba2590-59e7-11e9-b475-0800200c9a66" name="CD3
FLP" description="Fiori Launchpad in CD3"
            url="https://frontendserver.mycorp.com:54321/flpalias"
            type="FIORI" systemid="CD3" uses_webdispatcher="1"
sapguitype="WebGUI" />
        <ServiceTemplate uuid="dc6e1f47-b3ae-4952-ac22-2f92aeb1fb07" name="CD4
FLP" description="Fiori Launchpad in CD4"
            url="https:// frontendserver2.mycorp.com:54321/sap/bc/ui2/flp/
FioriLaunchpad.html"
            type="FIORI" client="111" msid="3b764f2a-edba-493e-
a470-2ad33b57f429" sapguitype="Fallback" />
  </ServiceTemplates>
    <Services>
        <Service name="AB1 [PUBLIC]" uuid="6fe11a42-bfb9-4683-8013-9aa4a69abb2a"
            sncname="p:CN=AB1, O=SAP-AG, C=DE" dcpg="2" sapcpg="1100" sncop="9"
            server="PUBLIC" systemid="AB1" type="SAPGUI" msid="3b764f2a-
edba-493e-a470-2ad33b57f429"/>
        <Service name="CD2 [PUBLIC]" uuid="449feb59-18e7-4f0c-9ee6-9835a0ff9298"
            sncname="p:CN=CD2, O=SAP-AG, C=DE" dcpg="2" sapcpg="1100" sncop="9"
server="PUBLIC"
            systemid="CD2" type="SAPGUI" msid="0dfd524e-
a4cb-4534-8c44-2e5bcd39b3f0"
            routerid="c63af9a6-47db-4a5b-a632-359c09465fdf"/>
        <Service name="CD2 in NWBC" uuid="3d06eada-7c75-4667-b0c3-2a09e0c6036d"
            server="app1server.mycorp.com" systemid="CD2" type="NWBC"
            msid="0dfd524e-a4cb-4534-8c44-2e5bcd39b3f0"
            sapguiid="449feb59-18e7-4f0c-9ee6-9835a0ff9298" client="120"
            url="https://app1server.mycorp.com:54321/ui2/nwbc"
            description="Inheriting CD2[PUBLIC] properties for applications
rendered with SAP GUI"/>
        <Service name="Search SAP.com" uuid="8cd44ab2-ff99-4d24-bfdd-
c00238c0bc4e"
            type="Search" url="http://www.sap.com/search/search-results.html?
Query={0}"
            mnemonic="sap"/>
        <Service name="Fiori Launchpad"
uuid="b9369204-9215-42f5-92ff-1abac32e24e0"
            url="https://frontendserver.mycorp.com:54321/sap/bc/ui5_ui5/ui2/
ushell/shells/abap/FioriLaunchpad.html"
            client="120" type="FIORI" systemid="UV2" uses_webdispatcher="1"/>
```

```
    </Services>

    <Workspaces>
        <Workspace name="Information Developers' Workspace"
uuid="e8c4bafe-8f48-4834-84e0-4243bec67ff6"
            description="Lorem ipsum" hidden="0" expanded="1">
            <Node name="Online Documentation Backends" uuid="2aaa8f34-0093-47dd-
b088-d1817a98c863"
                description="Store your ongoing online texts in these systems.">
                <Item uuid="e685d4e8-2d74-44bf-8728-a89fc8b38c69"
serviceid="6fe11a42-bfb9-4683-8013-9aa4a69abb2a"/>
                <Item uuid="f8ef9181-5fec-4d8d-833e-aca554128c31"
serviceid="449feb59-18e7-4f0c-9ee6-9835a0ff9298"/>
                <Item uuid="d5970be4-8ba1-43f2-a460-8f62a329fdad"
serviceid="3d06eada-7c75-4667-b0c3-2a09e0c6036d"/>
            </Node >
            <Item uuid="55d306b0-2e45-4593-96a3-bebca62089f4"
serviceid="b9369204-9215-42f5-92ff-1abac32e24e0" />
            <Item uuid="02416208-5c9d-4326-94ce-fc958e906865"
serviceid="449feb59-18e7-4f0c-9ee6-9835a0ff9298"/>
        </Workspace>
    </Workspaces>
    <Includes>
        <include url="http://corpwebserver.mycorp.com/saplandscapes/
AdditionalSAPUILandscape_1.xml" index="1"/>
    </Includes>
</Landscape>
```

The file consists of the following basic elements:

- Specification of the encoding.
- Definition of the message servers available in the current system landscape with *uuid*, *name*, *host*, and *port*.

  > **Note**
  >
  > You can find the resources to generate UUIDs in the Internet.

  The message server list should contain at least the message server definitions used in the services section described below.
- Definition of the routers with *uuid*, *name*, and complete *router* string.
- Definition of web dispatchers
  This repository contains a list of web dispatchers available in the current system landscape. It helps specifying SAP Business Client connections and SAP Fiori launchpad connections in the system selector.
- Definition of services templates
  Administrators can predefine service templates for Fiori Launchpad and SAP Launchpad service system connections in the admin UI landscape file that can then be selected and copied by end users in the SAP BC system selector. Service templates have the same attributes as the services they are modeled for. For more information, see the SAP UI Landscape Configuration Guide.
- Definition of services
  This is a flat, non-hierarchical list of all services referred to from within *Workspaces*. The list can also contain services not referred to that are used on client-side for creating user workspaces or for building other features such as a Favorites list or search provider list.
  Generally, a service entry consists of *uuid*, *name*, and *type* (= *service type*, for example SAP GUI connection, SAP GUI shortcut, SAP Business Client connection to Web AS ABAP or Portal, SAP Fiori launchpad connection, or search provider used by SAP Business Client).
  Depending on the service type, you can specify additional attributes:

- For SAP GUI connections, the service entry contains message server *uuid* , *systemid* , *server* (group or hostname:port), SNC, and code page entries. You can set the following SNC entries:
  - with *sncop*, you define, if single-sign-on is disabled (**`disabled = 0`**)
  - with *sncname* the SNC name is defined, for example, **`p/secude:CN=ACM, 0=ACME, C=DE`**.

  With regard to the encoding, you have the following possibilities:
  - With *sapcpg*, the SAP code page can be selected, for example 0,1,2,11000, and so on.
  - With *dcpg*, the Sap code page for upload and download is defined. Example values: 0,1,2,1100, and so on.
- For SAP Business Client connections to Web AS ABAP back ends, the service entry must contain the connection URL. Message server UUID, system ID, server, client, language, UUID of a referenced SAP GUI connection and the attribute **`uses_webdispatcher`** are optional.
- For SAP Business Client connections to Portal back ends, the service entry must contain the connection URL.
- For SAP Fiori launchpad connections (type= FIORI) to an ABAP Frontend Server, the service entry must contain the connection URL and client. Message server UUID, system ID, server, language, UUID of a referenced SAP GUI connection and the attribute **`uses_webdispatcher`** are optional.
- In search-provider service entries, the search URL (according to the SAP Business Client End User Guide chapter *Search Types*) is defined. Mnemonics are optional.

- Definition of workspaces, its nodes, and items
  A workspace is a group of connections for certain users, for example, for information developers. It consists of a group of services (items) and folders (nodes). A workspace can be used to show a predefined service set in the UI or be used for multi-logon for all services in the workspace. The workspace is a special kind of top node.
  A workspace is defined by *uuid*, *name*, *expanded* (the state of the folder in the UI: open or closed; the default is true), *hidden* (this marks the workspace as hidden and invisible in the UI).
  The nodes (folders) are item-grouping elements of the workspace; they are used to organize the items (services) within the workspace. From nodes and items, tree structures can be built. Items are placeholders for services, and the data is taken from the service description. You can define items directly in the workspace or in a node.
  A node is defined with *uuid*, *name*, *description*, *expanded* (see above paragraph), hidden (this marks the node as hidden and invisible in the UI, and allows changing workspace configuration locally).
  An item is defined with *uuid*, *serviceID* (ID of the service that the items refer to; it should be one of the known services from the service repository), *hidden* (marks the item as hidden and invisible in the UI, and allows changing the workspace configuration locally).
- Includes
  An include is a file or URL containing information that you want to merge with the content in your XML. This means, for example, that you do not need to define message servers directly in this XML file, but that you can point to this information from within the *includes* section. An include node describes a single source to include, and can have the following attributes: URL, index (shows which include is loaded first), name, and description.

Find more information in the **SAP GUI Landscape Configuration Guide** on the product page of SAP GUI for Windows on the Help Portal.

For information on validating your XML file that you have adapted in line with your landscape, see the SAP Note 2112449.

Active Directory (LDAP) Support

For information on LDAP support, see SAP Note 608781. To use message servers provided by Active Directory Support in SAP Business Client connections, first create a corresponding SAP GUI connection.

Related Information

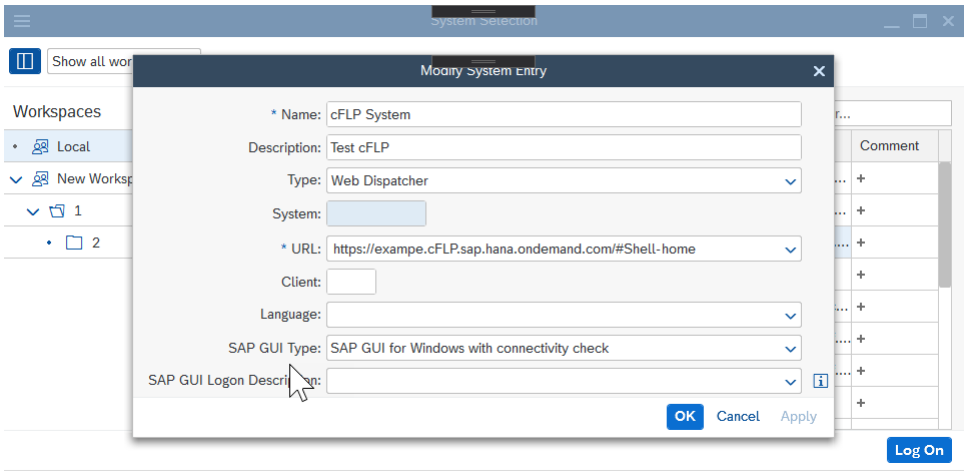
Migration of Configuration Data [page 80]

1.3.1.2.1.2 SAP Work Zone Integration

The SAP Business Client 8.00 integrates SAP Work Zone (standard edition and advanced edition). Thus, the SAP Business Client provides a single point of entry for different UI technologies and application types.

To make use of those capabilities, a new system connection of type Fiori Launchpad must be created. This can be done with a user-specified connection or by using service templates (see Configuring System Connections [page 15]).

The connection can be configured to try to start transactions within the embedded native SAP GUI for Windows if possible. Therefore, a TCP ping to the remote system has to be performed at the time the application shall be started. This can be enabled by selecting the SAP GUI Type *SAP GUI for Windows with connectivity check* as shown in the following picture:



To access your apps, you have to create the destinations for Direct Access as documented here: Create Destinations

> **Note**
>
> The URL field of the destination must point directly to the UI resources on the internal network host of the system – either the application server or the Web Dispatcher. Using a virtual host of Cloud Connector (Tunnelled Access) is not possible for this destination.

As announced above, a given SAP GUI for HTML transaction will be launched as a native SAP GUI for Windows transaction in the SAP Business Client if possible. For a seamless authorization using SAP GUI for Windows with the SAP Launchpad Service, SAP-SSO has to be configured. Please, create specific Destinations in the Cloud Cockpit for launching transactions in SAP GUI for Windows, depending if you want to use load balancing or access the application directly.

In each scenario particular parameters should be maintained as additional parameters in the destination configuration as shown in the following table:

Cockpit destination with load-balancing	Cockpit destination without load-balancing
sap-sysid	sap-sysid
sap-client	sap-client
sap-platform	sap-platform
sap-service (service number of message server)	sap-service (service number of message server)
sap-msg-server (only hostname)	sap-snc-name (optional)
sap-login-group	sap-snc-qop (optional)
sap-snc-name (optional)	sap-rfc-host (optional)
sap-snc-qop (optional)	

1.3.1.2.1.3 Migration of Configuration Data

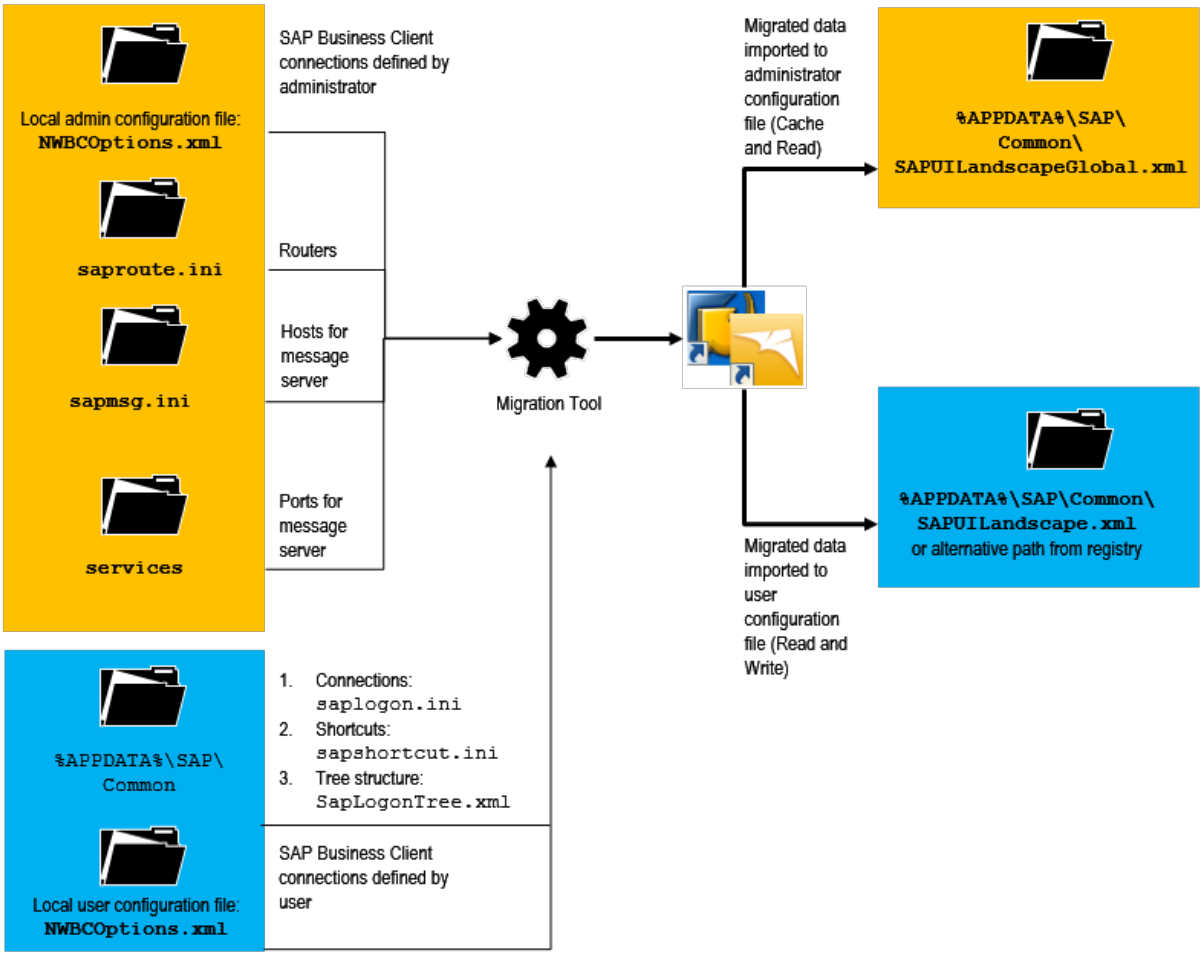
If you do not already have the configuration files according to the SAP UI landscape format, a migration tool migrates data contained in the following files:

- `NwbcOptions.xml` containing SAP Business Client connections defined by the administrator
- `saproute.ini` containing routers
- `sapmsg.ini` containing message server hosts
- TCP/IP `services` files containing message server ports
- `.ini` and `.xml` files containing SAP Logon connections, shortcuts, and the tree structure

The migrated data are imported to the following files:

- Administrator configuration file `%APPDATA%\SAP\Common\SAPUILandscapeGlobal.xml`
  Containing migrated data from:
  - `NwbcOptions.xml`
  - `saproute.ini`
  - `sapmsg.ini`
  - `services`
- User configuration file `%APPDATA%\SAP\Common\SAPUILandscape.xml`
  Containing migrated data from:
  - SAP Logon `.ini` and `.xml` files
  - `%APPDATA%\SAP\NWBC\NwbcOptions.xml`

The concept described above is illustrated by the following figure:



SAP Business Client connections defined by the user, and SAP GUI connections and SAP shortcuts from SAP Logon are inserted into a *Local* workspace. SAP Business Client connections defined by the administrator can be found in the *NWBC Admin Configuration* workspace.

Related Information

Provision of Administrator Configuration File [page 81]
Administrator Configuration [page 72]

1.3.1.2.1.4 Provision of Administrator Configuration File

The administrator configuration file can be provided either by **pull request** or by **push request**.

Provision by Pull Request

If the administrator configuration file is provided by pull request, it is located in a central, shared storage such as a remote share or an HTTP platform. The administrator must specify the path to the administrator configuration file. Therefore, the administrator defines the path for the key *Name*: *LandscapeFileOnServer* in the following locations:

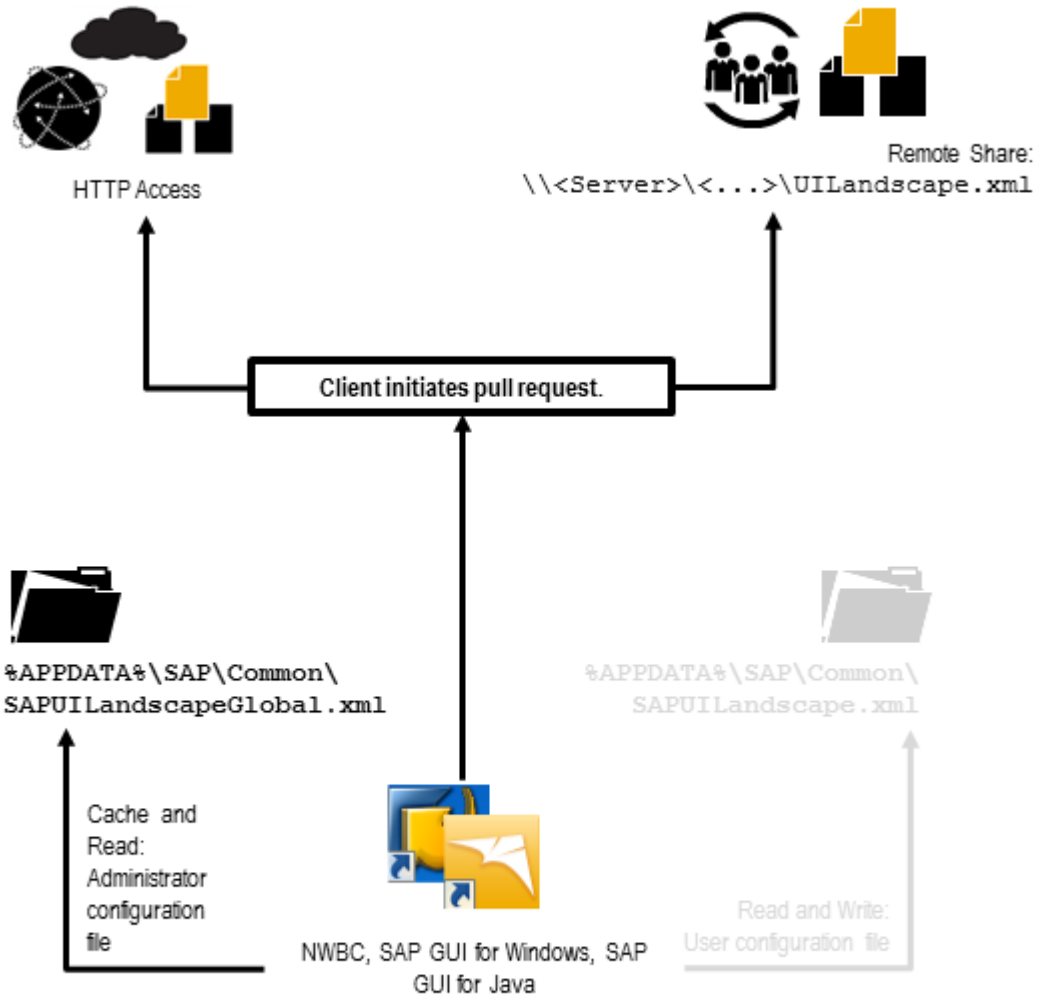
- `HKEY_LOCAL_MACHINE\SOFTWARE\SAP\SAPLogon\Options` *(REG_EXPAND_SZ)*

  > ⓘ Note
  >
  > The registry path described above is correct if you are using a 32bit version of the SAP Business Client on a 32bit OS and a 64bit version of the SAP Business Client on a 64bit OS. In case you are using a 32bit version of the SAP Business Client on a 64bit OS, the corresponding registry path is:
  >
  > HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\SAP\SAPLogon\Options
  >
  > Upcoming releases will always check both paths to ensure correct evaluation.

The local client can then retrieve the administrator configuration file from the central storage.

> → Tip
>
> Having configuration files located on a central share or platform facilitates the update process of the files, and no deployment effort is required.

The concept described above is illustrated by the following figure:



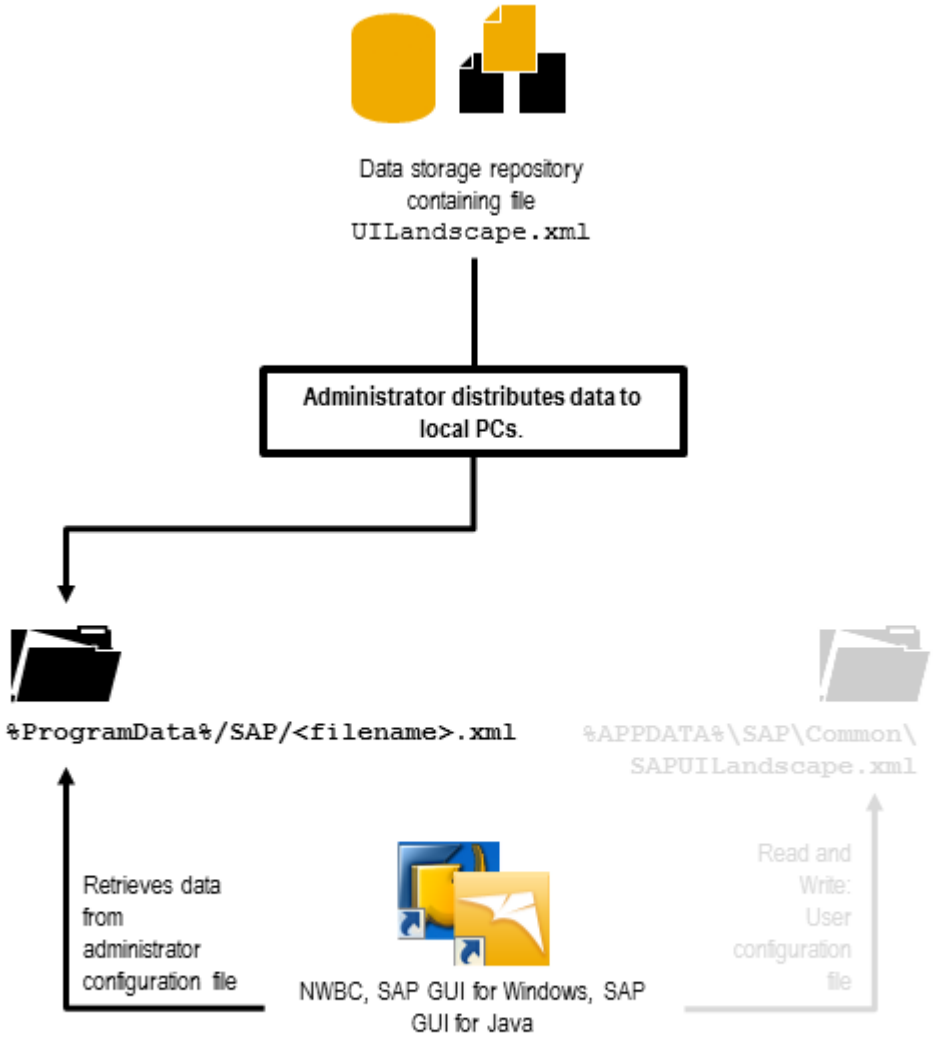
Provision by Push Request

The administrator distributes (pushes) the administrator configuration file, for example with `SAPSetup` or another software distribution tool, from the central data storage repository to the clients. SAP Business Client then retrieves the administrator connection configuration from the local client, according to the path which is defined in the registry for the key *Name*: *LandscapeFileOnServer* in the following locations:

- `HKEY_LOCAL_MACHINE\SOFTWARE\SAP\SAPLogon\Options`

> **Note**
>
> The registry path described above is correct if you are using a 32bit version of the SAP Business Client on a 32bit OS and a 64bit version of the SAP Business Client on a 64bit OS. In case you are using a 32bit version of the SAP Business Client on a 64bit OS, the corresponding registry path is:
>
> HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\SAP\SAPLogon\Options
>
> Upcoming releases will always check both paths to ensure correct evaluation.

The concept described above is illustrated by the following figure:



Environment Variable SAPLOGON_LSXML_FILE

You can use the Windows environment variable `SAPLOGON_LSXML_FILE` to define your own landscape files to be used by SAP Business Client as in the former SAP GUI for Windows releases (see the related SAP Note 38119).

The value for the environment variable `SAPLOGON_LSXML_FILE` can contain

- a full path including the name of the landscape file, or
- an http(s) address, fully specified, including the name of the landscape file

The landscape file to which the environment variable points, can reference to another landscape file. This reference is always realized as an include:

Sample Code

```
<Includes>
<Include
url="http://myserver:myport/config/SAPUILandscapeGeneralExample.xml"/>
</Includes>
```

The internal handling of includes in the landscape file is the following:

1. No include is explicitly specified:
   SAP Business Client searches for a landscape file with standard filename **`SAPUILandscapeGlobal.xml`** under the same path specified in the environment variable and - if it does exist - includes it automatically.
2. Includes with index **unequal** to 0 are explicitly specified:
   SAP Business Client includes the file(s) from the explicitly specified include(s) (see example above). It also searches for a landscape file with standard filename **`SAPUILandscapeGlobal.xml`** under the same path specified in the environment variable and - if it does exist - includes it automatically.
3. An include is specified with index **equal** to 0:
   SAP Business Client directly includes the file from the explicitly specified include. It will not search for a landscape file with standard filename SAPUILandscapeGlobal.xml under the same path. Additional includes with index equal to 0 will be ignored.

All connections which are defined in an http(s) referenced landscape file or in include files will appear as read-only in the system selector.

The searching order of the landscape file in SAP Business Client is as follows:

1. File set in the directory path from the environment variable **`SAPLOGON_LSXML_FILE`**
2. Files set under *Administrator Configuration File* and *User Configuration File (Path)* options in the SAP Business Client *Personalize* dialog box
3. Files set in the registry by the Administrator

If the files are not found using any of the searches outlined above, SAP Business Client starts the data migration automatically and tries to create the **`SAPUILandscape.xml`** and **`SAPUILandscapeGlobal.xml`** files according to the old configuration file settings, provided that the files can be written under the specified path.

For more information, see SAP Note 2075150.

1.3.1.2.2 Startup using URL

Using a startup URL, SAP Business Client and also applications within SAP Business Client can be launched from other applications or locations. Typical examples are

- a Windows Desktop shortcut
- a web page exposing connections for dedicated systems
- an e-mail
- a Computer Aided Design (CAD) program used to start a specific transaction to review the bill of materials

Please see URL for SAP BC Connection [page 86] and URL for Fiori Launchpad Connection [page 103] for details about the protocol and URL syntax.

There is also an ABAP API to generate the startup URL, see Generating an External Startup URL for SAP Business Client [page 239]. By default, only connections available in the SAP UI Landscape file can be accessed via a startup URL. Enabling temporary connections is done via the boolean switch *AllowTemporaryConnections* in the administrator configuration file. To use a temporary connection, the domain of the URL must either be identical to the user's machine domain (Intranet) or the domain must be explicitly added to the trusted site zone in the Internet Security Settings. It's recommended to always predefine all connections which are needed for the external startup URLs in the global landscape.

Related Information

Generating an External Startup URL for SAP Business Client [page 239]

1.3.1.2.2.1 URL for SAP BC Connection

- Short Form of URL [page 86]
- Long Form of URL for ~canvas Sequence [page 93]
- Long Form of URL for ~roletest Sequence [page 101]

1.3.1.2.2.1.1 Short Form of URL

Use

You can use the short variant of the URL described in the table below to start SAP Business Client with only a shell. The long variant of the URL can load any type of content on startup.

By merging the different URL elements, the complete URL looks as follows:

[optional protocol handler://][optional authentication sequence@]<server sequence>/<ICF path>/[optional cockpit/]

Element	Optional	Only SAP Business Client for Desktop	URL When Using Server Runtime for SAP NetWeaver UI Services	URL When Using Server Runtime for SAP Business Client	Description
E-mail bootstrap	yes		`url:`	`url:`	This element is specifically available for SAP Business Client for Desktop: If the startup URL is to be embedded in an e-mail, add the `url:` prefix to signal to Microsoft Outlook that this is a startable link and that it should be treated as a hyperlink.

Element	Optional	Only SAP Business Client for Desktop	URL When Using Server Runtime for SAP NetWeaver UI Services	URL When Using Server Runtime for SAP Business Client	Description
Protocol handler for desktop client	yes	yes	`sap-nwbc:`	`sap-nwbc:`	The protocol handler is an extension added to Windows to allow SAP Business Client to be started in the same way as a normal URL. When this "URL" starting with SAP Business Client is used within a browser or from a startup icon, the URL is opened in the SAP Business Client shell itself. This protocol handler is needed **only** if you intend to start NWBC for Desktop. If SAP NetWeaver Business Client 3.6 for HTML is to be started, the protocol handler need not be specified.

Element	Optional	Only SAP Business Client for Desktop	URL When Using Server Runtime for SAP NetWeaver UI Services	URL When Using Server Runtime for SAP Business Client	Description

Authentication	yes	yes	`<name>:<password>[optional connection parameters]@optional connection parameters`
			`;connection=ABAP|portal`
			`;proxy=<server>.<domain>.<ext>:<port>`
			`;proxy-secure=<server>.<domain>.<ext>:<port>`
			`;proxy-authentication=<name>:<password>`
			`;ssoparameter=<value>.`
				`<name>:<password>[optional connection parameters]@optional connection parameters`
				`;connection=ABAP|portal`
				`;proxy=<server>.<domain>.<ext>:<port>`
				`;proxy-secure=<server>.<domain>.<ext>:<port>`
				`;proxy-authentication=<name>:<password>`
				`;ssoparameter=<value>.`
					Similar to *ftp://<name>.<password>@<server>* for imbedding authentication into the URL.
					Supported only with SAP Business Client for Desktop.
					The connection is used to determine the type of server to which the connection is established; the default is an ABAP server.
					The proxy parameters can be employed to optionally specify a proxy used to establish the connection. Note that you must usually specify both an HTTP proxy (`;proxy` sequence) and an HTTPS proxy (`;proxy-secure` sequence). If necessary, supply the proxy authentication information (`;proxy-authentication` sequence). If a proxy configuration is specified, SAP Business Client changes the Internet Explorer

Element	Optional	Only SAP Business Client for Desktop	URL When Using Server Runtime for SAP NetWeaver UI Services	URL When Using Server Runtime for SAP Business Client	Description
					settings to use the proxy settings (for the current process) and restores the original settings when terminated. The `ssoparameter` is used to determine the SSO parameter value. The value could be for example `spnego=disabled` or `saml2=disabled`. **Important**: The value has to be converted into a valid **ASCII** format, e.g. `;ssoparameter=spnego%3Ddisabled`.
Remote Debugging Port	yes	yes	`;remotedebuggingport=8081`	`;remotedebuggingport=8081`	This element enables the Remote Debugging Port for the chosen browser control (Edge only).
Server address			`http(s)://<server>.<domain>.<ext>[:<port>]`	`http(s)://<server>.<domain>.<ext>[:<port>]`	For the server address, use the regular `http(s)://` sequence with a fully qualified domain name (FQDN).

Element	Optional	Only SAP Business Client for Desktop	URL When Using Server Runtime for SAP NetWeaver UI Services	URL When Using Server Runtime for SAP Business Client	Description

SAP Business Client handler path			`/ui2/nwbc`
			`/sap/bc/ui2/nwbc`
			`/<myCompany>/ui2/nwbc`
				`/nwbc`
				`/sap/bc/nwbc`
				`/<myCompany>/nwbc`
					This is the path within the ICF service tree to the SAP Business Client handler. By default, use `/sap/bc/ui2/nwbc` or, if available, the shorter `/ui2/nwbc` alias. You can also have a different ICF path specified in the ICF service tree.

Cockpit	yes		`/<myCockpit>` `/<ROLE_NAME>`	`/<myCockpit>` `/<ROLE_NAME>`	Optional cockpit that is a filter onto the role repository. Alternatively, you can use the name of a role that is used in the same way as a cockpit. This means that only the role is displayed.
Trailing slash `/`			`/`	`/`	The extra slash `/` is needed to lock the previous segment.

Examples

Description	For Users of Server Runtime for SAP NetWeaver UI Services	For Users of Server Runtime for SAP Business Client
Start SAP NetWeaver Business Client 3.6 for HTML	**`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc`**	**`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc`**

Description	For Users of Server Runtime for SAP NetWeaver UI Services	For Users of Server Runtime for SAP Business Client
Start SAP Business Client for Desktop	**sap-nwbc:https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc** **Note** When the link is to be triggered from an e-mail, add the **url:** prefix: **url:sap-nwbc:https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc**	**sap-nwbc:https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc** **Note** When the link is to be triggered from an e-mail, add the **url:** prefix: **url:sap-nwbc:https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc**
Start SAP Business Client for Desktop with only the role menu of role SAP_BPR_PPM	**sap-nwbc:https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/SAP_BPR_PPM**	**sap-nwbc:https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc**

A more complex example (only relevant for SAP Business Client for Desktop) that includes authentication information and also information to traverse a proxy:

sap-nwbc:user:password;proxy=proxy.domain.corp:8080;proxy-secure=proxy-domain.corp:8083;proxy-authentication=p-user:p-password@https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc

Caution

SAP does not recommend to use passwords within these URLs to start the SAP Business Client, because these URLs will be visible in plain text at various points, for example, in the user's commands history list, in the memory of the web browser control within the SAP Business Client process or probably even in logs of intermediate servers. Consequently, passwords should be provided only in such URLs, when this is a user on a test system with only very limited authorization - probably even a non-secret user and password - to prevent misuse. Do not store the URL that contains the personal user and password anywhere, where it could be read and misused.

Therefore, by default, a password cannot be supplied and SAP Business Client will stop with an error message during startup. To switch on again the usage of passwords in such URLs at ones own risk, set in the administrator configuration file (*%programdata%\SAP\NWBC\NwbcOptions.xml*) the option *IsPasswordInCommandlineAllowed* to value true:

```
<NwbcOptions>
  <SingleOptions>
    <IsPasswordInCommandlineAllowed>true</IsPasswordInCommandlineAllowed>
  </SingleOptions>
</NwbcOptions>
```

For more information, see SAP Security Note 3060621.

More Information

Long Form of URL [page 93]

1.3.1.2.2.1.2 Long Form of URL for ~canvas Sequence

Use

The first part of the long URL consists of the short URL as described in section *Short Form of URL*, plus the following elements:

.../~canvas/<canvas type>/<client_type>/<canvas relevant sequence>/[?parameter sequence][sap parameters]

Element	Optional	URL	Description
Content area (canvas) delimiter and options		`/~canvas[;window=main|app|embedded][;decoration=no_branding]`	If this is a URL that loads a specific content area (canvas), this `~canvas` sequence **must** be available. The window and decoration qualifiers are optional. • `window=main` Starts a shell window with both top and side navigation. • `window=app` Starts an application window without navigation elements. • `window=embedded` Starts the shell in rendered format that is embedded in foreign portals; relevant only for SAP NetWeaver Business Client 3.6 for HTML. • `decoration=no_branding` Hides the SAP branding logo in embedded mode. In the other window modes, this qualifier has no effect. relevant only for SAP NetWeaver Business Client 3.6 for HTML. **Example (when using server runtime for SAP NetWeaver UI services):** `http://<server>.<domain>.<ext>:<port>/sap/ui2/nwbc/~canvas;window=app/wda/myApplication/`

Element	Optional	URL	Description

Target-specific description		`/transaction/<transaction_code>`
		`[;client_type=auto|sapgui|webgui]`
		`/wda/[<namespace>/]<name>`
		`[;client_type=auto|html]`
		`/url/<segment>/...`
		`/roleEntry/<role_name>:<id>`
		`/sitemap`
		`/obn/<object>.<method>`
		`/applicationAlias/<alias>`
			Segment that describes the type of the content area (canvas) being loaded. These strings describe the different content area types that can be used.
			• **transaction**
			This form is used to define that a specific (SAP GUI-based) transaction should be started. It is similar to starting a transaction within the OK field in SAP GUI. By default, SAP Business Client for Desktop uses SAP GUI to start the transaction, and SAP NetWeaver Business Client 3.6 for HTML uses SAP GUI for HTML. Use the `client_type` qualifier to force a specific rendering engine. This is especially relevant when you use SAP NetWeaver Business Client 3.6 for HTML, but the transaction has to be executed in SAP GUI. For the transaction-specific sequence, specify the transaction that should be started.
			• **wda**
			Use this form to start a Web Dynpro ABAP (WDA) application. By default, all Web Dynpro ABAP applications are started with an HTML-based rendering client. The `client_type` qualifier is used for possible fu-

Element	Optional	URL	Description
			ture enhancements. For the specific sequence, specify the name of the Web Dynpro ABAP application. This can include an optional namespace if the application is not in the default SAP namespace. • **url** Defines an absolute URL on the server that must be started. Note that this is a URL relative to the server against which SAP Business Client is started. For the `url`-specific sequence, specify the server's absolute URL with any number of segments, each separated by a `/` character. • **roleEntry** Use this entry to start a specific entry in a specific role. This is an absolute form of addressing. Here the name of the role is used directly, and within the role, the assigned numeric ID. This number can be seen in transaction *Role Maintenance* (`PFCG`) on the *Menu* tab page when *Other Node Details* are displayed. For more information, see Navigation Tree [page 191]. For the `roleEntry`-specific sequence, specify the name of the role and the ID (numeric number) for the specific entry in the role. • **sitemap**

Element	Optional	URL	Description
			Use the `sitemap` sequence to embed a complete set of roles in an external portal. To embed only one role, specify the role as an optional part of the URL directly after the `/ui2/nwbc` sequence. For more information, see Short Form of URL [page 86]. A typical use case is embedding a complete Employee Self Service scenario (expressed with the role `SAP_ESS`, for example) in a Microsoft SharePoint portal. With this one link, a service map is embedded in the external portal that represents the complete role. This can be used to start any transaction contained within the role. • **obn** Specifies that the startup application must be determined by resolving the OBN call. This is a good way to start a specific type of symbolic transaction without knowing what the real transaction is that is mapped onto the user's role. For example, assume the call sequence is `.../obn/process.Monitor`. For a standard user, a role can be assigned in which this entry maps onto a monitoring ap-

Element	Optional	URL	Description
			plication for the user's specific work area. However, the area supervisor can have a different role. This maps the OBN call in the supervisor's assigned role onto a special application that gives an overall view of all work areas. For this OBN-specific sequence, both the object and method must be specified. • **applicationAlias** Using an application alias is another way to start an application using a symbolic name. Within the role (in transaction PFCG), you can assign symbolic names to role entries. For the PFCG, this is just a user-defined string without any further meaning. This symbolic name can be used to enable SAP Business Client at runtime to resolve the specific application that must be started.
Trailing slash /		/	The extra slash / is needed to lock the previous segment and to allow page-relative URLs to work.

Element	Optional	URL	Description
Query string	yes	? `name=value&name=value&` …	The query string is passed unchanged to the called application. It does not and should not contain any SAP Business Client-relevant parameters or options. **Note** If a transaction is to be started, the startup parameters must still be specified as normal URL parameters (in the format `&name=value`). At runtime, the parameters are correctly transformed into the format required by SAP GUI for HTML.

SAP parameter	yes	`&sap-client=<nnn>`
		`&sap-user=<user name>`
		`&sap-language=<XX>`
			Note that an additional `sap-client` is always added to ensure an HTML URL always leads back to the correct client.

Examples

Description	For Users of Server Runtime for SAP NetWeaver UI Services	For Users of Server Runtime for SAP Business Client
Start transaction *Create Purchase Order* (`ME21`) directly in SAP Business Client.	**`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~canvas/transaction/ME21/`**	**`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~canvas/transaction/ME21/`**
Force-start the transaction *Create Purchase Order* (`ME21`) in SAP GUI while using SAP NetWeaver Business Client 3.6 for HTML by adding the `client_type` qualifier.	**`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~canvas/transaction;client_type=sapgui/ME21/`**	**`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~canvas/transaction;client_type=sapgui/ME21/`**
Start the Web Dynpro ABAP application `IT00`, shipped by SAP in the default namespace.	**`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~canvas/wda/IT00/`**	**`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~canvas/wda/IT00/`**

Description	For Users of Server Runtime for SAP NetWeaver UI Services	For Users of Server Runtime for SAP Business Client
Start `/SRM/Inbox` if the Web Dynpro ABAP application was developed in a specific namespace	**`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~canvas/wda/SRM/Inbox/`**	**`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~canvas/wda/SRM/Inbox/`**
Start URL of a Web Dynpro ABAP application with certain parameters specific to Web Dynpro ABAP	**`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~canvas;window=app/wda/hress_a_persinfo/?WDCONFIGURATIONID=HRESS_AC_PERSINFO&sap-client=004&sap-language=EN`**	**`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~canvas;window=app/wda/hress_a_persinfo/?WDCONFIGURATIONID=HRESS_AC_PERSINFO&sap-client=004&sap-language=EN`**
Specify a BSP application `myApp` that needs to be started (specify the complete URL to start)	**`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~canvas/url/sap/bc/bsp/sap/myApp/default.htm`**	**`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~canvas/url/sap/bc/bsp/sap/myApp/default.htm`**
Start a specific entry in a role without knowing what the entry is by using the `roleEntry` sequence	✤ Example Given the role `PROCESS_MONITOR`, start entry `27` with the following sequence: **`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~canvas/roleEntry/PROCESS_MONITOR:27/`**	✤ Example Given the role `PROCESS_MONITOR`, start entry `27` with the following sequence: **`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~canvas/roleEntry/PROCESS_MONITOR:27/`**
Embed all roles in an external portal, for instance by using an SAP NetWeaver Business Client 3.6 for HTML link that shows a service map for all roles	**`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~canvas;window=embedded/sitemap/`**	**`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~canvas;window=embedded/sitemap/`**
Embed one complete role in an external portal, for instance by using an SAP NetWeaver Business Client 3.6 for HTML link that selects a complete role and shows a service map for the role	**`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/SAP_ESS/~canvas;window=embedded/sitemap/`**	**`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/SAP_ESS/~canvas;window=embedded/sitemap/`**

Description	For Users of Server Runtime for SAP NetWeaver UI Services	For Users of Server Runtime for SAP Business Client
If you use a symbolic call, consider using an OBN call that is resolved only at runtime using the specific assigned roles. For example, to start a process monitor application, map the OBN sequence `process.Monitor` in the assigned role and use the following startup URL:	`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~canvas/obn/process.Monitor/`	`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~canvas/obn/process.Monitor/`
Start an overview application, assuming the application alias `OVERVIEW_APP` has been defined for a specific entry within the user-assigned roles	`https://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~canvas/applicationAlias/OVERVIEW_APP/`	`https://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~canvas/applicationAlias/OVERVIEW_APP/`

Related Information

Short Form of URL [page 86]

1.3.1.2.2.1.3 Long Form of URL for ~roletest Sequence

Use

The first part of the long URL consists of the short URL as described in section *Short Form of URL*, plus the following elements:

.../~roletest/<role>/[?sap parameters]

Element	Optional	URL	Description
~roletest as delimiter		`/~roletest`	Segment that informs SAP Business Client to test with a specific unassigned role

Element	Optional	URL	Description
Role-specific information		`/~roletest/<role>`	Segment that specifies the name of the role that needs to be tested. This can be any role in the system (see transaction *Role Maintenance* (`PFCG`) that is not assigned to the user. **Note** Only the navigation tree is shown in SAP Business Client, no authority objects from the role are assigned to the user.
Trailing slash /		/	The extra slash / is needed to lock the previous segment and allow page-relative URLs to work.
Query string	yes	? `name=value&name=value&` …	The query string is passed unchanged to the called application. It does not, and must not, contain any SAP Business Client-relevant parameters or options.

SAP parameter	yes	`&sap-client=<nnn>`
		`&sap-user=<user name>`
		`&sap-language=<XX>`
			Note that an additional `sap-client` is always added to ensure an HTML URL always leads back to the correct client.

Example

For users using the UI services runtime: **`http(s)://<server>.<domain>.<ext>[:<port>]/ui2/nwbc/~roletest/SAP_BC_BASIS_ADMIN`**

For users using the SAP Business Client runtime: **`http(s)://<server>.<domain>.<ext>[:<port>]/nwbc/~roletest/SAP_BC_BASIS_ADMIN`**

Note

If the role name contains special characters (“/”, “?”, or “=”), you have to encode the role name before adding it to the URL.

Example:

The original role name is as follows: / `ROLEPREFIX`/ `SAP_BC_BASIS_ADMIN`/

The encoded version of this role name is as follows:

`%2FROLEPREFIX%2FSAP_BC_BASIS_ADMIN`

The long form of the URL is as follows:

For users using the UI services runtime: **`http(s)://<server>.<domain>.<ext>[:<port>]/ui2/nwbc/~roletest/%2FROLEPREFIX%2FSAP_BC_BASIS_ADMIN`**

For users using the SAP Business Client runtime: **`http(s)://<server>.<domain>.<ext>[:<port>]/nwbc/~roletest/%2FROLEPREFIX%2FSAP_BC_BASIS_ADMIN`**

Related Information

Short Form of URL [page 86]

1.3.1.2.2.2 URL for Fiori Launchpad Connection

It is possible to launch or activate a Fiori launchpad connection using an SAP BC startup URL, as it is feasible for SAP BC connections. You can:

- perform a Generic startup or
- launch a specific intent within an FLP connection.

If there is already an active FLP connection corresponding to the connection specified in the startup URL, either a tab in the FLP connection is activated or a new tab is created within the shell window hosting this connection.

Syntax

Element	Optional	Only SAP Business Client for Desktop	URL	Description
E-mail bootstrap	yes		`url:`	This element is specifically available for SAP Business Client for Desktop: If the startup URL is to be embedded in an e-mail, add the `url:` prefix to signal to Microsoft Outlook that this is a startable link and that it should be treated as a hyperlink.
Protocol handler for desktop client	yes	yes	`sap-nwbc:`	The protocol handler is an extension added to Windows to allow SAP Business Client to be started in the same way as a normal URL. When this "URL" starting with SAP Business Client is used within a browser or from a startup icon, the URL is opened in the SAP Business Client shell itself. This protocol handler is needed **only** if you intend to start NWBC for Desktop. If SAP NetWeaver Business Client 3.6 for HTML is to be started, the protocol handler need not be specified.
Connection type	yes	yes	`connection=FIORI`	
Remote Debugging Port	yes	yes	`;remotedebuggingport=8081`	This element enables the Remote Debugging Port for the chosen browser control (Edge only).
Server address			`http(s)://<server>.<domain>.<ext>[:<port>]`	For the server address, use the regular `http(s)://` sequence with a fully qualified domain name (FQDN).

Element	Optional	Only SAP Business Client for Desktop	URL	Description
SAP parameter	yes		• `&sap-client=<nnn>` • `&sap-user=<username>` • `&sap-language=<XX>`	optional URL parameters
intent			`#<SemanticObject>-<action>`	The intent consists of • a '#' character (hash) • the semantic object • a '-'-character • the action to be performed

Example

Sample Code

```
sap-nwbc:connection=FIORI@https://<server_address>/
<flp_home_url>#<SemanticObject>-<action>, e.g.
sap-nwbc:connection=FIORI@https://abc123-def456.wdf.sap.corp/sap/bc/
ui5_ui5/ui2/ushell/shells/abap
        /FioriLaunchpad.html
```

for Fiori launchpad Home

```
sap-nwbc:connection=FIORI@https://abc123-def456.wdf.sap.corp/sap/bc/
ui5_ui5/ui2/ushell/shells/abap
        /FioriLaunchpad.html?sap-client=310&sap-language=EN#SalesInquiry-
listIncompleteDocuments
```

for SalesInquiry-listIncompleteDocuments intent

Starting with SAP Business Client 7.70 PL2, it is possible to allow the FLP to handle a given intent at startup. If an intent leads to an application that can be launched inplace, it will now be launched inplace. Therefore, no extra tab has to be created. This is only possible by using a SAPUI5 version 1.84.6 or higher. To enable the improved intent handling, you have to enable the setting *<HandleStartUrlByFlp>* in the admin options.

Caution

It is the user's responsibility to take the appropriate security measures to prevent misuse of the user's credentials such as user ID and password. Do **not** store the URL that contains the personal user and password anywhere where it could be read and misused. Be aware that Web browser URLs are stored in a history list and the password would be visible in plain text, even after the browser is closed. For security

reasons, using a user and password in the startup URL is disabled by default. It can be enabled with the boolean switch *IsPasswordInCommandlineAllowed* in the administrator configuration file.

→ Recommendation

We recommend that you use a non-secret user and password to prevent misuse.

1.3.1.2.3 SAP Business Client Settings

In the `NwbcOptions.xml` configuration file, you can predefine the configuration settings as follows:

- Predefine default values (changeable by end users)
- Prevent end users from changing values
- Prevent end users from creating entries

For more information, see the comments in the configuration file template, `%ALLUSERSPROFILE%\SAP\NWBC\NwbcOptions.xml.800template` in the system.

Some settings, which SAP Business Client shares with SAP Logon/SAP GUI for Windows, must be maintained in the registry. In general, SAP Business Client and SAP GUI first access `HKEY_CURRENT_USER` and, if this registry value does not exist, then `HKEY_LOCAL_MACHINE`. If the registry value `HKEY_LOCAL_MACHINE` also does not exist, then the SAP Business Client/SAP GUI default value is applied.

In this section, only exceptions to this approach are detailed.

Settings maintained in the Registry

Registry Setting	Corresponding *SAP Logon Options* Setting	Comments
Client Language	*SAP Logon Options* > *General* > *Language*	Default: Windows *Region and Language* setting. Can be changed: [HKEY_ LOCAL_MACHINE\Software\SAP\General] (REG_SZ) Value: two characters language shortcut

Registry Setting	**Corresponding** *SAP Logon Options* **Setting**	Comments
Use client language on system logon screen	*SAP Logon Options* > *General* > *Use SAP Logon language as default on logon screen*	The language used by the SAP Business Client at startup is propagated to the system logon. This allows overruling a language predefined in a system connection, or logging on in a different language than is the default when authenticating with single sign-on (when there is no possibility to change the language in the system logon screen). You can use the registry entry *UseSAPLogonLanguageAsDefault* in the following locations to change this: • HKEY_LOCAL_MACHINE\SOFTWARE\SAP\SAPLogon\Options Default: 1 (Active) Note the reading priority for these registry values in the following modes: • SAP Logon: *HKCU* > *HKLM* • SAP Logon Pad*: *HKLM* > *HKCU*
Administrator Configuration File	*SAP Logon Options* > *Server Configuration Files* > *XML Configuration File on Server*	The administrator defines the path for the key *Name: LandscapeFileOnServer* in the following locations: • HKEY_LOCAL_MACHINE\SOFTWARE\SAP\SAPLogon\Options (REG_EXPAND_SZ) Default: "" (valid path to the correctly configured XML file) Note the reading priority for these registry values in the following modes: • SAP Logon: *HKCU* > *HKLM* • SAP Logon Pad*: *HKLM* > *HKCU*

Registry Setting	Corresponding *SAP Logon Options* Setting	Comments
User Configuration File (Path)	*SAP Logon Options* > *Local Configuration Files* > *Path of Local Configuration Files*	As administrator, you can set and/or change the path of the local configuration file using the registry value *PathConfigFilesLocal* under HKEY_LOCAL_MACHINE\SOFTWARE\SAP\SAPLogon\Options. Default: %APPDATA%\SAP\Common (valid path with write access) Note the reading priority for these registry values in the following modes: • SAP Logon: *HKCU* > *HKLM* • SAP Logon Pad*: *HKLM* > *HKCU*

> **Note**
>
> The registry paths described above are correct if you are using a 32bit version of the SAP Business Client on a 32bit OS and a 64bit version of the SAP Business Client on a 64bit OS. In case you are using a 32bit version of the SAP Business Client on a 64bit OS, the corresponding registry path is:
>
> HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\SAP\SAPLogon\Options
>
> Upcoming releases will always check both paths to ensure correct evaluation.

> **Note**
>
> * SAP Logon Pad is a term taken from SAP GUI and refers to read-only mode; in SAP Business Client, the Administrator can set the systems connections parameter `<ShowConnectionsAsReadOnly>` to prevent users from adding, deleting, and changing system connections.

Related Information

Administrator Configuration Tips [page 108]

1.3.1.3 Administrator Configuration Tips

As Administrator, you can change the behavior of SAP Business Client by making changes to parameters in the administrator configuration file, `NwbcOptions.xml`.

The table below describes some of the parameters, which, as Administrator, you are most likely to change.

Additionally, at the end of this section, a method for changing the client language on the system logon screen is described.

Parameters of Administrator Configuration File (Incomplete List)

Action	Parameter	Notes	Default
Suppress the SAP GUI for HTML Warning	`<WinguiCheck>`	If no SAP GUI is installed on the local computer or the SAP GUI version is too old, the first time you navigate to an SAP GUI transaction in SAP Business Client, the *SAP GUI Integrator* dialog box is displayed, stating that with the current installation, all SAP GUI transactions are started with SAP GUI for HTML. Following this, SAP GUI for HTML is started. To display the SAP GUI for HTML warning, set this parameter to false; no warning dialog box is displayed and SAP GUI for HTML starts immediately.	True
Set the Behavior of SAP GUI Sessions	`<OpenNewGuiSessionInNewWindow>`	A new session can be opened in a new tab or a window. By default, new sessions are opened in a new tab. To ensure that new sessions are opened in a new shell window, set this parameter to true.	False

Action	Parameter	Notes	Default
Set the Behavior of SAP Shortcuts	`<EnableProcessAgent>`	SAP Business Client uses the SAP Business Client process agent to communicate with its processes. Thus, triggered by an SAP shortcut or SAP Business Client start-up URL, SAP Business Client can open a tab within an existing SAP Business Client instance or shell window. For this, connection, client, and user must match. The process agent is activated by default. It starts when the first SAP Business Client instance is opened and is terminated with the last SAP Business Client instance. To deactivate the SAP Business Client process agent, set this parameter to false; the shortcut always starts a new SAP Business Client instance and opens in a new shell window.	True
Keep the SAP GUI Theme	`<KeepSapGuiTheme>`	SAP Business Client per default embeds SAP GUI in a theme that corresponds or is identical to its own shell theme.	False
Define the Entry Page	`<EntryPage>`	By default, the entry page for a user is set to the first pinned tab. You can change this to one of the following options: *IndexPage*, *NewTabPage*, *FirstWorkcenterPage*.	FirstPinnedTab
Open Side-Panel with New Tab	`<OpenSidepanelWithNewTab>`	If an application includes side panels, these can also be displayed when the application is opened by the user. To do this, change this parameter to true.	False

Action	Parameter	Notes	Default
Show Connections as Read-Only	`<ShowConnectionsAsReadOnly>`	Use this parameter to prevent users from adding, deleting, and changing system connections. This corresponds to the former definition *<RuntimeConnections Final ="true">* and *SAP Logon Pad* mode.	False
Read-only Mode for Search Providers	`<ShowSearchProviderConnectionsAsReadOnly>`	Use this parameter to prevent users from adding, deleting, and changing search providers. This corresponds to the former definition *<<SearchProviderConnections Final ="true">*. The user can still enable, disable, and change the sort order of search providers.	True
Switch Off SAP Business Client Built-in Search Providers	• `<EnableNavigationItemsQuickLaunch>` • `<ShowServerApplicationsQuickLaunch>` • `<EnableDesktopSearchQuickLaunch>`	• Activate or deactivate the *My Work Area* section in the quick launch dropdown menu. • Activate or deactivate the *Transactions and Applications* section in the quick launch dropdown menu • Activate or deactivate the *Desktop Search* section in the quick launch dropdown menu. By specifying the attribute `Final="true"`, the search provider does not occur in the *Search Providers* dialog box.	• True • True • True
Launch SAP Easy Access from New Page Tab	`<ShowEasyAccessLinkInNewTabPage>`	Users can launch the SAP Easy Access menu directly from the *New Tab* page to browse the SAP Menu. To deactivate this, set this parameter to false.	True

Action	Parameter	Notes	Default
Do Not Close Tabs	`<DoNotCloseGuiTabs>`	To ensure that SAP Business Client does not close tabs with SAP GUI transactions when the user or program navigates back to the SAP GUI entry screen, set this parameter to true.	False
Show Work Center Links on Index Page	`<ShowWoCLinksOnIndexPage>`	If true (default value), the work center links on the index page act as links to the first contained site.	True

Action	Parameter	Notes	Default
Define URLs for SAP Business Client Connections	`<DefaultConnectionBaseUrls>`	Define a set of base URLs to be used to generate a set of default URLs for SAP Business Client connections by combining each base URL with all available protocols, application server hosts, and ports of the specific system. The generated set of default URLs then appear in the *URL* dropdown listbox when creating or editing an *NWBC* connection. All URLs in the set will be pinged; the URL with the fastest response time is then suggested. Specify multiple base URLs by separating them with commas: **`<DefaultConnectionBaseUrls>/sap/bc/nwbc,/sap/bc/ui2/nwbc</DefaultConnectionBaseUrls>`** **Generation of remote access URLs for targets in remote systems:** Whenever SAP Business Client accesses the ABAP remote servers (for example, when accessing a server to gather side panel entries for a particular remote transaction), it does so via ICF node paths. SAP Business Client determines the ICF nodes paths as follows: 1. The Administrator can predefine the ICF node paths (for example, `/sap/bc/ui2/`	False

Action	Parameter	Notes	Default
		`nwbc` for using UI Services runtime or `/sap/bc/nwbc` for using NWBC runtime) by using the `<DefaultConnectionBaseUrls>` property (see above bullet point). If the Administrator has predefined the prefixes in this property, then SAP Business Client uses these prefixes. 2. If the connection is a FIORI connection type, the system first tries with the UI2 prefixes (`/ui2/nwbc` and `/sap/bc/ui2/nwbc`). If this does not work, SAP Business Client tries then with non-UI2 prefixes (`/nwbc`, `/sap/bc/nwbc`). 3. If the connection is an NWBC connection type, the system tries with active connection prefixes (for example `/nwbc` or external alias `/mynwbc`). If this does not work, SAP Business Client then tries with UI2 prefixes (`/ui2/nwbc` and `/sap/bc/ui2/nwbc`). If the UI2 prefixes do not work, then system then tries with non-UI2 prefixes (`/nwbc`, `/sap/bc/nwbc`).	

Action	Parameter	Notes	Default
Define URLs for *Fiori Launchpad* Connections	`<DefaultFioriLaunchpadUrls>`	Define a set of base URLs to be used to generate a set of default URLs for *Fiori Launchpad* connections by combining each base URL with all available protocols, application server hosts, and ports of the specific system. The generated set of default URLs then appear in the *URL* dropdown listbox when creating or editing a *Fiori Launchpad* connection. All URLs in the set will be pinged; the URL with the fastest response time is then suggested. Specify multiple base URLs by separating them with commas: **`<DefaultFioriLaunchpadUrls>/sap/bc/ui5_ui5/ui2/ushell/shells/abap/FioriLaunchpad.html,/sap/bc/ui2/flp/FioriLaunchpad.html</DefaultFioriLaunchpadUrls>`**	False
Define the default browser control	`<DefaultBrowserControl>`	The default browser control can be changed from *Edge* to *InternetExplorer*. If the default browser control is Edge, SAP Business Client checks if the Edge WebView2 browser control is available. If this is not possible, then the browser control falls back to InternetExplorer	InternetExplorer

Action	Parameter	Notes	Default
Storing the user name for SAP Business Client connections	<DoNotSaveConnectionUser>	If a SAP Business Client system connection is defined locally, then SAP Business Client can store the user name together with the connection, when the user accesses the system. If SAP Business Client should store the user name for this system connection, set this parameter to `false`.	True

Use Client Language on System Logon Screen

The language used by the SAP Business Client at startup is propagated to the system logon. This allows overruling a language predefined in a system connection, or logging on in a different language than is the default when authenticating with SSO (when there is no possibility to change the language in the system logon screen).

You can use the registry entry *UseSAPLogonLanguageAsDefault* in the following locations to change this:

- `HKEY_LOCAL_MACHINE\SOFTWARE\SAP\SAPLogon\Options`

> **Note**
>
> The registry path described above is correct if you are using a 32bit version of the SAP Business Client on a 32bit OS and a 64bit version of the SAP Business Client on a 64bit OS. In case you are using a 32bit version of the SAP Business Client on a 64bit OS, the corresponding registry path is:
>
> HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\SAP\SAPLogon\Options
>
> Upcoming releases will always check both paths to ensure correct evaluation.

Related Information

Administrator Configuration [page 72]

1.3.1.4 Configuring Support Information

Use

A trace file contains information about errors occurring during SAP Business Client runtime. Depending on the trace level, the trace file also contains additional information that can help developers isolate a specific problem.

Trace files are saved in a subdirectory of the personal files directory on the computer of the logged-on user, namely `%LOCALAPPDATA%\SAP\NWBC\Traces`.

The path is:

`C:\Users\<user name>\AppData\Local\SAP\NWBC\Traces`

You can personalize the settings for troubleshooting:

- Choose *Settings* > *Support*.
- Set the required trace level (see chapter Data Privacy & Support [page 31]).

1.3.1.5 Using SAP Business Client with a Load Balancer

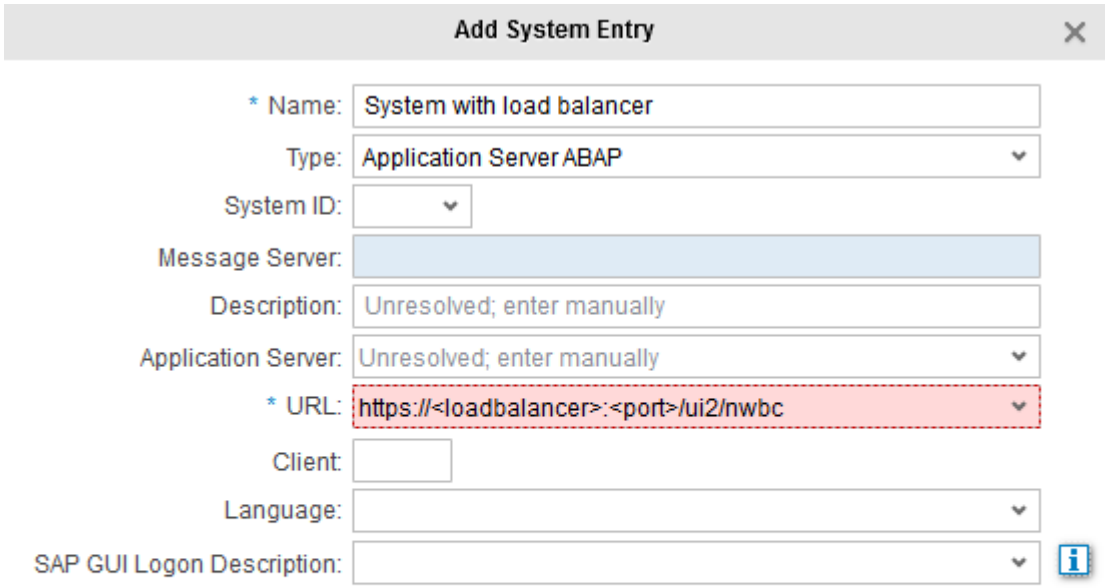
Use

Note that the information in this topic applies only to the NWBC connection type.

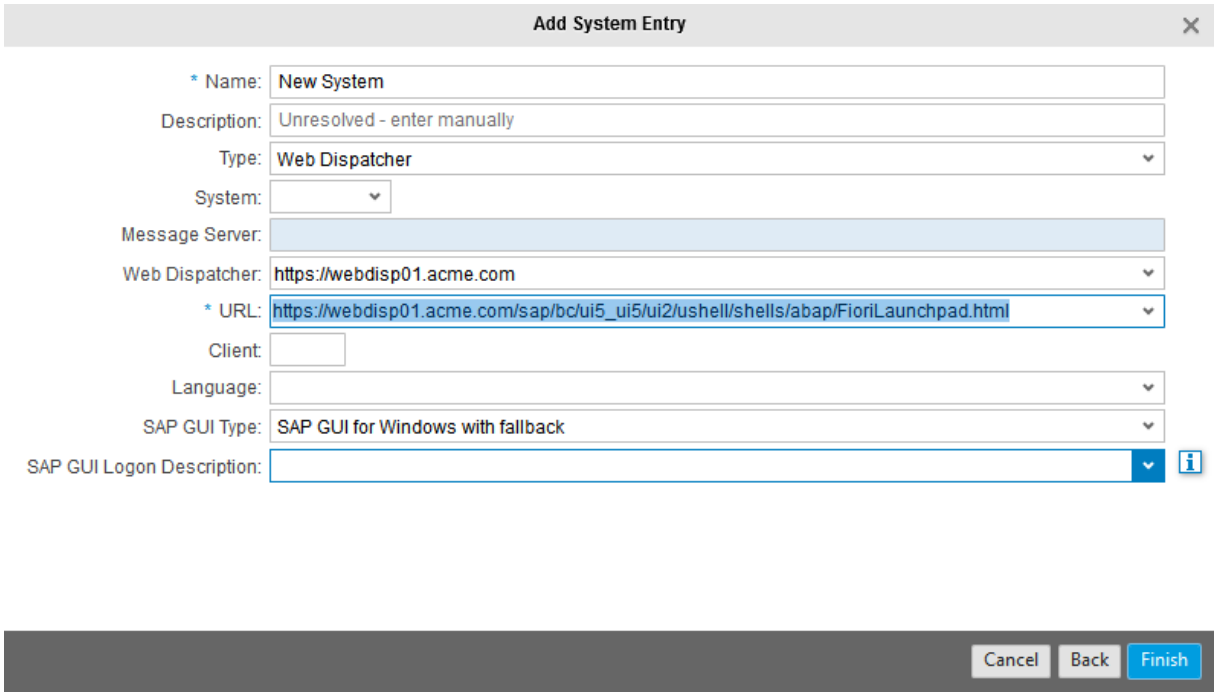
If a load balancer is available within the network, it can be used directly with SAP Business Client. Instead of configuring a direct URL on a specific application server, change the URL that SAP Business Client is configured to, to use the load balancer. On startup, SAP Business Client triggers a first HTTP request to the load balancer, which then redirects to an application server. For the duration of the SAP Business Client session, the load balancer only communicates with this specific application server. All applications that are started run on the assigned application server. (This is similar to a typical SAP GUI session that stays on the same assigned application server and starts all new windows on the same server.)

In SAP Business Client for Desktop, navigation data is cached on an ABAP system (AS ABAP), and not on a specific application server. Therefore, if the load balancer assigns a different application server the next time SAP Business Client for Desktop is started, the cached data are not invalidated.

> → Recommendation
>
> We highly recommended that you use **SAP Web Dispatcher** as a load balancer, since it contains key information about HTTP traffic that can be used to route all subsequent HTTP requests more effectively to the same application server.



You can predefine SAP Web Dispatcher entries in the SAP UI Landscape file. If you do so, then you will see predefined Web Dispatcher entries by selecting type *Web Dispatcher* as shown in the picture:

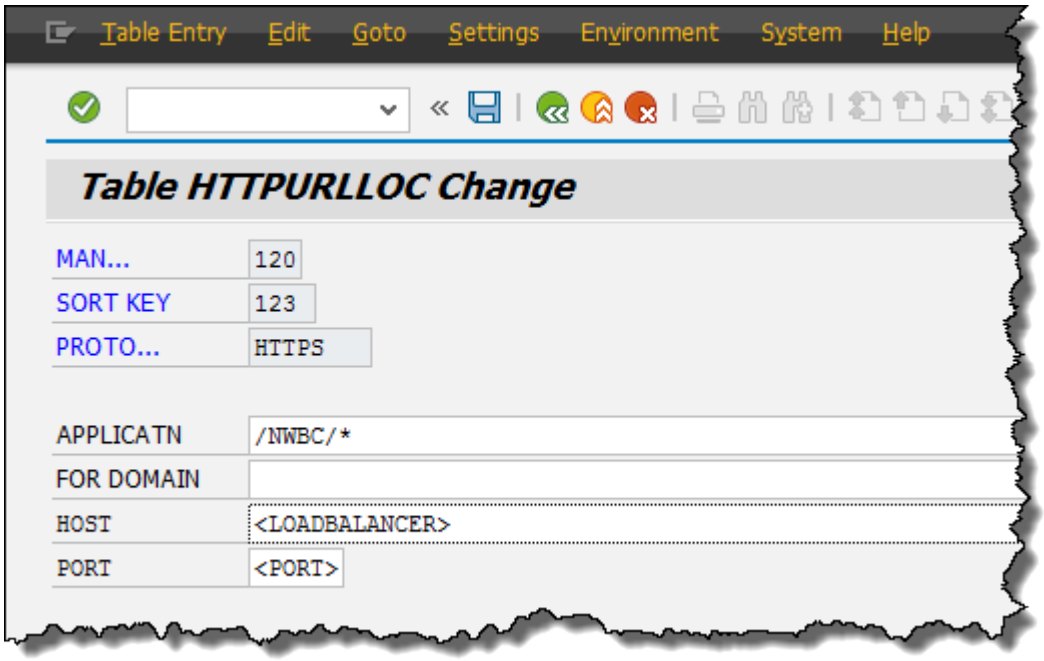


To define the Web Dispatcher repository, see also SAP UI Landscape [page 75] and Webdispatchers Repository.

→ Recommendation

We higly recommended that you set the *wdisp/handle_webdisp_ap_header* parameter to value *1*. This parameter ensures correct behavior of SAP BC using Web Dispatcher. See technical details of using *wdisp/handle_webdisp_ap_header* in chapter Overview of Parameters in the SAP Web Dispatcher documentation.

By default, transaction `NWBC` starts SAP NetWeaver Business Client 3.6 for HTML or the `~launch` page on the same AS ABAP application server. However, transaction `NWBC` also includes all available information about an external Web Dispatcher, or message server used as load balancer if configured in the `HTTPURLLOC` table. In the `HTTPURLLOC` table, configure an entry for `application = /NWBC/*` to influence the URL generation of SAP NetWeaver Business Client 3.6 for HTML. By consequence, the startup URL is changed to reference the configured load balancer directly.



ⓘ Note

You can also define load balancing settings in an SAP Logon/SAP GUI system connection, and refer this connection in the*SAP GUI Logon Description* of the NWBC connection. For more information about defining load balancing settings for transactions running in remote systems, see the topic *Configuring Special SAP GUI System Connection Properties for Remote Systems*.

More Information

SAP Note 1040325: *HTTP load balancing: Message Server or Web Dispatcher*

Related Information

Configuring System Connections [page 15]
Transaction NWBC [page 182]
~launch Page [page 180]
Configuring Special SAP GUI System Connection Properties for Remote Systems [page 120]

1.3.1.6 Configuring Special SAP GUI System Connection Properties for Remote Systems

SAP Business Client offers the possibility to integrate content from other systems by using RFC destinations for target systems:

- In SAP Business Client connections, by using the property *Target System* in PFCG, either for single menu entries or for a whole role
- In *Fiori Launchpad* connections, by assigning a system alias directly in the target mapping or in a Launchpad (`LPD_CUST`) role. For more information about RFC destination definition, see the topic *Remote Systems*.
  No RFC calls are executed and only some of the RFC destination settings are evaluated.

To control advanced SAP GUI connection properties like groups for load balancing , SAProuter or SNC settings which SAP Business Client uses when running a transaction in a remote system, you have the following options:

Connection Type	Procedure
Fiori Launchpad	The administrator defines the properties in the ABAP connection type RFC destination of the target system.
SAP Business Client connection + Server runtime for SAP NetWeaver user interface services (starting with UI Add-On 1.0 SPS09 and SAP NetWeaver 7.4 SP08)	The administrator defines the properties in the ABAP connection type RFC destination of the target system.

Connection Type	Procedure

SAP Business Client connection + Server runtime for SAP Business Client	The administrator creates one SAP GUI connection which contains the properties, and SAP Business Client connections for all clients on all servers that are accessed with remote roles, referencing the SAP GUI connection.
	
	Example
	
	In this example scenario, with the system currently being used and several remote systems, you can maintain the *SAP GUI Logon Description* not only for the system currently being used but also for the remote systems. This allows you to configure load balancing on the client side for the SAP Logon system and also for the remote systems.
	
	SAP Business Client connects to the server `Server_A` of the system `SYS`. The roles for this system comprise the following remote clients and servers:
	
	• System `RMA`, server `Remote_A.domain`, client 000
	• System `RMB`, server `Remote_B.domain`, client 000 and client 001
	
	You have the following options to configure load balancing for system RMA and RMB:
	
	• In SAP Business Client or SAP Logon, configure two SAP Logon (SAP GUI) system connections, RMA [PUBLIC] and RMB [PUBLIC] including load balancing.
	• To achieve SAP GUI load balancing for the remote clients and server, configure SAP Business Client connections for all clients on all servers that are accessed with remote roles:
	  • `Remote_A` connection:
	  URL: http://Remote_A.domain:port/nwbc
	  Client 000
	  SAP GUI Logon Description: `RMA [PUBLIC]`
	  • `Remote_B 000` connection:
	  URL: http://Remote_B.domain:port/nwbc
	  Client 000
	  SAP GUI Logon Description: `RMB [PUBLIC]`
	  • `Remote_B 001` connection:
	  URL: http://Remote_B.domain:port/nwbc
	  Client 001
	  SAP GUI Logon Description: `RMB [PUBLIC]`
	  The server URL must be fully qualified with domain name.

Related Information

Configuring System Connections [page 15]
Using SAP Business Client with a Load Balancer [page 117]
Remote Systems [page 230]

1.3.1.7 Specifying a Theme for Shell and Canvas

As Administrator, you can specify a theme for both the shell and canvas (content area) areas of the SAP Business Client.

As Administrator, you can make the settings described in the sections below depending on what you require.

The following types of theme are available:

- Standard (a standard SAP theme, such as SAP Blue Crystal)
- Custom (a standard SAP theme that has been changed, for example, to suit your company's brand)
- High Contrast

Note that not all current standard SAP themes are supported by this version of the SAP Business Client. When creating a custom theme, the base themes *SAP Corbu*, *SAP Blue Crystal*, *SAP High Contrast Black*, *SAP High Contrast White*, *SAP Belize*, *SAP Quartz Light* and *SAP Quartz Dark* are supported by the SAP Business Client.

> **Note**
>
> Be aware of the following differences regarding the *Appearance* dialog in SAP Business Client settings:
>
> 1. When opened from the System Selection dialog, *Appearance* dialog shows only standard SAP Business Client themes before logon and one possibly restored custom theme. After logon only standard Business Client Themes are shown.
> 2. When opened from main Business Client window, *Appearance* dialog shows all themes according to **USE_THEMES** parameter value (only using an SAP Business Client connection).
> 3. Case 1 behaves the same as case 2 after logon.

Settings for the Shell

You can predefine a theme in the administrator configuration file `NwbcOptions.xml`, as the following code snippet shows:

```
<!-- Define the theme. Possible values are "CorbuDark", "CorbuLight",
"BlueCrystal", "Belize", "HighContrast" (SAP Signature),  "SapHcb" (Quartz HCB),
"SapHcw" (Quartz HCW), "QuartzLight" and "QuartzDark". -->
<Theme>QuartzLight</Theme>
```

For more information, see SAP Business Client Settings [page 106].

Unless you lock this functionality (by setting the property to *Final*), the user can select a theme in the Business Client settings (*Settings* > *Appearance*).

If you lock this functionality, the user will not be able to select a different theme, in particular, *High Contrast* cannot be specified. We recommend, therefore, that you do **not** lock the *Theme* property.

The user has the choice between the following themes

- *Dark*
- *Light*
- *SAP Blue Crystal*
- *SAP Belize*
- *SAP Quartz Light*
- *SAP Quartz Dark*
- *High Contrast (SAP Signature)*
- *SAP High Contrast Black*
- *SAP High Contrast White*

Using an SAP Fiori Launchpad Connection

If an SAP Fiori launchpad connection is used, SAP Business Client automatically adopts the same theme which is specified in the SAP Fiori launchpad configuration.

Using an SAP Business Client Connection

If there are custom themes configured in the back-end system the user accesses using a SAP Business Client connection, he or she may have various options. They depend on how the parameters `THEME` and `USE_THEMES` are set in the back-end system. For detailed information, refer to chapter Theme Configuration - SAP Business Client Connection [page 151].

Server Runtime Configuration

Where and which settings you make for the server runtime depend on the server that SAP Business Client is connected to, as the following table outlines:

About	Server runtime for SAP NetWeaver user interface (UI) services (/ui2/nwbc)	Server runtime for SAP Business Client
Where to configure a theme	In Customizing: Transaction /UI2/NWBC_CFG_CUST under *SAP NetWeaver* > *UI Technologies* > *SAP NetWeaver Business Client* > *Assign Parameter Values*. Use the **THEME** parameter to specify either an SAP standard theme or a custom theme for the whole client, for access with a specific cockpit or role filter.	In the configuration table NWBC_CFG. Use the *Data Browser* (transaction SE16). Use the **THEME_NAME** parameter to specify a standard SAP theme.

About	Server runtime for SAP NetWeaver user interface (UI) services (/ui2/nwbc)	Server runtime for SAP Business Client
SAP standard themes	When the user logs on to the role or cockpit associated with the SAP standard theme in the back end, the NWBC for HTML shell, all Web Dynpro ABAP applications, service maps, and some SAP Fiori apps, are rendered using the specified theme. Note that SAP Fiori apps only support the newer SAP standard themes. You can change the theme for the SAP Fiori launchpad and SAP Fiori apps from within the launchpad itself (*SettingsAppearance*) and choose from standard and custom themes.	
Custom Themes	These are, additionally, applied to the Business Client shell. Custom themes are cached. If the user logs on to a system with a custom theme configured, then shuts down the Business Client, this theme will be applied to the shell (in particular to the system selector) the next time the Business Client is started. It might change to another custom theme or to the standard theme that was last used, depending on the next system logon: • SAP BC connection: Custom theme of this system or the standard theme last used • SAP GUI connection: Standard theme last used • FLP connection: Standard theme last used Note that custom themes for the SAP Fiori launchpad are available only from within the launchpad itself.	Custom themes are not supported.
More information	Theme Configuration - SAP Business Client Connection [page 151]	Definition of Configuration Parameters with Table NWBC_CFG [page 171]

Specifying Themes for different UI Technologies

You can make further settings for the various UI technologies used by the applications:

Classic Dynpro (SAP GUI transactions)

You can set selectable themes in the registry (see SAP GUI for Windows 7.60 Administration Guide); users can select from these in the SAP GUI options dialog box (if not restricted to read-only). The specified theme is applied if the Business Client setting *Use SAP GUI theme* is true.

Web Dynpro ABAP / Floorplan Manager

You can set URL and application parameters in the following places:

- In the Web Dynpro application (transaction SE80 in the *Web Dynpro Explorer* on the *Parameters* tab). You can either define new parameters or select a predefined parameter and assign a value to it.
- In the application configuration (Web Dynpro application *CONFIGURE_APPLICATION*, tab *Parameter*).
- Globally, for all applications and a specific client using the Web Dynpro application *WD_GLOBAL_SETTING*. Call Web Dynpro ABAP application *WD_GLOBAL_SETTING*, and enter the value you want the parameter to be for all applications.
- User parameters: For the user and all applications. This is only possible for a few parameters.

- As a URL parameter: For the current call. In this case, the parameter names are not case-sensitive.

For more information, type **`Web Dynpro ABAP`** in the search bar on the home page of the SAP Help Portal (https://help.sap.com/viewer/index).

Parameter Name	Options	Notes
WDTHEMEROOT/SAP-THEME	• sap_belize • sap_bluecrystal • sap_chrome • sap_corbu • sap_hcb • sap_standard • sap_tradeshow • sap_tradeshow_plus	Style sheets for the application without Portal integration. You can import user-configured Style sheets with report `WD_THEMES`. See also Stylesheets in Web Dynpro ABAP.

Rules

Shell Setting	System Settings	Result

Dark
Light
	`<none>`	• *Index* and *New Tab* page: SAP Corbu
		• Service map:
		  • System default:
		  • Old: SAP Signature (`sap_tradeshow_plus`)
		  • Starting with NWBC ABAP Runtime patch 36 (1963267) or when using the UI2 runtime: SAP Corbu
		• WDA/FPM applications:
		See the topic Reference: Application and URL Parameters.
		See also 2379058.
		• SAP Fiori apps:
		Frontend Server default (SAP_UI v1.0 and v2.0: SAP Blue Crystal; SAP_UI v3.0: SAP Belize)

Shell Setting	System Settings	Result

SAP Blue Crystal	`<none>`	• *Index* and *New Tab* page: SAP Blue Crystal
		• Service map:
		  • System default: Old: SAP Signature (sap_tradeshow_plus) Starting with NWBC ABAP Runtime patch 36 (1963267) or when using the UI2 runtime: SAP Corbu
		  • Old: SAP Signature (`sap_tradeshow_plus`)
		  • Starting with NWBC ABAP Runtime patch 36 (1963267) or when using the UI2 runtime: SAP Corbu
		• WDA/FPM applications: See the topic Reference: Application and URL Parameters. See also 2379058.
		• SAP Fiori apps: Frontend Server default (SAP_UI v1.0 and v2.0: SAP Blue Crystal; SAP_UI v3.0: SAP Belize)

Dark Light SAP Blue Crystal SAP Belize	`<SAP standard theme>`	• *Index* and *New Tab* page: `<SAP standard theme>` • Service map: `<SAP standard theme>` if supported by the system • WDA/FPM applications: `<SAP standard theme>` if supported by the system • SAP Fiori apps: `<SAP standard theme>` Be aware that SAP Fiori apps only support sap_bluecrystal and sap_hcb; with SAP S/4HANA 1610 (and SAP_UI 3.0 SP00) sap_belize instead of sap_bluecrystal. Specification of different standard themes breaks the rendering.

Shell Setting	System Settings	Result
`<Custom theme>` (in older server runtime for SAP NetWeaver UI services versions, it might happen that only a fixed description "Custom" is available)	`<Custom theme>`	• *Index* and *New Tab* page: `<Custom theme>` • Service map: `<Custom theme>` • WDA/FPM applications: `<Custom theme>` • SAP Fiori apps:`<Custom theme>` if the base theme is supported by the front-end server's SAP UI5 version. If not, there will be rendering problems.
High Contrast (SAP Signature)	Not relevant	Consistently High Contrast Black (sap-theme=sap_hcb)
SAP High Contrast Black (Belize)	Not relevant	Consistently High Contrast Black (sap-theme=sap_belize_hcb)
SAP High Contrast White (Belize)	Not relevant	Consistently High Contrast White (sap-theme=sap_belize_hcw)

1.3.1.7.1 Best Practices

How do I Consistently Apply SAP Quartz?

> **Note**
>
> Due to the availability of the theme SAP Quartz for the embedded UI technologies, this is possible for Fiori front-end server 6.0 and SAP UI5 1.71 or higher.

1. Select *SAP Quartz* theme.
2. • Set *Use SAP GUI theme* to *False*,
   or
   • Set *Use SAP GUI theme* to *True* and in the SAP Logon / SAP GUI 7.70 options, select *Quartz Theme*.
3. In an SAP Business Client connection: Set the theme parameter in the NWBC server configuration to *sap_fiori_3 or sap_fiori_3_dark*.
   In a Fiori Launchpad connection: Configure SAP Quartz as theme in the SAP Fiori launchpad settings on the frontend server.
   The ICF logon screen does not provide an SAP Quartz version.

How do I Consistently Apply SAP Belize?

> **Note**
>
> Due to the availability of theme *SAP Belize* for the embedded UI technologies, this is only possible for SAP S/4HANA 1610 or higher application back ends and frontend server with SAP_UI 3.0 or higher.

1. Select *SAP Belize* theme.
2. - Set *Use SAP GUI theme* to *False*,
   or
   - Set *Use SAP GUI theme* to *True* and in the SAP Logon / SAP GUI options, select *Belize Theme*.
3. In an SAP Business Client connection: Set the theme parameter in the NWBC server configuration to *sap_belize*.
   In a Fiori Launchpad connection: Configure SAP Belize as theme in the SAP Fiori launchpad settings on the frontend server.
   The ICF logon screen does not provide an SAP Belize version.

How do I Consistently Apply SAP Blue Crystal?

> **Note**
>
> Due to the availability of this theme for the embedded UI technologies, this is only possible for application back ends/ front-end server with SAP_UI 7.50 or higher. SAP_UI 3.0 will no longer support SAP Blue Crystal.

1. Select *SAP Blue Crystal* shell theme.
2. - Set *Use SAP GUI theme* to *False*,
   or
   - Set *Use SAP GUI theme* to *True* and configure SAP Blue Crystal I the SAP GUI options.
3. Set the theme parameter in the NWBC server configuration to *sap_bluecrystal*.
   The ICF logon screen does not provide an SAP Blue Crystal version.

How do I Consistently Apply SAP Corbu?

1. Select *Dark* or *Light* shell theme.
2. - Set *Use SAP GUI theme* to *True* and configure SAP Corbu in the SAP GUI option,

   > **Note**
   >
   > For SAP NetWeaver 7.31 systems:
   >
   > - Set the theme parameter in the SAP BC server configuration to *sap_corbu*.
   > - You might be required to configure SAP Corbu at the SAP BC ICF service or alias for the ICF logon screen.

or

- Set *Use SAP GUI theme* to *False*.

How can I insert a company logo for SAP GUI screens?

> ⓘ Note
>
> This feature is available as of SAP GUI for Windows 7.60.

1. A custom company logo image must be defined in a custom theme.
2. Set *Use SAP GUI theme* to *False*.
   The image is provided to SAP GUI screens and is displayed in the page header. It overrides the branding image which may be defined in SAP Logon options. This feature is supported for both connections types, SAP Business Client and SAP Fiori launchpad.

1.3.2 Server Configuration

As of SAP User Interface add-on 1.0 SPS 04 for SAP NetWeaver and SAP NetWeaver 7.4 SPS 03, users can choose between two server runtimes to connect to a Web AS ABAP back end when using SAP NetWeaver Business Client (NWBC) and the NWBC connection type. This chapter describes the server configuration depending on the server runtime you choose. The server runtime is needed to transfer system and user data. The following two server runtimes are available:

- Server runtime for SAP NetWeaver user interface services
- Server runtime for SAP Business Client

The server runtime for SAP NetWeaver user interface services (UI services) is a newer runtime and as such provides additional features compared with the server runtime for SAP Business Client. Users working with SAP NetWeaver Business Client 4.0 for Desktop or higher, or SAP Business Client 3.6 for HTML can now connect to this new runtime. You can decide to continue using the server runtime for SAP Business Client or to switch to the new server runtime for SAP NetWeaver UI services.

> → Recommendation
>
> It is recommended to switch to the server runtime for SAP NetWeaver UI services because of the following reasons:
>
> - New UI services features can be applied to SAP Business Client.
> - New UIs and latest developments based on SAPUI5 and SAP Gateway can be used with SAP Business Client.
> - SAP NetWeaver UI services can be supported by the provision of small-sized support packages.
> - Features of a SAP Business Client version are guaranteed back end enabled.
> - New UI features are shipped with support packages within a few months.

Related Information

Server Runtime for SAP NetWeaver User Interface Services [page 130]
Server Runtime for SAP Business Client [page 159]

1.3.2.1 Server Runtime for SAP NetWeaver User Interface Services

The server runtime for SAP NetWeaver user interface (UI) services is an ABAP-based back-end component providing services that can be consumed by various types of application shells.

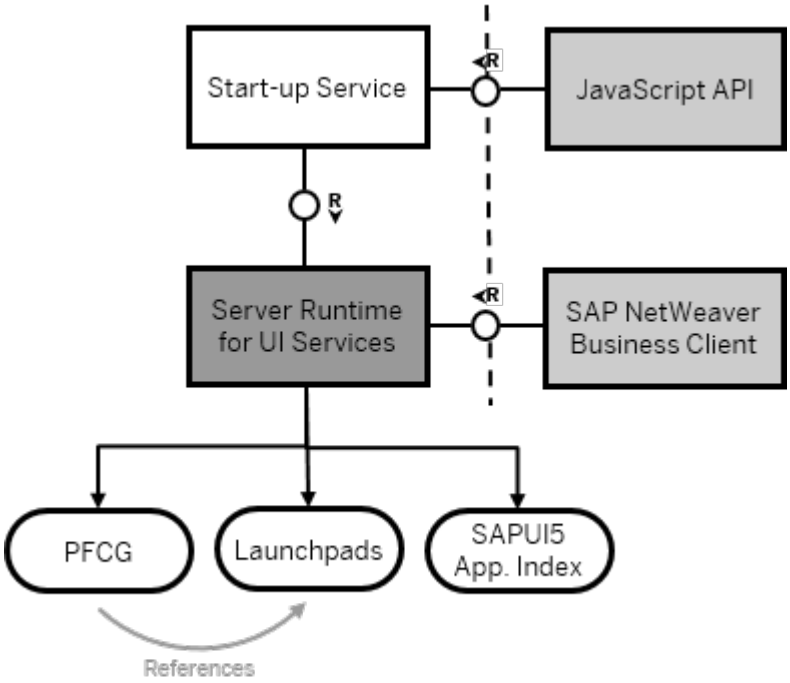
The server runtime provides capabilities to transfer user and system information as well as navigation menus to the UI client, to resolve navigation links, render service maps and much more. In addition, the new server runtime continues to provide support for the functionality available with the server runtime version 3.5 of SAP Business Client.

The server runtime for SAP NetWeaver UI services has the following capabilities:

- It provides a release-independent way to quickly deliver new features like theming capabilities to your system landscape.
- It allows for improved maintenance of SAP Business Client configuration parameters in Customizing using transaction `/UI2/NWBC_CFG_CUST`.
- It supports the existing side panel tagging configuration for an easy migration to the newer server runtime.
- It makes use of the SAPUI5 application index and requires that this index is always up to date. For more information about how to ensure this, for example about when the index is updated automatically and when you have to run the calculation report manually (and in what mode), see SAP Library for User Interface Add-On for SAP NetWeaver on SAP Help Portal. Under *Application Help*, open SAP Library and search for **`SAPUI5 Application Index`**.

> **Note**
>
> To ensure you can deploy the latest developments in your system (for example, adopting new features with SAP Business Client for Desktop or consuming new UIs based on SAPUI5 and SAP Gateway together with SAP Business Client), you need to connect to the server runtime for SAP NetWeaver UI services.
>
> SAP NetWeaver UI services are only supported for SAP NWBC 4.0 for Desktop or higher and NWBC 3.6 for HTML when you connect to the server runtime for SAP NetWeaver UI services.

The following diagram illustrates the current use case for the server runtime for UI services:



The JavaScript API allows you to develop an application shell with a menu tree. You define the structure of this menu tree in *Role Maintenance* (transaction `PFCG`). For this use case and for SAP NWBC 4.0 for Desktop or higher, the program type *Launchpad Reference* in `PFCG` is supported. This allows you to maintain the technical details for an application once in launchpad Customizing, and reference it from multiple `PFCG` roles.

Related Information

Configuring the Server Runtime for UI Services for SAP Business Client [page 133]
Migrating to the Server Runtime for UI Services [page 131]
Creating Launchpad References in Role Maintenance [page 158]
Definition of Configuration Parameters in Customizing [page 144]

1.3.2.1.1 Migrating to the Server Runtime for UI Services

This section describes which parts of the existing SAP Business Client configuration in `SAP_BASIS` you need to migrate for the system to work properly if you use the server runtime for SAP NetWeaver UI services.

You need to consider the following aspects for the migration:

- SAP Business Client configuration table (`NWBC_CFG`)
- SAP Business Client SAP GUI tag tables
- Client logon URLs

> **Note**
>
> The server runtime for SAP NetWeaver UI services is supported as of SAP NWBC 4.0 for Desktop or higher and NWBC for HTML 3.6.

SAP Business Client Configuration Table (NWBC_CFG)

Using the server runtime for SAP NetWeaver UI services with a version 3.6, you define configuration parameters in Customizing. If you connect to this server runtime version, the system no longer considers table `NWBC_CFG` that is used only with a version 3.5 of the server runtime. You must migrate configuration data manually from table `NWBC_CFG` to transaction `/UI2/NWBC_CFG_CUST` in Customizing under *SAP NetWeaver* > *UI Technologies* > *SAP NetWeaver Business Client*.

In Customizing, the following views form the equivalent of table `NWBC_CFG`:

- `/UI2/NWBC_CFGV`: Contains entries that are delivered by SAP
- `/UI2/NWBC_CFGCV`: Contains entries that are maintained by the customer
  These entries can supersede the entries delivered by SAP.

SAP Business Client SAP GUI Tag Tables

No manual migration is necessary. The data for SAP GUI tags that is evaluated when using the context-sensitive side panel continues to be read from the different tables that are used if you connect to the following versions of the server runtime:

- Version 3.5 of the server runtime for SAP Business Client (`SAP_BASIS`)
- Version 3.6 of the server runtime for SAP NetWeaver UI services

If you have already defined SAP GUI tags for the server runtime for SAP Business Client and you connect to the server runtime for SAP NetWeaver UI services, this data continues to be read from the `SAP_BASIS` tables:

- `NWBC_S_GUI_TAG`: Contains entries that are delivered by SAP
- `NWBC_C_GUI_TAG`: Contains entries that are maintained by the customer

In addition, the following tag views are available if you connect to the server runtime for SAP NetWeaver UI services:

- `/UI2/NWBC_V_GT`: Contains entries that are delivered by SAP
- `/UI2/NWBC_VC_GT`: Contains entries that are maintained by the customer

The entries are merged following this logic:

- The customer's entries supersede SAP entries.
- Entries for the server runtime for SAP NetWeaver UI services supersede `SAP_BASIS` entries.

In order to define SAP GUI tags for side panel applications, in *Customizing* (transaction `SPRO`), choose *SAP NetWeaver* > *UI Technologies* > *SAP NetWeaver Business Client* > *Define SAP GUI Tags (Runtime for SAP NetWeaver User Interface Services)*.

Client Logon URLs

Logon URLs stored in SAP Business Client for Desktop on the client-side work only if you connect to the server runtime for SAP Business Client. This is because the logon URLs point to the `SAP_BASIS` handler of SAP Business Client. Depending on whether logon URLs use the SAP Business Client external alias, you have the following options:

- Most of the time, logon URLs can be handled easily in the migration if they use the SAP Business Client external alias. You need to re-map the external alias /nwbc to **`sap/bc/ui2/nwbc`** instead of **`sap/bc/nwbc`**.
- You need to update logon URLs that do not use the external alias manually as shown in the following example:

> **Example**
>
> This is an example of a logon URL that does not use an external alias:
>
> https://<server>:<port>/sap/bc/nwbc/
>
> You need to change this URL as follows:
>
> https://<server>:<port>/sap/bc/ui2/nwbc/

Related Information

Server Runtime for SAP NetWeaver User Interface Services [page 130]
Configuring the Server Runtime for UI Services for SAP Business Client [page 133]
Definition of Configuration Parameters in Customizing [page 144]
Creating Tags in the Tag Table [page 265]

1.3.2.1.2 Configuring the Server Runtime for UI Services for SAP Business Client

With SAP Business Client, you can connect to systems based on SAP NetWeaver 7.4 or higher using both the server runtime for SAP NetWeaver user interface (UI) services and for SAP Business Client..

Context

To ensure you can deploy the latest developments in your system, you need to connect to the server runtime for SAP NetWeaver UI services.

Follow the instructions below to activate the server runtime for SAP NetWeaver UI services for use with SAP Business Client:

Procedure

- Activate the ICF node.

  The ICF tree contains a node for the SAP Business Client runtime by default under the path `/sap/bc/ui2/nwbc`. Ensure that this node is active to enable any SAP Business Client or previous SAP NetWeaver Business Client or SAP NetWeaver Business Client for HTML versions to access the server.
- Define SAP Business Client-specific configuration parameters (optional).

  Define configuration parameters, for example, branding image and custom theme, in Customizing using transaction `/UI2/NWBC_CFG_CUST` under *SAP NetWeaver* > *UI Technologies* > *SAP NetWeaver Business Client* > *Define SAP GUI Tags (Runtime for SAP NetWeaver user interface services)*.

  > **Note**
  >
  > This Customizing table is different from the configuration table used by version 3.5 of the server runtime for SAP Business Client.
- Define system connections in SAP Business Client.

  When configuring a system connection in SAP Business Client, specify the following path in the *URL* field:

  `/sap/bc/ui2/nwbc`

Related Information

Migrating to the Server Runtime for UI Services [page 131]
Definition of Configuration Parameters in Customizing [page 144]
Configuring System Connections [page 15]

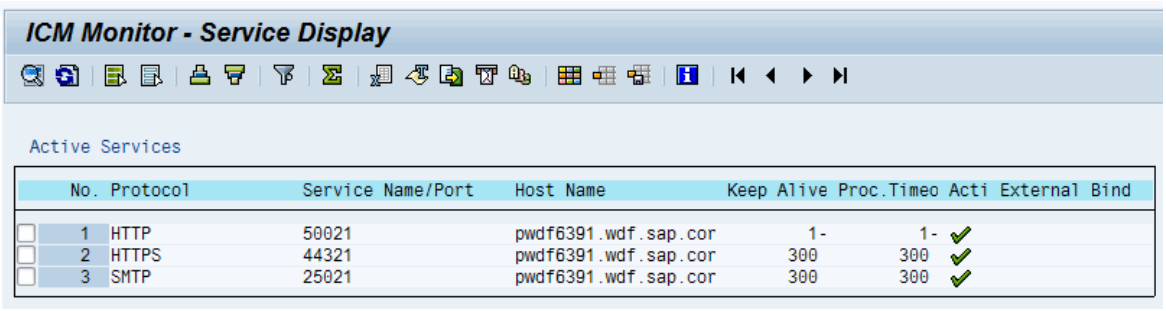
1.3.2.1.3 HTTP(S) Settings in ICM

Use

The Internet Communication Manager (ICM) enables communication between your SAP system and the Internet using the HTTP or HTTPS protocols for the SAP Business Client applications. SAP Business Client (both the shell and most content area types) uses HTTP to access an ABAP server. It is important that at a minimum one HTTP or HTTPS port is configured and active.

1. From the back-end system, go to the *ICM Monitor* (`SMICM`) transaction.
2. Choose *Goto* > *Services* to display the services configured in ICM.

The following figure shows an example of services in *ICM Monitor*:



3. If the HTTP or HTTPS service does not yet exist or you would like to make changes, you can create or edit a service by choosing *Service* > *Create* or *Service* > *Change* in the menu.
4. Enable or modify the HTTP or HTTPS port settings, if necessary.
5. Activate your HTTP or HTTPS service by choosing *Service* > *Activate*.

> ⚠ Caution
>
> Any changes you make here are lost when you restart. If you want to create or change a service permanently, you must do this using the profile parameter `icm/server_port_<xx>`.

SAP Web Dispatcher

A Web dispatcher can be placed before the AS ABAP system(s) to function as a reverse proxy. The Web dispatcher is then normally configured to access the server through HTTPS (for higher security) and to forward all data to the server through HTTP (for higher performance). In these scenarios, pay special attention to the configuration of the `HTTPURLLOC` table in accordance with the information in URL Generation in an AS-ABAP - Web Dispatcher Configuration.

Related Information

Using the ICM Monitor
Displaying and Changing Services
icm/server_port_<xx>
Maintaining Profiles

1.3.2.1.4 Active Services in ICF (UI Services)

Use

The Internet Communication Framework (ICF) allows you to communicate with the SAP system using Internet standard protocols (HTTP, HTTPS, and SMTP). In the ICF tree, the SAP Business Client runtime also has a node that is available by default under the path `/sap/bc/ui2/nwbc`. This node must be active to enable any SAP Business Client client to access the server.

Below the `nwbc` node, there are a number of nodes in the format `nwbc_*` that are used to limit access to specific SAP Business Client services. For more information, see SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com/netweaver and search for **`Internet Communication Framework`** and **`Active Services in SICF`**.

A subnode must be active so that the cockpit can work.

> **Note**
>
> The activation of ICF services for the server runtime for SAP NetWeaver UI services is required in the following instances:
>
> - When using the SAP Business Client connection type in SAP Business Client
> - When using the Fiori Launchpad connection type in SAP Business Client and using side panels for transactions
> - When using SAP NetWeaver Business Client 3.5 for HTML

The table shows the ICF nodes relevant for SAP Business Client:

Node	Representation in Browser	Description
`nwbc_api`	`/sap/bc/ui2/nwbc/~api`	SAP Business Client server runtime API services, e.g. for retrieving system and navigation information. Activation of this node is vital for SAP Business Client for Desktop and the SAP Business Client connection type.

Node	Representation in Browser	Description
`nwbc_launch`	`/sap/bc/ui2/nwbc/~launch`	Transaction `/UI2/NWBC` (started in the SAP GUI) displays a launch page with a complete list of all available cockpits and all roles that are assigned to the user. For more information, see Transaction /UI2/NWBC [page 157]. Effectively, the transaction starts the `nwbc_launch` node of SAP Business Client. For security reasons, the `~launch` page is controlled through the `nwbc_launch` node in the ICF tree and can be deactivated here. For more information, see ~launch Page (UI Services) [page 155]. If this node is **deactivated**, transaction `/UI2/NWBC` directly starts SAP NetWeaver Business Client 3.6 for HTML without allowing the user to select a specific cockpit. All roles are involved then.
`nwbc_test`	`/sap/bc/ui2/nwbc/~test`	This is an access channel that dumps, in raw format, all relevant trouble-shooting information that help to resolve a problem. The information from `~test` includes the complete SAP Business Client configuration, all roles assigned, and a large amount of user-relevant information. For more information, see ~test Page (UI Services) [page 154]. When SAP Business Client creates a support ZIP file, it also includes all this information, if available. This node can selectively be disabled. Activate this node in low security systems because the additional trou-bleshooting information from the server can help extensively. We recom-mend that you disable this node for high security systems or systems directly connected to the internet.
`nwbc_debug`	`/sap/bc/ui2/nwbc/~debug`	This node is used for internal development only. Therefore, make sure it is disabled in all productive systems. This allows you to run an alternative `$TMP` runtime for troubleshooting purposes.
`exprt_sapportal`	`/sap/bc/ui2/nwbc/~sapportal`	This node controls the activation of an API that can be used by SAP Net-Weaver Portal (SAP NetWeaver 7.02 or higher) to retrieve role informa-tion for using dynamically in an enterprise portal. For more informa-tion, see HTTP REST Based APIs [page 250] and SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com ▶ *SAP NetWeaver* ▶ *SAP NetWeaver 7.0 including Enhancement Package 2* ▶ *English* ▶ *SAP NetWeaver Developer's Guide* ▶ *IT-Scenario-Driven Enhancements to Applications* ▶ *Running an Enterprise Portal* ▶ *Reference* ▶ *Portal Web Services* ▶ *Navigation Web Service* ▶ *Navigation Data Types* ▶ *NavigationTreeRequest* ▶.

Node	Representation in Browser	Description
`nwbc_ext2int`	`/sap/bc/ui2/nwbc/nwbc_ext2int`	This node is used when data is to be displayed in a side panel. The node converts the external representation of UI elements to an internal representation. All remote systems must have a TRUST relationship to the SAP Business Client logon system. Otherwise the HTTP request doing the conversion fails. For more information about authentication, see Security Aspects [page 281] and SAP Note 1611298.
`nwbc_roletest`	`/sap/bc/ui2/nwbc/~roletest`	This node is used to test roles. You can start SAP Business Client with roles that are not assigned to your user, but only with display authorization. This node makes the *Other* section on the `~launch` page visible. For more information, see ~launch Page (UI Services) [page 155]. This node is used for internal development only. Therefore, make sure it is disabled on all productive systems.

Web Dynpro ABAP, SAPUI5, and BSP

For SAP Business Client applications based on Web Dynpro ABAP, SAPUI5, or BSP, the relevant nodes must be active in the ICF service tree.

- For more information about Web Dynpro ABAP settings, see *Initial Configuration Settings* in Initial System-Wide Configuration Settings for Web Dynpro ABAP and Active Services in SICF.
- For more information about BSP settings, see *Prerequisites* in Business Server Pages Administration.

Activities

1. From the back-end system, go to the *ICF service tree* (`SICF`) transaction.
2. Set the *Hierarchy Type* to *SERVICE* and choose *Execute* (F8).
3. Expand the nodes under *default_host*.
   To access the cockpit subnode for SAP Business Client, navigate to the following directory: `default_host/sap/bc/ui2/nwbc`.
4. Select the relevant service node(s) and choose *Service/Host* > *Activate*.

Related Information

Cockpits [page 143]
ICF Configuration [page 293]
Active Services in SICF

1.3.2.1.5 Settings for Fully Qualified Domain Names

Use

Fully qualified domain names (FQDN) are strictly required to ensure that SAP Business Client runs smoothly. This is also the case for BSP and Web Dynpro ABAP.

FQDNs are necessary for the following reasons:

- One domain is required with which cookies can be set domain-wide, for instance, `MYSAPSSO2` cookies.
- A domain relaxation code is required for cross-frame JavaScript.
- In an HTTPS environment, client and server names must correspond to each other for certificates and for the SSL protocol.

> ⓘ Note
>
> The domain in which AS ABAP is run is not necessarily the FQDN used to access AS ABAP from the browser. A typical example is an AS ABAP system that runs both in the Intranet and in the Internet. In a case like this, the FQDN is determined by the position of the browser relative to this AS ABAP system and not by the AS ABAP system itself.

Activities

1. Go to the *Maintain Profile Parameters* (`RZ10`) transaction and select the profile for the application server instance.
2. To modify the profile in the *Extended maintenance* mode, select *Extended maintenance*.
3. Configure the `icm/host_name_full` parameter with the fully qualified host name for the server.
   For more information, see online help for icm/host_name_full.
4. Save your settings.
5. Restart your system.

   > ⓘ Note
   >
   > All parameter changes require a restart of the system before taking effect.
6. Open the following test page through a browser to verify that the fully qualified name is working properly:
   `http://<FQDN>:<PORT>`

Host Name Conventions

If authentication using single sign-on or stateful applications is not working, it is often because the host and/or domain names do not reflect standard naming. There are Internet standards that define the naming conventions for domain names. It often comes down to a question of how strictly your browser implements the rules.

Summary of the rules:

- Domains with the extensions `com`, `edu`, `net`, `org`, `gov`, `mil`, or `int` must contain at least one additional domain part.
  This is normally the name of the company or organization.
- Domains with other extensions, including national top-level domains such as `de`, `uk`, or `fr`, must have at least two additional domain parts.
  In the case of top-level domains for countries, browsers often accept domains with just one additional domain part. However, for other, non-standard top-level domains, two additional domain parts are required.

> ⚠ Caution
>
> Underscores (_) are **not** supported for host names.

For more information, see 654982

Related Information

Fully Qualified Domain Names (FQDN)

1.3.2.1.6 Configuring Authentication on the Server

Authentication Against an ABAP System

To access a Web application, AS ABAP uses the HTTP framework from Internet Communication Manager (ICF) that provides functions for defining the logon procedure. For more information, see *Maintaining Logon Procedures* below.

A simple process is available for configuring the system logon. In addition, you can customize the logon information according to your needs, for example, system ID, client, language, system messages, logon, and system information. For more information, see *Creating and Configuring ICF Services* under *Communication between ABAP and Non-ABAP Technologies* below.

With this, authentication against an ABAP system reduces to the normal authentication process as is standard for all Web-based applications on an ABAP stack, for example, BSP and Web Dynpro ABAP.

Settings for the Configuration for SSL support are particularly important for security with AS ABAP. For more information, see *Configuring the AS ABAP for Supporting SSL* under *Network and Communication Security* below. The logon ticket cache function is provided for increasing performance when multiple logons exist.

HTTPS Settings (SSL)

1. Install and configure `SAPCRYPTOLIB`.
2. Configure SSL in the *Trust Manager* (`STRUST`) transaction.
3. Run the following test calls through a browser to verify that the HTTPS settings are configured correctly:
   `https://<server>:<port>/`

More Information

The *SAP NetWeaver Security Guide* includes the useful topics below. This guide is available in the SAP NetWeaver library in the SAP Help Portal (http://help.sap.com/netweaver); choose *(relevant) SAP NetWeaver Platform* > *Security Information* > *Security Guide*:

- *User Administration and Authentication*:
  - *User Authentication and Single Sign-On*
- *Network and Communication Security*:
  - *Transport Layer Security* (containing links to *Secure Sockets and SNC*, *Configuring the AS ABAP for Supporting SSL*
- *Security Guides for SAP NetWeaver Functional Units*:
  - *Security Guides for the Application Server*:
    - *Security Guides for ASAP*:
    - *SAP NetWeaver Application Server for ABAP Security Guide*:
      - *User Administration and Authentication*, *Integration in Single Sign On Environments*, *Logon Tickets*, *Using Logon Tickets with AS ABAP*
    - Security Guide: *Web Dynpro ABAP*

Alternatively, you can search for the above terms directly in the SAP Help Portal.

See also SAP Notes 1302734 and 1257108 and https://wiki.sdn.sap.com/wiki/display/BSP/Cookie+Problems.

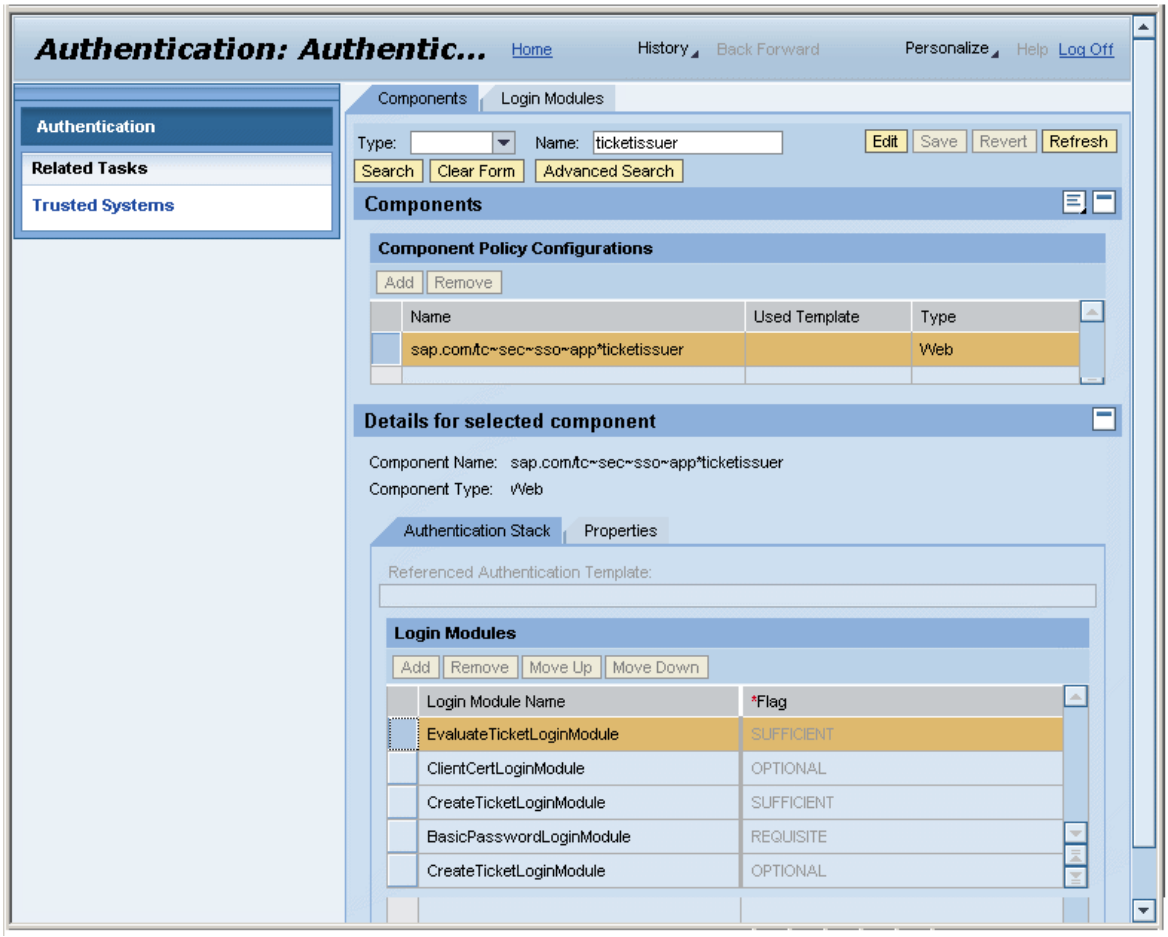
Authentication Against a Portal System

SAP Business Client uses the **Ticket Issuer** to log on to the J2EE server. The logon must be properly configured in the J2EE engine for this to work correctly.

1. Call the SAP NetWeaver Administrator.
2. Go to *Configuration Management*.
3. Choose *Authentication*.
4. Select component *sap.com/tc~sec~sso~app*ticketissuer*.
5. Enter the following as the assigned *login modules*:

Login Module Name	Flag
`EvaluateTicketLoginModule`	`SUFFICIENT`
`ClientCertLoginModule`	`OPTIONAL`
`CreateTicketLoginModule`	`SUFFICIENT`
`BasicPasswordLoginModule`	`REQUISITE`
`CreateTicketLoginModule`	`OPTIONAL`

This may appear as shown in the figure below:



More Information

The *SAP NetWeaver Security Guide* includes the useful topics below. This guide is available in the SAP NetWeaver library in the SAP Help Portal (http://help.sap.com/netweaver); choose *(relevant) SAP NetWeaver Platform* > *Security Information* > *Security Guide*:

- *Portal Security Guide*
- *SAP NetWeaver Application Server for ABAP Security Guide* including the following topic:
  - *Using Logon Tickets with AS ABAP*
- *SAP NetWeaver Application Server for Java Security Guide* including the following topics:
  - *Transport Layer Security on the SAP J2EE Engine*
  - *Configuring the Use of SSL on the J2EE Engine*

Alternatively, you can search for the above terms directly in the SAP Help Portal.

1.3.2.1.7 Cockpits

Use

When users log on to an AS ABAP system, they see all roles that are assigned to their user name in the system. This is the expected default behavior when the user logs on to SAP Business Client. However, in many cases, a user wants SAP Business Client to display a mini-application that consists of a small number of roles. It should only display the roles belonging to its application (the roles that are tailored to the specific task and that are tested and documented together). The new development of a solution management process can serve as an example here: All of the roles can be given an indicator specifying that they belong to a certain cockpit.

As soon as the user accesses the system using the SAP Business Client cockpit, only the roles assigned to that cockpit are sent to the client and displayed. This means that the user has a restricted view of the specific roles that belong to the displayed application. For more information, see Menu Options [page 189].

A cockpit is simply the name of an application that consists of one or more roles. From a **technical** point of view, a cockpit is defined as a node in the ICF service tree. This is the central point of access to the application and to AS ABAP. As soon as a request for a cockpit is received, all roles that are assigned to the current user run through a filter. Only a small subset of roles that are assigned to the specific cockpit are output. However, if no special roles are assigned, a general cockpit is displayed. In this case, all roles that are not assigned to a specific cockpit are made available on the client. This gives the user a generic view of all roles that are normally visible, without the roles of the mini-application. For more information, see Creating and Configuring ICF Services.

From a **security** point of view, cockpits have an extremely important role. A cockpit is a central point through which an application within AS ABAP can be accessed if it is active.

The ICF node of the relevant cockpit must be active to enable access to AS ABAP by using the cockpit path. This technology is similar to the procedure for BSP applications or Web Dynpro ABAP applications. The cockpit node must be active in the ICF service tree for the logical application with which the cockpit is associated to be active. For more information, see Activating and Deactivating ICF Services.

In summary, a cockpit can be seen as a logical application that filters all roles assigned to the user so that only the roles that belong to the application remain.

Activities

Make sure that the following activities are carried out for cockpits:

1. Define new cockpits by creating a new ICF node beneath your handler node in the ICF service tree. For more information, see Create Service.
   Example path specifications for SAP cockpits: `/sap/bc/ui2/nwbc/ess`
2. All cockpits are logical entries that must be activated.
   For more information, see Menu Options [page 189].
3. Define all roles that belong to each cockpit and provide them with indicators accordingly.
   For more information, see Menu Options [page 189].

Setting Up a Cockpit

> → Recommendation
>
> We recommend application groups and customers **not** to work under the path `/sap/bc`. If necessary, you can create new paths.

1. Define the access path to your cockpit in the HTTP service tree.
   The path must take the form `.../ui2/nwbc/<cockpit name>`.
   Example: `/sap/bc/ui2/nwbc/mycockpit`
   1. Create the path in transaction *HTTP Service Hierarchy Maintenance* (`SICF`).
   2. Configure the `UI2/CL_NWBC_HTTP` handler for the `nwbc` node.
   3. Activate the system logon for the `nwbc` node.
      For more information, see System Logon.
2. Assign roles to users.
   For more information, see *Creating and Editing User Master Records* in the section *Identitiy Management* in the SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com/netweaver.

1.3.2.1.8 Definition of Configuration Parameters in Customizing

You define configuration parameters for versions of SAP Business Client that connect to the server runtime for SAP NetWeaver user interface services in *Customizing*.

In *Customizing* under *SAP NetWeaver* > *UI Technologies* > *SAP NetWeaver Business Client* >, use transaction `/UI2/NWBC_CFG_CUST` to define configuration parameters for versions of SAP Business Client that connect to the server runtime for SAP NetWeaver UI services, for example the `THEME` or `WELCOME_MESSAGE`.

You can perform the following steps in Customizing:

- Define names for configuration parameters
- Assign values to the configuration parameters

You can define configuration parameters in Customizing using the following transactions:

- **SAP Business Client Configuration: Define Parameter Names (transaction `/UI2/NWBC_CFG_PARAMS`)**
  This table defines which configuration parameters are available and allows you to define names for configuration parameters and whether they should be translatable.
- **SAP Business Client Configuration: Maintenance (transaction `/UI2/NWBC_CFG_CUST`)**
  You use this table to assign concrete values to configuration parameters.
  This table allows you to make settings for the following configuration parameters:
  - parameter name (for example, `WELCOME_MESSAGE`)
  - parameter value (empty for translatable parameters)
  - translated parameter value (relevant only if you select the *Translatable* checkbox, for example, Welcome <User Name>)

SAP delivers some parameters with predefined values. This data is available via transaction `/UI2/NWBC_CFG_SAP`. As a customer you can define the same parameters with a different value in transaction `/UI2/NWBC_CFG_CUST`. The system always prefers the values that you have defined.

> **Note**
>
> Data from table `NWBC_CFG` used with a server runtime of version 3.5 is not migrated to the transactions in Customizing. If you use the server runtime for SAP NetWeaver user interface services 3.6, you have to enter your data again.

The following parameters are supported for configuration of SAP Business Client for Desktop:

Name	Translatable	Description
`BRANDING_IMAGE`	no	A branding image is typically a corporate logo that SAP Business Client displays on the *Index* and the *New Tab* page instead of the SAP logo. This can be a small PNG or JPG image. The height should be limited to a maximum of 66 pixel. The value field is a URL that refers directly to the image. It must be ensured that the image can be loaded without authorization.
`BRANDING_URL`	no	If this parameter is configured, the branding image is clickable, and clicking the branding image navigates to this URL. The value is the URL that must be started. Typically, this is the corporate portal page of the company, which is then loaded.
`THEME`	no	The default theme is *sap_belize*. An administrator selects an SAP theme, or a custom theme created with UI theme designer. When the user logs on to the role or cockpit associated with this theme in the back end, SAP Business Client with its overview pages, all Web Dynpro ABAP applications, and service maps are rendered using the specified theme. When configuring a custom theme, specify the theme ID here.

Name	Translatable	Description
`USE_THEMES`		This parameter defines which of the available themes are provided within the end user's settings selection. **Note** For SAP BC connections, the content of the dropdown menu within the end user's Settings dialog depends on both parameters, `THEME` and `USE_THEMES`. You find a detailed description of the respective dependency in chapter Theme Configuration - SAP Business Client Connection [page 151].
`WELCOME_MESSAGE`	yes At runtime, the system selects the welcome message in the logon language. If no matching language entry is found, the default message is used.	The welcome message is displayed on the *Index* page and replaces the default text "Here you can find all the information about your business". You can use the following placeholders in the text: • `&NAME&`: first name • `&SURNAME&`: last name • `&FULL_NAME&`: full name • `&USER&`: user name • `&CLIENT&`: client • `&SYSTEM&`: system ID
`CACHE_DISCRIMINATOR`	no	SAP Business Client for Desktop indefinitely caches the complete navigation tree for the end user locally on the desktop. Only when a role is changed, a new navigation tree is downloaded. However, there can be specific reasons one would like to force all desktop clients to dynamically reload their caches. The approach taken is to encode this random configuration string into the cache key. As long as the string is not configured or stably configured, it has no influence on the caching of SAP Business Client for Desktop. As soon as the string gets a new and different random string, it changes the cache key, causing SAP Business Client for Desktop to reload the caches. This parameter is not needed in productive use, unless explicitly so requested from a support process to resolve specific types of problems. You can use any character string. We recommend that you use three-digit numbers.

Name	Translatable	Description
USE_BROWSER_CACHE	optional	The following applies for this parameter: • Relevant for HTML sites of SAP NetWeaver Business Client 3.6 for HTML and for service maps used in SAP Business Client for Desktop • Possible values are ON and OFF (OFF is the default). This parameter offers the following enhancements: • Accelerated responsiveness of HTML pages • Less back end CPU usage • Reduced network traffic **⚠ Caution** The HTML sites of the SAP NetWeaver Business Client 3.6 for HTML might contain security-relevant data. Therefore, we recommend that you take appropriate measures to secure your data, for example hard disk encryption.

The following parameters are supported for configuration of SAP NetWeaver Business Client 3.6 for HTML:

Name	Translatable	Description
BRANDING_IMAGE	no	A branding image is typically a corporate logo that SAP Business Client is displayed on the lower part of the navigation panel (when visible). This can be a small PNG or JPG image. The value field is a URL that refers directly to the image. It must be ensured that the image can be loaded without authorization.
BRANDING_URL	no	If this parameter is configured, the branding image is clickable, and a click on the branding image navigates to this URL. The value is the URL that must be started. Typically, this is the corporate portal page of the company, which is then loaded.

Name	Translatable	Description
`THEME`	no	The default theme is *sap_corbu*. An administrator selects an SAP theme, or a custom theme created with UI theme designer. When the user logs on to the role or cockpit associated with this theme in the back end, SAP Business Client with its overview pages, all Web Dynpro ABAP applications, and service maps are rendered using the specified theme. When configuring a custom theme, specify the theme ID here.
`WELCOME_MESSAGE`	yes At runtime, the system selects the welcome message in the logon language. If no matching language entry is found, the default message is used.	The welcome message is displayed in SAP NetWeaver Business Client 3.6 for HTML next to the *Log Off* pushbutton. You can use the following placeholders: • `&NAME&`: first name • `&SURNAME&`: last name • `&FULL_NAME&`: full name • `&USER&`: user name • `&CLIENT&`: client • `&SYSTEM&`: system ID
`COCKPIT_TITLE`	yes	This parameter is only used in rare cases where a cockpit wishes to create a "product" approach. In such cases, this parameter can be used to configure a string that is displayed on the shell.
`LOGOFF_URL`	no	After a logoff sequence, if a logoff URL is specified, the browser navigates to this page.

Name	Translatable	Description
FORCE_BROWSER_STANDARD_MODE	no	Use this parameter to force an application to be rendered with the newest available rendering engine. SAP NetWeaver Business Client 3.6 for HTML uses the Internet Explorer 8 rendering engine by default. The following applies for this parameter: • Relevant for Internet Explorer 9 or higher • Possible values: An ABAP-regular expression that describes an application URL. If the pattern of the regular expression matches an URL, the entire SAP Business Client page (the top frame and with this also the application included in an IFrame) is rendered with the newest rendering engine (IE=edge). **Example** */sap\.com|/ui5_ui5/* : This regular expression matches any URL that contains the string */ui5_ui5/* or *sap.com*. **Caution** An entry is already available in the configuration delivered by SAP (transaction `/UI2/NWBC_CFG_SAP`). The system always prefers the values that you have defined. If SAP entries should not be lost, we recommend that you copy them to the new entry.

Name	Translatable	Description
USE_BROWSER_CACHE	optional	Use this parameter to store HTML pages in SAP NetWeaver Business Client 3.6 for HTML in the browser cache. This parameter offers the following enhancements: • Accelerated responsiveness of HTML pages • Less back-end CPU usage • Reduced network traffic The following applies for this parameter: • Relevant for HTML sites of SAP NetWeaver Business Client for HTML (version 3.6 or higher) and for service maps used in SAP Business Client for Desktop (version 3.5 or higher) • Possible values are ON and OFF (OFF is the default). **⚠ Caution** The HTML sites of the SAP NetWeaver Business Client 3.6 for HTML might contain security-relevant data. Therefore, we recommend that you take appropriate measures to secure your data, for example hard disk encryption.

The following parameters are supported for configuration of the ~launch page:

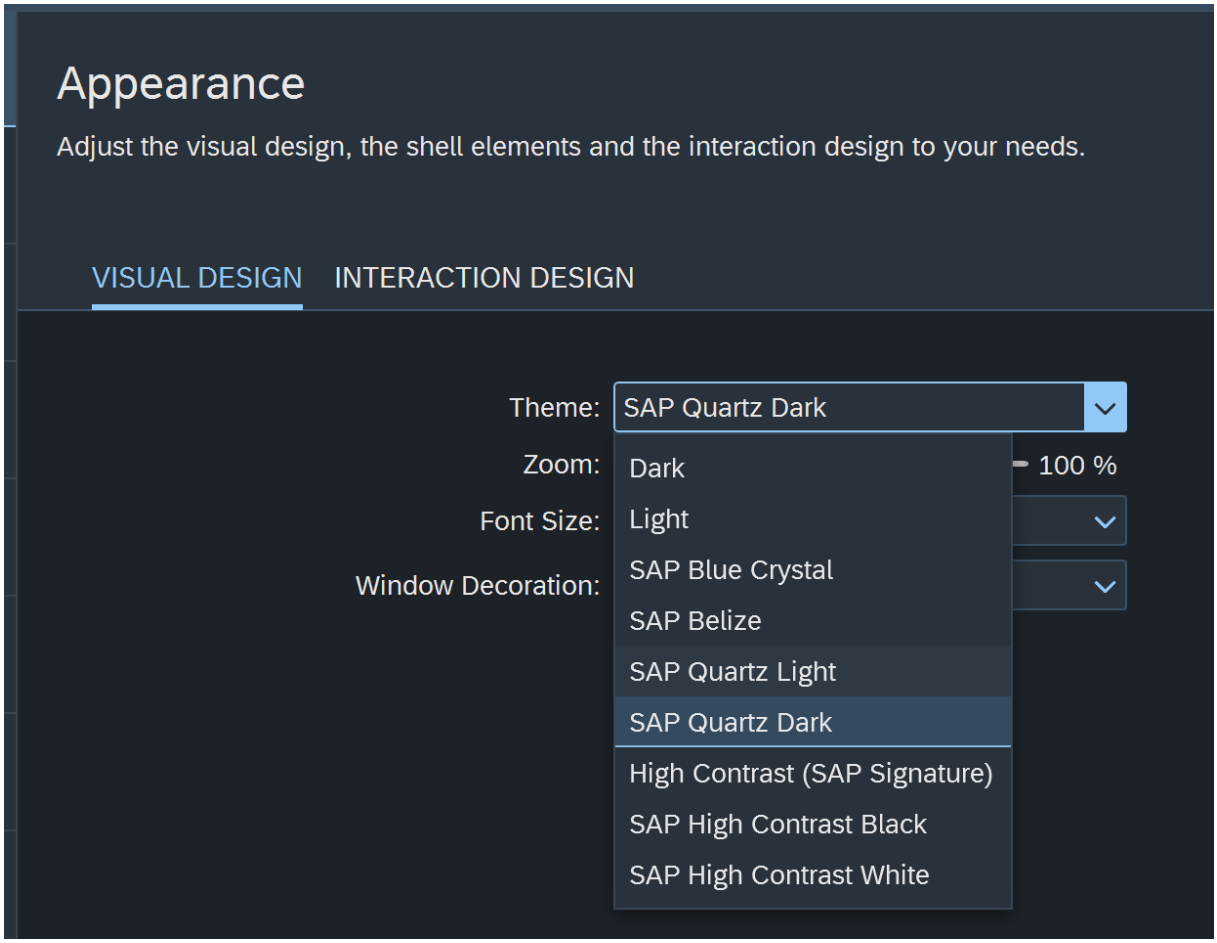
Name	Translatable	Description
INSTALL_DIRECTORY	no	A link that is displayed at the bottom of the ~launch page. The link allows users to quickly get a reference to a location from which SAP Business Client for Desktop can be installed. This link could refer to a wiki, a file share, even to the mime repository on the local server. We recommend that the URL itself refers to an HTML page because it is started in a browser window.
INSTALL_DESCRIPTION	yes	Text rendered for the INSTALL_DIRECTORY link on the ~launch page.

Related Information

Server Runtime for SAP NetWeaver User Interface Services [page 130]
Migrating to the Server Runtime for UI Services [page 131]

1.3.2.1.8.1 Theme Configuration - SAP Business Client Connection

Use



The theme selection within the end user's dialog *Settings* > *Appearance* (see Appearance [page 24]) depends on the combination of the two back end parameters `THEME` and `USE_THEMES`.

This chapter gives a structured overview on this dependency.

Parameter THEME

This parameter describes the basically available themes, its possible values are the technical name of the themes. The possible values can be divided into two different groups:

- Custom themes: Themes provided by the customer (e.g. **`my_company_theme`**)
- SAP themes: Themes provided by SAP. The naming convention here always is **`sap_*`** (e.g. **`sap_belize`**).

Finally parameter `THEME` may also be not specified at all.

Parameter USE_THEMES

This parameter describes which group of available themes are offered to the end user. It may have two different values:

- **`CUSTOM`**
- **`ALL`**

Finally parameter `USE_THEMES` may also be not specified at all.

How the different Combinations of THEME and USE_THEMES result in the end user's options

`THEME` not specified

1. `USE_THEMES`: not specified
   If both parameters are not specified at all, the dropdown menu in the end user's dialog *Settings* > *Appearance* offers the SAP standard themes. The initial theme applied after logon is theme Quartz Light/Dark, depending on your operating system settings. The theme will be kept per connection for future logons.
2. `USE_THEMES`: **`CUSTOM`**
   The themes are offered in the following order:
   1. all custom themes
   2. all standard **high contrast** themes provided by SAP Business Client

   All other standard themes provided by SAP Business Client **are hidden**. Initial theme which applied after logon is the first custom theme (if available). The theme will be kept per connection for future logons.

   > **Note**
   >
   > If no custom theme is available, the initial theme applied after logon is theme *SAP Quartz Light/Dark* (see 1.)
3. `USE_THEMES`: **`ALL`**
   The themes are offered in the following order:
   1. all custom themes
   2. all standard themes provided by SAP Business Client

   The initial theme applied after logon is the first custom theme (if available). The theme will be kept per connection for future logons.

THEME is set to a specific custom theme (e.g. `my_company_theme`)

1. USE_THEMES: not specified
   The themes are offered in the following order:
   1. the specified custom theme
   2. all standard **high contrast** themes provided by SAP Business Client:
2. USE_THEMES: **`CUSTOM`**
   The themes are offered in the following order:
   1. **all** custom themes (although only one is specified in parameter THEME)
   2. all standard **high contrast** themes provided by SAP Business Client

   The initial theme applied after logon is the specified custom theme. In this case, the theme will be kept per connection for future logons.
3. USE_THEMES: **`ALL`**
   The themes are offered in the following order:
   1. all custom themes
   2. all standard themes provided by SAP Business Client

   The initial theme applied after logon is the custom theme specified by parameter THEME. The theme will be kept per connection for future logons.

THEME is set to a specific SAP theme (`sap_*`)

1. USE_THEMES: not specified
   All standard themes provided by SAP Business Client are offered. The initial theme applied after logon is the specified SAP theme. The theme will be kept per connection for future logons.

   > **Note**
   >
   > If parameter THEME is set to **`sap_*`**, this influences rendering of Web Dynpro ABAP content pages as this value will always be forwarded as sap-theme url parameter even if user selects a different theme in the **Appearance** dialog, e.g. **`sap-theme=sap_belize`**. This may lead to unexpected results and differences in the theme rendering of SAP Business Client shell and content pages.
2. USE_THEMES: **`CUSTOM`**
   The themes are offered in the following order:
   1. **all** custom themes (although only one is specified in parameter THEME)
   2. all standard **high contrast**: themes provided by SAP Business Client

   The initial theme applied after logon is the first custom theme (if available). Only of no custom theme is available the SAP theme set in parameter THEME is used as initial theme. The initial theme applied after logon will be kept per connection for future logons.

   > **Note**
   >
   > This is an exceptional case: If custom themes are available, the first one is initially applied and the default SAP theme will be ignored.
3. USE_THEMES: **`ALL`**
   The themes are offered in the following order:
   1. all custom themes
   2. all standard themes provided by SAP Business Client

   The initial theme applied after logon is the SAP theme specified by parameter THEME. The theme will be kept per connection for future logons.

1.3.2.1.8.2 Theme Configuration - SAP Fiori Launchpad Connection

Use

1. SAP Business Client consumes the theme selected in SAP Fiori launchpad and reacts accordingly to the theme selection.
2. SAP Business Client doesn't offer a *Theme* selection option in its *Settings* > *Appearance* dialog. Users can only select themes in the SAP Fiori launchpad.
3. The selected theme is kept per connection and restored before logon. After logon, the theme selected in the SAP Fiori launchpad is applied.

1.3.2.1.9 ~test Page (UI Services)

Use

The `/sap/bc/ui2/nwbc/nwbc_test` (`/sap/bc/ui2/nwbc/~test`) page shows all cockpits and roles assigned to a user. This page is important when resolving possible problems. It provides a view of all the data that is gathered by the SAP Business Client runtime before sending it to the client. This is a direct output of the data and identical to the data that is sent to the client. The `~test` page allows you to isolate whether errors are already on the server or only later at the client.

Access to the `~test` page is controlled through the ICF node `nwbc_test`. For more information, see ICF Configuration [page 293]. Additionally, clients read this page (if active and available) to include all server-relevant information in a ZIP file when gathering information for a problem ticket.

You can launch the `~test` page by pasting **`~test`** at the end of the HTTP URL that you use to connect to the server. Then copy this URL and paste it into a browser. The `~test` page is displayed. For more information, see Configuring System Connections [page 15].

Example:

`http(s)://<server>.<domain>.<ext>:<port>/sap/bc/ui2/nwbc/~test`

The `~test` page contains the following information:

Type of Information	Description
Trouble shooting information	User information, HTTP information, single sign-on, PFCG, roles, local configuration

Type of Information	Description
System information	Runtime version, base URL, fully qualified base URL, fully qualified domain name
User information	User settings in *User Maintenance* (`SU01`)
Configuration information	Entries in table `NWBC_CFG` and `NWBC_CFG_SAP`. For more information, see SAP Business Client configuration parameters such as `WELCOME_MESSAGE` or `THEME` in Definition of Configuration Parameters in Customizing [page 144].
Cockpits information	Names and paths of the different cockpits
Roles information	Roles assigned in `PFCG`
Navigation tree	
OBN targets	
Cockpits with roles	

> ⚠ Caution
>
> The `~test` gathers extensive server side information to help in trouble shooting. We recommend that you disable this node in highly secure productive systems or systems attached directly to the internet. If in doubt, disable this node.

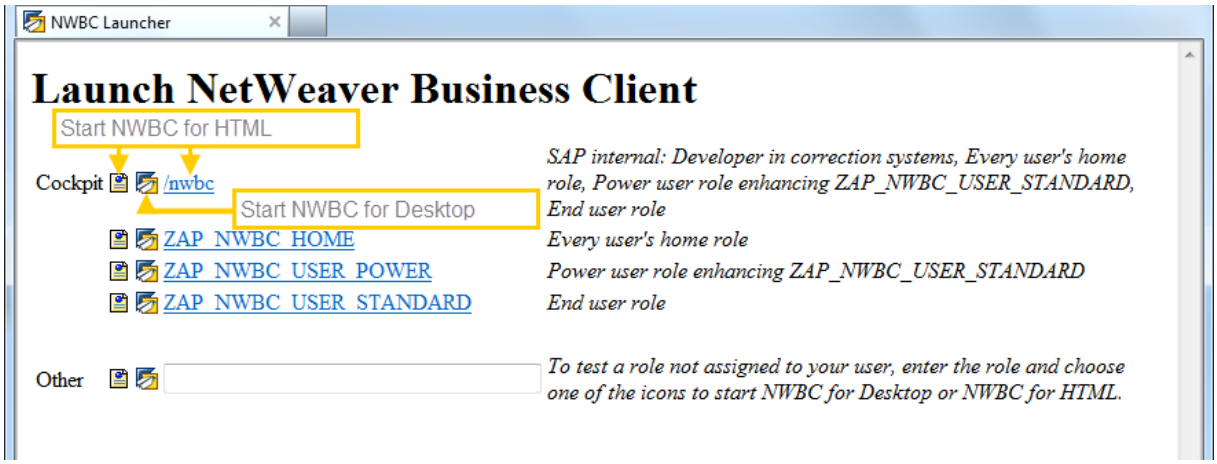
1.3.2.1.10 ~launch Page (UI Services)

You can start the `~launch` page with transaction `NWBC`. The availability of the `~launch` page is controlled with ICF node `nwbc_launch`. If this node is disabled in the ICF service tree, transaction `/UI2/NWBC` directly starts SAP NetWeaver Business Client 3.6 for HTML.

The `~launch` page shows all available cockpits and all roles that the user has assigned for this cockpit. Therefore, this `~launch` page gives a user an overview of the available cockpits (that are active in ICF) with the specific roles that can be reached through each cockpit.

> ⓘ Note
>
> All roles assigned to a user are displayed next to the */nwbc* node.

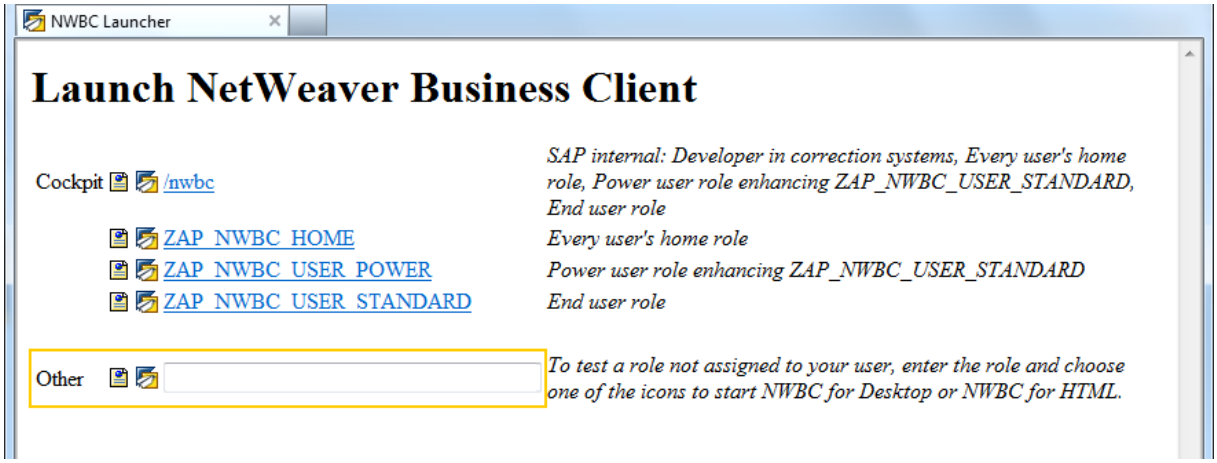
The ~launch page also offers the option to start either SAP Business Client for Desktop or SAP NetWeaver Business Client 3.6 for HTML. The first icon starts SAP NetWeaver Business Client 3.6 for HTML and the second icon starts SAP Business Client for Desktop. This concept is illustrated by the following figure:



> **Note**
>
> If you use role names that contain special characters, for example “/”, “?”, and “=”, you cannot start SAP Business Client from the ~launch page. For more information, see 1826609.

Other

By clicking the link under *Other*, you can start a role that is not assigned to your user. You can use this link to test the role. However, only the navigation tree is shown in SAP Business Client, no authority objects from the role are assigned to the user. Enter the role name into the field and click one of the icons.



Related Information

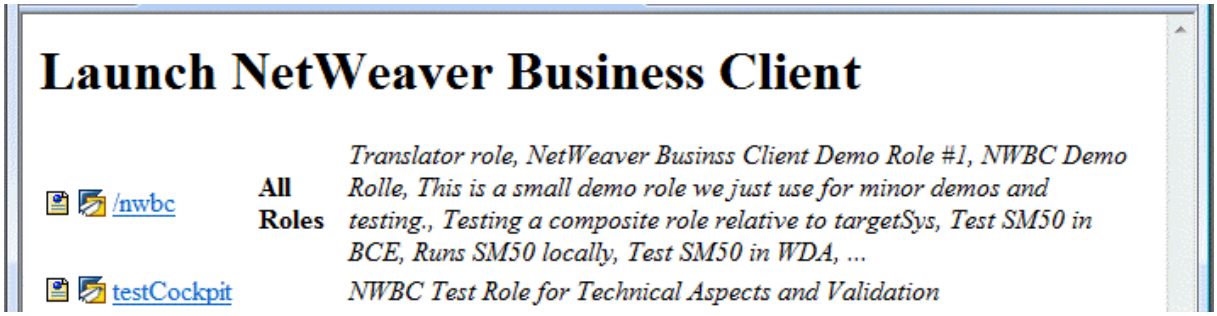
Active Services in ICF (UI Services) [page 136]
Transaction /UI2/NWBC [page 157]

1.3.2.1.11 Transaction /UI2/NWBC

Use

In all SAP NetWeaver AS ABAP systems, you can start the *Launch NWBC* (`/UI2/NWBC`) transaction by entering **`/n/UI2/NWBC`** in the command prompt field.

This transaction code starts the `~launch` page in the browser, that is, a separate browser instance is started.



The benefit of this function is that you do not need to look up HTTP ports, and so on. Within the `~launch` page, all configured cockpits in this system with the list of associated roles are displayed. All cockpits for which the user has no roles are filtered.

- The first icon starts SAP NetWeaver Business Client 3.6 for HTML.
- The second icon starts SAP Business Client for Desktop.

Transaction `/UI2/NWBC` uses class `CL_GUI_HTML_VIEWER` to start the URL in the browser. This class starts the URL with Microsoft Internet Explorer (IE) installed, even if another browser is defined as the default browser. The reason for this is that the class contains additional logic to insert authentication information from the running SAP GUI session into the Microsoft Internet Explorer instance when started, so that, by default, the browser runs with the same user name and client as the active SAP GUI session.

Related Information

~test Page (UI Services) [page 154]
~launch Page (UI Services) [page 155]
ICF Configuration [page 293]

1.3.2.1.12 Creating Launchpad References in Role Maintenance

Launchpad references in *Role Maintenance* (transaction PFCG) enable you to organize applications and menu trees according to the following concept.

- You use **launchpads** (transaction LPD_CUST) as a repository for **applications**.
  This is the location where you specify the technical details for calling an application. For each application, these only need to be specified once.
- You use **Role Maintenance** (transaction PFCG) as a repository for role-specific **menu trees**.
  These menu trees represent a navigation hierarchy where users who are assigned to the respective role can navigate to applications.

The benefit of this approach is that you can reference a launchpad application from multiple roles. The technical details for each application only need to be specified once. If you implement a new version of an application, you only need to edit the launchpad entry in order to see the new version in all roles that reference it.

> **Note**
>
> The program type *Launchpad Reference* in *Role Maintenance* is supported by the start-up service only. For more information on the start-up service, see the *UI Add-On Developer Guide*.

Procedure

1. In *Role Maintenance* (transaction PFCG), choose the *Menu* tab.
2. Select a folder where you want to add an application.
3. Choose , and select program type *Launchpad Reference*.
4. In the dialog box that appears, enter the following data:

Field	Description
Launchpad Role	Technical name of a role as defined in transaction LPD_CUST
Launchpad Instance	Technical name of an instance as defined in transaction LPD_CUST
Application ID or *Application Alias*	Enter either an application ID or an application alias. To display application IDs in transaction LPD_CUST, choose *Extras* > *General Settings*, and select *Show Application IDs*.
Short Text	Enter a text as it should be displayed in the role menu.

1.3.2.2 Server Runtime for SAP Business Client

Use

You need to add connection parameters to your back-end system in your locally installed SAP Business Client by choosing *Settings* > *Connections* > *Systems*.

The following settings are required in your back-end system:

- HTTP/HTTPS settings in ICM
  Explains that at least one HTTP or HTTPS port needs to be configured and active
- Active services in ICF
  Describes active service nodes for SAP Business Client in the `SICF` service tree
- Settings for fully qualified domain names (FQDN)
  Explains the importance of fully qualified domain names and host name conventions
- System security settings
  Descibes how HTTPS settings can be set up and how SSO2 cookies can be configured
- Cockpits
  Introduces cockpits and their role for SAP Business Client and explains how to set up a new cockpit
- Configuration using Table `NWBC_CFG`
  Lists the name-value pairs of possible settings in table `NWBC_CFG` and describes their effects on the UI

Prerequisites

You have installed the following:

- SAP Business Client on your local machine
- Application Server ABAP (AS ABAP) with one of the following SAP NetWeaver releases:
  - SAP NetWeaver 7.0 SP22 or higher
  - SAP NetWeaver 7.0 EHP1 SP7 or higher
  - SAP NetWeaver 7.0 EHP2, 7.03, 7.11, 7.20, and 7.30 or higher

  For information about the configuration of AS ABAP, see Customizing under *Application Server* or in the SAP Solution Manager (Business Suite 2008) under *Business Process Repository* (transaction `SOLAR_LIBRARY`): *Solutions* > *Basic Configuration* > *Configuration Structures* > *SAP NetWeaver 7.0* or *SAP NetWeaver 7.1* and *Usage Type AS ABAP*.
- The relevant SAP Business Suite system

For system administration purposes, you need the role `SAP_BC_BASIS_ADMIN` in your back-end system.

Related Information

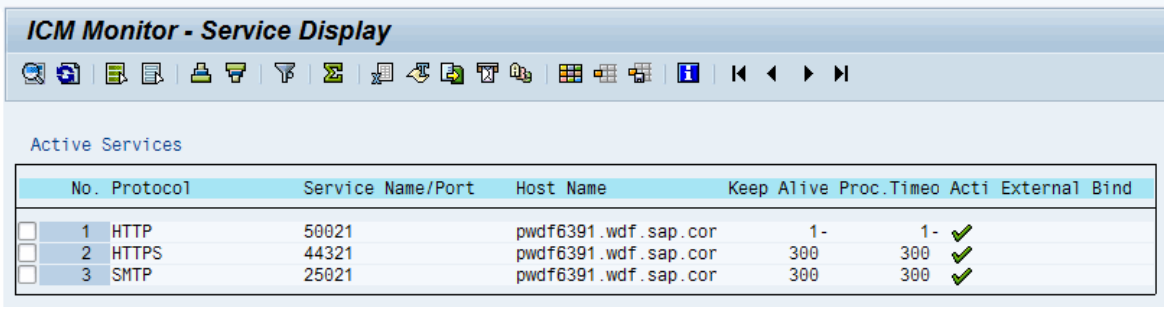
HTTP(S) Settings in ICM [page 134]
Active Services in ICF [page 161]
Settings for Fully Qualified Domain Names [page 139]
Configuring Authentication on the Server [page 140]
Cockpits [page 143]
Definition of Configuration Parameters with Table NWBC_CFG [page 171]
~test Page [page 179]
~launch Page [page 180]
Transaction NWBC [page 182]

1.3.2.2.1 HTTP(S) Settings in ICM

Use

The Internet Communication Manager (ICM) enables communication between your SAP system and the Internet using the HTTP or HTTPS protocols for the SAP Business Client applications. SAP Business Client (both the shell and most content area types) uses HTTP to access an ABAP server. It is important that at a minimum one HTTP or HTTPS port is configured and active.

1. From the back-end system, go to the *ICM Monitor* (`SMICM`) transaction.
2. Choose ▶ *Goto* ▶ *Services* ▶ to display the services configured in ICM.
   The following figure shows an example of services in *ICM Monitor*:



3. If the HTTP or HTTPS service does not yet exist or you would like to make changes, you can create or edit a service by choosing ▶ *Service* ▶ *Create* ▶ or ▶ *Service* ▶ *Change* ▶ in the menu.
4. Enable or modify the HTTP or HTTPS port settings, if necessary.
5. Activate your HTTP or HTTPS service by choosing ▶ *Service* ▶ *Activate* ▶.

> ⚠ Caution
>
> Any changes you make here are lost when you restart. If you want to create or change a service permanently, you must do this using the profile parameter `icm/server_port_<xx>`.

SAP Web Dispatcher

A Web dispatcher can be placed before the AS ABAP system(s) to function as a reverse proxy. The Web dispatcher is then normally configured to access the server through HTTPS (for higher security) and to forward all data to the server through HTTP (for higher performance). In these scenarios, pay special attention to the configuration of the `HTTPURLLOC` table in accordance with the information in URL Generation in an AS-ABAP - Web Dispatcher Configuration.

Related Information

Using the ICM Monitor
Displaying and Changing Services
icm/server_port_<xx>
Maintaining Profiles

1.3.2.2.2 Active Services in ICF

Use

The Internet Communication Framework (ICF) allows you to communicate with the SAP system using Internet standard protocols (HTTP, HTTPS, and SMTP). In the ICF tree, the SAP Business Client runtime also has a node that is available by default under the path `/sap/bc/nwbc`. This node must be active to enable any SAP Business Client client to access the server.

Below the `nwbc` node, there are a number of nodes in the format `nwbc_*` that are used to limit access to specific SAP Business Client services. For more information about when these nodes must be active, see ICF Configuration [page 293].

In addition, the various cockpits are configured within ICF. Each cockpit is defined as a subnode under `/sap/bc/nwbc`, for example `/sap/bc/nwbc/solman`. A subnode must be active so that the cockpit can work.

> ⓘ Note
>
> The activation of ICF services for the server runtime for SAP Business Client is required in the following instances:
>
> - When using the NWBC connection type in SAP Business Client with this runtime
> - When using the Fiori launchpad connection type in SAP Business Client and using side panels for transactions based on this runtime
> - When using SAP NetWeaver Business Client 3.5 for HTML

The table shows the ICF nodes relevant for SAP Business Client:

Node	Representation in Browser	Description
`nwbc_api`	`/sap/bc/nwbc/~api`	SAP Business Client server runtime API services, e.g. for retrieving system and navigation information. Activation of this node is vital for SAP Business Client for Desktop and the SAP Business Client connection type.
`nwbc_launch`	`/sap/bc/nwbc/~launch`	Transaction `NWBC` (started in the SAP GUI by entering `/nNWBC`) displays a launch page with a complete list of all available cockpits and all roles that are assigned to the user through this cockpit. For more information, see Transaction NWBC [page 182]. Effectively, the transaction starts the `nwbc_launch` node of NWBC. For security reasons, the `~launch` page is controlled through the `nwbc_launch` node in the ICF tree and can be deactivated here. For more information, see ~launch Page [page 180]. If this node is **deactivated**, transaction `NWBC` directly starts SAP NetWeaver Business Client 3.6 for HTML client without allowing the user to select a specific cockpit; the access involves all roles.

Node	Representation in Browser	Description
`nwbc_test`	`/sap/bc/nwbc/~test`	This is an access channel that dumps, in raw format, all relevant troubleshooting information that help to resolve a problem. The information from `~test` includes the complete SAP Business Client configuration, all roles assigned, and a large amount of user-relevant information. For more information, see ~test Page [page 179]. When SAP Business Client creates a support ZIP file, it also includes all this information, if available. This node can selectively be disabled. Activate this node in low security systems because the additional troubleshooting information from the server can help extensively. We recommend that you disable this node for high security systems or systems directly connected to the internet.
`nwbc_testcanvas`	`/sap/bc/nwbc/~testcanvas`	This node is used for internal development only. Therefore, it should be disabled in all productive systems. This is a test content area that is loaded into the SAP Business Client shell with a test role to test different APIs.
`nwbc_debug`	`/sap/bc/nwbc/~debug`	This node is used for internal development only. Therefore, it should be disabled in all productive systems. This allows you to run an alternative `$TMP` runtime for troubleshooting purposes.

Node	Representation in Browser	Description
`exprt_sapportal`	`/sap/bc/nwbc/~sapportal`	This node controls the activation of an API that can be used by SAP NetWeaver Portal (SAP NetWeaver 7.02 or higher) to retrieve role information for using dynamically in an enterprise portal. For more information, see HTTP REST Based APIs [page 250] and SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com: *SAP NetWeaver* > *SAP NetWeaver 7.0 including Enhancement Package 2* > *English* > *SAP NetWeaver Developer's Guide* > *IT-Scenario-Driven Enhancements to Applications* > *Running an Enterprise Portal* > *Reference* > *Portal Web Services* > *Navigation Web Service* > *Navigation Data Types* > *NavigationTreeRequest*.
`nwbc_ext2int`	`/sap/bc/nwbc/nwbc_ext2int`	This node is used when data is to be displayed in a side panel. The node converts the external representation of UI elements to an internal representation. All remote systems must have a TRUST relationship to the SAP Business Client logon system. Otherwise the HTTP request doing the conversion fails. For more information about authentication, see Security Aspects [page 281] and 1611298.
`nwbc_roletest`	`/sap/bc/nwbc/~roletest`	This node is used to test roles. You can start SAP Business Client with roles that are not assigned to your user, but only with display authorization. This node makes the *Other* section on the `~launch` page visible. For more information, see ~launch Page [page 180]. This node is used for internal development only. Therefore, it should be disabled on all productive systems.

Customer Paths

We recommend that application groups and customers do **not** work under the path `/sap/bc`. If necessary, you can create new paths: `/myCustomer/.../nwbc/myCockpit`.

For NWBC nodes, the `CL_NWBC_HTTP` runtime handler must be configured. Access over the `myCockpit` node is also monitored; it must be available and active.

In addition, the system logon must be configured. For more information, see System Logon and Namespaces and Naming Conventions (BC-CTS-NAM).

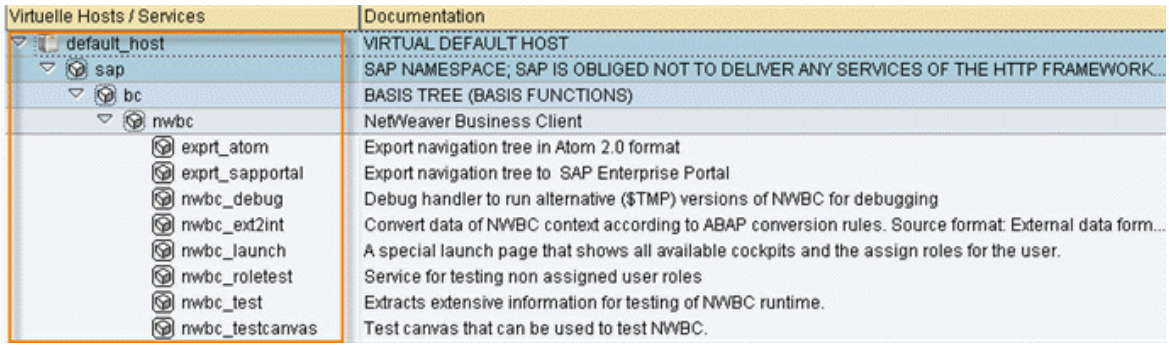
BSP and Web Dynpro ABAP

For BSP or Web Dynpro ABAP applications in SAP Business Client, the relevant BSP/Web Dynpro ABAP-specific nodes must be active in the ICF service tree.

- For more information about BSP settings, see *Prerequisites* in Administration of Business Server Pages
- For more information about Web Dynpro ABAP settings, see *Initial Configuration Settings* in Initial System-Wide Configuration Settings for Web Dynpro ABAP and Active Services in SICF.

Activities

1. From the back-end system, go to the *ICF service tree* (`SICF`) transaction.
2. Set the *Hierarchy Type* to *SERVICE* and choose *Execute* (F8).
3. Expand the nodes under the `default_host`.
   To access the cockpit subnode for SAP Business Client, navigate to the following service tree: `default_host/sap/bc/nwbc` .



4. Select the relevant service node(s) and choose *Service/Host* > *Activate* .

Related Information

Cockpits [page 143]
ICF Configuration [page 293]
Active Services in SICF

1.3.2.2.3 Settings for Fully Qualified Domain Names

Use

Fully qualified domain names (FQDN) are strictly required to ensure that SAP Business Client runs smoothly. This is also the case for BSP and Web Dynpro ABAP.

FQDNs are necessary for the following reasons:

- One domain is required with which cookies can be set domain-wide, for instance, `MYSAPSSO2` cookies.
- A domain relaxation code is required for cross-frame JavaScript.
- In an HTTPS environment, client and server names must correspond to each other for certificates and for the SSL protocol.

> ⓘ Note
>
> The domain in which AS ABAP is run is not necessarily the FQDN used to access AS ABAP from the browser. A typical example is an AS ABAP system that runs both in the Intranet and in the Internet. In a case like this, the FQDN is determined by the position of the browser relative to this AS ABAP system and not by the AS ABAP system itself.

Activities

1. Go to the *Maintain Profile Parameters* (`RZ10`) transaction and select the profile for the application server instance.
2. To modify the profile in the *Extended maintenance* mode, select *Extended maintenance*.
3. Configure the `icm/host_name_full` parameter with the fully qualified host name for the server.
   For more information, see online help for icm/host_name_full.
4. Save your settings.
5. Restart your system.

   > ⓘ Note
   >
   > All parameter changes require a restart of the system before taking effect.
6. Open the following test page through a browser to verify that the fully qualified name is working properly:
   `http://<FQDN>:<PORT>`

Host Name Conventions

If authentication using single sign-on or stateful applications is not working, it is often because the host and/or domain names do not reflect standard naming. There are Internet standards that define the naming conventions for domain names. It often comes down to a question of how strictly your browser implements the rules.

Summary of the rules:

- Domains with the extensions `com`, `edu`, `net`, `org`, `gov`, `mil`, or `int` must contain at least one additional domain part.
  This is normally the name of the company or organization.
- Domains with other extensions, including national top-level domains such as `de`, `uk`, or `fr`, must have at least two additional domain parts.
  In the case of top-level domains for countries, browsers often accept domains with just one additional domain part. However, for other, non-standard top-level domains, two additional domain parts are required.

  > ⚠ Caution
  >
  > Underscores (_) are **not** supported for host names.

For more information, see 654982

Related Information

Fully Qualified Domain Names (FQDN)

1.3.2.2.4 Configuring Authentication on the Server

Authentication Against an ABAP System

To access a Web application, AS ABAP uses the HTTP framework from Internet Communication Manager (ICF) that provides functions for defining the logon procedure. For more information, see *Maintaining Logon Procedures* below.

A simple process is available for configuring the system logon. In addition, you can customize the logon information according to your needs, for example, system ID, client, language, system messages, logon, and system information. For more information, see *Creating and Configuring ICF Services* under *Communication between ABAP and Non-ABAP Technologies* below.

With this, authentication against an ABAP system reduces to the normal authentication process as is standard for all Web-based applications on an ABAP stack, for example, BSP and Web Dynpro ABAP.

Settings for the Configuration for SSL support are particularly important for security with AS ABAP. For more information, see *Configuring the AS ABAP for Supporting SSL* under *Network and Communication Security* below. The logon ticket cache function is provided for increasing performance when multiple logons exist.

HTTPS Settings (SSL)

1. Install and configure `SAPCRYPTOLIB`.
2. Configure SSL in the *Trust Manager* (`STRUST`) transaction.
3. Run the following test calls through a browser to verify that the HTTPS settings are configured correctly:
   `https://<server>:<port>/`

More Information

The *SAP NetWeaver Security Guide* includes the useful topics below. This guide is available in the SAP NetWeaver library in the SAP Help Portal (http://help.sap.com/netweaver); choose *(relevant) SAP NetWeaver Platform* > *Security Information* > *Security Guide*:

- *User Administration and Authentication*:
  - *User Authentication and Single Sign-On*
- *Network and Communication Security*:
  - *Transport Layer Security* (containing links to *Secure Sockets and SNC*, *Configuring the AS ABAP for Supporting SSL*
- *Security Guides for SAP NetWeaver Functional Units*:
  - *Security Guides for the Application Server*:
    - *Security Guides for ASAP*:
    - *SAP NetWeaver Application Server for ABAP Security Guide*:
      - *User Administration and Authentication*, *Integration in Single Sign On Environments*, *Logon Tickets*, *Using Logon Tickets with AS ABAP*
    - Security Guide: *Web Dynpro ABAP*

Alternatively, you can search for the above terms directly in the SAP Help Portal.

See also SAP Notes 1302734 and 1257108 and https://wiki.sdn.sap.com/wiki/display/BSP/Cookie+Problems.

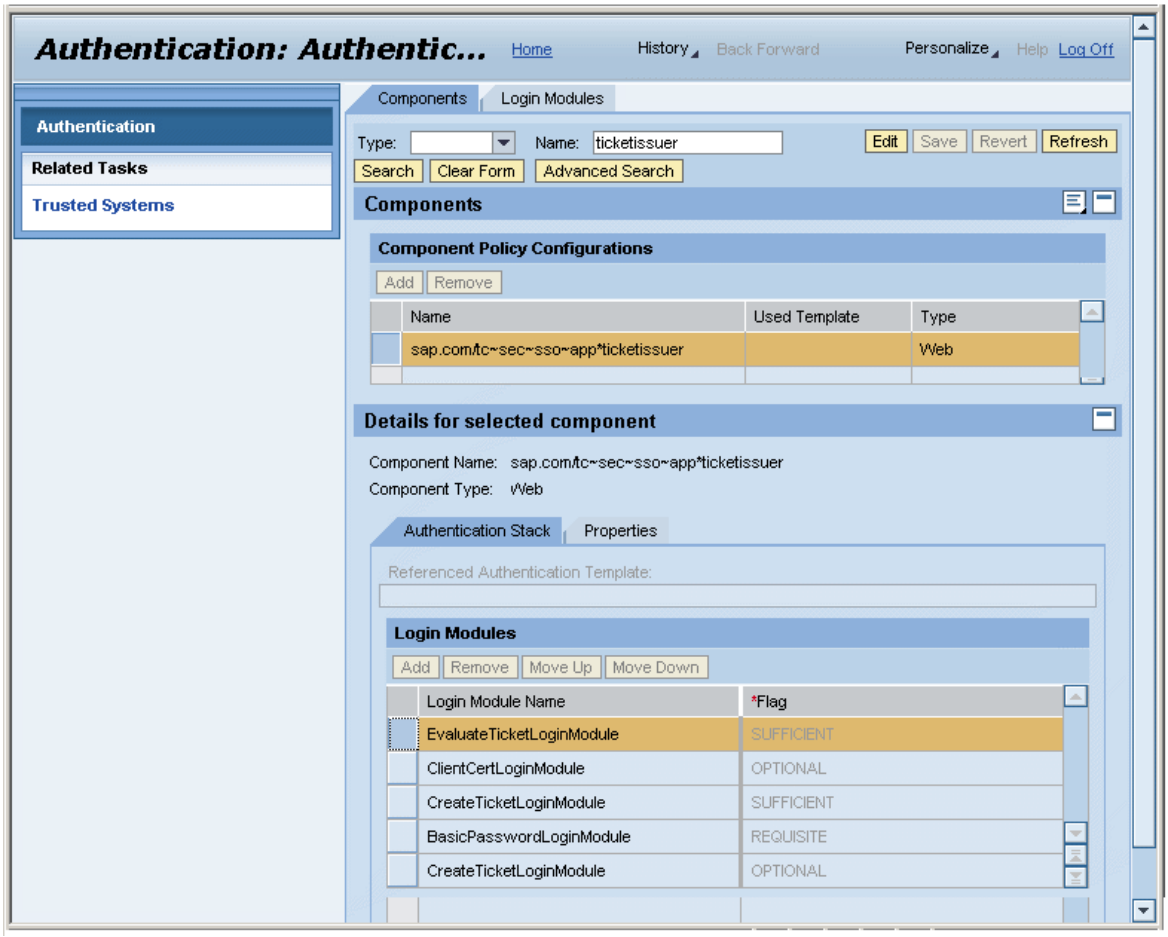
Authentication Against a Portal System

SAP Business Client uses the **Ticket Issuer** to log on to the J2EE server. The logon must be properly configured in the J2EE engine for this to work correctly.

1. Call the SAP NetWeaver Administrator.
2. Go to *Configuration Management*.
3. Choose *Authentication*.
4. Select component *sap.com/tc~sec~sso~app*ticketissuer*.
5. Enter the following as the assigned *login modules*:

Login Module Name	Flag
`EvaluateTicketLoginModule`	`SUFFICIENT`
`ClientCertLoginModule`	`OPTIONAL`
`CreateTicketLoginModule`	`SUFFICIENT`
`BasicPasswordLoginModule`	`REQUISITE`
`CreateTicketLoginModule`	`OPTIONAL`

This may appear as shown in the figure below:



More Information

The *SAP NetWeaver Security Guide* includes the useful topics below. This guide is available in the SAP NetWeaver library in the SAP Help Portal (http://help.sap.com/netweaver); choose *(relevant) SAP NetWeaver Platform* > *Security Information* > *Security Guide* >:

- *Portal Security Guide*
- *SAP NetWeaver Application Server for ABAP Security Guide* including the following topic:
  - *Using Logon Tickets with AS ABAP*
- *SAP NetWeaver Application Server for Java Security Guide* including the following topics:
  - *Transport Layer Security on the SAP J2EE Engine*
  - *Configuring the Use of SSL on the J2EE Engine*

Alternatively, you can search for the above terms directly in the SAP Help Portal.

1.3.2.2.5 Cockpits

Use

When users log on to an AS ABAP system, they see all roles that are assigned to their user name in the system. This is the expected default behavior when the user logs on to SAP Business Client. However, in many cases, a user wants SAP Business Client to display a mini-application that consists of a small number of roles. It should only display the roles belonging to its application (the roles that are tailored to the specific task and that are tested and documented together). The new development of a solution management process can serve as an example here: All of the roles can be given an indicator specifying that they belong to a certain cockpit.

As soon as the user accesses the system using the SAP Business Client cockpit, only the roles assigned to that cockpit are sent to the client and displayed. This means that the user has a restricted view of the specific roles that belong to the displayed application. For more information, see Menu Options [page 189].

A cockpit is simply the name of an application that consists of one or more roles. From a **technical** point of view, a cockpit is defined as a node in the ICF service tree. This is the central point of access to the application and to AS ABAP. As soon as a request for a cockpit is received, all roles that are assigned to the current user run through a filter. Only a small subset of roles that are assigned to the specific cockpit are output. However, if no special roles are assigned, a general cockpit is displayed. In this case, all roles that are not assigned to a specific cockpit are made available on the client. This gives the user a generic view of all roles that are normally visible, without the roles of the mini-application. For more information, see Creating and Configuring ICF Services.

From a **security** point of view, cockpits have an extremely important role. A cockpit is a central point through which an application within AS ABAP can be accessed if it is active.

The ICF node of the relevant cockpit must be active to enable access to AS ABAP by using the cockpit path. This technology is similar to the procedure for BSP applications or Web Dynpro ABAP applications. The cockpit node must be active in the ICF service tree for the logical application with which the cockpit is associated to be active. For more information, see Activating and Deactivating ICF Services.

In summary, a cockpit can be seen as a logical application that filters all roles assigned to the user so that only the roles that belong to the application remain.

Activities

Make sure that the following activities are carried out for cockpits:

1. Define new cockpits by creating a new ICF node beneath your handler node in the ICF service tree. For more information, see Create Service.
   Example path specifications for SAP cockpits: `/sap/bc/ui2/nwbc/ess`
2. All cockpits are logical entries that must be activated.
   For more information, see Menu Options [page 189].
3. Define all roles that belong to each cockpit and provide them with indicators accordingly.
   For more information, see Menu Options [page 189].

Setting Up a Cockpit

> → Recommendation
>
> We recommend application groups and customers **not** to work under the path `/sap/bc`. If necessary, you can create new paths.

1. Define the access path to your cockpit in the HTTP service tree.
   The path must take the form `.../ui2/nwbc/<cockpit name>`.
   Example: `/sap/bc/ui2/nwbc/mycockpit`
   1. Create the path in transaction *HTTP Service Hierarchy Maintenance* (`SICF`).
   2. Configure the `UI2/CL_NWBC_HTTP` handler for the `nwbc` node.
   3. Activate the system logon for the `nwbc` node.
      For more information, see System Logon.
2. Assign roles to users.
   For more information, see *Creating and Editing User Master Records* in the section *Identitiy Management* in the SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com/netweaver.

1.3.2.2.6 Definition of Configuration Parameters with Table NWBC_CFG

For minimal configuration of SAP Business Client, use configuration table `NWBC_CFG`. The table is used only for customization and is local to the current system.

> ⚠ Caution
>
> Data from table `NWBC_CFG` used with a server runtime of version 3.5 is not migrated to the transactions in Customizing. If you use the server runtime for SAP NetWeaver user interface services 3.6, you have to enter your data again.

You can maintain the table in transaction *Data Browser* (`SE16`) because it is basically a sequence of name-value pairs that are configured either globally or for a specific cockpit. The table has the following general structure:

Name	Required/Optional	Description
`CLIENT`	required	System client to which the configuration belongs
`IDX`	required	A unique number that has no other purpose than to set a sort sequence and function as a key. The actual value of the number is irrelevant.
`COCKPIT`	optional	Use either the wildcard * character to apply this setting to **all** cockpits or enter the name of a cockpit to limit the settings to the specific cockpit.

Name	Required/Optional	Description
`NAME`	required	Name of the configuration parameter (see below)
`LANG`	depends on `NAME`	If the parameter can also have a language-dependent string, set the ISO language code here. Or use the wildcard (*) to apply to all languages.
`DISPLAY`	depends on `NAME`	The actual natural language string that is displayed to the user
`VALUE`	depends on `NAME`	For language-independent texts (opposed to `DISPLAY`), such as a URL (for example, for the branding image parameter)
`COCKPIT_PATH`	optional	It is possible that the same cockpit name actually exists in different parts of the ICF tree. The name itself is not unique, it only becomes unique when the full path from the root is specified, for example, for `myCockpit`, the full path could be `/sap/bc/nwbc/myCockpit`. You can specify the complete cockpit path to ensure that the cockpit is unique. If specified, this string is also used to validate whether this configuration row belongs to the current cockpit. We recommend that this field is empty or "*" in all cases.

Each parameter is one entry in the table. The following parameters are supported:

Name	Language Field	Description
`CACHE_DISCRIMINATOR`	not used	SAP Business Client for Desktop indefinitely caches the complete navigation tree for the end user locally on the desktop. Only when a role is changed, a new navigation tree is downloaded. However, there can be specific reasons one would like to force all desktop clients to dynamically reload their caches. The approach taken is to encode this random configuration string into the cache key. As long as the string is not configured or stably configured, it has no influence on the caching of SAP Business Client for Desktop. As soon as the string gets a new and different random string, it changes the cache key, causing SAP Business Client for Desktop to reload the caches. This parameter is not needed in productive use, unless explicitly so requested from a support process to resolve specific types of problems. You can use any character string. We recommend that you use three digit numbers.
`INSTALL_DIRECTORY`	required	A link that is displayed and rendered on the `~launch` page to allow users to quickly get a reference to a location from which SAP Business Client for Desktop can be installed. This link could refer to a wiki, a file share, even to the mime repository on the local server. We recommend that the URL itself refers to an HTML page because it is started in a browser window.

Name	Language Field	Description
`BUSINESS_LINE`	not used	This entry controls the icon that is displayed within SAP Business Client to refer to one of SAP's business lines. Possible values are: • `BUSINESS_SUITE` • `Business_All-in-One` or `BAiO` • `BUSINESS_BYDESIGN` If the parameter is not defined, the usual SAP icon is displayed with SAP Business Client. **Note** Specifically for the SAP Business Suite, no separate logo is displayed, but the SAP logo itself is applied. **→ Recommendation** We recommend to use the default setting of “SAP”.
`BRANDING_IMAGE`	not used	A branding image is typically a corporate logo that SAP Business Client is displayed on the lower part of the navigation panel (when visible). This can be a small PNG or JPG image. The value field is a URL that refers directly to the image. It must be ensured that the image can be loaded without authorization.
`BRANDING_URL`	not used	If this parameter is configured, the branding image is clickable, and a click on the branding image navigates to this URL. The value is the URL that must be started. Typically, this is the corporate portal page of the company, which is then loaded.
`COCKPIT_TITLE`	not used	This parameter is only used in rare cases where a cockpit wishes to create a "product" approach. In such cases, this parameter can be used to configure a string that is displayed on the shell, limited at the moment to NWBC for HTML.

Name	Language Field	Description
LOGOFF_URL	not used	This parameter is for NWBC for HTML. After a logoff sequence, if a logoff URL is specified, the browser navigates to this page. NWBC for Desktop has the typical desktop application behavior where a logoff causes the application to terminate.
WELCOME_MESSAGE	optional At runtime, the system selects the welcome message in the logon language. If no matching language entry is found, LANG=' ' or LANG='*' is used as a fall-back.	The welcome message is displayed in NWBC for HTML next to the *Log Off* pushbutton. The VALUE field contains the text. You can use the following placeholders: • &NAME&: first name • &SURNAME&: last name • &FULL_NAME&: full name • &USER&: user name • &CLIENT&: client • &SYSTEM&: system ID
THEME_NAME	not used	By default, the VALUE field contains *sap_corbu*. As an administrator you can select a different theme based on customer needs. When the user logs on to the role or cockpit associated with this theme in the back end, the NWBC for HTML shell, all Web Dynpro ABAP applications, and service maps are rendered using the specified theme.

Name	Language Field	Description
FORCE_BROWSER_STANDARD_MODE	optional	Use this parameter to force an application to be rendered with the newest available rendering engine. NWBC for HTML uses the Internet Explorer 8 rendering engine by default. The following applies for this parameter: • Relevant for NWBC for HTML 3.5 only • Relevant for Internet Explorer 9 or higher • Available with patch 25. For more information, see SAP Note 1783826. • Possible values: An ABAP-regular expression that describes an application URL. If the pattern of the regular expression matches an URL, the entire SAP Business Client page (the top frame and with this also the application included in an IFrame) is rendered with the newest rendering engine (IE=edge). **Example** */sap\.com|/ui5_ui5/* : This regular expression matches any URL that contains the string */ui5_ui5/* or *sap.com*. **Caution** An entry is already available in the NWBC_CFG_SAP system table. Entries for the mentioned parameter in table NWBC_CFG overwrite the entry in table NWBC_CFG_SAP. If SAP entries should not be lost, we recommend that you copy them to the new entry created by the customer.

Name	Language Field	Description
USE_BROWSER_CACHE	optional	Use this parameter to store HTML pages in NWBC for HTML in the browser cache. This parameter offers the following enhancements: • Accelerated responsiveness of HTML pages • Less back-end CPU usage • Reduced network traffic The following applies for this parameter: • Relevant for HTML sites of NWBC for HTML (version 3.5 or higher) and for service maps used in NWBC for Desktop (version 3.5 or higher) • Available with patch 25. For more information, see SAP Note 1783826. • Possible values are ON and OFF (OFF is the default). **⚠ Caution** The HTML sites of the NWBC for HTML might contain security-relevant data. Therefore, we recommend that you take appropriate measures to secure your data, for example hard disk encryption.

Name	Language Field	Description
`APPLICATION_WINDOW_LAUNCH_MODE`	not used	**Note** This parameter is relevant only in NWBC for HTML (and not NWBC for Desktop). SAP Business Client application windows are launched in new browser windows rather than in new tabs. SAP Business Client calculates the size of the new application window, based on the size of the source window. There is an option to omit this calculation. Most modern browsers, by default, open new applications in new tabs rather than in new windows. This configuration parameter allows you to omit the calculation. Set this parameter to `BROWSER_DEFAULT`. The browser settings then control whether a new application is launched in a new window or in a new tab. The new configuration parameter results in a JavaScript call, for example: `window.open(sUrl, sName);` instead of the usual (with the window-size calculation): `window.open(sUrl, sName, sWindowSize);` Keep in mind that application windows cannot be bookmarked, neither in tabs nor in windows. For more information on limitations of application windows, see SAP Note 1620576.

The following figure provides a configuration example:

MANDT	IDX	COCKPIT	NAME	LANG	DISPLAY	VALUE	COCKPIT_PATH
000	131	*	CACHE_DISCRIMINATOR			41b	
000	501	*	INSTALL_DIRECTORY	E	Install NWBC v3.0 Beta from our Wiki!	http://nwbc:1080/dl	
000	502	*	INSTALL_DIRECTORY	D	NWBC v3.0 Beta auf unserer Wiki-Seite!	http://nwbc:1080/dl	
000	998	*	BUSINESS_LINE			Business All-In-One	
000	B01	TESTCOCKPIT	BRANDING_IMAGE			\\ns0009\nwuif\nwbc\neo.png	
000	B02	TESTCOCKPIT	BRANDING_URL			\\ns0009\nwuif\nwbc\index.html	
000	C01	TESTCOCKPIT	COCKPIT_TITLE	*	Test Cockpit		/MY/TEST123/NWBC/TESTCOCKPIT/
000	L01	TESTCOCKPIT	LOGOFF_URL			http://www.sap.com	

For SAP Developers Only

There are cases where it might be required to ship specific parameters that are predefined for a specific cockpit. This is particularly interesting when a cockpit is used to define a small "product". For example, assume that SRM would like to define a new cockpit and pre-configure a title, a custom search engine and a help are

linked in this use case. The approach would be then to define a new cockpit that can be used to group relevant roles and to which the configuration can be tied. In these cases, use the table `NWBC_CFG_SAP` to configure a set of parameters for the cockpit that can be transported.

> ⚠ Caution
>
> This table is client-dependent. It uses only a three-character index to obtain unique keys. Contact the SAP Business Client development team to reserve a set of numbers.

1.3.2.2.7 ~test Page

Use

The `/sap/bc/nwbc/nwbc_test` (`/sap/bc/nwbc/~test`) page shows all cockpits and their associated roles. This page is important when resolving possible problems. It provides a view of all the data that is gathered by the SAP Business Client runtime before sending it to the client. This is a direct output of the data and identical to the data that is sent to the client. The `~test` page allows you to isolate whether errors are already on the server or only later at the client.

Access to the `~test` page is controlled via the ICF node `nwbc_test`. For more information, see ICF Configuration [page 293]. Additionally, clients read this page (if active and available) to include all server-relevant information in a ZIP file when gathering information for a problem ticket.

You can launch the ~test page by pasting ~test at the end of the HTTP URL that you use to connect to the server. Then copy this URL and paste it into a browser. The ~test page is displayed. For more information, see Configuring System Connections [page 15].

Examples:

```
http(s)://<server>.<domain>.<ext>:<port>/sap/bc/nwbc/~test
```

The `~test` page contains the following information:

Type of Information	Description
Trouble shooting information	User information, HTTP information, single sign-on, PFCG, roles, local configuration
System information	Runtime version, base URL, fully qualified base URL, fully qualified domain name
User information	User settings in *User Maintenance* (`SU01`)
Configuration information	Entries in table `NWBC_CFG` and `NWBC_CFG_SAP`. For more information, see Definition of Configuration Parameters with Table NWBC_CFG [page 171].
Cockpits information	Names and paths of the different cockpits

Type of Information	Description
Roles information	Roles assigned in `PFCG`
Navigation tree	
OBN targets	
Cockpits with roles	

> ⚠ Caution
>
> The `~test` gathers extensive server side information to help in trouble shooting. We recommend that you disable this node in highly secure productive systems or systems attached directly to the internet. If in doubt, disable this node.

1.3.2.2.8 ~launch Page

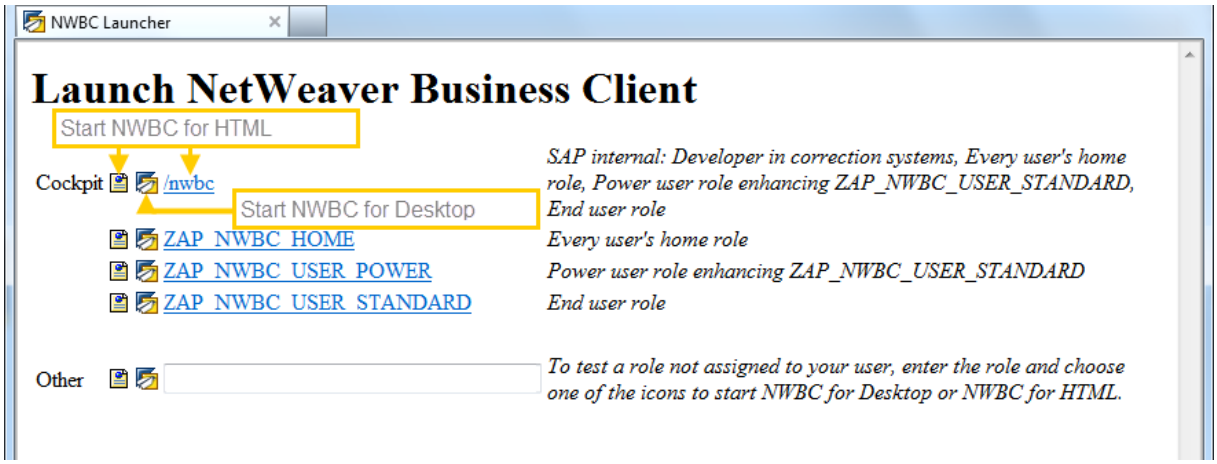
Use

You can start the `~launch` page with transaction `NWBC`. The availability of the `~launch` page is controlled with ICF node `nwbc_launch`. If this node is disabled in the ICF service tree, transaction `NWBC` directly starts NWBC for HTML.

The `~launch` page shows all available cockpits and all roles that the user has assigned for this cockpit. Therefore, this `~launch` page gives a user an overview of the available cockpits (that are active in ICF) with the specific roles that can be reached through each cockpit.

> ⓘ Note
>
> All roles assigned to a user are displayed next to the */nwbc* node.

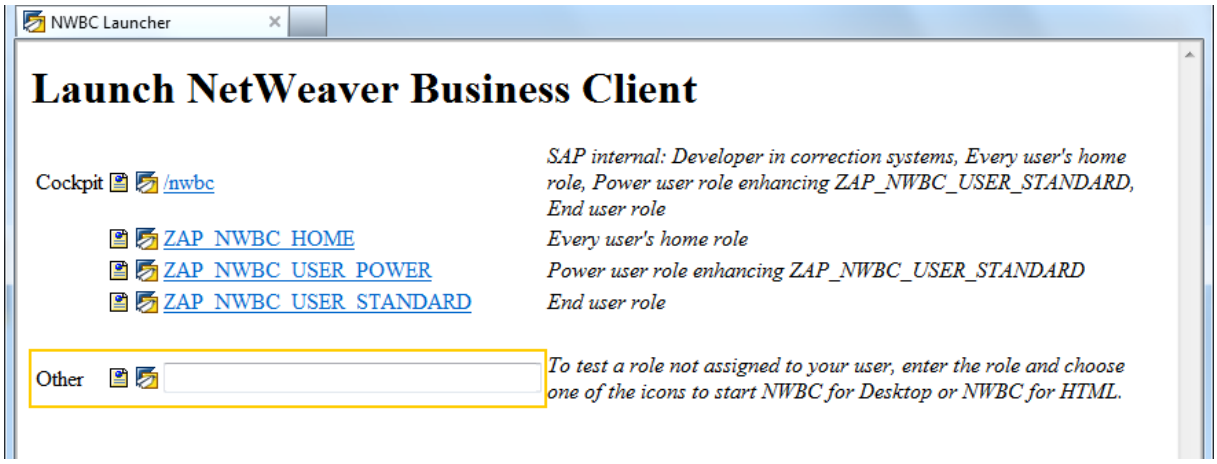
The `~launch` page also offers the option to start either NWBC for Desktop or NWBC for HTML. The first icon starts NWBC for HTML, second icon starts NWBC for Desktop. This concept is illustrated by the following figure:



> **Note**
>
> If you use role names that contain special characters, for example “/”, “?”, and “=”, you cannot start NWBC from the ~launch page. For more information, see 1826609.

Other

By clicking the link under *Other*, you can start a role that is not assigned to your user. You can use this link to test the role. However, only the navigation tree is shown in NWBC, no authority objects from the role are assigned to the user. Enter the role name into the field and click one of the icons.



Install

In addition, the `~launch` page can have an optional link that can be customized to tell the user from where to install NWBC for Desktop. This optional link corresponds to the entry in table `NWBC_CFG` for `INSTALL_DIRECTORY`. The entry could look like this in `NWBC_CFG`:

Name	Language	Display	Value
`INSTALL_DIRECTORY`	`EN`	`Install latest NWBC Desktop 3.5 from here...`	`http://nwbc:1080/dl`

This corresponds to the following output in the browser:



More Information

Active Services in the ICF [page 161]

Transaction NWBC [page 182]

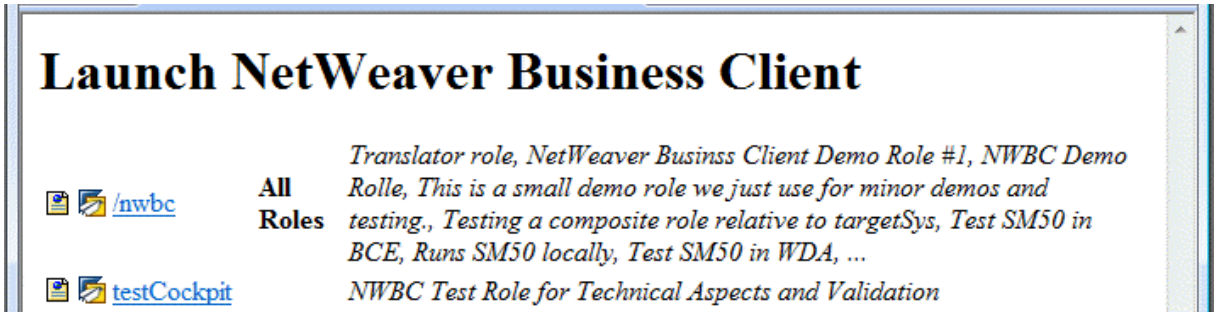
1.3.2.2.9 Transaction NWBC

Use

In all SAP NetWeaver AS ABAP systems, you can start the *Launch NWBC* (`NWBC`) transaction by entering **`/nNWBC`** in the command prompt field:

This transaction code starts the `~launch` page in the browser, that is, a separate browser instance is started.

An example of a `~launch` page is illustrated in the following figure:



The benefit of this function is that you do not need to look up HTTP ports, and so on. Within the `~launch` page, all configured cockpits in this system with the list of associated roles are displayed. All cockpits for which the user has no roles are filtered.

- The first icon starts SAP NetWeaver Business Client 3.6 for HTML.
- The second icon starts SAP Business Client for Desktop.

Transaction `NWBC` uses class `CL_GUI_HTML_VIEWER` to start the URL in the browser. This class starts the URL with Microsoft Internet Explorer (IE) installed, even if another browser is defined as the default browser. The reason for this is that the class contains additional logic to insert authentication information from the running SAP GUI session into the Microsoft Internet Explorer instance when started, so that, by default, the browser runs with the same user name and client as the active SAP GUI session.

More Information

~test Page [page 179]

~launch Page [page 180]

ICF Configuration [page 293]

1.3.3 Role Maintenance in PFCG

Use

With SAP Business Client using the NWBC connection type, you can display information on the client that is mapped to the client using the *Role Maintenance* (PFCG) transaction. For this purpose, PFCG as the central repository for all system roles, has been enhanced with additional functions.

Information from *Role Maintenance*, including some enhancements, is used to set up the menu structure of SAP Business Client. Possible settings in PFCG are described in the following sections:

- **PFCG Overview**
  Introduces PFCG and its impact on SAP Business Client. A short description of roles is given, the importance of user settings in SU01 is described, as well as the effects of roles on the easy access menu and the SAP Business Client menu structure.
- **Improvements in PFCG User Interface**
  Lists the main differences in PFCG between SAP NetWeaver 7.00 SP21 (or higher) and 7.01 SP6 (or higher) versus SAP NetWeaver 7.02 (or higher) systems
- **Role Description**
  Provides information on role names, role short texts, and the *Description* tab page
- **Menu Options**
  Describes specific additional menu options for special use cases
- **Navigation Tree**
  Explains the settings relevant for SAP Business Client on the *Menu* tab page
- **Default Pages and Service Maps**
  Describes the concepts of default pages and service maps, which cause the content area to be filled with content
- **Link Collections**
  Describes the *Link Collection* option
- **Single Top Level**
  Compares two-level navigation with single top level navigation
- **Menu**
  Introduces the function of additional menu entries as well as enhanced menu entries
- **Side Panel**
  Describes how to configure a side panel for a role
- **Remote Systems**
  Describes what to do if transactions contained in a role are to be started in a different system
- **Object-Based Navigation (OBN)**
  Explains how to set up and use OBN for SAP Business Client
- **Role Comparison**
  Describes the role comparison tool, which you can use to compare roles and their role menu
- **Merging of Navigation Trees**
  Describes how navigation trees of multiple roles are merged

More Information

PFCG Overview [page 184]

Improvements in PFCG User Interface [page 186]

Role Description [page 188]

Menu Options [page 189]

Navigation Tree [page 191]

Default Pages and Service Maps [page 200]

Link Collections [page 203]

Single Top Level [page 204]

Menu [page 204]

Side Panel [page 206]

Remote Systems [page 230]

Object-Based Navigation (OBN) [page 210]

Role Comparison [page 222]

Merging of Navigation Trees [page 223]

For more information about the tools and function mentioned in the following sections, see:

- Role Administration
- Role Administration Functions
- AS ABAP Authorization Concept
- User Administration Functions and Creating and Editing User Master Records
- SAP Easy Access
- Maintaining Remote Destinations and Establishing a Connection Using a Destination (SM59)
- Object-based navigation (OBN) documentation links:
  - SAP Business Objects
  - The Business Object Repository
  - Maintenance of Object Types (BOR)
  - Creating Object Types (BOR)
  - Definition of Methods for an Object Type (BOR)
  - Definition of Method Parameters (BOR)

1.3.3.1 PFCG Overview

In transaction *Role Maintenance* (PFCG) you can configure **roles**. Transaction PFCG covers various aspects: the administration of authorizations and profiles as well as the definition of user menus.

In real life, a role corresponds to the work that a person does within a company or the position held, for example, a sales person or someone working in support. In transaction PFCG, roles are defined matching the

real life roles that people play within a work situation. More specifically, a role within transaction PFCG is a set of transactions that persons within specific roles would need for their daily work. For example, a sales person might have a role that requires transactions to add new customers, display customer details, or to enter a new lead.

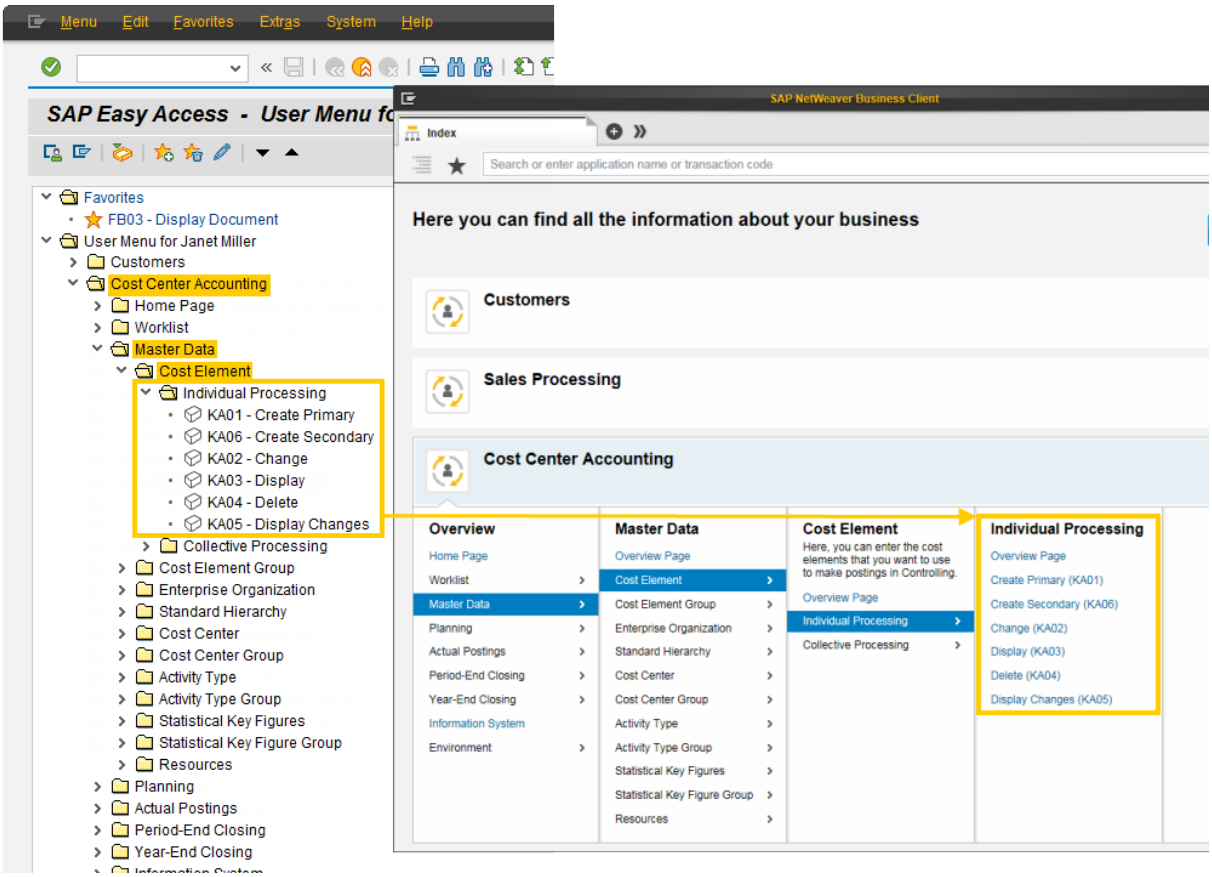
Given the existence of roles within transaction PFCG that describe the typical work persona, use transaction *User Maintenance* (SU01) to assign these roles to specific users. A user in the system can have any number of roles assigned, which reflects the real work that the person does within the company.

Given the roles in transaction PFCG, the *SAP Easy Access* menus are displayed directly after logging on with SAP GUI. These are effectively the menu trees as expressed in one or more roles for each user. This allows the user to quickly start the relevant transactions for their daily work.

SAP Business Client builds on this same PFCG infrastructure in the ABAP system. The SAP Business Client runtime retrieves all roles assigned to a specific user and makes them available to the shell. The shell uses exactly the same role information to show the user the possible transactions that might help them with their daily work.

For this reason, the shell in SAP Business Client is in the first instance another expression of the *SAP Easy Access* menu, providing roughly the same functionality.

However, the SAP Business Client runtime also extends the usage of transaction PFCG to make additional functionality available or to depict the configured data in a different fashion. This chapter looks at the relevant parts of transaction PFCG that are used by SAP Business Client, and also at the additional features that can be configured within transaction PFCG for SAP Business Client. This concept is illustrated in the following figure:



> ⓘ Note
>
> Menu entries can be filtered from either the *SAP Easy Access* menu or the menu laid out in SAP Business Client, see *Menu Options*.

In addition to the role name and the description, **only** the settings on the following tab pages are relevant for the SAP Business Client:

- *Description*
- *Menu*

> → Remember
>
> Your settings are activated only if you have assigned a user name on the *User* tab page and saved your settings.

Settings for Role Maintenance

The settings for role maintenance are slightly different in the previous SAP NetWeaver releases. For more information, see *Improvements in PFCG User Interface*.

Related Information

Menu Options [page 189]
Improvements in PFCG User Interface [page 186]

1.3.3.2 Improvements in PFCG User Interface

Use

While the functions offered in transaction *Role Maintenance* (`PFCG`) remain the same in the different releases supported by SAP Business Client, the user interface (UI) on the *Menu* tab page has been changed to offer an enhanced user experience. In SAP NetWeaver 7.00 SP21 (or higher), SAP NetWeaver 7.01 SP6 (or higher) and SAP NetWeaver 7.02 (or higher), a number of changes have been implemented.

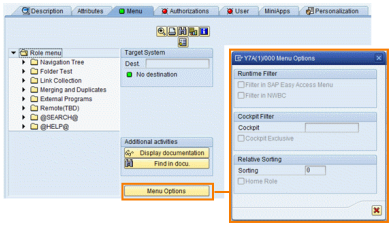
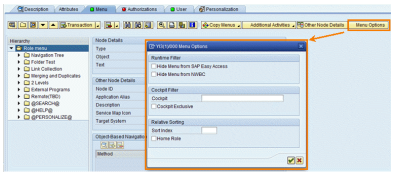
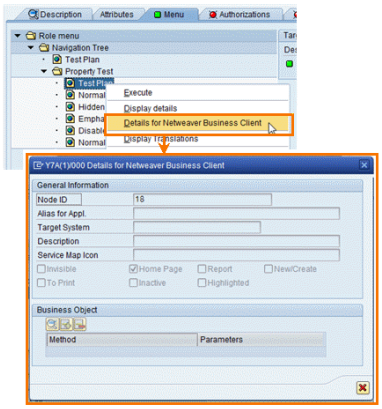
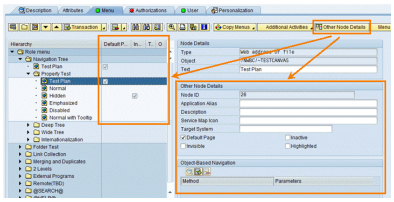
> ⚠ Caution
>
> These changes are available only in systems from **SAP NetWeaver 7.00 SP21 (or higher)**, **SAP NetWeaver 7.01 SP6 (or higher)**, and **SAP NetWeaver 7.02 (or higher)** and cannot be used in lower releases and service packs.

The changed UI reflects both settings that apply to the role level as well as settings for individual role entries (both folders and nodes). At the role level, there are the *Menu Options* for special use cases, whereas for

individual role entries, there are the *Other Node Details* that differ slightly from one another regarding the details offered, depending on the position in the menu tree, whether they are folders or nodes, and so on.

- In 7.00 SP21 (or higher) and 7.01 SP6 (or higher) systems, the settings for the whole role are available with the pushbutton *Menu Options* at the bottom of the screen. In 7.02 (or higher) systems, these settings are available with the same *Menu Options* pushbutton that is located at the end of the button bar next to the *Other Node Details*.
- In 7.00 SP21 (or higher) and 7.01 SP6 (or higher) systems, the settings for individual node entries, be they folders or nodes, are available for each item in the context menu entry *Details for NetWeaver Business Client*. In 7.02 (or higher) systems, these settings are available with the pushbutton *Other Node Details*.

The table provides an overview of the UI differences for the mentioned SAP NetWeaver releases:

	SAP NetWeaver 7.00 SP21+ and SAP NetWeaver 7.01 SP6+	**SAP NetWeaver 7.02 and higher***
Role Level	*Menu Options* The following figure shows an example of an old version of the role menu: 	*Menu Options* The following figure shows an example of the role menu as of the SAP NetWeaver 7.0 EHP2 release: 
Individual Entries	*Details for NetWeaver Business Client* The following figure shows an example of an old version of the role menu *Details for NetWeaver Business Client* dialog:box 	*Other Node Details* The following figure shows an example of the role menu including a node detail view as of the SAP NetWeaver 7.0 EHP2 release: 

	SAP NetWeaver 7.00 SP21+ and SAP NetWeaver 7.01 SP6+	SAP NetWeaver 7.02 and higher*
Background configuration settings in table `SSM_CUST` using transaction *Call View Maintenance* (`SM30`)	`ADD_MENU_DETAILS` is set to `NO` by default and must be set to `YES` to see these SAP Business Client settings.	`ADD_MENU_DETAILS` is set to `YES` by default. If you do **not** wish to make SAP Business Client settings, you must set `ADD_MENU_DETAILS` to `NO` explicitly.

* With SAP NetWeaver 7.03, the UI has been further enhanced and new options have been introduced.

More Information

- Menu Options [page 189]
- Navigation Tree [page 191]
- SAP Note 1321829

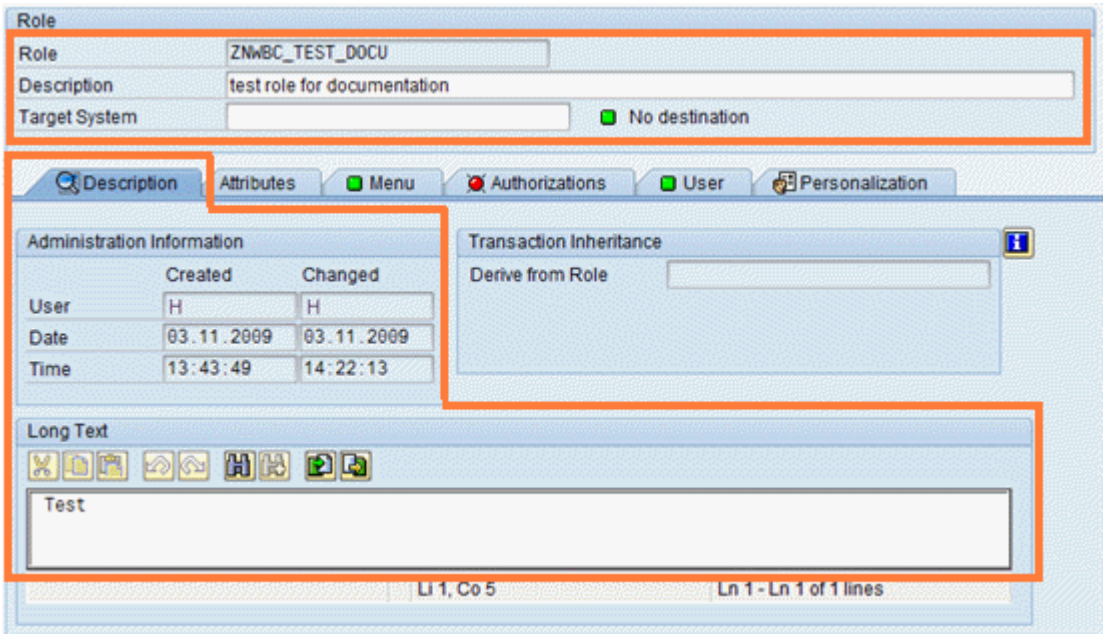
1.3.3.3 Role Description

Use

A role is defined by the following information:

- **Role Name**
  Technical name of the role. This name is unique and is used as the key for tables and for the transport system.
  The selection of the role name is limited by namespaces and naming conventions.
- **Description**
  Language-dependent short text that can be displayed for the user. We strongly recommend that you always enter a description.
  This short text is used to display a list of roles available in the dropdown menu for a client, for example. This enables the user to switch from role to role. Another example is a list of roles from which a power user can assign appropriate roles to other users. This short text is also used as tooltip.
- **Target System**
  RFC destination of a role in another ABAP system

The role details described above are shown in the following figure:



In addition to the role name, short text, and a possible target system, the entry *Long Text* on the *Description* tab page is important. The long text is always used if detailed information about a role for the user has to be displayed. It can be seen as mini-help.

More Information

Namespaces and Naming Conventions (BC-CTS-NAM)

Remote Systems [page 230]

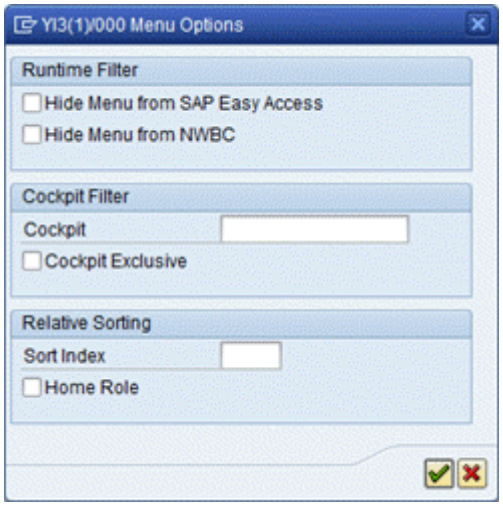
1.3.3.4 Menu Options

Use

The *Menu Options* pushbutton in the toolbar of the *Menu* tab page leads you to several additional attributes for a given role. A role can also have additional attributes that are relevant only for SAP Business Client. However, these attributes are required for SAP Business Client only for **specific use cases**. For example, you can affect the relative order of role menus for a user having multiple roles assigned with the sort index.

You can use the additional attributes in *Menu Options* dialog box for a role in customer systems. These attributes are used to associate specific information with the role, with the result that the SAP Business Client runtime can make the relevant rendering decisions.

The figure below shows the additional attributes available in the *Menu Options* dialog box and is followed by an explanation:



Runtime Filter

You can specify that a role is filtered out of the menu on the *SAP Easy Access* screen or in SAP Business Client:

- *Hide Menu from SAP Easy Access*
  By selecting this checkbox, this role is removed from the menu on the *SAP Easy Access* screen.
- *Hide Menu from NWBC*
  By selecting this checkbox, this specific role is not made visible in SAP Business Client. It is filtered out.

Cockpit Filter

This attribute is used only together with cockpits. If SAP Business Client is accessed in the default mode, all roles are made visible. If SAP Business Client is accessed via a cockpit, only those roles that belong to the cockpit specified using *Cockpit* are made visible. That enables building small mini-scenarios, giving the user a specific view of the system.

However, it is possible that the roles belonging to a cockpit are specific only for this scenario and should not be made available in general. Nevertheless, even if a role is flagged as belonging to a specific cockpit, it is still made visible when SAP Business Client is accessed without a cockpit filter.

You can choose between the following cockpit filter settings:

- *Cockpit*
  If a user accesses SAP Business Client using a cockpit (which is defined in ICF as a child node to the `NWBC` node), only those roles that belong to the cockpit are displayed; in this case roles that are flagged with the cockpit attribute. Note that the cockpit name must match the relevant entry in the ICF service tree.
  This attribute tags a role as explicitly belonging to a specific cockpit. That is, the cockpit is a filter on all roles, returning only those roles that are actively defined as explicitly belonging to the cockpit.
  It is theoretically possible to use this attribute more than once per role to indicate that the role belongs to more than one cockpit.
- *Cockpit Exclusive*
  Select this checkbox to indicate that this role is made visible only within the context of the cockpit specified above and not when SAP Business Client is accessed without a filter. That is, this role may only be used in the tagged cockpits and not generally.

Relative Sorting

To specify the order in which the roles should be positioned in the SAP Business Client shell, use the following functions:

- *Sort Index*
  Allows roles to be sorted relative to one another. These numbers do not have to be in sequence. We recommend that you use large steps of 100 to give the roles a sort index relative to one another.
- *Home Role*
  This checkbox defines that the role must be mapped onto the home position, which is the first position on the shell. This is equivalent to a *Sort Index* of **1**.

Related Information

Cockpits [page 143]
Merging of Navigation Trees [page 223]

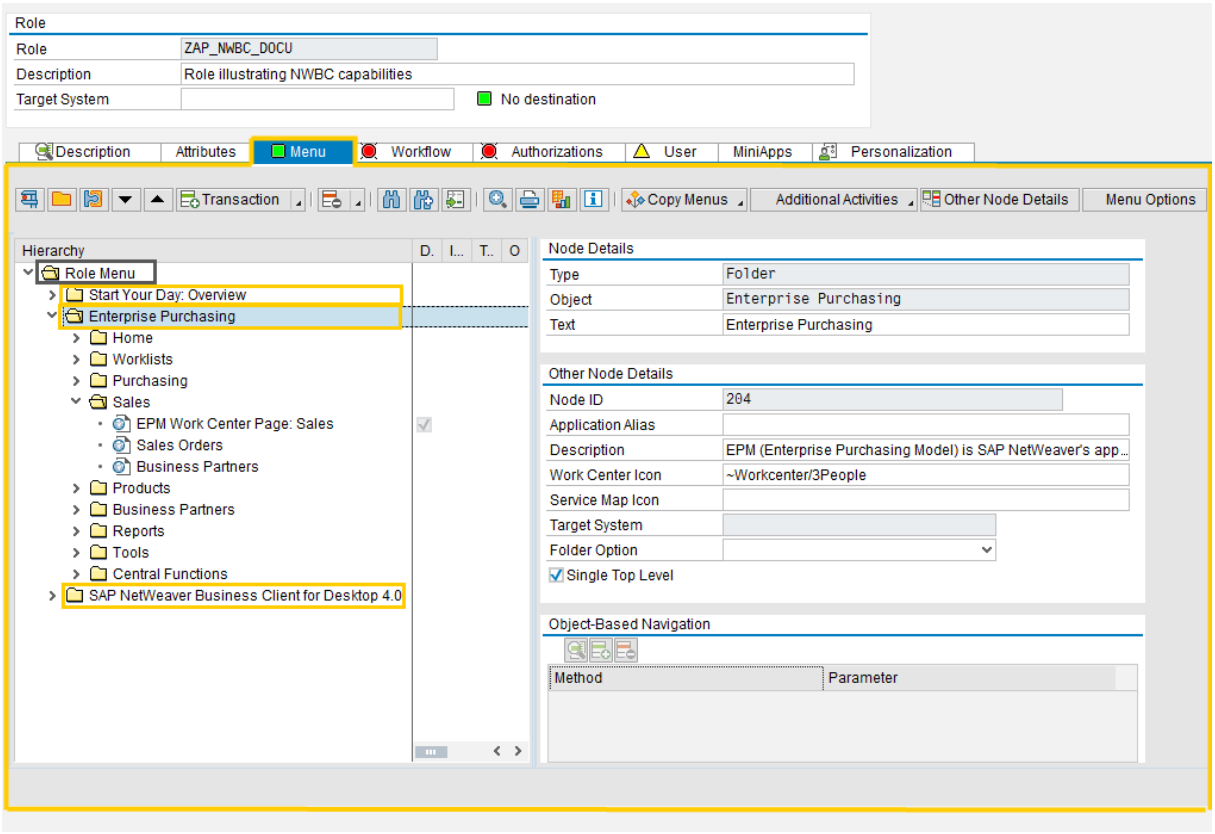
1.3.3.5 Navigation Tree

You create and configure the role menu tree and extra attributes for SAP Business Client on the *Menu* tab page in transaction *Role Maintenance* (`PFCG`).

For more information, see Role Menu and the documentation that is displayed by choosing the *Information* icon on the *Menu* tab page.

Tree Structure

The figure below shows the role menu tree on the *Menu* tab page in PFCG and is followed by an explanation:

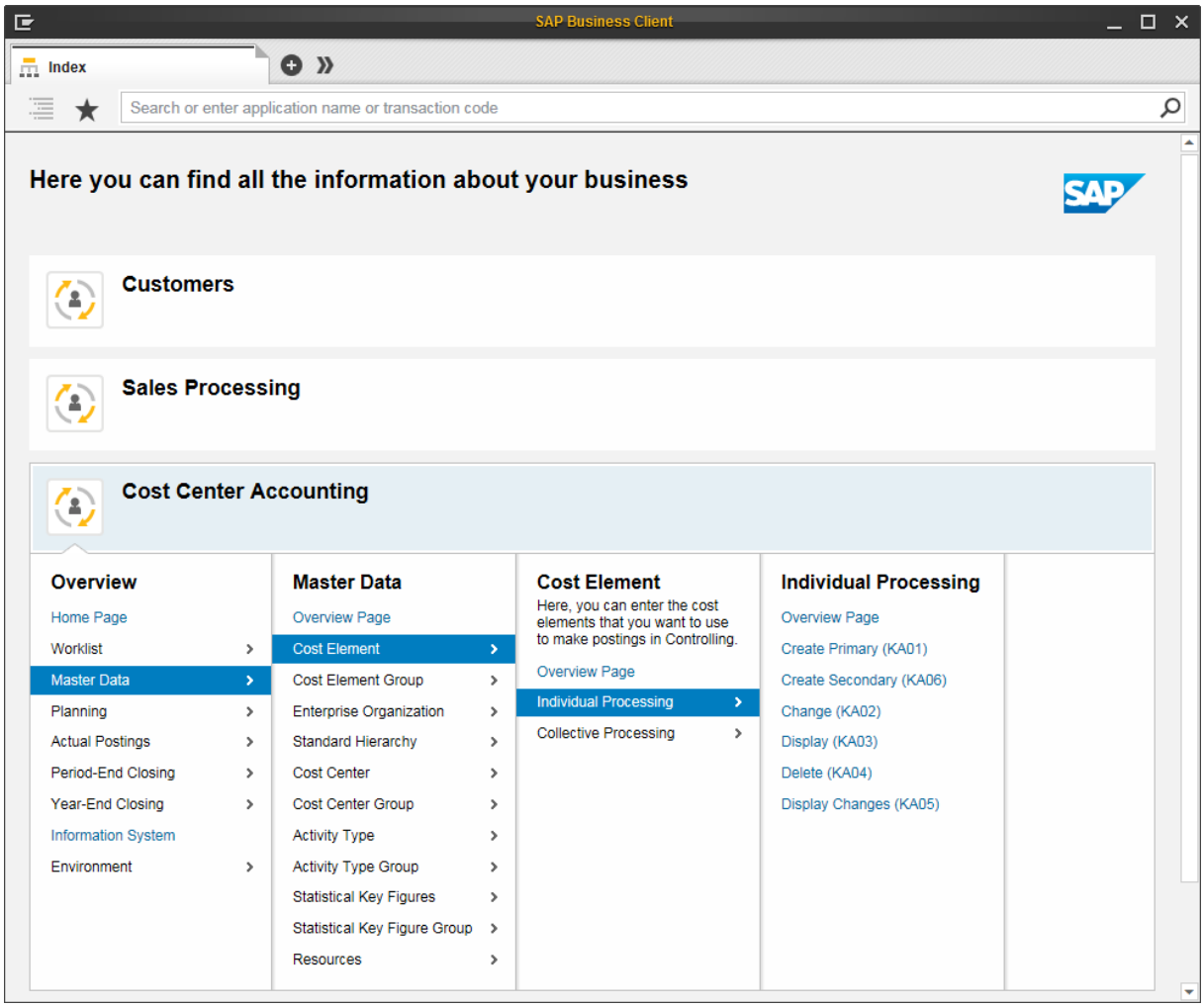


The first node in the tree, labeled *Role menu*, is a pseudo node that contains the root folder (or folders) as children. This specific node is not part of the navigation tree and is not visualized in SAP Business Client. A menu tree contains a root folder, represented by the work center, as the starting point. A work center comprises the navigation options to the applications a user needs to perform his or her typical tasks. In case the navigation structure is more complex and consists of several navigation levels, the content for this work center can be organized in folders. A menu tree can contain any number of levels.

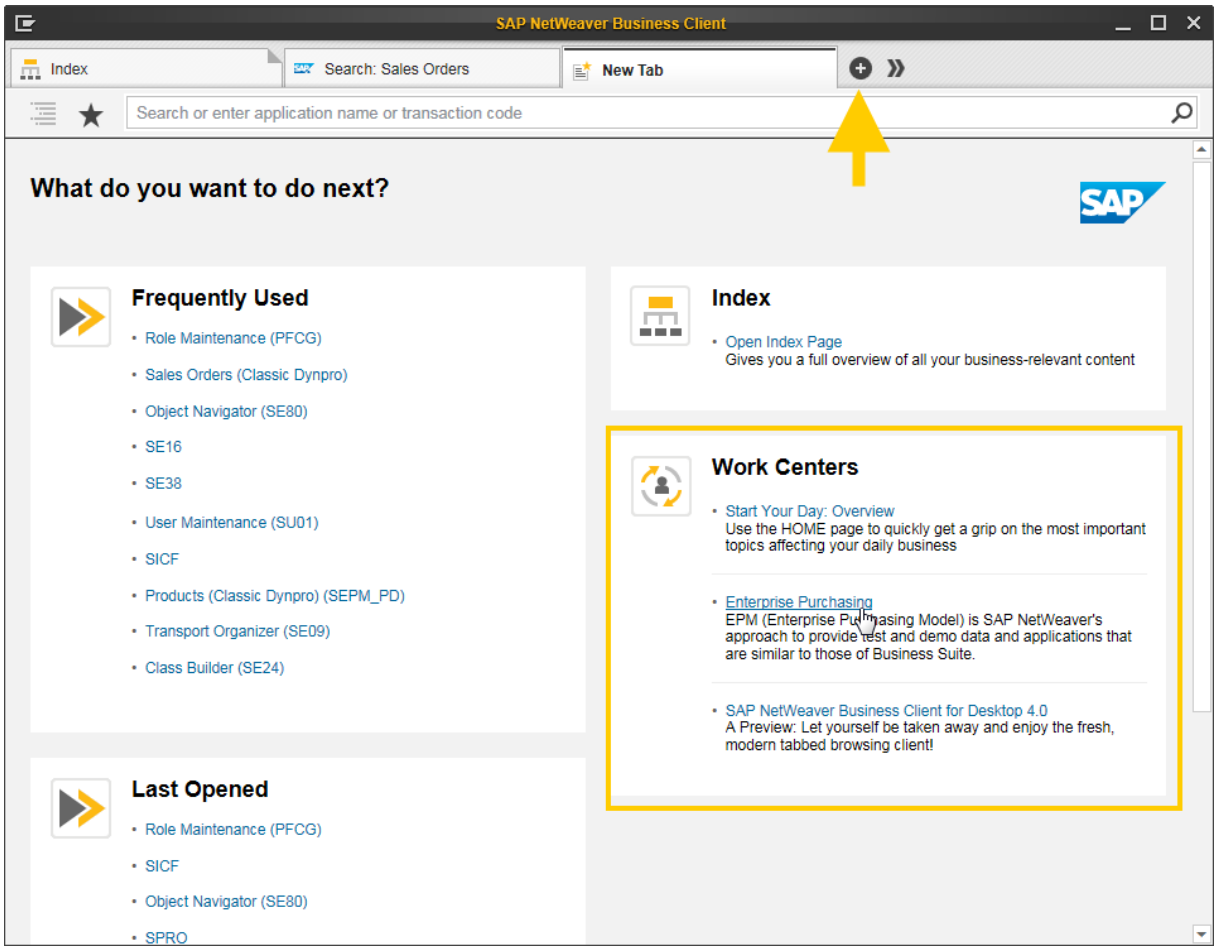
The navigation tree is exposed to the overview pages and the navigation panel of SAP Business Client.

The index page [page 49] displays the entire navigation structure for a user in a hierarchical form. When the user starts to navigate inside a work center on the folder level, the navigation targets of this folder are exposed in a new column next to the folder. When the user selects an entry for an application or transaction, which appears as a link, the content opens in a new tab.

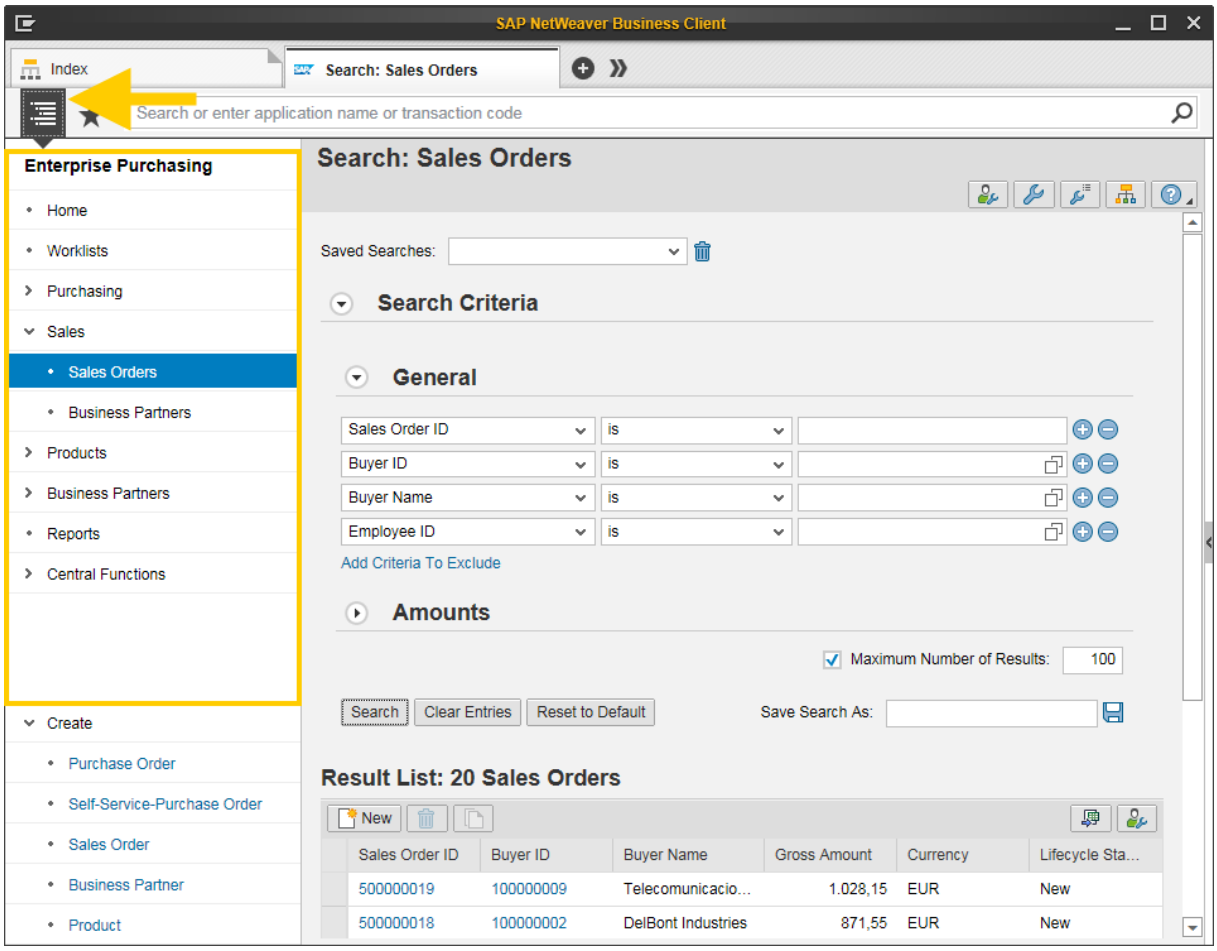
The concept described above is illustrated in the following figure:



On the new tab page [page 50], the user can select work centers. SAP Business Client then opens a new tab with either the default page of the work center, a service map, or the first application within the work center. This concept is illustrated in the following figure:



The navigation panel [page 47] is displayed for each tab next to the content area and grants access to the navigation tree of the work center the tab page belongs to. This concept described above is illustrated in the following figure:



You can rearrange your folders and individual menu items by choosing the arrow icons on the *Menu* tab page or by using drag and drop.

Program Types

Diverse objects can be specified as items in the menu tree according to normal PFCG procedures. To do this, choose the appropriate option from the 

dropdown menu of the *Insert node* function in change mode. Note that each application has its own attribute screen that is dependent on its application type. To call the attribute screen, select *Details* in the context menu of the node.

> **Note**
>
> Note that you cannot insert applications at level 1 but only folders.

SAP Business Client supports only the following objects in the menu tree:

- SAP Fiori app
- Transaction code
- Web Dynpro ABAP application
- BSP application
- Web address or file*
- Generic Web address (URL template)*
- WebClient UI applications (for systems with WEBCUIF 7.02 upwards, for example, CRM 7.0 EHP1).
  Note that navigation with SAP Business Client may differ from the common look and feel in SAP CRM.
  This integration is aimed primarily at users whose applications are not based on the WebClient UI with SAP Business Client and need to access only a few WebClient UI applications. For example, you use Financial Accounting in SAP Enterprise Resource Planning (SAP ERP) and, in addition, you wish to use account details of SAP Customer Relationship Management (SAP CRM).
  Users who work primarily with WebClient UI applications should continue to use the standalone WebClient UI to have the full set of features available with WebClient UI components and the roles that were designed for the WebClient UI.
  Note that there are certain limitations and specifics regarding WebClient UI applications and SAP Business Client. For more information, search for *Integration with SAP Business Client* in the SAP Help Portal under the *WebClient UI Framework* section.

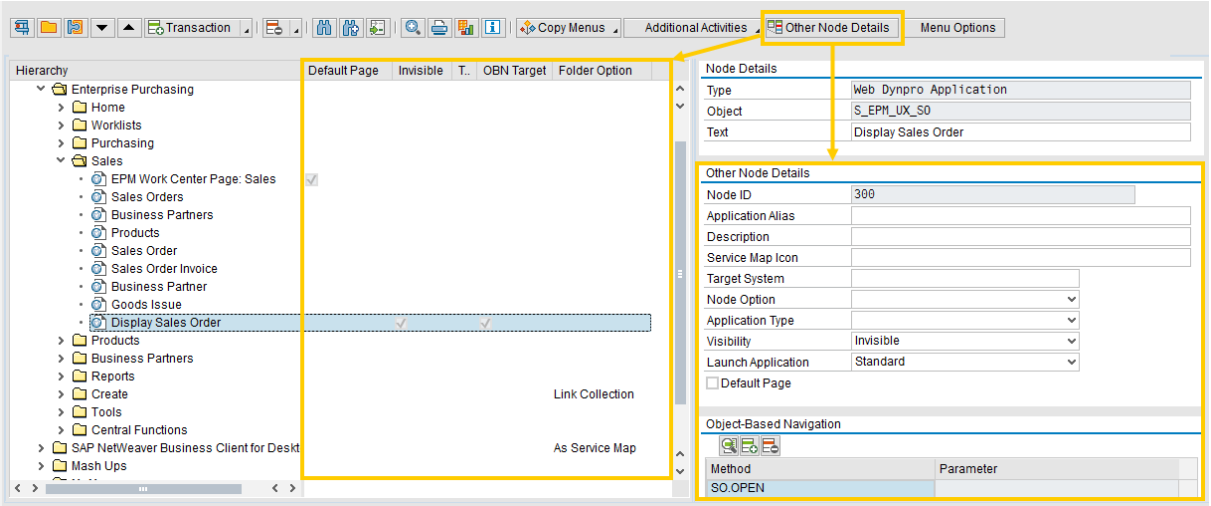
* **Replacing Variables in Web Addresses (URLs)** - For Web addresses, you can define variables that are then replaced by the appropriate value at runtime. Doing this makes it possible, for example, to change a server address without making the Web address entered in a role suddenly invalid. In the Web address, you must enter the variables in pointed brackets <...>. You can define the variables in transaction `SM30` in table `SSM_VAR`. For example, a row is created with the key `SERVERNAME` and the value `http://www.my-server.com`. Here, the Web address `<SERVERNAME>/home.htm` is interpreted as `http://www.my-server.com/home.htm` when you run it in the SAP Business Client.

For each folder, you can specify a description that is rendered on service maps, and the *Index* and *New Tab* page. To edit the short text, select the folder and choose *Change Folder* in the context menu.

Node and Folder Properties and their Relationship to SAP Business Client

For SAP Business Client, specific attributes are available in transaction `PFCG` for each folder or node. These additional attributes are used to achieve runtime effects on the SAP Business Client shell. To maintain these attributes, select the relevant folder or node and choose the *Other Node Details* pushbutton. For more information, see Improvements in PFCG User Interface [page 186].

The settings described above are illustrated in the following figure:



The entries in the menu can have the following attributes:

Level	Attributes
Folders at root level	*Folder Option* (*Service Map*, *Link Collection*, *Menu* or *Side Panel*) *Single Top Level*
Other folders	*Folder Option* (*Service Map*, *Link Collection* or *Side Panel*)
Single entries (applications)	*Node Option* (*Side Panel* or blank) *Application Type* *Visibility* *Launch Application*

The settings lead to different visualizations in the shell and in the content area. The table explains the settings available under *Other Node Details*:

Settings on Folder Level

Field Name (and Level)	Description
Service Map Icon (*)	You can select the icon that is to be displayed for this role on the service map. For more information, see the field help.
Work Center Icon (1)	You can select the icon that is to be displayed for this role on the navigation tab for the work center. For more information, see the field help.

Field Name (and Level)	Description
Folder Option (* except *Link Collection* and *Menu*)	The following options are available: • *As Service Map* Specifies that this folder has a special content area that displays the next level navigation entries. • *Link Collection* (only on level >1) Specifies that this folder, along with its entries, is a collection of links with additional functionality, for example, *See Also* links. • *Menu* (only on level =1) Specifies that this folder is displayed as an additional menu entry in the SAP Business Client menu bar. • *Side Panel* Specifies that this folder and all its subfolders are side panel applications.
Single Top Level (1)	No effect on SAP Business Client for Desktop 5.0.

Settings on Application Level

Field Name (and Level)	Description
Node Option (*)	*Side Panel* Specifies that this folder and all its subfolders are side panel applications.
Application Type (*)	These options are used to group entries together within home pages that were built by using Page Builder and that have the correct CHIPs. The following options are available: • *Report* Specifies that this application is a report so that all reports can be grouped together on home pages. • *New* Specifies that this application can be used to create a new type of business object. All transactions of this type are grouped together on home pages so that the end user can easily access them. • *Search* Specifies that this application can be used to find business objects, to then be able to work with them. All transactions of this type are grouped together on home pages. • <blank> This is the default setting and groups all applications.

Field Name (and Level)	Description
Visibility (*)	The following options are available: • *Visible* Specifies that the application is shown on the navigation panel and the index page. This is the default setting. • *Visible and Highlighted* In SAP Business Client for Desktop 5.0, the effect is the same as with option "Visible". • *Visible and Deactivated* Displays the link for this application grayed out to indicate that it cannot be opened by the user. • *Invisible* Specifies that the link for this application is not displayed in the navigation panel and the index page. • *Invisible in Navigation Frame* Specifies that this application is not shown in the navigation panel and the index page, but is displayed on a service map or on the home page if the specific CHIPs are available to show the sections from the navigation tree. Use this setting for applications/entries that are rarely used, for example, end-of-quarter transactions. These entries should not be visible in the navigation panel but in the more detailed views of the content area.
Launch Application (*)	The following options are available: • *Standard* With SAP Business Client 8.00, this application is opened in-place. • *In Application Window/ Tab* Specifies that the application is always started in a new tab. • *Stand-Alone* Specifies that this application is started directly in a browser. Typically, you use this option for scenarios where SAP Business Client is the only access point to the system and where SAP Business Client integrates other applications that are not designed to run in the SAP Business Client shell, for example, SAP Enterprise Portal and SAP CRM. In this case, the application is started in a browser session that is independent of SAP Business Client. This option is only available for nodes of type *Web address or file* or *Generic Web Address (URL Template)*.
Default Page (*)	Specifies that an application is displayed when the folder is selected.

Field Name (and Level)	Description
Force SAP GUI in HTML (* only SAP GUI transactions)	Specifies that a transaction is started in SAP GUI, not in SAP GUI for HTML. You can select this checkbox to force a transaction to be started in SAP GUI. Some transactions only run in SAP GUI, but not in SAP GUI for HTML. For more information, see the *Maintain Transaction Code* (SE93) transaction. However, note that this information is not always up-to-date. **Prerequisite:** You have installed SAP GUI on the presentation server. **Note** This checkbox is relevant only for SAP NetWeaver Business Client 3.6 for HTML. Remote SAP GUI for Windows calls cannot be supported and are converted into remote SAP Web GUI calls, unless the administrator explicitly prevents this using Customizing. In particular, you must be careful with the PFCG setting *Force SAP GUI in HTML* when defining OBN targets if you want to ensure that SAP NetWeaver Business Client 3.6 for HTML is fully supported by the role maintained.

Related Information

Default Pages and Service Maps [page 200]
Link Collections [page 203]
Single Top Level [page 204]
Menu [page 204]
SAP Fiori Integration [page 236]

1.3.3.6 Default Pages and Service Maps

Default pages and service maps are based on the following concept: When you select a folder, the content area fills with content.

Default Page

A default page is an application that is started when you select a folder and that usually provides an overview screen. In transaction *Role Maintenance* (PFCG), you can define default pages for each folder at any menu level. On the index page, default pages appear as the first entry in a folder. In the navigation panel and on the new tab page (*Work Centers* area), you can select folders. If a folder has a default page defined, the associated default page is opened.

To define the *Default Page* option, on the *Menu* tab page in transaction PFCG select the relevant folder and choose *Other Node Details*. Then select the *Default Page* checkbox.

> **Note**
>
> If a folder contains nothing but a default page, only one node will be inserted in the navigation tree representing the default page. The description shown on the index page and the navigation panel is taken from the folder.

Service Map

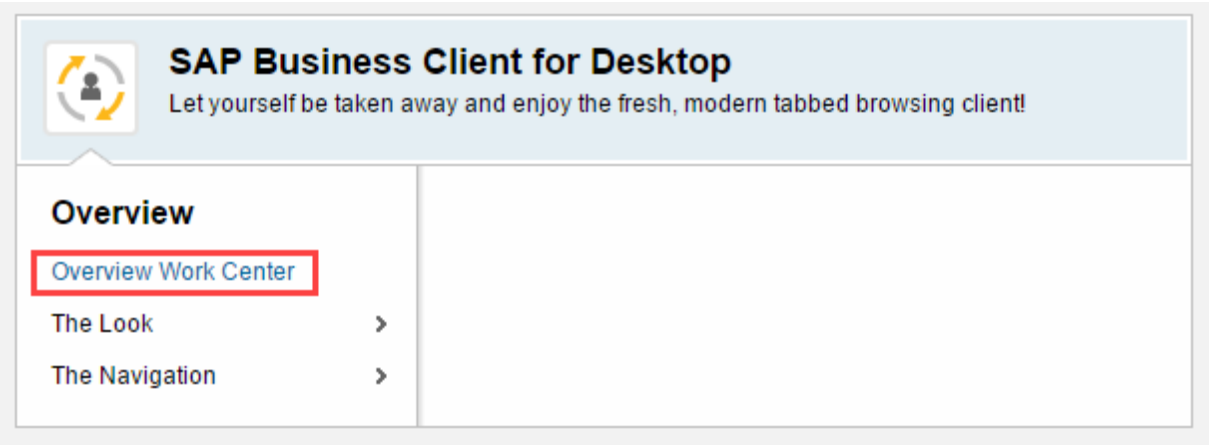
A service map generates an overview of the navigation structure of the next levels of the navigation tree, allowing the user to get a better overview of the business process represented by the folder.

To define the *As Service Map* folder option, select the relevant folder on the *Menu* tab page in transaction PFCG and choose *Other Node Details*. Then select the *As Service Map* option.

You can also specify an icon for folders within service maps in the *Service Map Icon* field. This is a 48 x 48 pixel icon that is used to visualize a folder in a service map. Entries with the format `~Pictogram/name` are supported. The `<name>` must be a token from a predefined list of pictograms. To have this folder represented, for example with a train image in a service map, configure `ServiceMap = ~Pictogram/Train`.

Short texts entered in the *Description* field are rendered into the service map.

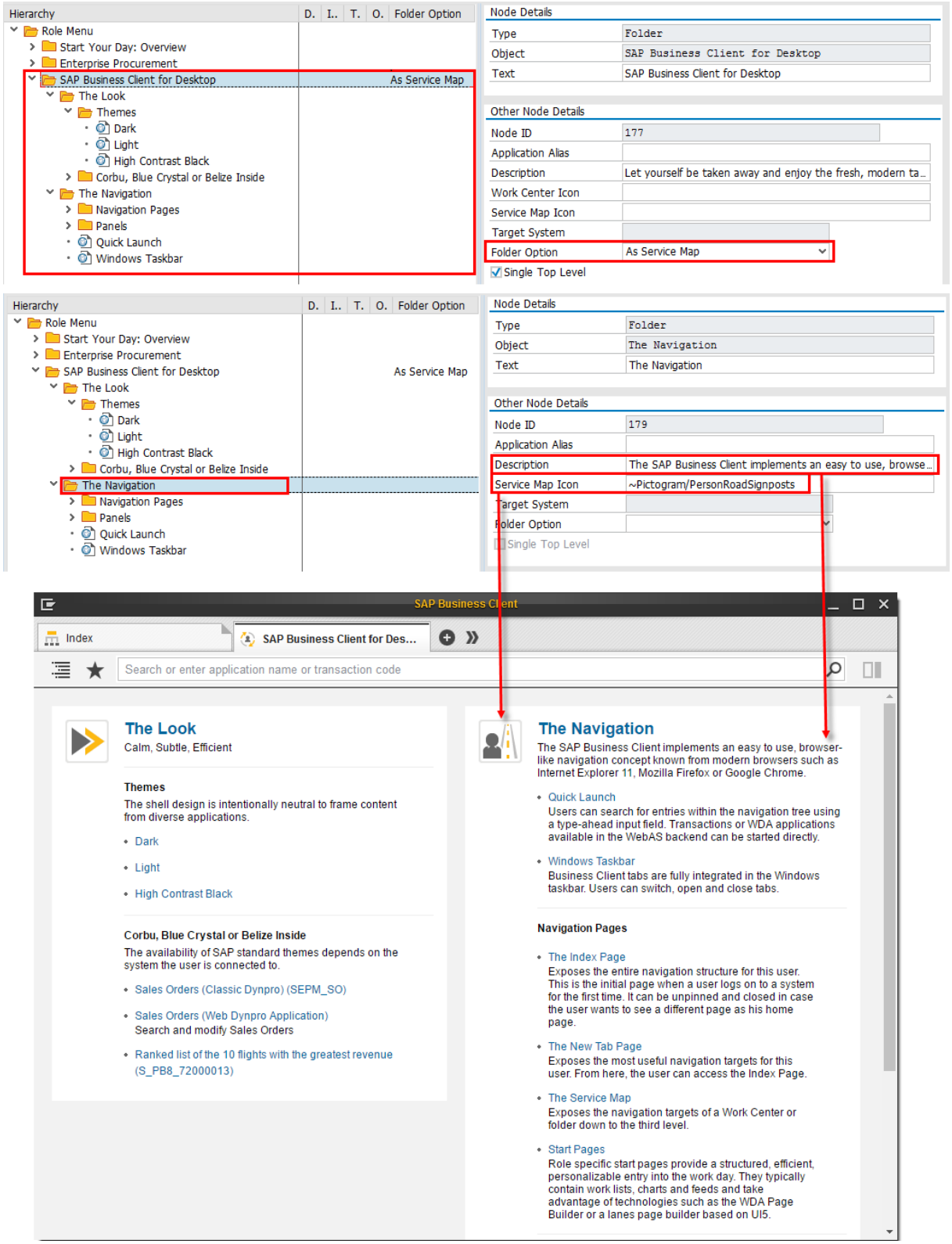
Folders defined as service maps are displayed on the index page when using an *Overview Work Center* or *Overview Page* link. This concepted is illustrated in the following figure:



The applications in a folder that is defined as a service map in transaction PFCG are displayed as links above the links for subfolders, even if these applications appear further down in the navigation panel. On the service map,

if you click the link that is a folder in transaction **PFCG**, you reach a page that contains the same application links.

The concept described above is illustrated in the following figure:



1.3.3.7 Link Collections

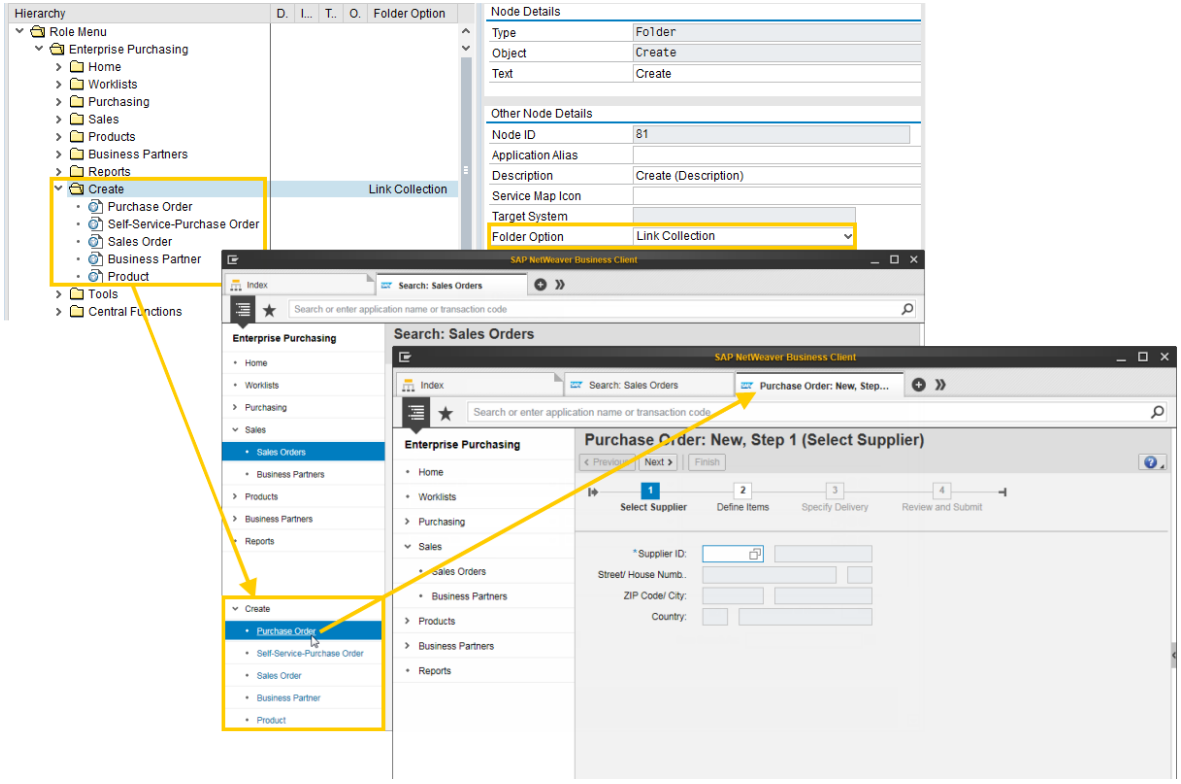
Use

The *Link Collection* setting in transaction *Role Maintenance* (PFCG) means that the folder, along with its entries, is rendered as a collection of related links, which belongs to the currently selected folder and is displayed in the lower part of the navigation panel. To define link collections on the *Menu* tab page in transaction PFCG, select the relevant folder, choose the *Other Node Details* pushbutton and select the *Link Collection* option in the *Folder Option* field.

Typical names of a link collection are *You can Also*, *See Also*, *Create New* or *Services*. For this type of link collection, the name already suggests its purpose.

Link collections are displayed on the navigation panel for the selected application. When clicking an entry in a link collection, it is always started in a new tab. Link collections are displayed in the navigation panel only, **not on the index page**.

The concept described above is illustrated in the following figure:



A folder that is specified as a link collection is always a child folder belonging to a parent folder. A link collection belongs to, and is displayed for, a folder and all of its entries. A folder can have multiple link collections.

One specialty of link collections is the way they are propagated down through the navigation tree. A link collection on a folder at any level of the navigation tree is also visible for all child folders. If there is more than one link collection for the same folder with exactly the same display name, the collections are merged.

1.3.3.8 Single Top Level

Use

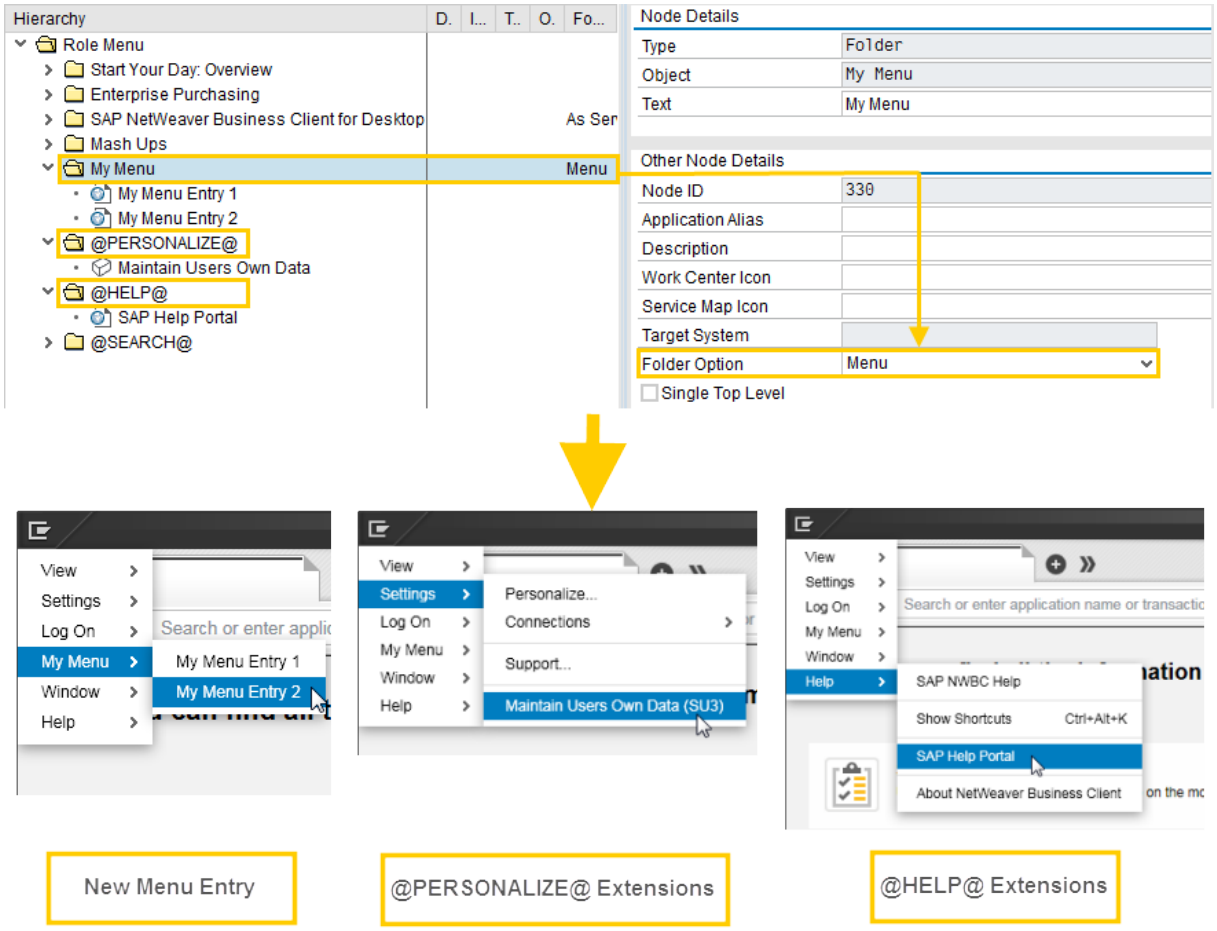
The option to define a folder as *Single Top Level* is not relevant as of SAP Business Client.

1.3.3.9 Menu

Use

The *Menu* option in transaction *Role Maintenance* (PFCG) specifies that the folder, along with its entries, is rendered as a separate menu in the upper part of the shell. The menu is then visible and available at all times, regardless of the application that is currently running in the content area. Such folders representing menus can be configured more than once for each role, but only on the root folder level. This is just an alternative way to start a transaction without having to select it in the navigation tree.

The figure below illustrates the menu option and is followed by an explanation:



To define the *Menu* option, select the relevant folder on the *Menu* tab page in transaction PFCG and choose *Other Node Details*. Then select the *Menu* option in the *Folder Options* field.

The folder name is either a freely defined text or you can use a predefined ID. Entries with predefined IDs are merged with existing menus.

The table shows the predefined ID that you can use as folder name:

Predefined ID	Description
@HELP@	Extend *Help* menu All help link entries are added in SAP Business Client to the help menu. The display string is shown in the menu, and the value itself is an URL that is started within a browser instance. You can use this to configure company-specific help, for example, to contact the help desk that is then available in all clients.
@PERSONALIZE@	Extend *Settings* menu

1.3.3.10 Search Providers

Administrators can configure search providers in transaction *Role Maintenance* (PFCG) under a folder with the predefined ID @SEARCH@ that are then presented in the quick launch dropdown to end users owning the role with the search provider definition.

This entry can be used to define an external search engine that is to be made visible in SAP Business Client. This is typically used to incorporate external search engines into all desktop clients. The entry text of each folder node is shown within the list of search engines on the client. The application is started when used.

A search provider is defined by a URL. There are the following types of URLs:

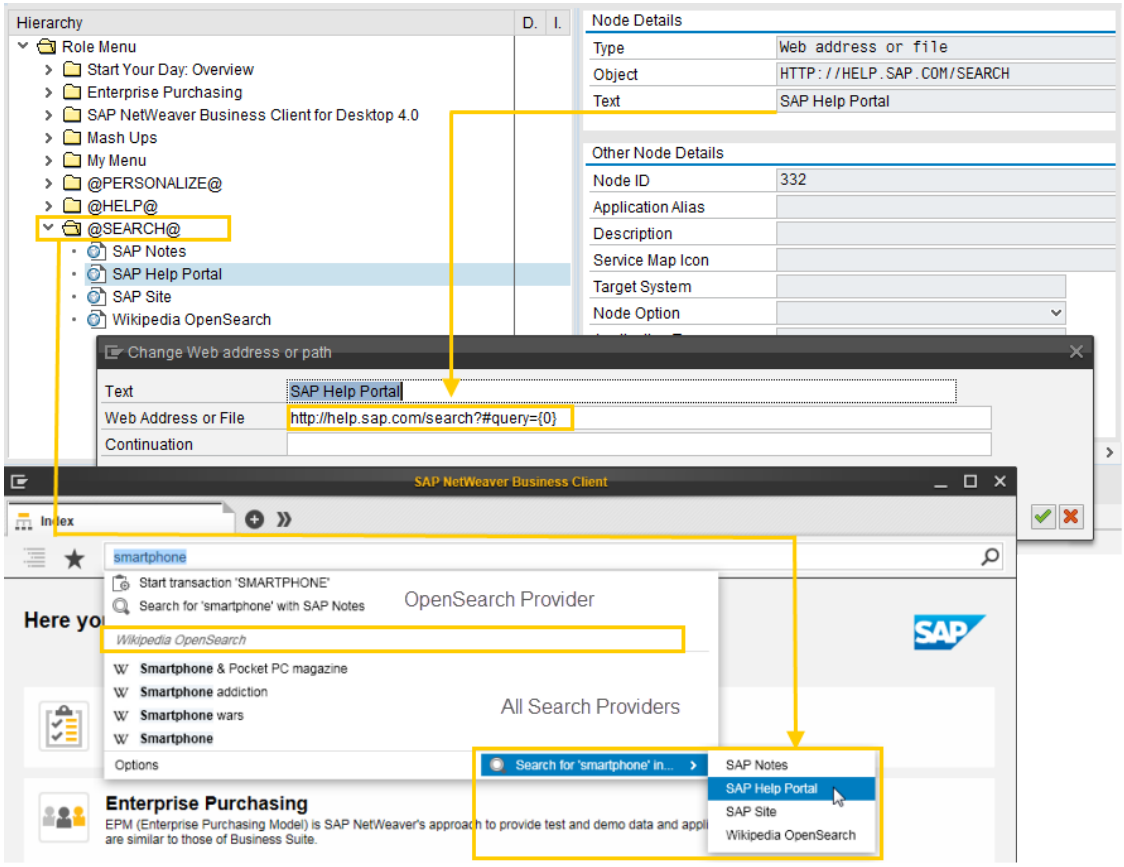
- A direct search URL that contains a placeholder for the query string that results in an HTML page with search results. The URL can be any URL that contains a string **{0}** as the placeholder. This placeholder is replaced with the query the user enters and the URL directly navigates to the specified HTML search result page.

  > ✤ Example
  >
  > **http://www.sap.com/search/index.epx?q1={0}**

- An OpenSearch URL that points to an OpenSearch metadata description (see **http://www.opensearch.org**). The metadata is an XML file that can contain multiple search services in the following flavors:
  - As HTML search result page
  - As suggest providers whose result is a list of search suggestions that are displayed in the dropdown menu of the quick launch

  > ✤ Example
  >
  > **http://en.wikipedia.org/w/opensearch_desc.php**

The figure below illustrates the search provider definition in PFCG and the effect on the quick launch dropdown:



Related Information

Search Types [page 40]
Dropdown Menu of the Quick Launch [page 38]

1.3.3.11 Side Panel

Use

You use the side panel to display additional context-sensitive information that relates to the main application in a container by the side of the content area of SAP Business Client. You define side panels using the *Role Maintenance* (PFCG) transaction. You can assign a side panel to specific applications which are contained in the menus of roles assigned to a user, to all applications contained in the user's menus, or to applications that are not contained in the menus.

> **Note**
>
> The entries defined as a side panel are displayed in the side panel container in SAP Business Client but not in the navigation tree.

More Information

Defining Side Panels [page 207]

Assigning Side Panels [page 208]

Integrating the Context-Sensitive Side Panel [page 257] (Contains information on integrating side panels for both NWBC and Fiori Launchpad type connections)

1.3.3.11.1 Defining Side Panels

Use

You define side panels using the *Role Maintenance* (`PFCG`) transaction. You select an entry in the *Role Menu* and define it as side panel. This entry can be a folder or a node such as a transaction code, a Web Dynpro application, a Web address or a file.

You have the following options to define side panels:

- You can define an individual node as a side panel.
- You can define a folder as a side panel.
  All entries in the folder are defined as a side panel.

After defining a side panel, you can proceed as follows:

- You can assign a side panel to other applications.
- You can assign a side panel to different user roles (a specific role or for all roles relevant to a user).

Procedure

1. Select the *Menu* tab page.
2. Select an entry in the *Role menu*.
3. Choose the *Other Node Details* pushbutton.
4. Proceed as follows:
   - To define an **individual entry** as a side panel, choose the *Side Panel* option in the *Node Option* field.
   - To define a **folder** as a side panel, choose the *Side Panel* option in the *Folder Option* field.

For more information about the settings in the *Role menu*, see Navigation Tree [page 191].

More Information

Side Panel [page 206]

Assigning Side Panels [page 208]

1.3.3.11.2 Assigning Side Panels

You can make an entry in the *Role Menu* that is defined as a side panel available for other applications and different user roles. This can be in a specific side panel role or in every role relevant to a user.

Procedure

To assign a side panel, proceed as follows:

1. Start transaction *Role Maintenance* (PFCG) and select a role.
2. On the *Menu* tab page, choose the *Other Node Details* pushbutton.
3. Select an entry in the *Role Menu* that is defined as a side panel.
4. Decide if you want to make the side panel available for a specific application or for multiple applications in the user's menu or irrespective of the menu, and proceed as follows:

Assignment Type	Procedure	Example (Application Alias)
For a specific SAP GUI application: Application-specific assignment irrespective whether the application is part of the user's menus.	Enter the following data in the *Application Alias* field of the side panel entry in the Role Menu: **{TR=<tcode>}**	**{TR=VA01}** Assign side panel to transaction Create Sales Order (VA01).
For multiple SAP GUI applications: Application-specific assignment irrespective whether the application is part of the user's menus.	Enter the following data in the *Application Alias* field of the side panel entry in the Role Menu: **{TR=<tcode_1>;…;<tcode_n>}** **Note** When you assign a side panel to a transaction, there is no support for matching of generic wildcard patterns.	**{TR=ME21N;ME22N}** Assign side panel to transactions Create Purchase Order (ME21N) and Change Purchase Order (ME22N).
For all SAP GUI applications: For all transactions irrespective whether it is part of the user's menus.	Enter the following data in the *Application Alias* field of the side panel entry in the Role Menu: **{TR=*}** .	**{TR=*}**

Assignment Type	Procedure	Example (Application Alias)
For a specific Web Dynpro application: Application-specific assignment irrespective whether the application is part of the user's menus.	Enter the following data in the *Application Alias* field of the side panel entry in the Role Menu: **{WDA=<application>[\<configuration>]}** You can also specify the configuration separated by a backslash.	**{WDA= FAC_PCG\ FAC_PCG_CONF}** Assign side panel to WDA application Manage Profit Center Group (FAC_PCG) with configuration FAC_PCG_CONF.
For multiple or all Web Dynpro applications: Application-specific assignment irrespective whether the application is part of the user's menus.	Enter the following data in the *Application Alias* field of the side panel entry in the Role Menu: **{WDA=<app_1>[\<conf_1>];…;<app_n>[\<conf_n>}** You can use wildcard patterns in the application and configuration specifiers.	**{WDA=FAC_*\FAC_*}** Assign side panel to the WDA applications Manage Profit Center (FAC_PROFITCENTR) and Manage Profit Center Group (FAC_PCG) with configurations starting with FAC_. **{WDA=*}** Assign side panel to all WDA applications
Application- and role-specific assignment	To assign a side panel to a specific entry such as a transaction code, a Web Dynpro application, or a Web address, enter the node ID of another entry **{REF=<node_id>}** in the *Application Alias* field of the entry or folder. You cannot reference folders.	**{REF=644}** Assign side panel to the application with node ID 644 in the same role **{REF=*}** Assign side panel to all nodes of the current role
For multiple applications in the same role	To assign a side panel application to multiple applications, leave the *Application Alias* field of the entry or folder blank. All applications on the same or underlying tree levels have the entry assigned as a side panel.	
For all applications assigned to the user's menus	To assign a side panel to all applications of all user roles, you have the following options: • Enter **{REF=**}** in the *Application Alias* field of the entry or folder. • Define a top level folder with Folder Option *Side Panel* and leave the *Application Alias* field of the folder blank. The applications within this folder will be assigned as side panel applications to all applications in the user's menus.	**{REF=**}**

→ Tip

The most clear and powerful way to assign side panels to SAP GUI and WDA applications is using the application alias. You can then change the assignment in one role and the side panel entries are assigned to all matching applications. If you use the REF application alias, there could be problems if you change the role, for example, recreate the referenced application which causes a different node ID.

ⓘ Note

For side panels in an FLP connection, an assignment of side panels to transactions can only be done using the application alias **`{TR=<tcode>}`**.

General Rules

Side Panel option and application alias can be specified on application node and folder level. If you specify these properties on folder level, do not use them in underlying nodes. Although this is possible, it can lead to confusion as side panels can be duplicated if you refer to an application inside your side panel folder.

In the application alias, you can assign multiple applications and mix absolute, role-specific assignments (**`{REF=25,89}`**) with global SAP GUI transaction assignments (**`{TR=SE16;SE80}`**) and Web Dynpro application assignments:

```
{REF=14;12}{TR=SE16;SE80}{WDA=NWBC_*\NWBC_WDA_*; WDR_TEST*}
```

ⓘ Note

Side panels are assigned to all user roles only in special cases when the user logs on without a specific role or cockpit defined. In this case, all roles are loaded together with the roles that contain side panel definitions, and correspondingly all loaded roles are modified with the side panel assignment. However, if a user logs on with some specific role (without the mentioned side panel assignment definition), this role (or the resulting Role Menu) does not get the side panel assignment from another side panel role.

More Information

Side Panel [page 206]

1.3.3.12 Object-Based Navigation

Use

Object-based navigation (OBN) is a form of loosely coupled communication through indirection, where the caller does not know the final transaction being executed. If you have, for example, a list of sales orders

and the user clicks one entry to display the sales order, the listed application triggers an OBN to destination `SalesOrder.Display` with the parameter `number=59`. By using transaction *Role Maintenance* (`PFCG`), you can configure the exact transaction to be called to handle this navigation. This target transaction could be different for different users or in different locations, which would be expressed by the assignment of specific roles to the user.

In this example the following concepts are important: the **indirect navigation** and the **handling of parameters**.

The following aspects of OBN are explained in detail:

- *OBN Overview* provides a general overview of different OBN features.
- *Determining the OBN Interface* explains the use of objects from the Business Object Repository (BOR).
- *Defining an OBN Target* describes the procedure to set up an OBN navigation target in transaction `PFCG`.
- *Parameter Mapping* lists the rules for parameter mapping and gives an example of inbound parameters, mapping table, and outbound parameters.
- *Determining Parameters for Transactions* specifies important aspects regarding parameter mapping for classic ABAP transactions.
- *OBN Target In Remote System* describes a special use case of OBN targets being in different remote systems.
- *Dynamic System Target* for OBN describes a special use case of OBN target resolving during runtime.

More Information

OBN Overview [page 212]

Determining the OBN Interface [page 213]

Defining an OBN Target [page 213]

Parameter Mapping [page 215]

Determining Parameters for Transactions [page 216]

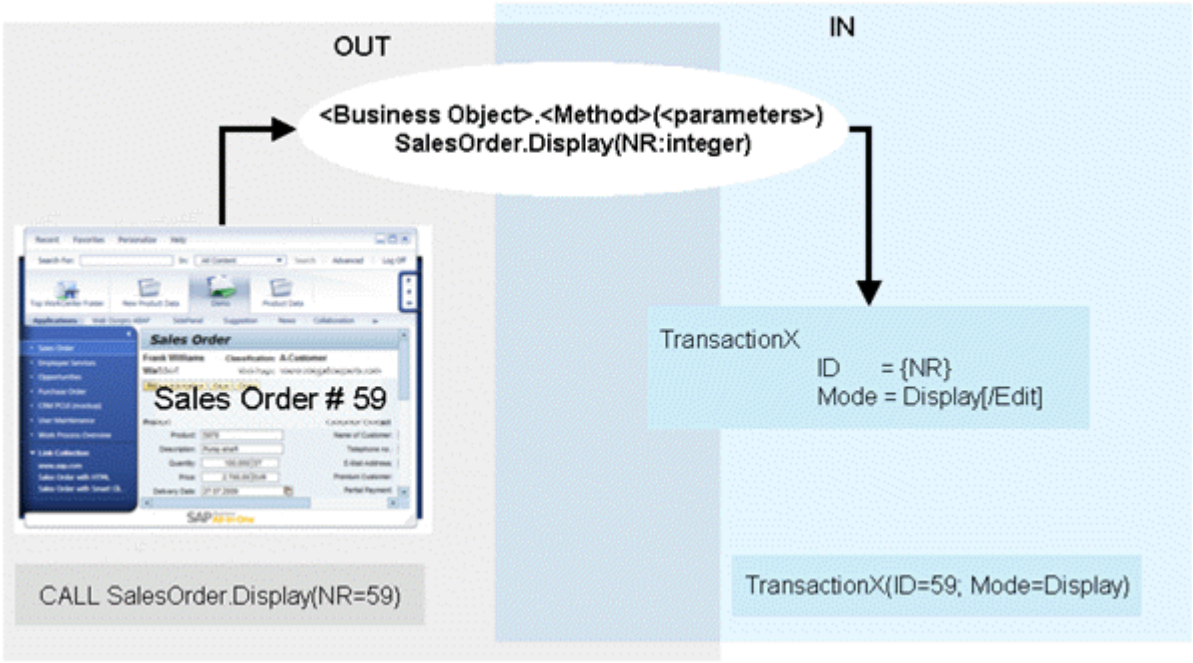
OBN Target In Remote System [page 220]

Dynamic System Target for OBN [page 221]

1.3.3.12.1 OBN Overview

Use

The figure below provides an OBN overview and is followed by an explanation:



For the indirect navigation, the symbolic object `SalesOrder` is introduced with the symbolic method `Display`. This sequence `SalesOrder.Display` is, in the first instance, a pure agreement that states that the application always calls the symbolic name `SalesOrder.Display` that can then be mapped in transaction *Role Maintenance* (`PFCG`) onto any target application within a role that is then assigned to the user. At runtime, the roles assigned to the user are all loaded and scanned for a transaction that is associated with the symbolic name `SalesOrder.Display`.

The parameter handling is more complex. When the calling application is developed, there is no information available about the target application that is to be selected to handle the call at runtime. The calling application only knows that there is a symbolic name `SalesOrder.Display` available. In addition to this symbolic method call, a symbolic parameter `nr` of the sales order, which must be displayed, is introduced. The calling application can set the symbolic parameter.

This introduces the concept of a symbolic interface that is a description of the abstract method that is called with the defined parameters as they should be set for the call. For this example, the symbolic interface is `SalesOrder.Display( nr:integer )`. The calling application calls `SalesOrder.Display( nr = 59 )`. Note that in the first instance, the symbolic interface is purely a documented agreement that is not enforced.

In the last step, a new target application must be defined to handle this symbolic interface. The target application has any number of parameters with different names. For example, we wish to call the target application `TransactionX( id:integer , mode:string )`. While configuring, a parameter mapping must be done. In this case, we want to express that the `id` parameter must be filled from the symbolic parameter `nr`. This is achieved with the notation `id = {nr}`. In addition, we need to hard-code the `mode` parameter. The complete mapping is then: `SalesOrder.Display( nr:integer ) -> TransactionX( id = {nr}, mode = Display )`.

Once the interface is defined, the first half is only the sequence to actually call the symbolic interface. The second half is the step to map the symbolic interface onto a concrete application.

1.3.3.12.2 Determining the OBN Interface

Use

One approach, supported by the `PFCG` integration, is to use business objects from the Business Object Repository (BOR) for the definition of the OBN interfaces. The object model of the BOR provides a description of all business objects, their methods, and their parameters. Use the *Business Object Builder* (`SWO1`) transaction to look up the required information. In the context of SAP Business Client, the calling application needs to know the interface and the names and possible values of the parameters. This is achieved by directly referencing BOR objects.

> ⓘ Note
>
> The BOR objects are only a design time construct to define the symbolic interfaces. At runtime there is **no** BOR involvement; the BOR business objects are purely used to help alignment onto standardized interfaces.

The use of BOR objects is optional. It is a repository of predefined interfaces that also includes parameter mapping. Alternatively, in transaction *Role Maintenance* (`PFCG`), you can configure a predefined set of values that have no relationship to an actual BOR object. The agreement on the decision of which specific symbolic interface to use is handled within the development team and must be documented. In this case, the following data must be known: the object name, the method name, and the list of parameters with their value ranges. This information is used to define the mapping onto the target application that must be called.

More Information

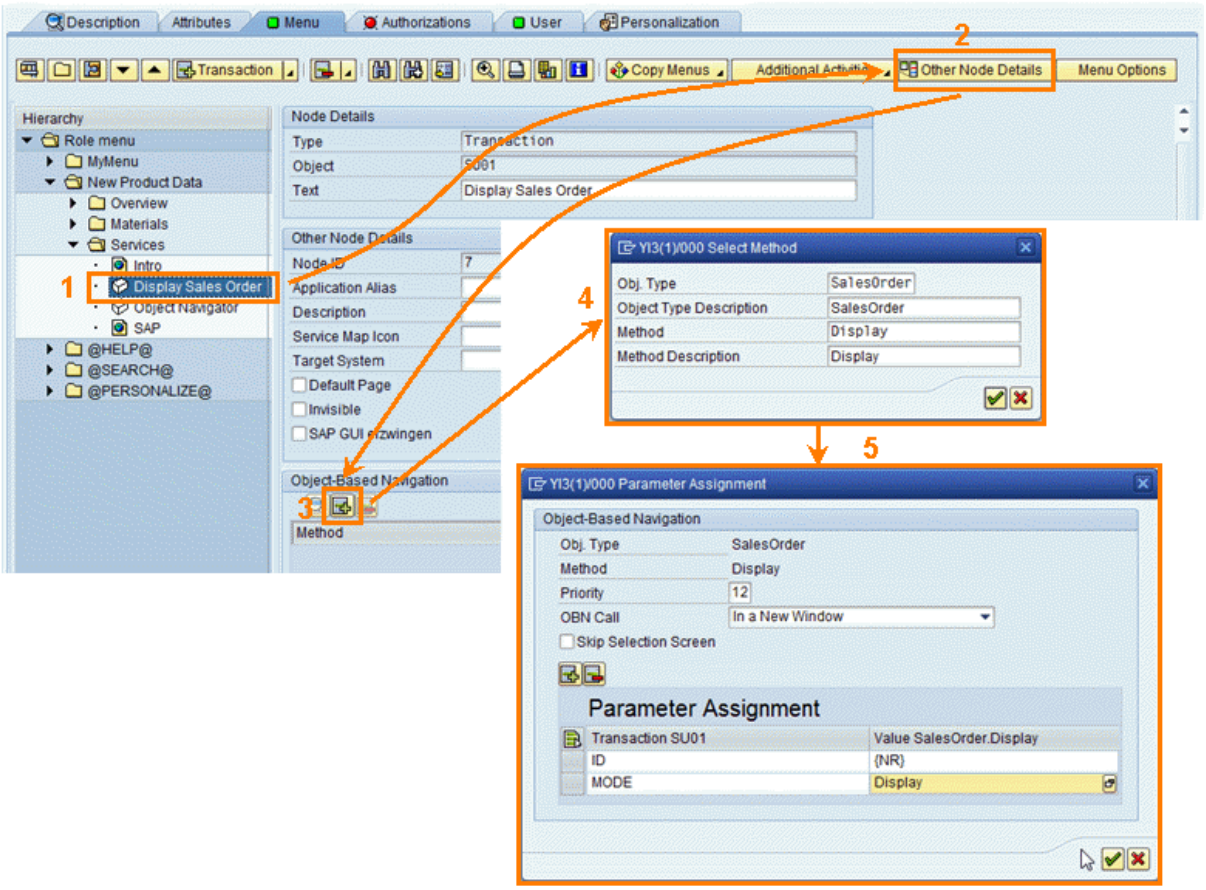
Role Maintenance in PFCG [page 183]

1.3.3.12.3 Defining an OBN Target

Use

The process of mapping one OBN onto a target application starts by selecting the target application and then specifying that this application can handle a specific OBN call. For more information about how OBN data is obtained, see OBN Overview [page 212] and Determining the OBN Interface [page 213].

The figure below provides an overview of OBN maintenance in transaction *Role Maintenance* (PFCG) and is followed by an explanation:



1. On the *Menu* tab in transaction PFCG, select the item you want for the target application and choose *Other Node Details*.

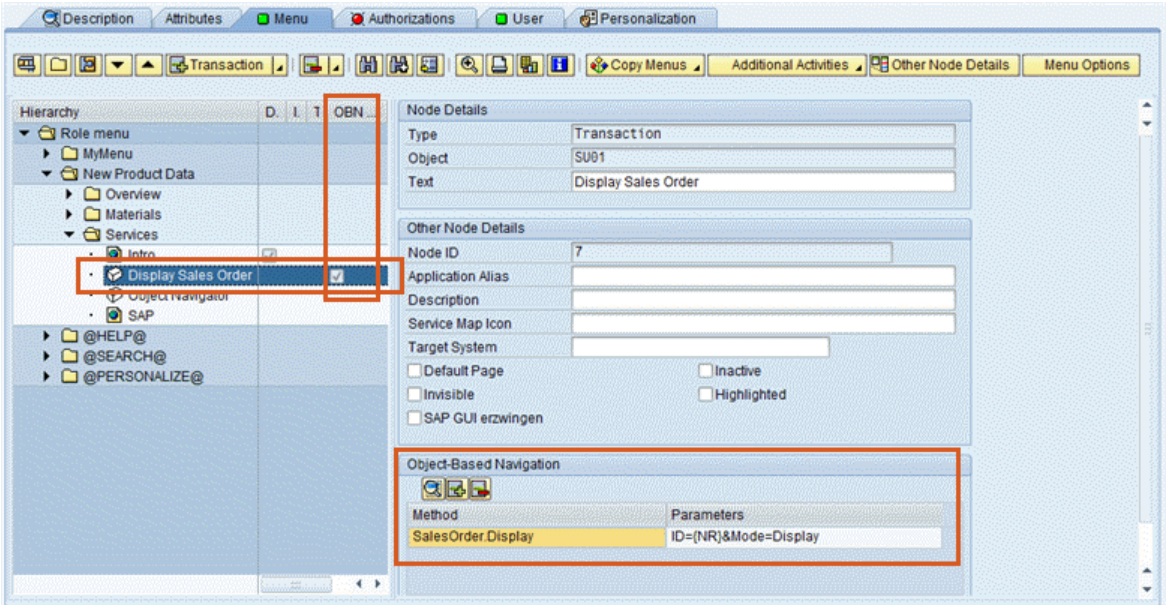
2. Choose the icon for *Insert Method* in the *Object-Based Navigation* screen area, enter the name of the business object and the required method, and confirm your entries. The object can either be selected from the Business Object Repository or can be freely defined. Both the object type as key and the description (the actual key that is used) must be defined. Define, for example, SLSORDER as object type and `SalesOrder` as description. The similar process applies to specifying the method: If a BOR object is referenced, the method can be selected, otherwise it must also be freely defined. Again, both the key and the description are needed. For our example, we could define DISPLAY as key and `Display` as method description.

3. Assign a priority and specify whether the OBN call should be displayed in a separate window or in the same window. Choose the icon for *Insert Parameter* under *Mapping of Parameters*.
   Priority values are used in the final OBN resolving in cases where more than one application is available for the same OBN target. In this case, the target application with the highest priority is selected. The priority is defined in descending order, with the highest number being the highest value.

4. You can now insert as many parameters as you wish and assign values to them for the mapping. Within the table, the first column contains the parameter names of the target application. These are the parameters

that are used to start the application and must exactly be the list of parameters that the application expects. In the last column, the values that are set for each parameter are listed. Each value can either be set directly or be taken from the parameters supplied for the OBN call. In this last case, use for the value of the OBN parameter name in curly brackets. The actual value is then taken from the value supplied in the OBN call at runtime.

5. Save your entries.
   Your entries are listed in a table under the *Object-Based Navigation* screen area. Here, you can display entries individually, insert additional methods, and delete entries from the list. This feature is shown in the following figure:



1.3.3.12.4 Parameter Mapping

Use

For the parameter mapping, the following rules apply:

1. The starting point is the set of parameters that are mapped.
   - All parameters that are mapped are filled.
   - Parameters, for which no input value is supplied, are stripped.
   - All static parameters are automatically forwarded.
2. In the next step, the incoming parameters are evaluated.
   - All parameters used for mapping are discarded.
   - For all incoming parameters, for which a new value already exists, the incoming parameter is dropped.
   - The rest of the parameters are forwarded transparently.

Inbound Parameters	Mapping Table	Outbound Parameters	Comment
A=1	X={A}	X=1	X is filled with the value of A, A is discarded from the input set.
B=2		B=2	B is not referenced and mapped through transparently.
	Y=3	Y=3	Y is statically defined in the mapping and automatically used as an outbound parameter.
Z=99	Z=4	Z=4	Z gets a new value from the mapping, which is used as an outbound parameter. The original inbound parameter is discarded.
	Q={KLM}	(Q=)	For Q no value is supplied. It is discarded (effectively set as an outbound parameter with no value).

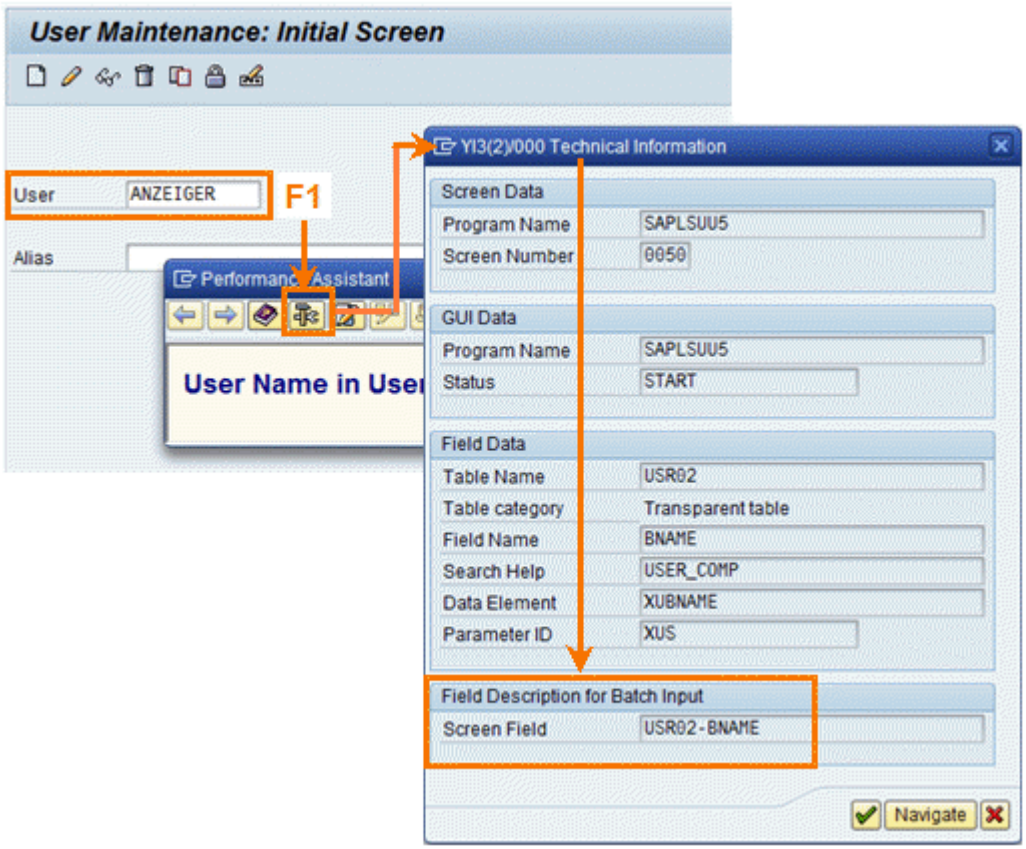
> **Note**
>
> The parameter mapping is done on string values; no processing is done to change the data format or representation of the parameters.

1.3.3.12.5 Determining Parameters for Transactions

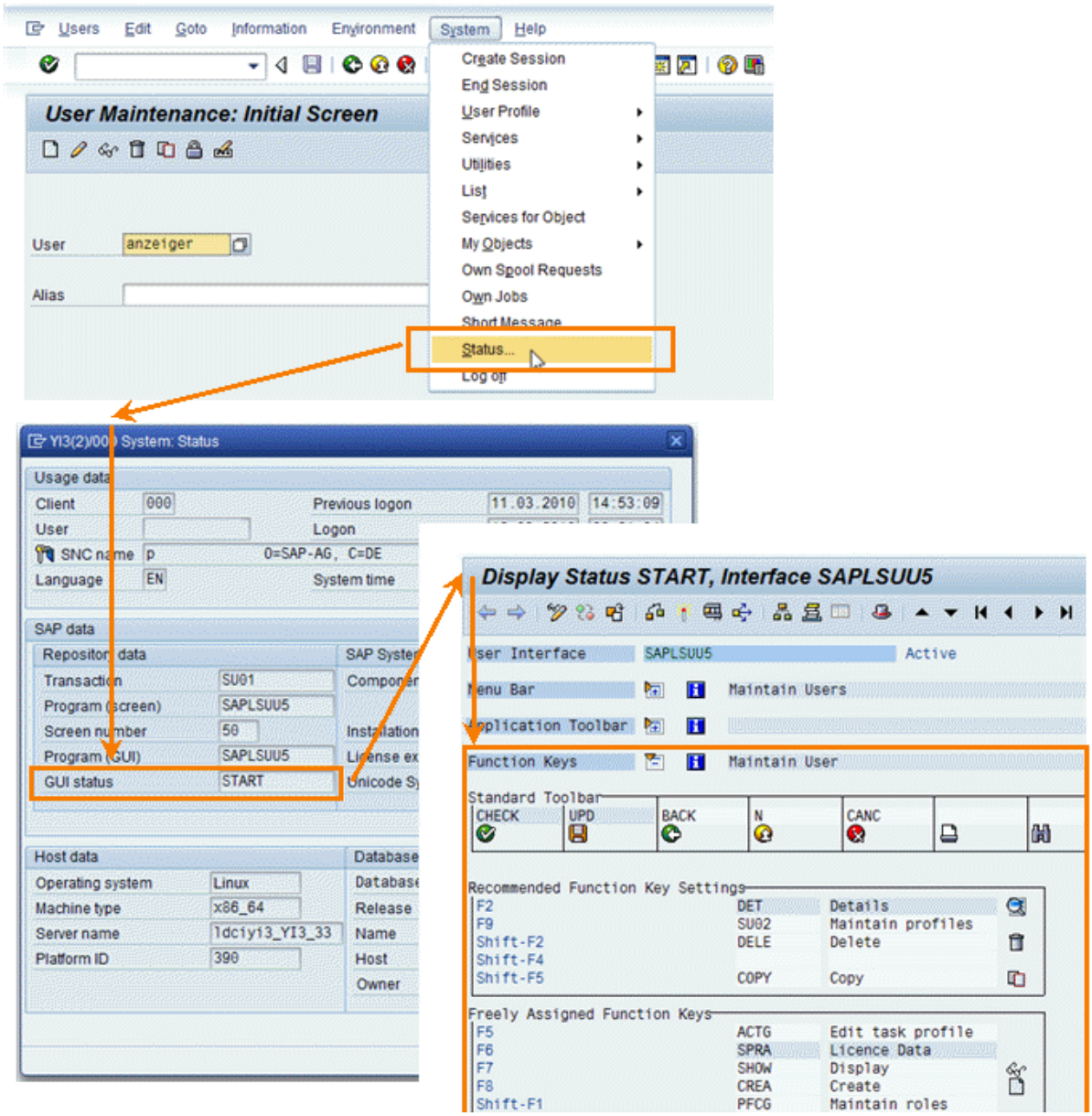
Use

When an OBN call is mapped onto a transaction, parameter mapping is still possible. Use the technical information to determine the screen field names (as is usually used for batch input) for the startup screen of the target application. If all fields are available, the start screen fields are filled and the transaction moves to the next field.

For example, you wish to start transaction *User Maintenance* (`SU01`) to show the information for the user `ANZEIGER`. Start the transaction in SAP GUI and determine the screen field name. The following figure shows an example, in which the value is `USR02-BNAME`:



Secondly, determine the `OK code` for the next screen. To do this, choose *System* > *Status...* from the menu and then double-click the *GUI Status* field. A status editor appears that shows all the `OK codes` possible on this specific dynpro under *Function Keys*. The activities described above are shown in the following figure:



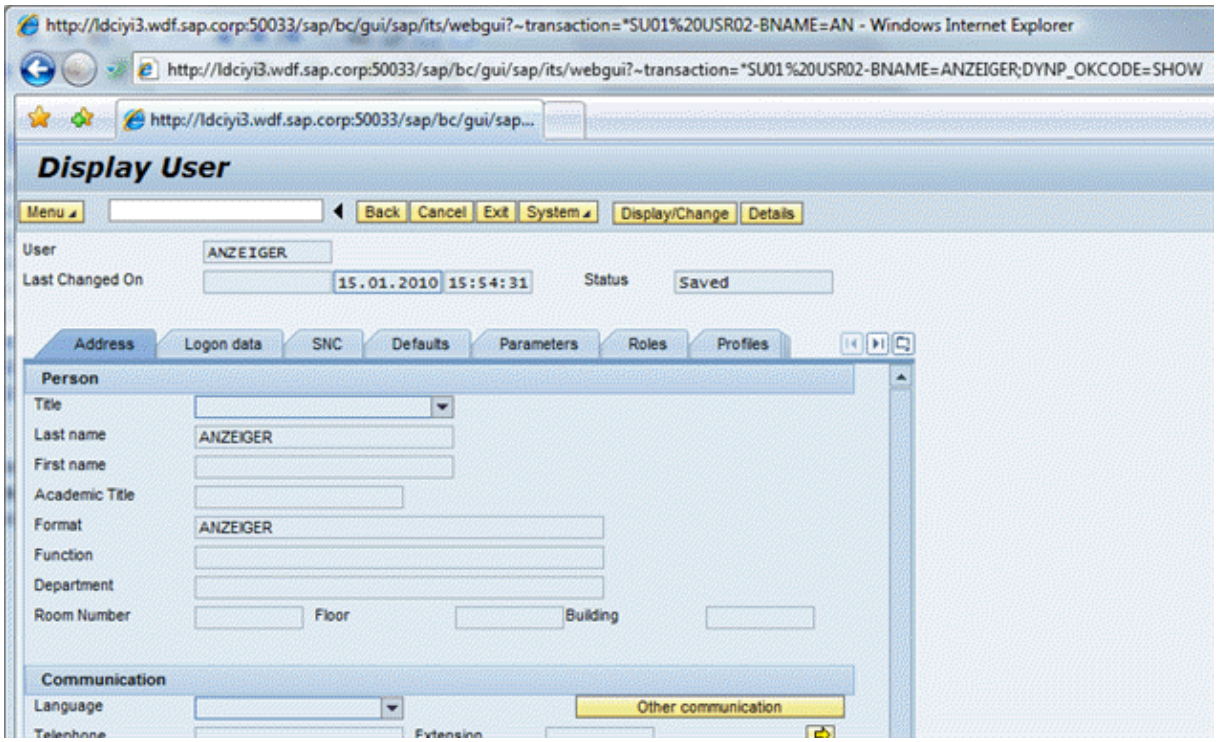
We recommend that you test the screen field names with values using the SAP GUI for HTML. The startup URL of the SAP GUI for HTML has the following format:

```
http://server:port/sap/bc/gui/sap/its/webgui?
~transaction=*<TCODE><SPACE><P1>=<V1>;<P2>=<V2>;<P3>=<V3>;DYNP_OKCODE=<CODE>
```

For this test example, use the following URL (using `%20` as URL encoding of a space character):

```
http://server:port/sap/bc/gui/sap/its/webgui?~transaction=*SU01%20USR02-
BNAME=ANZEIGER;DYNP_OKCODE=SHOW
```

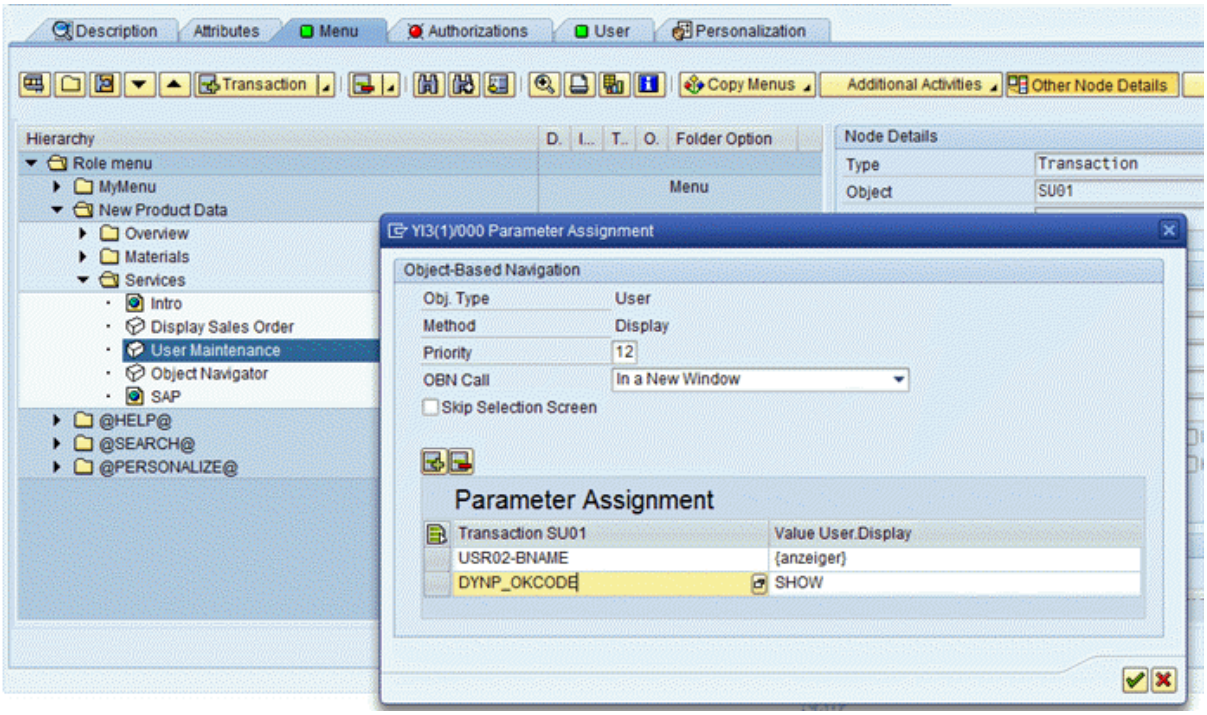
The concept described above is shown in the following figure:



With this data, you can now easily map an OBN target onto a transaction. If OBN interface `User.Display( username:string )` has to be mapped, a normal static parameter is added in the OBN mapping for the dynpro `OK code`. This parameter is then automatically added to the startup parameters for the transaction.

```
User.Display( username:string ) -> SU01( USR02-BNAME={username}
DYNP_OKCODE=SHOW )
```

The concept described above is illustrated in the following figure:



> ⚠ Caution
>
> For an OBN call onto a transaction, always define the transaction as a **transaction code**. Do **not** specify an SAP GUI for HTML URL directly! For the OBN parameter mapping, we always use **standard URL encoding formats**. The SAP Business Client runtime transforms the standard URL formats into the specialized format required by SAP GUI for HTML.

1.3.3.12.6 OBN Target In Remote System

Use

You can implement an OBN that executes an application in a different target system. Therefore, if the OBN target that is to be launched resides in another system, use the same mechanism as described in *Remote Systems*. An example of this cross-system navigation scenario with static system definitions is an SAP Supplier Relationship Management (SRM) solution or an SAP Supply Chain Management (SCM) solution that wants to navigate to an SAP Enterprise Resource Planning (ERP) system to display a specific business document. In this case, for the ERP-based application that is to be executed in a different system, change the *Target System* field to refer to the remote host. For more information about handling transactions that are not locally known, see Remote Systems [page 230].

Another example: Advanced Planning and Optimization (APO) is the leading system for planning. There could be multiple ERP systems providing different documents, such as sales order, production order, and so on. Each document in APO stores the information of the logical system to which the original document belongs. For cross-system navigation from APO to ERP to see all the details of the original document (for example,

VA03 for sales order), the logical system in the APO document is used to determine the correct ERP system for navigation. While setting up the PFCG role, the target system already needs to be defined statically and cannot be set dynamically from the calling screen. Therefore, one possible solution could be that for every target system, the application needs to be added multiple times to the role, each time for every single ERP system that could be targeted with an OBN call. For more information about dynamically determining the target system, see *Dynamic System Target for OBN*.

More Information

Remote Systems [page 230]

Dynamic System Target for OBN [page 221]

1.3.3.12.7 Dynamic System Target for OBN

Use

An OBN can dynamically, that is at the point of being resolved, decide to target a different system. An example of this scenario is an SAP Supplier Relationship Management (SRM) solution or an SAP Supply Chain Management (SCM) solution wishing to navigate to an SAP Enterprise Resource Planning (ERP) system to display a specific business document. However, in large installations, there could typically be more than one ERP system involved, with the exact selection of the ERP system only known based on the document or business object that actually triggers the object-based navigation. In such cases, although a target system may be configured in transaction *Role Maintenance* (PFCG), the actual target system is only known at runtime and must be passed as part of the OBN call.

With dynamic system target for OBN, it is not necessary to enter a remote system for the target in transaction PFCG. Instead, during the OBN navigation, add an additional OBN parameter called System that must have the value of the target system field. This value is used at runtime during the OBN resolving to determine the target system dynamically. Connections of type H must be added to the *RFC Destinations (Display/Maintain)* (SM59) transaction.

For more information about target system names, see Remote Systems [page 230].

1.3.3.12.8 Handling of Complex Data

Use

Normally, single parameters are passed together with an OBN event. These parameters can be used by the target application as a key to read further data. However, there are cases where it is necessary to transfer complex data, such as tables or structures, within an OBN event. This is not easy with single OBN parameters. Specifically where OBN is used with the same SAP system (preferably the same application server, but not enforced), two helper functions are added. These functions can take any data and serialize it locally to a shared

buffer, from where the starting application can then retrieve the data again. Therefore, it is only necessary to transfer a key to the serialized data, without the complexities of converting ABAP-internal data structures into other different formats. The static method `CL_NWBC=>OBN_PARAM_SET` takes one or more sets of data (including tables) and serializes them to a shared buffer. Optionally, you can provide your own unique key; otherwise a generated key is returned.

> **Note**
>
> If the provided key is not unique, exception `CX_NWBC_STATIC_CHECK` is raised. In the session of the target application, the stored data can be retrieved by using static method `CL_NWBC=>OBN_PARAM_GET` by using the unique key.

Example

Application where the OBN event is raised

```
lv_unique_key = cl_nwbc=>obn_param_set( it_data = lt_simple_table ).
```

... trigger OBN event and pass the `lv_unique_key` as the parameter value

Target application

... retrieve the unique key from the URL startup parameters

```
cl_nwbc=>obn_param_get ( EXPORTING iv_unique_key = lv_unique_key
IMPORTING et_data = lt_return_simple_table ).
```

1.3.3.13 Role Comparison

Use

The role comparison tool is a tool for administrators who want to compare two similar roles and their menu definition for SAP Business Client. For example, you can compare a copied role and the original role, or a role in different systems. Since an entry of a role has various attributes that influence the navigation structures in SAP Business Client, the tool helps you to identify inconsistencies or updates.

> **Note**
>
> You **cannot** compare authorization settings of a role by using this tool.

The tool is a Web Dynpro application (`WDA_NWBC_COMPARE_ROLE_MENU`). To access it, include it in your favorites or in the user menu.

The tool has the following screen areas:

- **Selection area**
  Here you can define which roles you want to compare.

- **Result table**
  Here you have the overview of the comparison result. The tool connects two menu entries from the two roles based on the same menu path and entry text.
  In the selection area, you can choose two roles. If a role is not stored in the local system, you can specify the remote system. The remote system refers to a RFC (Remote Function Call) destination, which you can specify in transaction *RFC Destinations (Display/Maintain)* (SM59). You can configure the destination to perform authentication automatically by supplying credentials in the destination itself. Entries with the same parent path text and the same entry text are compared. If two entries are connected and compared, both entries are merged into one line in the list. Any entry that is **not** connected is represented as an additional entry in the related role menu. Depending on whether the entry is additional in the first or second role, the appropriate icon is displayed.
  You have the following options:
  - *Display Mode*
    You can display both roles or single roles.
  - *Main Role*
    You can switch between the two roles.
  - *Filter*
    You can filter entries in the result table.
- **Details area**
  For each line in the result table, you can see the details of the comparison result of two entries.
  In the details area, the settings of the connected role entries are displayed. One entry is from the main role (by default, the main role is role 1 from the selection screen), the other entry from the dependent role. An icon shows that differences in the attributes exist.

1.3.3.14 Merging of Navigation Trees

Use

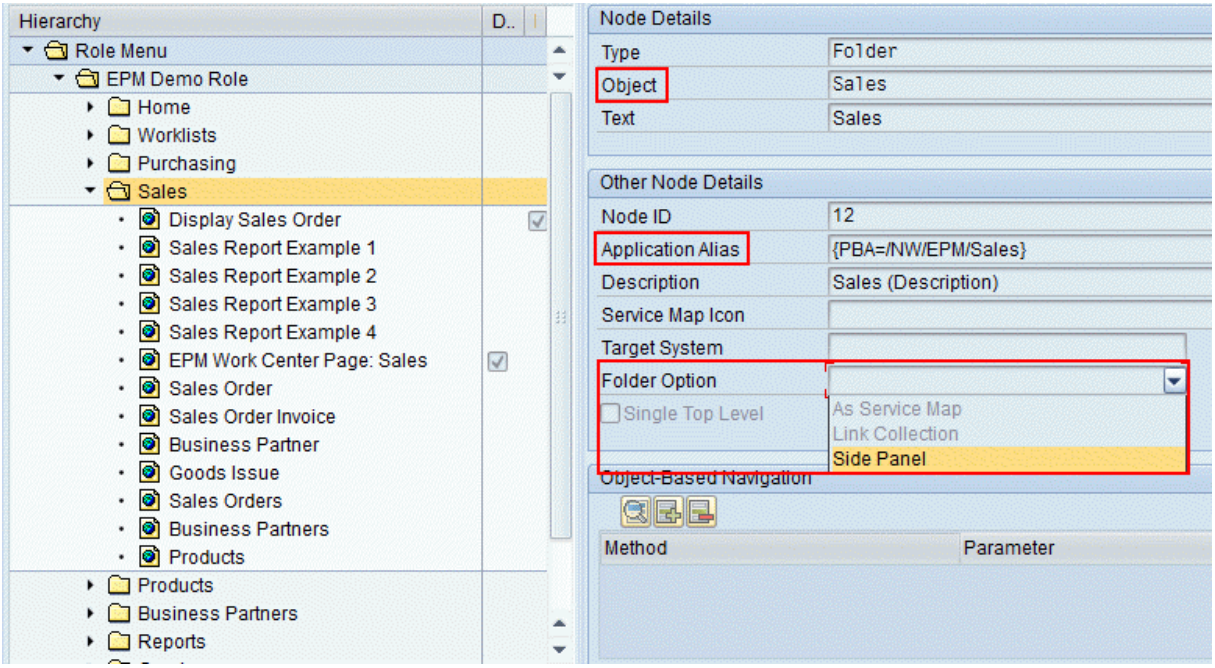
If a user has more than one role assigned, the entries in the navigation tree appear merged as in one role. If the same folders are used in several roles, the folder contents are merged. Two entries that are the same in two roles, appear only once.

The role order depends on the sort index defined for the role (in transaction *Role Maintenance* (PFCG) under *Menu Options* in the *Sort Index* field). The sort index determines the relative sorting of different roles when multiple roles are assigned. The sort order is ascending. The home role means sort index 0.

The following rules apply:

- If roles contain identical folders in equal hierarchies, their folder contents are merged and redundant folders are not visible. The folder contained in the role with the lower sort index is displayed.
- Identical folder means that the following attributes are identical:
  - Name of the entry (*Object* field)
  - Level of the entry in the tree
  - Type of the entry (standard entry, side panel, or link collection)
  - Referenced entry (for side panel and link collection)
- The entries of the merged folder are sorted according to the sort index. That is, entries from role with the lower sort index come first.

The figure below illustrates the relevant settings in transaction PFCG:



Example

Role 1 (sort index 1)

- Folder A
  - Folder A1
    - Entry A11
    - Entry A13
    - Entry A14
- Folder B
  - Entry B5
  - Entry B2
  - Entry B3
- Folder C
  - Entry C1

Role 2 (sort index 2)

- Folder A
  - Folder A1
    - Entry A10
    - Entry A15
    - Entry A13
- Folder D
  - Entry D1
- Folder B
  - Entry B5

- Entry B2

Result (merged role)

- Folder A
  - Folder A1
    - Entry A11
    - Entry A13
    - Entry A14
    - Entry A10
    - Entry A15
- Folder B
  - Entry B5
  - Entry B2
  - Entry B3
- Folder C
  - Entry C1
- Folder D
  - Entry D1

Link Collection and Side Panel

To enable entries specified as side panel or link collection to refer to normal entries, use an explicit assignment in the *Application Alias* field. In this case, the location in the tree for this entry is not considered for role merging.

Example

The following example is based on one role:

Role

- Folder A
  - Folder A1
    - Entry A11 (node ID 123)
    - Entry A13
    - Entry A14
    - Side panel A (refers to node 123)
- Folder B
  - Entry B5
  - Entry B2
  - Entry B3
  - Side panel A (refers to node 123)
- Folder C
  - Entry C1
  - Side panel A (refers to node 123)
- Side panel A (refers to node 123)
- Side panel B (refers to node 123)

Result (merged navigation tree)

- Folder A
  - Folder A1
    - Entry A11 (node ID 123)
    - Entry A13
    - Entry A14
    - Side panel A (refers to node 123)
- Folder B
  - Entry B5
  - Entry B2
  - Entry B3
- Folder C
  - Entry C1
- Side panel B (refers to node 123)

If you use a container folder for the assignment, that is, you have assigned several side panel entries for all entries of the same folder and child folders, the name of the container folder is not considered for merging. That is, in this case, the names do not need to be the identical. The reason is that the folder name is not shown on the UI. All entries of the assigned container folders are merged. The same effect occurs for global references, that is, when side panel applications are assigned to all roles of a user.

Example

The following example is based on one role:

Role

- Folder A
  - Folder A1
    - Entry A11
    - Entry A13
    - Entry A14
  - Side panel folder 1
    - Side panel A
    - Side panel B
    - Side panel C
  - Side panel folder 2
    - Side panel A
    - Side panel E
    - Side panel C
  - Side panel folder 3
    - Side panel A
    - Side panel D
    - Side panel C

Result on the UI

Entry A11 (and all other entries from folder A1) have the following side panel entries that appear when you choose the 

icon:

- Side panel A
- Side panel B
- Side panel C
- Side panel E
- Side panel D

For more information about the assignment of side panel applications, see Side Panel [page 206].

1.3.3.15 SAP Fiori Integration into PFCG

You can integrate SAP Fiori apps and the SAP Fiori launchpad into transaction PFCG (*Role Maintenance*) and make them consumable in the SAP Business Client.

Prerequisites

There are certain back-end requirements for the use of SAP Fiori apps and the SAP Fiori launchpad in the SAP Business Client that necessitate the following:

- *User Interface Add-On 2.0 SP00 for SAP NetWeaver* or
- Component SAP_UI 750 SP00

SAP Fiori Apps

SAP Fiori apps can be divided into the following categories:

- Non-standalone apps
  The majority of SAP Fiori apps fall into this category. These apps must first be configured in the SAP Fiori Launchpad Designer and transaction PFCG; for more information, search for the topics *Using the Launchpad Designer*, *Configure Custom Catalogs, Groups, Tiles and Target Mappings* under the *SAP Fiori Launchpad* topic in the SAP NetWeaver documentation in the SAP Help Portal http://help.sap.com/netweaver/. These apps use *intent-based* navigation that requires the use of an *Intent*, a *Semantic Object* and an *Action*.
- Standalone apps
  There is a small minority of standalone SAP Fiori apps which require simple configuration only in transaction PFCG (there is no need for any SAP Fiori launchpad system/user configuration on the ABAP front-end server creating catalogs, groups, tiles, etc.).

> **Note**
>
> "Standalone apps" is a deprecated feature; with FES 2021 (SAP_UI 7.56), this has been removed completely.

For an overview of SAP Fiori apps released to run in standalone mode when integrated in SAP Portal, see SAP Note 2103156.
For more information on running apps standalone, see *Running an Application Standalone* in the SAP NetWeaver documentation in the SAP Help Portal http://help.sap.com/netweaver/.

For general information about a SAP Fiori app, go to the SAP Fiori apps reference library and select the app you are interested in. For configuration details, switch to the *Implementation Information* view and expand the *Configuration* section under the *Technical Configuration* section.

With this version of the SAP Business Client, you can integrate all SAP Fiori apps via the PFCG menu. Additionally, you can use the SAP Fiori launchpad as a single point of access for the SAP Fiori apps.

Adding an SAP Fiori App or the SAP Fiori Launchpad to the Menu Tree in PFCG

To add an SAP Fiori app or the SAP Fiori launchpad in the menu tree in transaction PFCG, perform the following steps:

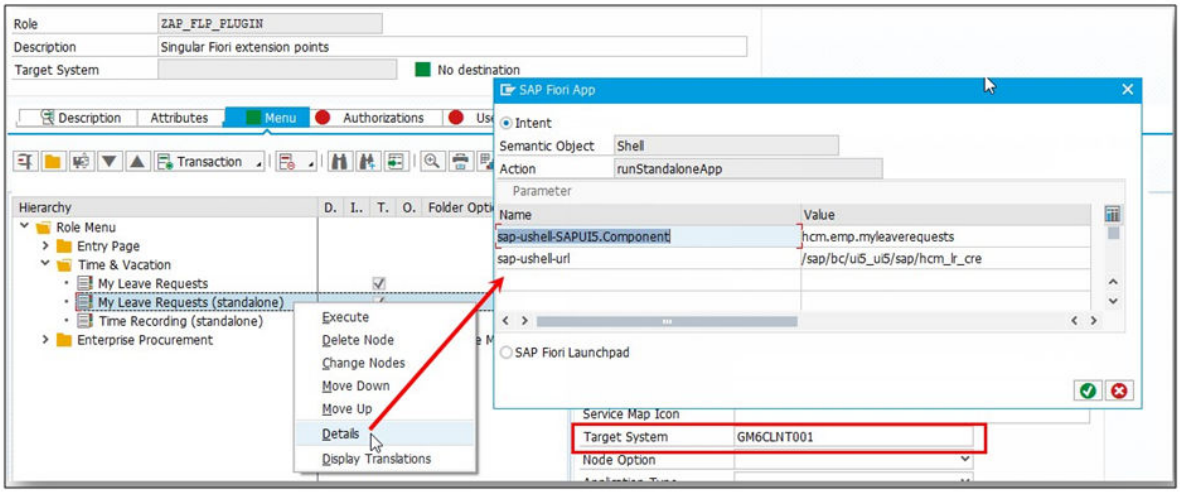
1. On the *Menu* tab, select *SAP Fiori App* from the *Insert Node* dropdown list box.
2. In the *SAP Fiori App* dialog box, do **ONE** of the following options:
   - Choose *SAP Fiori Launchpad*
     At runtime, the SAP Fiori launchpad home page is displayed, allowing the user to choose his/her app.
   - Choose *Intent* and complete the fields *Semantic Object* and *Action*, and enter the application-specific parameter information as follows:
     - Non-Standalone Apps
       For the required information, see the *SAP Fiori Apps Reference Library* (details above).
     - Standalone Apps
       For this type of SAP Fiori app, you must enter the following information:
       - *Semantic Object* = *Shell*
       - *Action* = *runStandaloneApp*
       - *Parameters* are used to identify the app:
         - *sap-ushell-SAPUI5.Component* = Name of SAPUI5 component, including the namespace, for example: hcm.emp.myleaverequests
         - *sap-ushell-url* = URL on the server, of the app's resource file, for example: /sap/bc/ui5_ui5/sap/hcm_lr_cre
3. Choose *Continue* to create the new entry.

> **Note**
>
> Once you have created an entry, you cannot edit it. You must delete the current entry and create a new one.

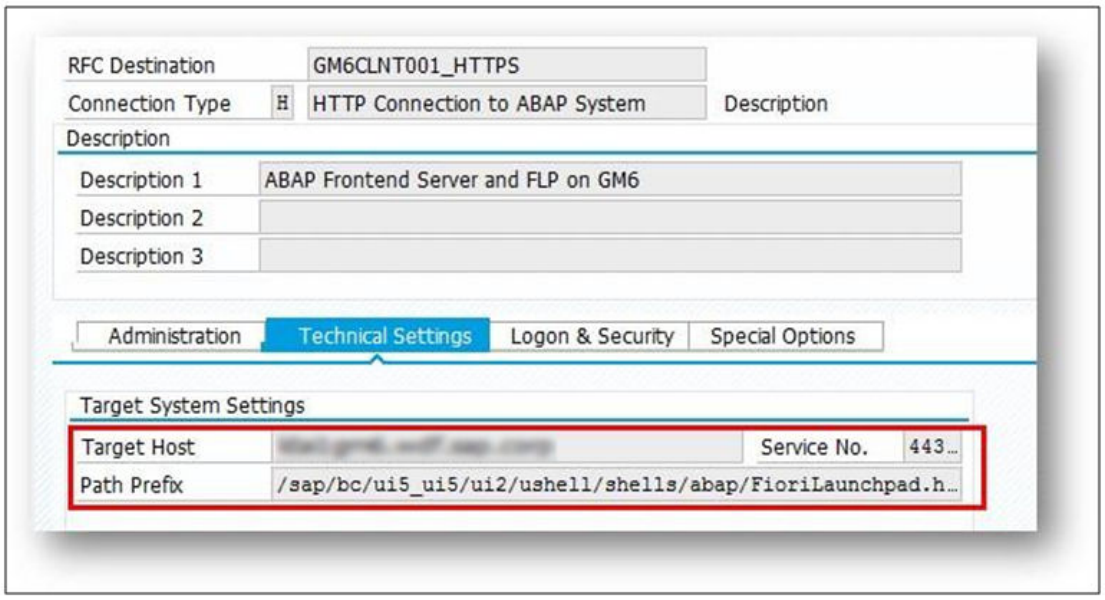
> **Note**
>
> When testing, note that the context menu option *Execute* does not take into account the target system but uses the local system and the default SAP Fiori launchpad URL instead.

Example

The following figure displays the details of a standalone SAP Fiori app (deprecated) in the menu tree. Note that the text required in the input fields of the *SAP Fiori App* dialog box is described in the procedure above (step 3).



> **Note**
>
> If you want to insert a SAP Fiori app, you must create RFC destinations in transaction SM59, specifying server addresses, ports, logon information, and in particular, the SAP Fiori launchpad start-up URL (for more information about this, see the SAP Business Client space on SCN Configuring Remote Systems in SM59). The ABAP connection must be specified in the *Target System* field (see screenshot). If no target system is specified, system alias FIORI will be assumed as of Server Runtime for SAP Business Client patch 64 (SAP Note 2721832).



In the above example, system GM6, client 001 is used as the ABAP front-end server/system hosting the stand-alone app. ABAP connection GM6CLNT001 contains information used for establishing SAP GUI connections (message server, port) as well as logon options (for example, client).

The HTTP connection contains server and port information as well as the relative Fiori launchpad start-up URL.

1.3.4 Remote Systems

In SAP Fiori launchpad connections as well as in NWBC connections, the system that a user initially connects to, and the system where applications assigned to the user are running, the so-called remote system, may be different. This section explains how you as an administrator specify those remote systems.

> ⓘ Note
>
> If you want to enable single sign-on between logon and target system, and run transactions in the target system in the embedded SAP GUI for Windows, you have two options:
>
> - Use SAP Secure Login Service for SAP GUI (recommended)
> - Use SAP Logon Tickets. For this option, there must be a **trusted relationship** between the relevant systems. To ensure that the same user is used in the target system, the only RFC destinations that are allowed are those created using the trusted system concept.

Related Information

Trusted Relationships [page 286]

1.3.4.1 Configuration Using RFC Destinations

To provide all information to SAP Business Client that is required to start a SAP GUI-based or HTTP-based application in the target system, two RFC destinations of different types are necessary.

The following two RFC destinations are required:

- ABAP connection (type 3); this connection is mainly used for retrieving information to render transactions with SAP GUI for Windows
- HTTP or HTTPS connection (type H); this connection is necessary for supporting HTTP-based communication, such as all browser-based application technologies, for example Web Dynpro ABAP, BSP, SAP Fiori, and SAP GUI for HTML.

No RFC calls are executed at runtime and only some of the RFC destination settings are evaluated.

1.3.4.1.1 Naming Convention

Transaction `SM59` does not allow you to create several destinations with the same name, even if the connection types are different. For referencing associated destinations of different connection types, define multiple `SM59` entries with the same base name and a suffix (`_RFC`, `_HTTP`, `_HTTPS`), and reference the base name only.

The following suffixes can be used:

- `_HTTP` (`XYZCLNT123_HTTP`): For the definition of HTTP connection settings; can be applied for connection type H
- `_HTTPS` (`XYZCLNT123_HTTPS`): For the definition of HTTPS connection settings; can be applied for connection type H
- `_RFC` (`XYZCLNT123_RFC`): For the definition of RFC/SAP GUI connection settings; can be used for connection type 3
- `_BOE` (`XYZCLNT123_BOE`): For the definition of an additional HTTP connection for BI, which is referenced in an FPM launchpad role for Crystal Report links; can be used for connection type H

For connection types ABAP (3) or HTTP (H), the suffix can be omitted and the runtime will still resolve the connection data properly. This fallback allows you to reuse existing definitions without extra configuration.

> ✤ Example
>
> If the base name is `XYZCLNT123`, the server runtime resolves the destination names in the following sequence:
>
> - For ABAP connections: `XYZCLNT123_RFC`, `XYZCLNT123`
> - For HTTP connections: `XYZCLNT123_HTTPS`, `XYZCLNT123_HTTP`, `XYZCLNT123`

> ⓘ Note
>
> Destination names in transaction `SM59` and in tools using `SM59` aliases are case-sensitive. We recommend to use **upper** case names and to type suffixes in all consumption points. The technical destination names NONE, LOCAL,and so on are resolved as the local system, meaning the application is located on the same system as the runtime.

1.3.4.1.2 ABAP Connection Definition

The server runtime evaluates parameters related to technical settings and logon and security.

The following table lists the parameters that are evaluated at server runtime:

Technical Settings	*Load Balancing* • Yes: Specify system ID in *Target System*, message server, and group • No: Specify target host and instance number; corresponds to SAP Logon/SAP UI landscape definitions
Logon and Security	*Language* If you want to use the language from the calling application, leave the *Language* parameter empty. *Client* System client; ensure that the client you define in the corresponding connection types is the same. If *Client* is not specified, the client of the calling application is added. *User* Leave empty; specific users are not supported. You may select the *Current User* checkbox. *SNC* If you want to use Secure Protocol, set *SNC* to *Active*; you need to define SNC settings first.
Logon and Security (SNC)	*SNC* setting; corresponds to SAP Logon/SAP UI landscape definitions. If load balancing is active, the *Message Server* entry in the *SNC Names* group must be the same as the *Partners* entry.

→ Recommendation

Activate *Load Balancing* to enable connection reuse for SAP GUI transactions in remote systems.

With SAP Business Client and the server runtime for SAP NetWeaver user interface services (starting with UI Add-On SPS09 or SAP NetWeaver 7.4 starting with software component SAP_UI SPS08), the administrator defines load balancing or SNC properties in the RFC destinations only.

Note: Users need *Display* authorization for RFC destinations (transaction `SM59`) in the role system.

With SAP Business Client and older server runtimes, load balancing can only be achieved by configuring SAP GUI system connections with load balancing for the remote system, see Configuring Special SAP GUI System Connection Properties for Remote Systems [page 120]. In this case, load balancing must be

switched off in the ABAP connection for the remote system, otherwise SAP Business Client will launch a SAP GUI for HTML instead of a SAP GUI for Windows.

1.3.4.1.3 HTTP Connection Definition

The server runtime evaluates the following parameters:

Technical Settings	*Target Host*: HTTP(S) host *Service No.*: HTTP(S) port
Logon and Security	*Language* Leave Language empty if you want to use the language from the calling application. *Client* Ensure that the same client is defined in all connection types. If no client is nspecified, the client running in the calling application is added. *User* Leave empty; specific users are not supported. You may select the *Current User* checkbox. *SSL* (Secure Socket Layer) Set SSL to *Active* if you want to use HTTPS.

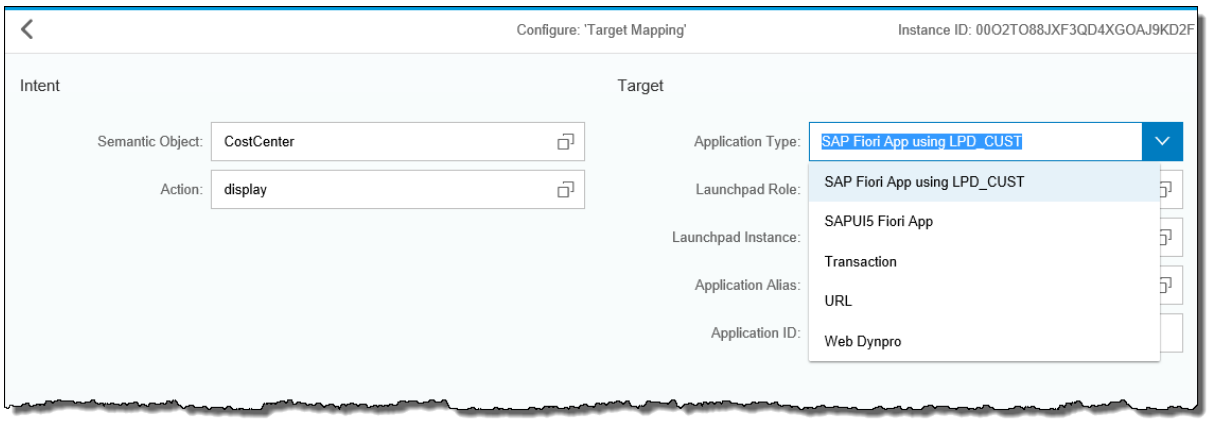
1.3.4.2 Remote Systems in a Fiori Launchpad Connection

Remote systems are used in target mappings addressing SAP GUI transactions or Web Dynpro ABAP applications.

For this, you specify a system alias as follows:

- For application types *Transaction* and *Web Dynpro*: Directly in the target mapping in the SAP Fiori launchpad designer
- For app type *SAP Fiori App using LPD_CUST* (deprecated): In launchpad customizing (transaction `LPD_CUST`) on the frontend server

The following figure shows the application types for selection in the *Target Mapping* configuration of the SAP Fiori launchpad designer.



The system alias references the RFC destinations which have been defined according to the rules, see Configuration Using RFC Destinations [page 231].

For further details on how to configure the SAP Launchpad Service, see SAP Work Zone Integration [page 79].

1.3.4.3 Remote Systems in a SAP Business Client Connection

Although the role is defined locally, you might need to be able to specify that specific applications or all entries in one role can be executed in a different, remote system.

> ⚠ Caution
>
> SAP supports this leading system and the side-by-side scenario with some restrictions, but does not recommend that you implement a hub scenario. For more information about the definition of the scenarios as well as the restrictions of working with remote systems, see SAP Note 1795171.

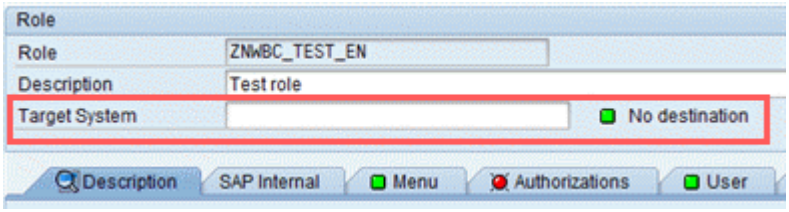
Target System

SAP Business Client offers the possibility to integrate content from other systems by using the property *Target System* in PFCG, either for single menu entries or for a whole role. *Target System* refers to an RFC destination. To provide all information to SAP Business Client that is required to start an SAP GUI-based or HTTP-based application in the target system, two RFC destinations of different types are necessary, see Configuration Using RFC Destinations [page 231].

No RFC calls are executed and only some of the RFC destination settings are evaluated.

> ⓘ Note
>
> Instead of specifying RFC destinations maintained using transaction `SM59`, you can also specify a variable that references an RFC destination. Variables are assigned to RFC destinations using transaction `SM30_SSM_RFC`.

- For the **complete role**, enter the RFC destination in the *Target System* field. If you leave this field blank *No destination* is displayed. The concept described above is shown in the following figure:



- For **individual role entries** from another system, leave the upper *Target System* field blank and navigate to the role menu folder or node. Then enter the RFC destination for this folder or node on the side of the screen in the area *Other Node Details* in the *Target System* field.

Role Import from Remote System

If a target remote application belonging to a node type with validity checks (transaction, Web Dynpro, BSP and WebClient application) is not available in the local system, you cannot specify it directly in the local PFCG role. Instead, you need to insert it in a role of the target system and import it in the local role by choosing *Copy Menus* > *From Other Role* > *Target System* >. If you change a remote application, you need to re-import it.

As a prerequisite, a PFCG role with the transaction or Web Dynpro application must be maintained in the target system. We recommend that you choose the PFCG role that is assigned to the user in the remote system. After the import, the *Target System* field is automatically filled with the RFC destination name being used.

The following example uses an Advanced Planning and Optimization system `APO` as leading system, and a target ERP system `EC1`. In `EC1`, role `ZSHELL_ROLE` is assigned to the user.

To import the role from system `EC1` to `APO`, proceed as follows:

1. Log on to system `APO`.
2. In transaction `SM59`, maintain an ABAP connection (type 3) to the target system `EC1`, for example, `EC1CLNT558`.
3. In transaction `PFCG`, enter your role and switch to the *Menu* tab.
4. Choose *Copy Menus* > *From Other Role* > *In Remote System* >.
5. You can enter either an RFC destination or a variable that points to an RFC destination as target system. In this example, choose *Select RFC Destination* and then *Continue (Enter)*.
6. In the following table, select the entry for RFC destination *EC1CLNT558* and choose *Copy*. A list of all available roles in `EC1` is displayed.
7. Select `ZSHELL_ROLE` and choose *Copy*. The menu tree of `ZSHELL_ROLE` is displayed.
8. To choose those transactions from the `ZSHELL_ROLE` menu that you want to import into `APO`, select the checkboxes in front of the relevant role entries. Then add the selected menu nodes by choosing *Add*. The role menu tree in `APO` is updated automatically with the entries you selected. The selected checkboxes next to the imported menu items indicate that these menu entries belong to a separate target system. In addition, the *Target System* field is automatically filled with the RFC destination for `EC1`, `EC1CLNT558`.

Related Information

Trusted Relationships [page 286]

1.3.5 SAP Fiori Integration

You can integrate SAP Fiori apps and the SAP Fiori launchpad into the SAP Business Client.

There are different ways of integrating SAP Fiori apps and the SAP Fiori launchpad into the SAP Business Client. They can also be integrated on different levels. You have the following options regarding integration:

- Via **Fiori Launchpad** connection type
  Here, you can run SAP Fiori launchpad **embedded** in the SAP Business Client.
  Deployment of SAP Fiori Launchpad on ABAP Front End Server and SAP Enterprise Portal is supported.
  There are back-end dependencies for the full usage of the *Fiori Launchpad* connection which is related to SAP Fiori launchpad resources on the Fiori launchpad / frontend server. To be able to render transactions with SAP GUI for Windows, the ABAP front-end server requires at least User Interface Add-On 2.0 SP01 for SAP NetWeaver or component SAP_UI 750 SP01, and the SAP Enterprise Portal requires at least SAP NetWeaver 7.5 SP4.
  For the ABAP frontend server, the launchpad content is defined as described in the SAP Fiori launchpad documentation in the SAP Help Portal http://www.help.sap.com (search for *Setting Up Launchpad Content*).
  For SAP Fiori Launchpad on Portal, search for the topic *Configuring SAP Fiori Launchpad on Portal* in the NetWeaver library in the SAP Help Portal http://www.help.sap.com .SAP Business Client facilitates the integration of classic Dynpro applications with the embedded SAP GUI for Windows.
  For more information, see System Connections [page 13].
- Via transaction PFCG
  Here, you can enhance the classical SAP Business Client navigation structure in PFCG by singular SAP Fiori apps (or even the SAP Fiori launchpad as an entry page).
  For more information, see SAP Fiori Integration into PFCG [page 227]

Level of Integration of the SAP Fiori Launchpad

As the previous section explains, you have two options of integrating the SAP Fiori launchpad. Each option provides a different level of integration with the SAP Business Client:

- Via **Fiori Launchpad** connection type
  This method provides you with full access to the SAP Fiori launchpad features; you have access to the launchpad shell and its functions such as giving feedback, creating support messages, and changing user settings. Additionally, you **can call SAP GUI transactions and have full access to all their features** as SAP GUI for Windows is invoked.
- Via transaction PFCG
  This method provides you with a limited set of SAP Fiori launchpad features. You can use it as an entry page, and call your individual SAP Fiori apps from it. Note that you do not have full access to native SAP GUI transactions using this method; a web-GUI version of the transaction is opened instead with a limited range of available options.

Intent-based Navigation in Classic Dynpro Applications (“SAP GUI Transactions”)

The Fiori navigation concept - intent-based navigation (IBN) - can also be integrated in classic Dynpro applications using an ABAP API. IBN is supported with the following versions for applications running in SAP GUI for Windows embedded in SAP Business Client:

- SAP Business Client 6.5 PL5 or higher
- SAP GUI for Windows 7.50 PL4 or higher
- Application system: SAP_UI 752 or higher, or SAP NWBC ABAP Runtime Patch 57 (2433839) or higher, or support packages mentioned in this note.

1.3.6 Programming Aspects

Use

This chapter describes different programming aspects regarding applications in SAP Business Client. The following concepts are described:

- Generating an external startup URL for SAP Business Client
  Outlines possible startup sequences for an SAP Business Client shell
- Creating an SAP Business Client desktop icon
  Explains the practical use and how to set up an icon with a startup URL for SAP Business Client
- High-level architecture
  Provides an overview of the central classes and interfaces of the SAP Business Client runtime
- ABAP-based APIs
  Describes interface `IF_NWBC_RUNTIME` and class `CL_NWBC`
- HTTP REST-Based APIs
  Lists the most prominent Web services that are provided by the SAP Business Client runtime
- SAP Business Client application context
  Describes how the SAP Business Client context can show which window is active with the result that the application can use this information to decide whether a CLOSE or END pushbutton is needed in the content area
- Integrating the context-sensitive side panel
  Describes the programming steps needed to implement a side panel

More Information

- Generating an External Startup URL for SAP Business Client [page 239]
- High-Level Architecture [page 243]
- ABAP-Based APIs [page 244]
- HTTP REST Based APIs [page 250]

- SAP Business Client Application Context [page 256]
- Integrating the Context-Sensitive Side Panel [page 257]
- Accessing the Remote Debugging Port (RDP) [page 280]

1.3.6.1 Using SAP Business Client with Dynamic Browser Control Selection

SAP Business Client allows to use different browser control types simultaneously. This is particularly useful if you are using a portfolio of web applications which benefit from the abilities of different browser engines. For example, some web applications embed ActiveX controls and, therefore, require Internet Explorer for full UI capabilities while HTML5 content generally performs better in Chromium based browsers.

In the SAP Business Client browser settings, you can select the primary browser control. This is the default web browser control that will be used for all web content in SAP Business Client. If you want to use the dynamic browser control selection feature, provide the URL (in case of HTTP) or file path to the dynamic browser selection configuration file.

The dynamic browser selection configuration file contains the mappings of URL patterns to browser controls. Here is a simple example illustrating the file structure:

Sample Code

```
<?xml version="1.0" encoding="utf-8"?>
<BrowserControlSelections>
  <BrowserControl name="InternetExplorer" rank="1">
    <Selection host="myhost" port="" path="*/myoldapp/*" query=""/>
  </BrowserControl>
</BrowserControlSelections>
```

Valid browser control names are `Edge` and `InternetExplorer`. If selections for different browser controls overlap, the rank determines which browser control wins (1 = highest). Selections for the primary browser control are ignored.

A selection can specify conditions for the host, port, path or query parts of the URL. You can specify an exact value or use the following wildcards:

- * represents zero or more characters
- ? represents a single character
- # represents a single numeric character

At least one condition must be specified for a selection. All given conditions have to be fulfilled for a selection to match (logical AND). Empty condition attributes are ignored. If you specify multiple selections, at least one of them must match to select the specific browser control (logical OR).

In the previous example, URLs with hostname `myhost` will lead to a dynamic selection of the Internet Explorer browser control, if their path also contains the term `/myoldapp/`.

Note

The dynamic browser control selection is usually only performed when new tabs, sidepanels or popup windows are opened. If the start URL matches a pattern in the browser selection configuration file, the

alternative browser control is used. Later, browser navigations in the control are not evaluated. However, SAP Business Client navigations with the inplace window mode will replace an existing browser tab with a new one, if the target URL implies a browser control switch.

SAP Business Client supports dynamic browser selection in scenarios where web applications use window.open() to spawn child windows. In that case, SAP Business Client bridges the communication between the heterogenous browser controls. The innovative bridging mechanism supports a subset of remote window methods and properties that are usually available in browsers when the Same Origin Policy is not fulfilled. This includes window.postMessage(), window.close(), window.focus(), window.blur(), window.closed and manipulation of window.location.

Web applications which are using remote window methods available only in the same domain or after a domain relaxation will run into script errors, if a spawned window is opened in a different browser control. Therefore, it is recommended to avoid browser control switches inside web applications. Instead, use the browser control switch for entry URLs of whole web applications. To ease the definition of URL patterns without the danger of unintended browser control switches inside web applications, dynamic browser control selection in window.open() scenarios is only applied when the opener is a primary browser control. This means that windows which were opened in an alternative browser control will stick to that type of control when spawning child windows using window.open().

1.3.6.2 Generating an External Startup URL for SAP Business Client

Use

Sometimes you need to generate a startup URL for SAP Business Client that can be started from other applications or locations. Typical examples are a Computer Aided Design (CAD) program used to start a specific transaction to review the bill of materials, or a special startup URL. We recommend generating them with the supplied API (see method `CL_NWBC=>URL_CONSTRUCT`).

More Information

- Short Form of URL [page 86]
- Long Form of URL for ~canvas Sequence [page 93]
- Long Form of URL for ~roletest Sequence [page 101]

URL Construction

We highly recommend that you use the method `cl_nwbc=>url_construct` to create the startup URLs. The parameters of this method include the following:

Parameter Name	Type	Associated Type	Default Value	Description
`FOR_USE_IN_EMAIL`	`Importing`	`ABAP_BOOL`	`ABAP_FALSE`	Prefix `sap-nwbc://` with `url:` for use in (Microsoft Outlook) e-mails
`HTML_CLIENT`	`Importing`	`ABAP_BOOL`	`ABAP_TRUE`	Use HTML Client ==> SAP Business Client HTML
`SERVER`	`Importing`	`IF_HTTP_SERVER`		Use for determining proxies in network
`COCKPIT`	`Importing`	`CSEQUENCE`		Optional cockpit to activate
`ROLE`	`Importing`	`CSEQUENCE`		Optional role that can be defined as “cockpit” to filter and show only the content of this specific role
`CANVAS_WDA`	`Importing`	`CSEQUENCE`		Content area (canvas) = WDA: Web Dynpro ABAP (`[/namespace/]name`)
`CANVAS_TRANSACTION`	`Importing`	`CSEQUENCE`		Transaction code to start
`CANVAS_URL`	`Importing`	`CSEQUENCE`		Content area (canvas) = URL: must be server absolute URL! (start with `/`)
`CANVAS_SITEMAP`	`Importing`	`ABAP_BOOL`		A sitemap for the user-assigned role(s) is generated into the content area (canvas).
`CANVAS_ROLE_ENTRY`	`Importing`	`CSEQUENCE`		Canvas = RoleEntry: `role:object_id`

Parameter Name	Type	Associated Type	Default Value	Description
`CANVAS_OBN`	`Importing`	`CSEQUENCE`		Canvas = OBN: `object.method`
`CANVAS_WDA__CLIENT_TYPE`	`Importing`	`String`	`auto`	Client type of the content area (canvas) Possible values: `auto` | `html`
`CANVAS_TRANSACTION__CLNT_TYPE`	`Importing`	`String`	`auto`	Client type of the content area. Possible values: `auto` | `sapgui` | `webgui`
`QUERY_STRING`	`Importing`	`CSEQUENCE`		Query string `name=value` format, already URL encoded
`URL`	`Returning`	`String`		Server absolute URL
SM59_ALIAS	`Importing`	`CSEQUENCE`	OPTIONAL	Destination for which URL should be generated
APPLICATION	`Importing`	`CSEQUENCE`	DEFAULT CL_URL=>MC_APPLICATION	Default `HTTPURLLOC` application name
DOMAIN	`Importing`	`CSEQUENCE`	OPTIONAL	Default `HTTPURLLOC` domain name

See the API of the method for a complete overview of all parameters in the system.

When using `url_construct`, note that you need to place transaction parameters as normal query string parameters.

Example

Example of how to start a transaction with a parameter:

Sample Code

```
DATA: url TYPE string, query TYPE string.

  CONCATENATE 'S_UNAME-LOW=' sy-uname '&abc=123' INTO query.
  url = cl_nwbc=>url_construct(
     canvas_transaction = 'ST22'
     query_string = query ).
  cl_nwbc=>url_launch( url ).
```

How to Customize Server Name and Port

If you want to generate a URL for public use or for use in e-mail, you can control the name and port of the server in the generated URL using three additional parameters. This function is available only if you have implemented the following patch levels and read the SAP Note:

- **For SAP NetWeaver 7.3 EHP1:**
  SAP Note 1747651 - SAP Business Client 3.5 7.31: cumulative correction package nr.8

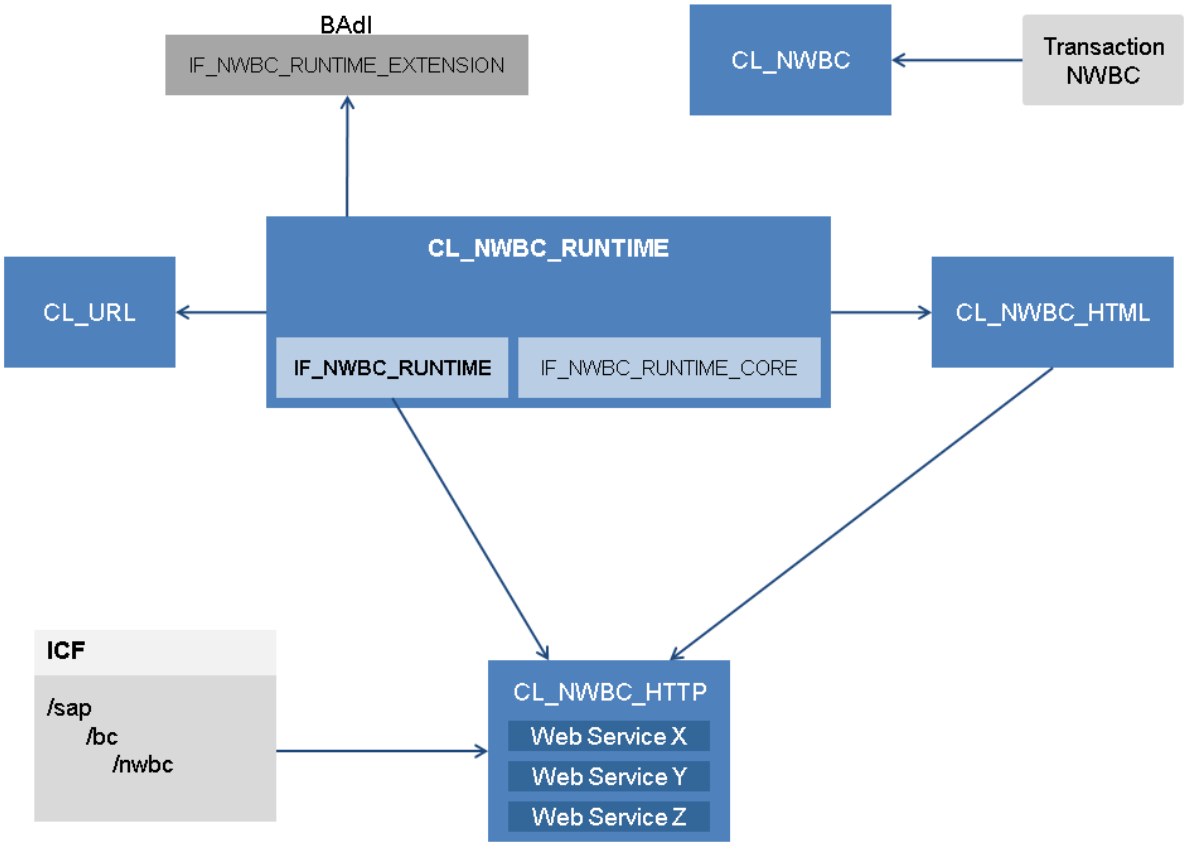
If you want to generate a URL for public use or for use in e-mail, you can control the name and port of the server in the generated URL in the following ways:

- You can pass the target system name using the new parameter named `SM59_alias`. The target system name is defined in the same way as for the remote system definition in transaction *Role Maintenance* (`PFCG`).
  For more information, see Remote Systems [page 230].
- You can pass the application name and / or the domain name in the respective parameters. Based on these parameters, the server and port name for the generated URL are taken from the configuration table `HTTPURLLOC`.
  For more information, see Programming Interface.

1.3.6.3 High-Level Architecture

Use

The figure below provides a high-level overview of the main components of the SAP Business Client runtime and is followed by an explanation:



Architecture Block Diagram

The SAP Business Client runtime is deeply rooted in the Internet Communication Framework (ICF). You can find the SAP Business Client HTTP handler class `CL_NWBC_HTTP` on the path `/sap/bc/nwbc`. The ICF node manages several important aspects such as the following:

- Authentication is configured here.
- It makes SAP Business Client available as HTTP service.
- The system logon can be configured here.

You can also have the handler somewhere else in the tree.

Class `CL_NWBC_HTTP` manages all HTTP-related aspects for SAP Business Client. In the first instance, it is responsible for parsing the rest of the entry URL to determine the required service. Once the service is determined, the specific ABAP-based service is called and the returned data is handed to the HTTP response. The second important aspect of class `CL_NWBC_HTTP` is to manage and enforce security; specific services are only available if the corresponding ICF nodes are active. For more information, see Active Services in ICF [page 161].

All of the SAP Business Client runtime code is implemented in class `CL_NWBC_RUNTIME`. The SAP Business Client API available on ABAP is defined in interface `IF_NWBC_RUNTIME` that declares all API calls. In addition, there is a low-level API, `IF_NWBC_RUNTIME_CORE`, that is not publicly available, but used only within the runtime. For specific exits, the enhancement interface (BAdI calls), `IF_NWBC_RUNTIME_EXTENSIONS`, contains methods that are called from the runtime at critical times to allow collected information to be adapted or influenced.

Class `CL_URL` is strictly not part of SAP Business Client, but it was developed to provide one unified place within the system in which different types of URLs can be generated while taking into consideration the complexities of possible destinations configured in transaction *RFC Destinations (Display/Maintain)* (`SM59`) to be resolved and possible configured proxies in the network.

Class `CL_NWBC_HTML` contains the complete code of SAP NetWeaver Business Client 3.6 for HTML. This class contains the HTML-rendering engine and all required MIME objects (CSS and JavaScript).

Class `CL_NWBC` is a general static utility class that contains calls for applications to use, mostly to generate SAP Business Client-relevant URLs.

Finally, transaction code `NWBC` uses class `CL_NWBC` to start SAP NetWeaver Business Client 3.6 for HTML in a browser.

More Information

~launch Page [page 180]

Transaction SAP Business Client [page 182]

Generating an External Startup URL for SAP Business Client [page 239]

HTTP REST Based APIs [page 250]

ICF Configuration [page 293]

1.3.6.4 ABAP-Based APIs

Use

SAP Business Client provides an ABAP-based API (defined in interface `IF_NWBC_RUNTIME`) that can be used directly within an ABAP session. This is the API that is used by SAP NetWeaver Business Client 3.6 for HTML directly and it is also the same API that is made available through HTTP.

An instance of the runtime can be obtained by calling the `CL_NWBC_RUNTIME=>GET` method. The `GET` method also runs one singleton of the runtime that has been configured for the specific set of parameters. You can specify the following parameters:

Parameter	Optional	Description
`COCKPIT`	yes	Filters the user roles to show only those roles that should be visible for the specific cockpit
`ROLE_FILTER`	yes	Makes only this specified role visible within the SAP Business Client runtime
`SERVER`	yes	ICF server object that can be used as the runtime for URL generation. This object is specifically of interest in cases where there are proxies in the network as the URL generation code can determine from the server object all relevant settings.
`ICF_BASE_URL`	yes	Direct path of the SAP Business Client HTTP handler within the ICF tree, by default `/sap/bc/nwbc`.
`BASE_URL`	yes	The actual ICF path that can be an alias that was used to access SAP Business Client, typically `/nwbc`
`FULL_QUALIFIED_BASE_URL`	yes	The base URL with server name and port. Used in cases where a fully qualified URL needs to be generated onto the SAP Business Client runtime.

For example, the minimal call to obtain an instance of the runtime would be:

```
DATA: nwbc_runtime TYPE REF TO if_nwbc_runtime.

nwbc_runtime = cl_nwbc_runtime=>get( ).
```

Method	Description
`GET_CONFIGURATION`	Returns all configuration data in one easy-to-use structure (`IF_NWBC_RUNTIME=>T_CONFIGURATION`). This is typically information on the system, such as system host and URL data.
`GET_SYSTEM_INFO`	Returns all system-relevant information that is important for SAP Business Client

Method	Description
`GET_USER_INFO`	Returns a small set of user information. This can be used to render a welcome string
`GET_COCKPITS`	Retrieves the list of configured cockpits that are available. These are the child nodes that have been configured within the ICF tree.
`GET_COCKPITS_WITH_ROLES`	For all the cockpits configured, also compute the list of roles that are visible through each cockpit. This is particularly useful when presenting the user with the cockpits and typical applications that are within the selected cockpit. For information about an example of usage of this API call, see ~launch Page [page 180].
`GET_ROLES`	Returns all roles that are available for this user with the current instance of the SAP Business Client runtime.
`GET_NAVIGATION_TREE`	Returns a list of all menus configured over all roles for this instance of the SAP Business Client runtime. This is the navigation tree that is presented to the user.
`GET_OBN_TARGETS`	Returns the complete set of possible OBN targets for all roles that are visible within the instance of the SAP Business Client runtime
`RESOLVE_NAVIGATION`	API call to resolve an OBN request
`GET_ALL_RUNTIME_INFO`	Exports all SAP Business Client runtime data in one call. This method is only useful when testing or exporting a specific complete set of runtime information.
`GET_TROUBLE_SHOOTING_INFO`	Gathers as much troubleshooting information as possible that can be used to answer specific questions on the system configured. This enables you to detect possible error situations.

All API methods return structures and internal tables that are defined and commented in the `IF_NWBC_RUNTIME` interface (see public section). Most of the names are self-explanatory. The main structures are briefly described.

Parameter	Type	Description
`agr_name`	`agr_name`	The role name (30 character key) as specific within transaction *Role Maintenance* (`PFCG`)
`change_date`	`dats`	Date on which the role was last changed

Parameter	Type	Description
change_time	tims	Time at which the role was last changed
sort_index	integer	Relative sort index of this role. Allows roles to be positioned relative to one another. This is a simple integer that can have any value according which is sorted. The numbers do not have to be in sequence.
home_role	abap_bool	Indicates that this role should be sorted to the front (where the home icon is), effectively `sort_index = 1`
name	string	Displayed user name of the role
description	string	A long description string for the role
attributes	t_attributes	A freely defined set of attributes for the role (that can be used for further enhancements)

Parameter	Type	Description
agr_name	agr_name	Role name in which OBN is configured
object_id	string	Specific role entry to which this OBN points
object_type	swo_objtyp	Key to business object, for example, `SFLIGHT`
object_name	string	User-friendly name for the business object, for example, Flight
method	swo_verb	Key to the method, for example, `DISPLAY`
method_name	string	User-friendly method name, for example, `Display`
priority	integer	If more than one OBN is available within the same set of roles, the priority is used to decide on which OBN entry to use. The highest priority (= highest number) is used.
description	string	Descriptive text that describes the OBN mapping; not used at runtime

Parameter	Type	Description
`parms`	`string`	List of name and value pairs for the OBN parameter mapping, stored URL-encoded

Parameter	Type	Description
`object_id`	`string`	Node ID: entry of the node over all selected roles
`unique_id`	`string`	Unique ID that is computed to be "stable" for use in SAP Business Client (sum of role name and `origin_id`)
`parent_id`	`string`	Parent node ID
`sort_order`	`integer`	Sort sequence of the tree level
`target_system`	`string`	If this application must be started on a different server, this is the corresponding reference configured in transaction *RFC Destinations (Display/Maintain)* (`SM59`) .
`url`	`string`	Application URL
`is_hidden`	`abap_bool`	This entry is not visible in the navigation tree.
`is_disabled`	`abap_bool`	The entry is visible in the navigation tree but disabled.
`is_emphasized`	`abap_bool`	The entry should be displayed more prominently in the navigation tree.
`force_sapgui`	`abap_bool`	Enables native SAP GUI rendering in the browser
`is_home_page`	`abap_bool`	Home page of the parent folder.
`is_service_map`	`abap_bool`	This folder requires a service map.
`link_collection`	`abap_bool`	This folder is part of link collections.
`single_top_level`	`abap_bool`	Display only one top-level entry and the rest on the panel
`menu_entry`	`abap_bool`	These entries belong in the top menu.
`text`	`string`	Display text

Parameter	Type	Description
`description`	`string`	Tooltip text
`icon`	`string`	Only relevant for folder root nodes (`level=1`) when displayed on the shell
`icon_for_service_map`	`string`	Only relevant for folders when displayed in a service map (48x48), format `~Pictogram/name`
`is_top_level`	`abap_bool`	Flag to indicate that the node is a top-level node
`has_children`	`abap_bool`	This flag is set if the node has children
`application_alias`	`string`	A string with no further meaning that applications can configure in transaction `PFCG` to recognize entries again during a BAdI call

Class CL_NWBC

Class `CL_NWBC` contains external functionality for SAP Business Client. The two central methods are listed below:

Method	Description
`URL_CONSTRUCT`	Constructs an SAP Business Client URL onto a shell: You can directly specify the relevant application to load in the content area.
`URL_LAUNCH`	Launches an SAP Business Client URL: SAP NetWeaver Business Client 3.6 for HTML is launched in a browser; SAP Business Client for Desktop is launched directly as application.

More Information

Navigation Tree [page 191]

Default Pages and Service Maps [page 200]

Link Collections [page 203]

Single Top Level [page 204].

Menu [page 204]

Remote Systems [page 230]

HTTP REST Based APIs [page 250]

ICF Configuration [page 293]

1.3.6.5 HTTP REST Based APIs

Use

The SAP Business Client runtime provides different sets of HTTP REST APIs. We recommend the ATOM APIs for external usage. They provide a high-level export of all roles with entry points to start any of these roles within an SAP Business Client shell that can be embedded in a foreign environment. A typical use case would be to consume all roles for a specific user and make them available in another type of “portal”.

The other APIs are mainly used internally. One set of APIs is used by SAP Business Client for Desktop to interact at a fine granular level with the SAP Business Client runtime; the second set similarly used by SAP Enterprise Portal to retrieve role information from the SAP Business Client runtime.

More Information

ATOM Based APIs [page 250]

APIs to Export Detailed Information [page 254]

APIs to Export Content to SAP Enterprise Portal [page 255]

1.3.6.5.1 ATOM-Based APIs

Use

Within the Internet, the **Atom** standard is used to describe feeds of information. This is typically used by news Web sites to publish a list of new articles that are available for reading, for example. It is a simple XML-based format that is loaded by an HTTP request.

The SAP NetWeaver Business Client runtime exports the OData format (which is an extension of the Atom Syndication Format, see also http://www.odata.org/documentation/) for publishing role information in a standard way that is understandable for other software. The base URL for accessing atom services is:

> ⓘ Note
>
> The following example refers to users using the server runtime for SAP NetWeaver UI services. When using the server runtime for SAP Business Client, leave out the addition `ui2/`.

> ✤ Example
>
> **http://<server>/ui2/nwbc/~atom**

At the root level, a service catalog is rendered, containing a list of services currently active for publishing. Example of SAP Business Client root atom catalog:

```
<xml version="1.0 encoding="UTF-8" standalone="yes" ?>
<service xml:base="https//<server>/ui2/nwbc/~atom"
 xmlns:atom="http://www.w3.org/2005/Atom" xmlns:app="http://www.w3.org/2007/
app"
 xmlns="http://www.w3.org/2007/app">
    <workspace>
        <atom:title>Services</atom:title>
        <collection href="roles">
          <atom:title>Roles Services</atom:title>
        </collection>
   </workspace>
</service>
```

Entity	Occurrence	Description
`service` `xml:base` attribute	`1`	Service root node Service base address
`workspace`	`1`	Corresponds to the catalog root node
`atom:title`	`1`	Title of the catalog and service / or embedded service catalog names
`collection` `href` attribute (in `collection`)	`1..N`	Corresponds to every available service or service catalog Relative URL for services or embedded catalogs (relative to `xml:base`)

For navigation to published services or other catalogs, use `xml:base` and `href`. For the roles services, the URL is:

For users using the UI services runtime: `https://<server>/ui2/nwbc/~atom/roles`

For users using the SAP Business Client runtime: `https://<server>/nwbc/~atom/roles`

Roles Services Catalog

The roles services catalog is similar to the root catalog listing the roles services as containing a collection list.

Example of a roles services catalog:

> ### Note
>
> The following example refers to users using the server runtime for SAP NetWeaver UI services. When using the server runtime for SAP Business Client, leave out the addition `ui2/`.

> ### Sample Code
>
> ```
> <?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
> <service xml:base="https://<server>/ui2/nwbc/~atom/roles/"
>  xmlns:atom="http://www.w3.org/2005/Atom" xmlns:app="http://www.w3.org/2007/
> app"
>  xmlns="http://www.w3.org/2007/app">
> ```

```
    <workspace>
        <atom:title>Roles Services</atom:title>
        <collection href="list">
            <atom:title>Roles List</atom:title>
        </collection>
    </workspace>
</service>
```

From within the roles services, use `xml:base` and `href` to access the role list. The URL is as follows:

`https://<server>/ui2/nwbc/~atom/roles/list`

Roles List Service

The roles list service exports the list of roles assigned to each user with a high-level entry that can be imbedded into any HTML page to visualize this specific role.

As a result of the service call, you obtain a feed document containing OData entries, where one entry represents a specific role. The request is for the specific user currently logged on, so the feed contains only the entries for roles assigned to the user.

If, for testing, such a service URL is called directly within a browser, the browser itself recognizes the atom format and displays an HTML-rendered page for the content. To see the real XML representation of the data, use the *View Source* function of the browser.

Example of the response of roles list service:

> ⓘ Note
>
> The following example refers to users using the server runtime for SAP NetWeaver UI services. When using the server runtime for SAP Business Client, leave out the addition `ui2/`.

> {·} Sample Code

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<feed xml:base="https://<server>/nwbc/~atom/roles/"
 xmlns:d="http://schemas.microsoft.com/ado/2007/08/dataservices"
 xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata"
 xmlns="http://www.w3.org/2005/Atom">
    <title type="text">Roles List</title>
    <id>https://<server>/nwbc/~atom/roles/list</id>
    <updated>2010-04-16T12:23:00Z</updated>
    <link rel="self" title="Roles List" href="list" rel>
    <entry>
        <title type="text">Employee Self Services</title>
        <updated>2010-04-16T14:23:00Z</updated>
        <link rel="edit" title="Link" href="list('SAP_ROLE_ESS')" />
        <link rel="alternate" type="text/html" href=" /nwbc/SAP_ROLE_ESS/
~canvas;window=embedded/sitemap/" />
        </entry>
</feed>
```

Entity	Occurrence	Description
`feed`	`1`	Root service node
`xml:base` attribute		Base URL of the service catalog (not a service!)
`title` node	`1`	Name of the service
`id` node	`1`	ID of the service, containing the absolute service URL
`updated` node	`1`	Time stamp of the last role list change
`link rel="self"` node		Relative link to a service, from catalog base URL
`entry` node	`0..N`	Entry nodes corresponding to every role assigned to the user
`title` node	`1`	Role name
`id` node	`1`	Unique ID of the role entry, which can be used to retrieve role information directly
`updated` node	`1`	Time stamp of the last role modification to this role.
`link role="edit"` node	`1`	Obligatory node for direct access to role modification. Currently not supported.
`link role="alternate"` node	`1`	Node with absolute link (attribute `href`) to a role service map

The URL itself gives a site map for one specific role.

More Information

For information about URL formats and generation, see Generating an External Startup URL for SAP Business Client [page 239].

1.3.6.5.2 APIs to Export Detailed Information

Use

The SAP Business Client runtime exposes some of the API calls available on interface `IF_NWBC_RUNTIME` also as HTTP REST based API calls. Each of the HTTP based API calls wraps the internal ABAP API call. All calls have effectively the same URL format: `../nwbc/~api/method?parameters`. The following methods are provided:

Web Service	Maps to	Description
`.../nwbc/~api/GetSystemInfo`	`IF_NWBC_RUNTIME=>GET_CONFIGURATION` and `IF_NWBC_RUNTIME=>GET_USER_INFO`	The call has no input parameters. It returns an XML response of the `GET_CONFIGURATION` and `GET_USER_INFO` calls together in one structure. For more information about `GET_CONFIGURATION`, see ABAP-Based APIs [page 244]. The XML format follows the normal ABAP identify transformation.
`.../nwbc/~api/GetNavigationTree`	`IF_NWBC_RUNTIME=>GET_NAVIGATION_TREE`	The call has no input parameters. It returns an XML response of the `GET_NAVIGATION_TREE` call. The XML format follows the normal ABAP identify transformation.
`.../nwbc/~api/ResolveNavigation`	`IF_NWBC_RUNTIME=>RESOLVE_NAVIGATION`	The call returns an XML response of the `RESOLVE_NAVIGATION` call. The XML format follows the normal ABAP identify transformation. This API call accepts a number of incoming parameters that are mapped onto the ABAP-internal API call. The HTTP exposed parameters are: `SOURCE`, `SOURCE_ROLE`, and so on.

For a quick test of the REST based APIs, call the URL `.../nwbc/~api` directly.

More Information

ABAP-Based APIs [page 244]

1.3.6.5.3 APIs to Export Content to SAP NetWeaver Portal

Use

For communication with an enterprise portal several APIs are available.

> ⚠ Caution
>
> The portal APIs are protected in the following ways:
>
> - The ICF service `/sap/bc/nwbc/exprt_sapportal` needs to be activated explicitly.
> - The authority object `S_NWBC` must have the following settings for its authorization fields:
>
> | Field | Value |
> |---|---|
> | ACTVT | 33 |
> | AUTH_VALUE | NWBC_EXPORT_SAPPORTAL |

The following methods are provided:

Method	Description
`.../nwbc/~sapportal/RoleAssignment?user=<user>&user=<user>...`	This method lists the roles that have been assigned to the user. This corresponds to the information provided by `GET_ROLES`. For more information, see 6.4 ABAP-Based APIs [page 244]. Information can be queued for one or more user names.
`.../nwbc/~sapportal/RoleInformation?role=<role1>&...&role=<roleN>`	For each role, this method lists detailed information about the role itself, as well as the navigation tree for the role. This corresponds to the information provided by a combination of `GET_ROLES` and `GET_NAVIGATION_TREE`.
`.../nwbc/~sapportal/RoleModifiedSince?role=<role>&...&role=<roleN>[&from=YYYYMMDDhhmmss]`	For a given set of roles, this method returns only those roles that have been updated since the supplied time stamp. This roughly corresponds to the information provided by `GET_ROLES`.
`.../nwbc/~sapportal/`	Test page for interactive test of `~sapportal` methods. In contrast to a direct call, method parameters are limited to one user name or role name, respectively.

More Information

ICF Configuration [page 293]

1.3.6.6 SAP Business Client Application Context

Use

When SAP Business Client starts an application, it provides a startup parameter `sap-nwbc-context` (`CL_NWBC=>CONTEXT_HTTP_FORM_FIELD`) on the URL. This parameter provides the application with information about the context in which the application was started. SAP Business Client itself does not require the information, it is important only if this information is relevant to the started application.

All applications (or application frameworks) can retrieve this context and supply the startup context to SAP Business Client within the started session with method `CL_NWBC=>CONTEXT_SET_FROM_HTTP_REQUEST`. The context string is stored statically within the session and can be retrieved at any time.

> ⓘ Note
>
> If the application is running stateless, the application should preserve the context string over roundtrips and re-initialize the string to SAP Business Client at each time (if this context information is required). For Web Dynpro ABAP, these steps are already completed automatically by the Web Dynpro ABAP runtime, making the startup context available within the session for the application to reference.

The SAP Business Client context can be retrieved at any time with the `CL_NWBC=>CONTEXT_GET` call. This method returns a structure with all relevant context information. (Note that in future the structure can be extended to contain more information.) Most importantly, directly after the context has been retrieved, the application should validate that a valid context does exist.

Example:

```
DATA: nwbc_context TYPE CL_NWBC=>T_CONTEXT.

nwbc_context = CL_NWBC=>CONTEXT_GET( ).

IF nwbc_context-valid = abap_true.

   ... here the rest of context can be referenced ...

ENDIF.
```

The following information is returned in the context:

Name	Type	Description
`valid`	`abap_bool`	Set to `abap_true` if the SAP Business Client context has been initialized for this ABAP session
`runtime_version`	`string`	The value of the current ABAP runtime (`if_nwbc_runtime=>version`)
`role_name`	`string`	The name of the role that contains the application
`role_id`	`string`	The ID of the entry within the role

Name	Type	Description
`nwbc_shell`	`string`	The current variant of active SAP Business Client: either SAP Business Client for Desktop (`CL_NWBC=>FOR_DESKTOP`) or SAP NetWeaver Business Client 3.6 for HTML (`CL_NWBC=>FOR_HTML`)
`canvas_window`	`string`	Indicates the type of window in which the application has been started: main shell window (`CL_NWBC=>CANVAS__WINDOW__MAIN`), an application window (`CL_NWBC=>CANVAS__WINDOW__APP`) or an embedded window in an external portal (`CL_NWBC=>CANVAS__WINDOW__EMBEDDED`)

More Information

Web Dynpro ABAP

1.3.6.7 Integrating the Context-Sensitive Side Panel

Use

The side panel in SAP Business Client is not only a new UI area located on the side of the content area but also an infrastructure to enhance existing SAP GUI transactions from older releases without modifications.

Applications that can be run in the content area and be connected to a side panel comprise the following UI technologies:

- For NWBC connection type:
  - SAP GUI (Dynpro) applications
  - Web Dynpro ABAP applications
    For more information, search for *Implementing Tagging* in the *Page Builder* documentation in the SAP NetWeaver Library (http://www.help.sap.com).
- For Fiori launchpad connection type:
  - SAP GUI (Dynpro) applications

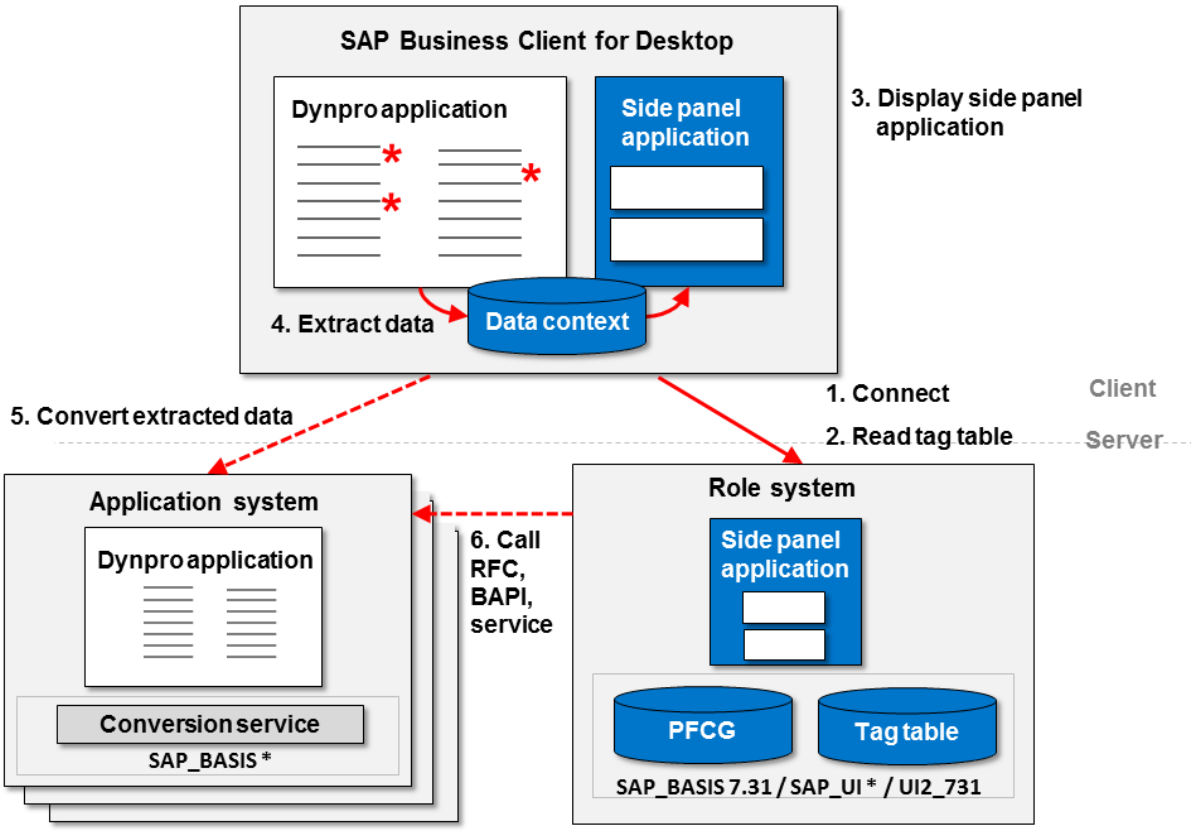
The side panel allows you to connect data from the application in the content area with data in the side panel. SAP Business Client extracts data from SAP GUI or Web Dynpro screens and passes them to the side panel, allowing you to build context-sensitive side panel applications.

The implementation of the side panel is different depending on whether a Web Dynpro application or an SAP GUI application is running in the content area.

> **Note**
>
> The purpose of the following documentation is to describe the use of a side panel for exchanging data with **SAP GUI**-based applications in the content area.

Side Panels in a SAP Business Client Connection

The figure below illustrates the high-level overview of the side panel architecture and is followed by an explanation:



Side Panel Architecture - SAP Business Client Connection

The application system is the system that hosts the application. The role system is the system that hosts the role displayed by SAP Business Client and the side panel application. Application system and role system can be the same if the system version requirement for component SAP_BASIS is met (version 7.31 or higher).

Runtime

At runtime, the following steps are executed:

1. SAP Business Client connects to the role system and reads the user's roles from transaction *Role Maintenance* (PFCG).
2. SAP Business Client downloads tags.
   Tags are the basis for the extraction process. They define which screen properties are to be extracted from an application running in the content area, and with which name the extracted properties are passed to the side panel application. All tags are stored in the tag table. For more information, see Creating Tags in the Tag Table [page 265].
   For more information about using tagging with Web Dynpro applications, see Setting Up Tagging in the Side Panel.
3. The role definition describes which side panel application is to be shown for a certain application. SAP Business Client reads this information and displays the appropriate side panel applications. For more information, see Side Panel [page 206].
4. SAP Business Client extracts the data from the Dynpro application and puts the values into the data context, making them available for all side panel applications. Data is extracted using SAP GUI scripting that is part of SAP GUI.
   You have installed and enabled SAP GUI scripting on the server.

   > ⓘ Note
   >
   > As of NWBC 3.5 patch level 6 or SAP NWBC 4.0 and SAP GUI 7.20 patch level 13 or 7.30 final release, it is no longer necessary to enable SAP GUI Scripting on the client PC, except if you are using SAP GUI Property Collector. That means, it is no longer necessary to enable front-end scripting through registry key (HKLM and HKCU) for using side panels in SAP Business Client. However, it is still necessary to install SAP GUI Scripting on the local desktop and to enable it for the server (at least read-only).

   > ⚠ Caution
   >
   > If SAP GUI scripting is enabled, the screens can be read. For more information about SAP GUI scripting, see chapter *Installation* in the SAP GUI Scripting Security Guide: Go to the SAP Help Portal *https://www.help.sap.com* and search for product *SAP GUI for Windows*.

   You can also use read-only scripting. For more information, see the SAP GUI scripting API documentation at *http://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/a034a16b-3bfe-2a10-e2bb-8bd880db0b3c*.

   > → Tip
   >
   > We recommend read-only scripting.
5. The data extracted from SAP GUI is in the external format. If the side panel application needs the internal format (for example, to call the application system), SAP Business Client calls the conversion service on the application system to convert the external to the internal format. The data conversion is optional and must be enabled in the tag table. For more information, see Active Services in ICF [page 161] and Creating Tags in the Tag Table [page 265].
6. The side panel application receives the extracted data as an input.

System Landscape

The architecture provides a flexible system landscape. The following setups are possible:

- **Single System**

The application system and role system are the same physical system. If you are able to upgrade SAP_BASIS to version 7.31, this is the logical choice with minimum total cost of ownership.

- **Distributed Systems**
  To enhance existing SAP GUI transactions from older releases without modifications, you can keep the application systems on their current release. In this case, only the role system must be an up-to-date SAP system with SAP_BASIS 7.31.
  You have the following options:
  - You can reuse existing roles from your application systems. To reuse existing roles, import the roles from your application system into the role system. For more information, see Remote Systems [page 230].
  - You can create roles in the role system. When you create roles, use remote roles to include transactions of the application system. You also need to configure a trusted relationship between the role and application system. For more information, see Remote Systems [page 230].

> ⚠ Caution
>
> SAP supports this side-by-side scenario with some restrictions, but does not recommend implementing a hub scenario. For more information about the definition of the scenarios as well as the restrictions of working with remote systems, see SAP Note 1795171.

If your remote application system runs on SAP_BASIS 7.31 or higher, you can also define that SAP Business Client reads side panel assignments and tags in the remote application system. In this case, the remote application system is the system of the application running in main canvas. You can activate reading of side panel assignments and tags in the remote application system by setting an admin configuration property **`EvaluateSidePanelInApplicationSystem`**. If this property is set to true, Business Client reads the side panel assignment and tag data from the remote application system instead of the role system. Note that the data won´t be merged with data potentially existing in the role system. The side panel assignment in the remote application system needs to be defined using the *Application Alias* field of the PFCG menu entries, the assignment method *For multiple applications in the same role* cannot be used here.

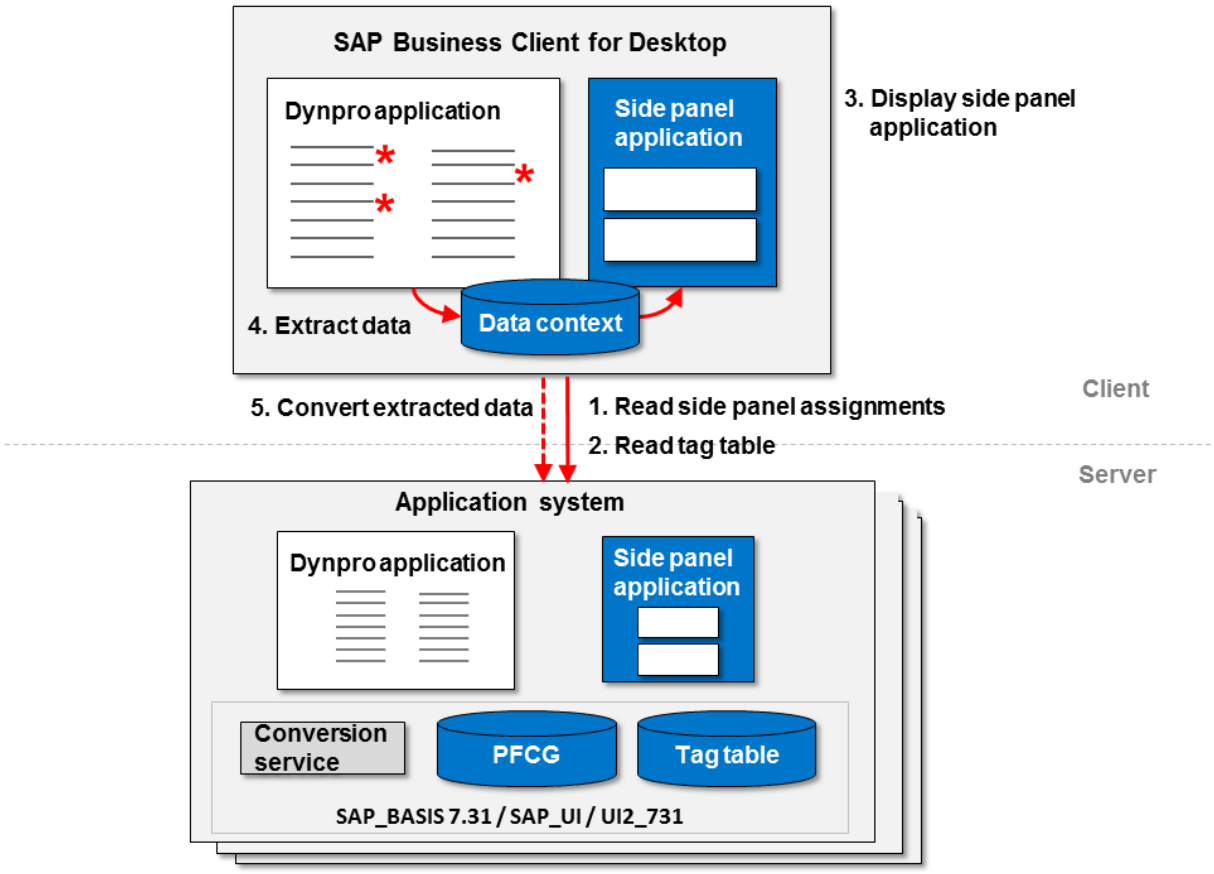
System Version Requirements

The following version requirements must be met:

- For the role system:
  - Component SAP_BASIS version 7.31 or higher (for the tag table and side panel assignment in transaction PFCG)
- For the application system:
  - Component SAP_BASIS version 7.31 or SAP Note 1611298 for older versions (for the conversion service)
  - No requirements for other software components of the application system (for the Dynpro application)

Side Panels in a SAP Fiori Launchpad Connection

The figure below illustrates the high-level overview of the side panel architecture and is followed by an explanation:



Side Panel Architecture - Fiori Launchpad Connection

The application system is the system that hosts the Dynpro application (also known as an SAP GUI transaction). In addition, it hosts the side panel application, the role which contains the assignment of the side panel application to the Dynpro application, and the tag table.

Runtime

At runtime, the following steps are executed when an intent-based navigation to a Dynpro application happens:

1. SAP Business Client starts the Dynpro application in the application system using an embedded SAP GUI for Windows. At the same time, it reads all direct side panel assignments maintained in the user's roles in the application system. The role definition in transaction Role Maintenance (PFCG) describes which side panel application is to be shown for a certain application.
2. SAP Business Client downloads tags. Tags are the basis for the extraction process. They define which screen properties are to be extracted from an application running in the content area, and with which name the extracted properties are passed to the side panel application. All tags are stored in the tag table. For more information, see Creating Tags in the Tag Table [page 265].
3. SAP Business Client displays the appropriate side panel applications. For more information, see Side Panel [page 206].
4. SAP Business Client extracts the data from the Dynpro application and puts the values into the data context, making them available for all side panel applications. Data is extracted using SAP GUI scripting that is part of SAP GUI.
   You have installed and enabled SAP GUI scripting on the server.

> **Note**
>
> As of NWBC 3.5 patch level 6 or SAP NWBC 4.0 and SAP GUI 7.20 patch level 13 or 7.30 final release, it is no longer necessary to enable SAP GUI Scripting on the client PC, except if you are using SAP GUI Property Collector. That means, it is no longer necessary to enable front-end scripting through registry key (HKLM and HKCU) for using side panels in SAP Business Client. However, it is still necessary to install SAP GUI Scripting on the local desktop and to enable it for the server (at least read-only).

> **Caution**
>
> If SAP GUI scripting is enabled, the screens can be read. For more information about SAP GUI scripting, see chapter *Installation* in the SAP GUI Scripting Security Guide: Go to the SAP Help Portal *https://www.help.sap.com* and search for product *SAP GUI for Windows*. You can also use read-only scripting. For more information, see the SAP GUI scripting API documentation at http://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/a034a16b-3bfe-2a10-e2bb-8bd880db0b3c.

> **Tip**
>
> We recommend read-only scripting.

5. The data extracted from SAP GUI is in the external format. If the side panel application needs the internal format (for example, to call the application system), SAP Business Client calls the conversion service on the application system to convert the external to the internal format. The data conversion is optional and must be enabled in the tag table. For more information, see Active Services in ICF [page 161] and Creating Tags in the Tag Table [page 265].
6. The side panel application receives the extracted data as an input.

System Version Requirements

The following version requirements must be met for the application system:

- Component SAP_BASIS version 7.31 or higher (for the side panel assignment in transaction PFCG)
- Component SAP_UI or UI2_731 or SAP_BASIS version 7.31 SP07 for retrieving direct side panel assignments. We recommend activation and usage of the server runtime for SAP NetWeaver user interface services which are available with SAP_UI and UI2_731.

System Configuration

You must carry out the following activities:

- Activate ICF services in transaction back end (`/ui2/nwbc, /ui2/nwbc/ext2int or /nwbc, /nwbc/ext2int`)
- Create tags in the back end of the application system
- Create direct, application-specific PFCG assignments in the back end of the application system. Use **{TR=…}** in the *Application Alias* field as **{REF=…}** will not be evaluated. For more information, see Assigning Side Panels [page 208].
- If you are using an NWBC ICF service different from the default services and aliases `/sap/bc/ui2/nwbc`, `/ui2/nwbc`, `/sap/bc/nwbc`, or `nwbc`, specify this service in the administrator configuration file NwbcOptions.xml, parameter `<DefaultConnectionBaseUrls>` . For more information, see Administrator Configuration Tips [page 108].

Design Time

At design time, an additional component is important, SAP GUI Property Collector. It is integrated into SAP Business Client and allows you to identify properties that should be extracted from SAP GUI. Additionally, it allows you to simulate the lifetime of extracted values in the data context. For more information, see Identification of UI Elements with SAP GUI Property Collector [page 264]. You copy the collected properties to the tag table and map them there to tags.

Handling Invisible Data

If the Dynpro application in the main canvas contains hidden fields, this data cannot be extracted on the client. Therefore, SAP Business Client offers an application programming interface (API): `IF_LSAPI`. This API can be called from the back end part of the Dynpro application to write data to the data context. This mechanism forces you to modify the existing Dynpro application. For more information, see Passing Data to Side Panel Application Using API [page 277].

Implementation of a Side Panel Application

Side panel applications are Web applications. You have the following options to implement a side panel application:

- **HTML and JavaScript**
  For information, see Implementation of a Side Panel Application with HTML and JavaScript [page 270].
- **Web Dynpro ABAP**
  For more information, see Implementation of a Side Panel Application with Web Dynpro [page 277].
- **Web Dynpro ABAP Page Builder**
  We recommend that you use Web Dynpro ABAP Page Builder to implement side panel applications. You define a side panel by creating CHIPs that are displayed on this side panel.
  For more information, see Using Pages in SAP Business Client Side Panel and SAP Business Client Context in the Web Dynpro ABAP documentation in the SAP NetWeaver library (http://www.help.sap.com).
  If you use the same tags, the system automatically wires the side panel application and the SAP GUI transaction.

More Information

Implementation of a Side Panel Application with HTML and JavaScript [page 270]

Implementation of a Side Panel Application with Web Dynpro [page 277]

For more information about using side panels for **SAP Business Suite**, see SAP Library for SAP Business Suite on SAP Help Portal at *http://help.sap.com/* > *SAP Business Suite* > *SAP ERP* > *SAP ERP Central Component* > *SAP Enhancement Package 6 for SAP ERP 6.0* > *Application Help* > *SAP ERP Cross-Application Functions* > *SAP ERP Cross-Application Functions* > *Cross-Application Components* > *Side Panel for Business Suite* >.

1.3.6.7.1 Identification of UI Elements with SAP GUI Property Collector

Use

You can use SAP GUI Property Collector to identify the UI elements in an SAP GUI transaction (a Dynpro screen) and their properties that are to be extracted and passed to the side panel. SAP GUI Property Collector helps you to determine the field IDs that you need to extract the data. Properties are the basis for defining tags. You need to collect the properties that are to be exposed from an SAP GUI transaction and then used in the side panel before you can define tags.

For more information, see Creating Tags in the Tag Table [page 265].

In the Property Viewer, you can get an overview of the current screen and of all supported properties of a UI element. When you select a different property, it is automatically selected in the main dialog of SAP GUI Property Collector and you can directly add it to the collection. In the Property Viewer, you find the extended properties, that is, properties that are implemented in SAP Business Client and not in SAP GUI scripting.

> ### Example
>
> `IsOnScreen`
>
> Every UI element has this property. The value is `X` when the field is currently visible on screen; the value is blank when the field is not on the screen.
>
> `SelectedRowsData`
>
> `SelectedColumnsData`
>
> `SelectedCellsData`

For more information, see the screen explanations in the Property Viewer.

Prerequisites

You use SAP GUI for Windows 7.40 or higher to use SAP GUI Property Collector.

You use SAP GUI for Windows 7.40 or higher to use SAP GUI transactions in SAP Business Client.

You have installed and enabled SAP GUI scripting on the server and in SAP GUI.

For more information about SAP GUI scripting, see chapter *Installation* in the SAP GUI Scripting Security Guide: Go to the SAP Help Portal *https://www.help.sap.com* and search for product *SAP GUI for Windows*.

> ### ⚠ Caution
>
> If SAP GUI scripting is enabled, the screens can be read.

You can also use read-only scripting. For more information, see the SAP GUI scripting API documentation.

More Information

Identifying UI Elements with SAP GUI Property Collector

1.3.6.7.2 Creating Tags in the Tag Table

Use

You can use tags to exchange data between an application running in the content area and the side panel. Tags relate to properties of the UI elements that you extract from an SAP GUI transaction using SAP GUI Property Collector. You map the collected properties to tags and pass them to the side panel. The tag table stores the tags in the SAP back-end system. This table is read by SAP Business Client at runtime and controls the extraction process. The relevant properties are identified by the program name, the screen name, and the field ID.

Depending on the server runtime you are using, different tag tables and maintenance views are involved:

- Server runtime for SAP Business Client
  SAP GUI tags are specified in the following SAP_BASIS tables:
  - NWBC_S_GUI_TAG: Contains entries that are delivered by SAP
  - NWBC_C_GUI_TAG: Contains entries that are maintained by the customer
- Server runtime for SAP NetWeaver UI services
  SAP GUI tags specified for the server runtime for SAP Business Client in the above mentioned SAP_BASIS tables continue to be read by the server runtime for SAP NetWeaver UI services. In addition, the following tag views are available:
  - `/UI2/NWBC_V_GT`: Contains entries that are delivered by SAP
  - `/UI2/NWBC_VC_GT`: Contains entries that are maintained by the customer. The entries are merged following this logic:
    - The customer's entries supersede SAP entries.
    - Entries for the server runtime for SAP NetWeaver UI services supersede SAP_BASIS entries.

Procedure

To insert the data that you have extracted using SAP GUI Property Collector, proceed as follows:

1. In Customizing (transaction SPRO), choose:
   - *SAP NetWeaver* > *UI Technologies* > *SAP NetWeaver Business Client* > *Define SAP GUI Tags (Runtime for SAP NetWeaver User Interface Services)* when using the server runtime for SAP NetWeaver UI services.
   - *SAP NetWeaver* > *Application Server* > *Frontend Services* > *NetWeaver Business Client* > *Define SAP GUI Tags* when using the server runtime for SAP Business Client.
2. Choose the *New Entries* pushbutton.
   Insert the properties from the Windows clipboard into the table by pressing CTRL + V.

3. Specify a tag name and a description. We recommend that you use a namespace for the tag name. You can use the input help to select tags. For more information, see Tagging Framework.
4. You can use asterisks (*) for the *Program Name* field and the *Screen* field if the same SAP GUI field is used on multiple screens or in multiple programs. For example, you can use **`1*`** for all screens that start with 1 (100, 101, 110, 120, and so on).

   > **Note**
   >
   > In case of duplicate tag names, the following rules apply:
   > 1. The customer's entries supersede SAP entries.
   > 2. Entries in the SAP NetWeaver UI tag tables supersede entries in SAP_BASIS tag tables.
   > 3. Tags with the most specific screen number take precedence, for example:
   >   “301” > “”
   >   “301” > “3*”
   >   “301” > “301*”
   >   “30*” > “3*”

5. You can use constants. In this case, you use a special syntax instead of pasting the properties from the clipboard. In the *Property (SAP GUI Scripting)* field, enter **`value:<constant>`**.

   > **Example**
   >
   > A use case for constants is the assignment of business object types to screens. This is useful for generic side panel applications that interpret the business object type.

6. Select the lifetime for the property. You have the following options:
   - *Transaction*
     The data context stays available as long as the current transaction is running in SAP Business Client.
   - *Main Screen*
     The data context stays available as long as you do not leave the main screen.
7. By entering a data element, you can control the data extraction to convert from external to internal format on the application system by using the conversion service. This mechanism is helpful if the processing logic of the side panel application needs the appropriate format for calling the application system. The data element is then used to derive the appropriate conversion exit on the application system.
8. Specify a development package.
9. Save your entries.
10. Restart SAP Business Client for Desktop.

For more information, see the field help.

The tag exposes the referenced property value to the SAP Business Client data context. From the selection screen, you can display, create, edit, or transport the tags. Note that an area of SAP GUI tags is always transported.

> **Note**
>
> You can create multiple tags for the same field. For example, for field `FIELD_1`, you have created two tags `TAG_1` and `TAG_2`. For the CHIP import parameter `PARAMETER_1`, there are also two tags available: `TAG_1` and `TAG_2`. The automatic wiring does not work here. In the Page Builder data context, it is not known that the tags `TAG_1` and `TAG_2` refer to the same field. Therefore, there is a conflict whether import parameter `PARAMETER_1` is to be associated with `TAG_1` or `TAG_2`. We recommend that you do not define multiple tags for CHIP import parameters.

Related Information

Migrating to the Server Runtime for UI Services [page 131]
Identification of UI Elements with SAP GUI Property Collector [page 264]

1.3.6.7.3 Refresh and Pin

Use

Refresh

If the user chooses the  icon in the side panel, the content area receives an event to update the data context with the current data on the screen. SAP GUI data is extracted automatically by SAP Business Client. An HTML-based application receives a `com.sap.lsapi.dataContext::update` event. The `update` event handler should trigger an update of the data context and send an `com.sap.lsapi.dataContext::updateFinished` event. For more information, see Events [page 268].

This function is required because not all screen changes in the content area lead to an update of the data context. For dynpro applications this is done automatically only after the end of a roundtrip, for example, when the user chooses a pushbutton or presses ENTER.

Examples of user actions that may not result in a roundtrip:

- The user enters another value in an input field.
- The user selects another row in SAP List Viewer (ALV).

Pin

If the user chooses the  icon in the side panel, the current side panel application receives a `com.sap.lsapi.sidePanel::disconnected(true)` event. As a result, a side panel application should ignore all `changedWithXml` events and therefore does not change its state until it receives a `disconnected(false)` event.

Even navigating away from the current application to an entry that does not have this side panel application assigned does not remove the side panel application (the session of the side panel application stays alive).

When reconnecting (that is, the user chooses the  icon again), the current side panel application receives a `com.sap.lsapi.sidePanel::disconnected(false)` event. A side panel application should visualize the last received data context with a `changedWithXml` event.

The side panel application must implement this resfresh and pin logic.

1.3.6.7.4 Events

Use

This chapter describes possible events that can be used for the communication between the side panel and applications running in the content area.

For reference, you can view a sample application in SAP Business Client, which is available as of SAP NetWeaver 7.0 EHP3. In SAP Business Client, hold the CTRL key and open the *Help* menu, and choose *Tools* > *Side Panel* > *Data Context Viewer*. Then choose *View Source* from the context menu.

changedWithXML

Namespace: `com.sap.lsapi.dataContext`

Parameter `evtObject.dataObject`: the XML document containing the complete data context

Description : This event is sent to subscribers in **all** side panel applications and in the content area. The event is triggered with a delay after the data context was changed. A data context can be changed by starting an application or by changing data in SAP GUI and triggering a roundtrip, for example.

loadFromXML

Namespace: `com.sap.lsapi.dataContext`

Parameter `evtObject.dataObject`: the XML document that contains new data loaded into the data context. The format of the XML is the same as the format returned by the `changedWithXML` event.

Description : This event can be triggered by an application. SAP Business Client handles it and parses all namespaces from the XML. Every namespace that is in the XML is completely replaced by the content of the XML. This works only for namespaces where no write access key is specified.

mergeWithXML

Namespace: `com.sap.lsapi.dataContext`

Parameter `evtObject.dataObject`: the XML document that contains the new data that is loaded into the data context. The format of the XML is the same as the format returned by the `changedWithXML` event.

Description : This event is the same as `loadFromXML` with the difference that namespaces are not replaced, but instead the XML content is merged with the data context. This means that identical keys are overwritten, others are added.

asyncRefresh

Namespace: `com.sap.lsapi.dataContext`

Parameter: none

Description : This event is triggered after the JavaScript method `dataContext.asyncRefresh` was called.

It is similar to the `update` event triggered by the icon. No `updateFinished` event must be sent in this event handler and, therefore, no `refresh` event is sent to the side panel. The only effect of this event is a `changedWithXml` event in case of changes in data context.

update

Namespace: `com.sap.lsapi.dataContext`

Parameter `refreshId`: Each click on the  icon generates a unique ID.

Description : This event is sent to all subscribers in the content area and side panel applications after the  icon was chosen. In the event handler, the main application should start updating the data context with the data that is on the screen at the moment. Compare to SAP GUI data extraction. Every subscriber must send an `updateFinished` message with the same `refreshId` after finishing the data context update.

updateFinished

Namespace: `com.sap.lsapi.dataContext`

Parameter `refreshId`: the same ID received in the corresponding `update` event

Description : This event must be sent by a subscriber to the `update` event after finishing the update of the data context. It can be sent asynchronously after a roundtrip. SAP Business Client is subscribed to this event and handles it.

> ⓘ Note
>
> SAP Business Client's `updateFinished` handler then fires these two events to the side panel for which you have chosen the  icon:
>
> - changedWithXml event (even if data context is unchanged)
> - refresh event

refresh

Namespace: `com.sap.lsapi.sidePanel`

Parameter `refreshId`: the same ID received in the corresponding `update` event

Description : This event is sent to the **current** side panel application **after** the user has chosen the  icon and **after** at least one subscriber of the `update` event has sent an `updateFinished` event. This event can be triggered more than once if there are more subscribers that send `updateFinished` events.

disconnected

Namespace: `com.sap.lsapi.sidePanel`

Parameter `disconnectedParam.dataObject`: `true` when the user has disconnected the side panel application (by choosing the  icon) and `false` when the user has reconnected the side panel application (by choosing the  icon)

Description : This event is triggered after the user has chosen the  icon of the **current** side panel application. This event informs the side panel application that it is connected/disconnected. This means that each side panel application has to implement the logic of disconnected or connected side panel applications itself.

> ⓘ Note
>
> After reconnecting, no further `ChangedWithXml` event is triggered. Therefore, the application has to wait for the next event to come or should remember the last `ChangedWithXml` event triggered while disconnected. A disconnected side panel should handle the refresh event to update its view.

1.3.6.7.5 Implementation of a Side Panel Application with HTML and JavaScript

Use

SAP Business Client provides an application programming interface (API) that is accessible in the HTML document object model (DOM). This API is called `DataContext`. It can be accessed by using JavaScript variable `Window.external.DataContext`.

For reference, you can view a sample application in SAP Business Client. In SAP Business Client, hold the CTRL key and open the *Help* menu. Choose *Tools* > *Side Panel* > *Data Context AppData Viewer*. Then choose *View Source* from the context menu.

The data context is a data container for exchanging data between the application in the content area and the side panel application. The data (simple key-value pairs) is organized in namespaces. SAP Business Client reserves the following prefixes of namespaces:

- `SHELL_`
- `CANVAS_`
- `SIDEPANEL_`
- `NWBC_`
- `LSAPI_`
- `LSHAPE_`
- `__global__`

Applications that write data into their own data context must use namespaces that do not start with these reserved prefixes.

The following namespaces are filled by SAP Business Client:

- `SHELL_currentSystem`
  This namespace contains information about the current system, user, language, and so on.
- `SHELL_currentApp`
  This namespace contains information about the current application.
- `CANVAS_appData`
  This namespace contains data written without an explicit namespace parameter in the following ways:
  - SAP GUI extraction
  - ABAP LSAPI calls (to extract data that is not displayed in dynpros)

JavaScript code that writes directly into the data context has to specify the `namespace="CANVAS_appData"` parameter. The easiest way to receive the complete data context content as XML after changes is to subscribe to the relevant EPCM event. For more information about events, see Refresh and Pin [page 267].

The `DataContext` API includes the following interfaces:

- `IDataContext`

This interface provides the following methods:

Return Value	Method (Parameters) Description
`string`	`read (string name, [Optional, DefaultParameterValue(null)] string @namespace,[Optional, DefaultParameterValue(null)] string namespaceReadKey)` Read access of a single entry's value. To access other parameters of the entry, for example, data type, use `entry`. **Parameters:** • `name`: mandatory name of the entry • `namespace`: optional name of the entry's namespace. If not specified or null, the entry belongs to the `__global__` namespace • `namespaceReadKey`: optional read access key for the namespace **Returns:** the value of the entry or null if the given namespace or key does not exist **Exceptions:** `UnauthorizedAccessException` if the given namespace already has a different read key than the given one

Return Value	Method (Parameters) Description
`IDataContextEntry`	`write (string key, string value, [Optional, DefaultParameterValue(null)] string @namespace,[Optional, DefaultParameterValue(null)] string namespaceWriteKey,[Optional, DefaultParameterValue(null)] string namespaceReadKey)` Write access of a single entry. The first write access to a namespace creates it. A given (or left out!) write key is used throughout the whole lifetime. A namespace is automatically destroyed if no entries exist any longer. An entry can be removed explicitly or implicitly if the original writer (for example, a `DataContextUser` plugin extension or a side panel application) runs out of lifetime. The lifetime of an entry is identical to the lifetime of the application in the content area. **⚠ Caution** Do not create namespaces starting with the reserved namespace prefixes described above. **Parameters:** • `key`: mandatory name of the entry • `value`: mandatory value, may be null • `namespace`: optional name of the entry's namespace; If not specified or null, the entry belongs to the `__global__` namespace. • `namespaceWriteKey`: optional write access key for the namespace • `namespaceReadKey`: optional read access key for the namespace **Returns:** the written entry that can be used to set or access additional attributes **Exceptions:** `UnauthorizedAccessException` if the given namespace already exists and has a different write key than the given one

Return Value	Method (Parameters) Description
`void`	`remove (string key, [Optional, DefaultParameterValue(null)] string @namespace,[Optional, DefaultParameterValue(null)] string namespaceWriteKey)` Deletion of a single entry or all entries of a given namespace **Parameters:** • `key`: mandatory name of the entry. * denotes all entries (only in combination of a namespace). • `namespace`: optional name of the entry's namespace. If not specified or null, the entry is only searched in the `__global__` namespace • `namespaceWriteKey`: optional write access key for the namespace **Exceptions:** `UnauthorizedAccessException` if the given namespace has a different write key than the given one
`void`	`publishChanges ( )` Signals the end of writing to the data context. This call is mandatory after modifying (write or delete) the data context. Without this call, other listeners do not get an update notification!

Return Value	Method (Parameters) Description
`IDataContextEntry`	`entry (string name, [Optional, DefaultParameterValue(null)] string @namespace,[Optional, DefaultParameterValue(null)] string namespaceReadKey,[Optional, DefaultParameterValue(null)] string namespaceWriteKey)` (Advanced) read access of a single entry. To access the value of the entry, use `read`. **Parameters:** • `name`: mandatory name of the entry • `namespace`: optional name of the entry's namespace; If not specified or null, the entry belongs to the `__global__` namespace. • `namespaceReadKey`: optional read access key for the namespace • `namespaceWriteKey`: optional write access key for the namespace, needed when later trying to modify the entry **Returns:** the entry object that gives further access to all the parameters **Exceptions:** • `UnauthorizedAccessException` if the given namespace already has a different read key than the given one • `NotSupportedException` if the given name does not exist in the given namespace
`ImmutableArray*`	`listNamespaces ( )` Generic API to enumerate all namespaces **Returns:** the names of all contained namespaces

Return Value	Method (Parameters) Description
`ImmutableArray*`	`listKeys (string @namespace,[Optional, DefaultParameterValue(null)] string namespaceReadKey)` Generic API to enumerate all entries within a namespace. **Parameters:** • `namespace`: the name of the namespace • `namespaceReadKey`: optional read key **Returns:** the names of all fields of the corresponding namespace **Exceptions:** `UnauthorizedAccessException` if the given read key does not match the read key of the namespace
`void`	`asyncRefresh ( )` Asynchronously refreshes the core set of content. Among this, it triggers an update of a `DataContextUser` plug-in extension (if available) and SAP GUI data extraction. Only if the data context has changed, this leads to a `ChangedWithXml` event.
`string`	`toXml ( )` Generic API to access the whole data context. Only entries without read protection are returned, that is, from namespaces that do not have a read key set. **Returns:** an XML string containing all freely accessible entries, structured by namespace
`void`	`fromXml (string xml, bool mergeWithExisting)` Import whole data context except for namespaces `SHELL_currentSystem` and `SHELL_currentApp`. **Parameters:** • `xml`: XML in the same format as returned by `toXml` • `mergeWithExisting`: keep existing entries and add new entries, overwrite identical entries only

Return Value	Method (Parameters) Description
`void`	`subscribe (string @namespace, string callbackMethod,[Optional, DefaultParameterValue(null)] object callbackObj)` As soon as somebody calls `publishChanges`, the JS handler is called. **Note** If the bag is not created yet, the subscription is remembered and as soon as the next bag with this name is created, the subscriptions are set for this new bag. This should guarantee the same behavior from consumer side if the side panel application is executed earlier and executed later than the application in the content area. **Parameters:** • `namespace`: unique name of a namespace that need not exist yet. It can be created later. • `callbackObj`: object whose method is called. If null, the global JS function `callbackMethod` is executed. • `callbackMethod`: name of JS function that is called when somebody calls `publishChanges`. If the JS function is already described, nothing is to be done.
`void`	`unsubscribe (string @namespace, string callbackMethod,[Optional, DefaultParameterValue(null)] object callbackObj)`

* Return value `ImmutableArray` provides the following:

- Method `object at (int index)`
- Property `int count [get]`

- `IDataContextEntry`
  This interface provides the following properties:
  - `string value [get, set]`
  - `string dataType [get, set]`

1.3.6.7.6 Implementation of a Side Panel Application with Web Dynpro ABAP

Use

You can implement a Web Dynpro ABAP application for the side panel. When building a Web Dynpro ABAP standalone application (without using Page Builder), some additional initialization code is required in the Web Dynpro component. The code has the effect that interface `IF_CHIP_DATA_CONTEXT` receives the data from the main application of SAP Business Client: The main application of SAP Business Client sends EPCM (portal) events that contain data in XML format. Class `cl_chip_wd_side_panel_manager` processes the XML and provides the side panel application with this data.

ABAP interface `IF_CHIP_DATA_CONTEXT` provides access to the data context of SAP Business Client. For more information, see the interface documentation in the system.

Sample application `wdr_test_data_context` provides the following:

- Web Dynpro ABAP application: `/sap/bc/webdynpro/sap/wdr_test_data_context`
- Web Dynpro ABAP component: `WDR_TEST_DATA_CONTEXT`
- Web Dynpro ABAP assistance class: `CL_TEST_DATA_CONTEXT_ASS`

Side Panel Manager

```
cl_chip_wd_side_panel_manager=>get_instance( )->
     init( side_panel_view = view
           portal_event_action = 'PORTAL_EVENT_SP')
```

Copy this code into the Web Dynpro component.

Web Dynpro View with Action PORTAL_EVENT_SP

```
method ONACTIONPORTAL_EVENT_SP .
     cl_chip_wd_side_panel_manager=>get_instance( )->
          hndl_portal_event( event = wdevent ).
endmethod.
```

Copy this code into the Web Dynpro view.

1.3.6.7.7 Passing Data to Side Panel Application Using API

Use

If the data that you want to extract is not visible on a screen, you can use `IF_LSAPI` (l-shape application programming interface) to pass the data to the side panel application. This API can be called from the back-end part of the dynpro application to write data to the data context. This mechanism forces you to modify the existing dynpro application (provided that this is possible).

Interface `IF_LSAPI` is the communication interface between the shell, the content area, and the side panel application. For more information, see the interface documentation in the ABAP system.

If the data to be provided to the side panel is not displayed as an SAP GUI field, add the following programming code in the ABAP program:

```
DATA lo_lsapi TYPE REF TO if_lsapi.
 lo_lsapi = cl_lsapi_manager=>get_instance( ).
 lo_lsapi->if_lsapi_data_context~set_tag_value( name  = lv_tag_name
                                                type  = lv_tag_type
                                                value = lv_tag_value ).
```

Parameter	Type	Associated Type	Default	Description
NAME	Importing	STRING		Tag name to be set
TYPE	Importing	STRING	STRING	Tag data type
VALUE	Importing	STRING		Tag value to be set

1.3.6.7.8 Side Panel Lifetime Aspects

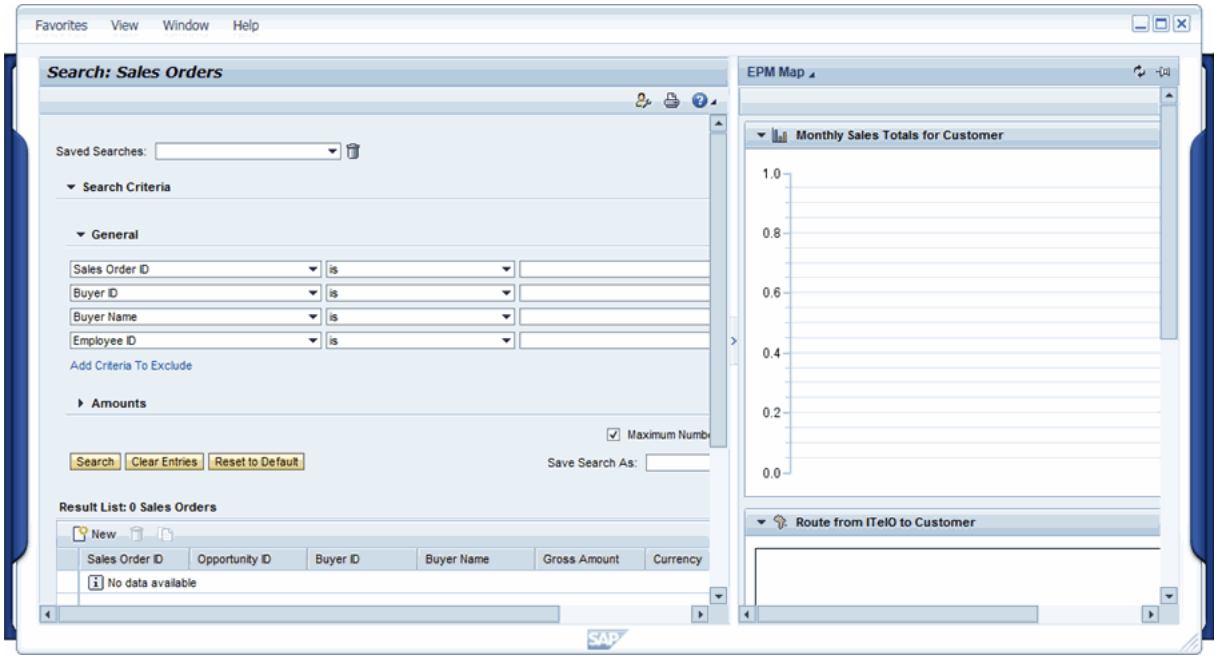
Use

Side panel applications can cause a significantly higher load on the back end because each stateful side panel application (for example, Web Dynpro) has a back-end session running.

Side Panel Defined in PFCG

If a user navigates to a different target that has a side panel application defined in transaction *Role Maintenance* (PFCG), the side panel application is loaded and displayed in the right panel. Initially, only the first side panel application is loaded and displayed if more than one is defined for a navigation node. The other side panel applications are only loaded if the user explicitly selects them using a selector. In the following example, the

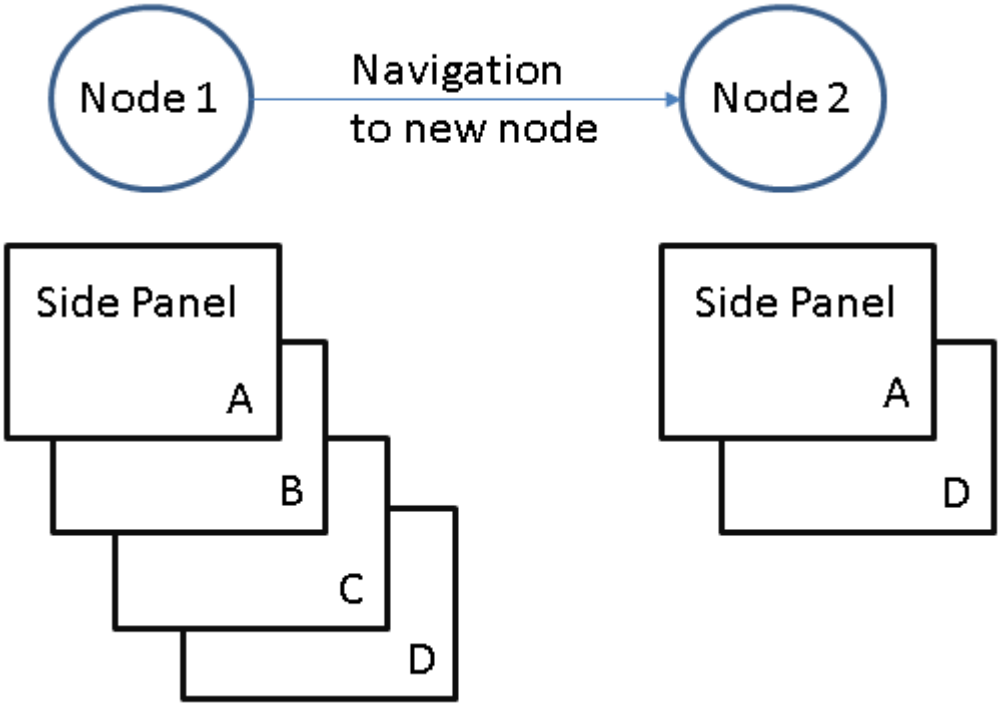
first side panel application (EPM Map) is loaded and displayed initially. The concept explained above is shown in the following figure:



Once loaded, the side panel application, including its corresponding back-end session, remain started even if the side panel is not visible (not selected). The session of the previous side panel is still active in the background. After navigating from node 1 to node 2, all side panels of node 1 that are not side panels of node 2 are closed. The last used side panel of each navigation node is persisted and restored if the user returns to that node.

Example: Node 1 (for example with dynpro application) has the side panels A, B, C, and D defined. Node 2 (another dynpro application) has side panels A and D. Only the overlap of both side panels is available after

the navigation process. In this case, only side panels A and D are present after navigating, while side panel applications B and C are terminated. The concept described above is illustrated in the following figure:



Navigation Example

If the side panel is pinned, it is not closed after a navigation process. Its back-end session remains active. To pin a side panel, choose the pushbutton.

Local Side Panel

Local side panels are present at each navigation node and displayed at the end of the selection list. To configure local side panels, choose *Settings* > *Connections* > *Side Panel*.

1.3.6.8 Accessing the Remote Debugging Port (RDP)

Use for automating the embedded browser control. For testing purposes only.

Using the Edge browser control, it is possible to access the Remote Debugging Port (RDP) within the SAP Business Client. With an accessible Remote Debugging Port, it is possible to automate the embedded browser control. This mechanism should be used for testing purposes only.

To enable the Remote Debugging Port access, the setting `<EnableRdpAccess>` must be set to 'true' in the Administrator Configuration File. During startup, if the setting is enabled, the user will be informed via Windows notification that RDP access is possible, as this should not be active unintentionally. Once the administrator setting is enabled, the Remote Debugging Port can be activated via two ways:

- Startup URL
  The Remote Debugging Port can be provided via an extra element in the Startup URL:
  sap-nwbc:**remotedebuggingport=8081**;connection=ABAP@https://<server>.<domain>.<ext>:<port>

- Command Line Arguments
  Launch the SAP Business Client executable directly with command line argument:
  Filepath/NWBC.exe /**remotedebuggingport=8081**

1.3.7 Security Aspects

Use

This chapter provides an overview of security aspects and recommendations relevant to using SAP Business Client. As security is a wide ranging but important aspect that affects the server and the client, all security relevant aspects are described in this chapter. After the most basic recommendation to always use HTTPS for communications, the most interesting aspect is that of authentication. A large part of the chapter is dedicated to drawing parallels between the standard authentication processes that are available in any browser-based access to an SAP server and the authentication process as is supported by SAP Business Client. This includes looking at authentication, also achieving single sign-on using certificates, and the subsequent re-authentication needed when each new application is started. On a small scale, the use of the Internet Communication Framework (ICF) to control access to SAP Business Client services on the server is discussed.

This chapter describes high-level security concepts that are relevant to SAP Business Client. However, for detailed discussion of how specific security concepts are implemented in SAP servers, and especially their configuration, a reference is made each time to the relevant documentation that covers that topic in detail.

The following concepts are described:

- SAP Business Client and authentication
  Describes in general the authentication process from SAP Business Client to the server. This section explains that, principally, the authentication process in SAP Business Client is exactly equivalent to the authentication process as is managed in a browser.
- Use of digital certificates
  Elaborates on how single sign-on can be achieved with the use of digital certificates.
- Logon tickets and assertion tickets
  Explains the prerequisite of logon tickets (`MYSAPSSO2` cookies), or alternatively assertion tickets, which must be available for handling the re-authentication process when starting a new application in the content area.
- Trusted relationships
  Extends the authentication process over multiple servers using logon tickets.
- Configuring authentication on the server
  Groups all relevant server configuration information. This is mostly a set of references to other relevant information for in-depth information.
- ICF configuration
  Describes the use of ICF to control HTTP access to SAP Business Client runtime.
- Certificate Error Popups in the Browser
  Highlights problems related to the use of digital certificates that are normally perceived as error situations, although they are usually just different variations of invalid certificates.
- Security settings for browser controls
  Specific security features and measurements should be considered according to the browser control you are using within SAP Business Client to display HTML content.

- Allowlist
  An allowlist infrastructure in the HTTP framework defends against XSS attacks.

> **Note**
>
> When using HTTPS, we highly recommend that you read at least Use of Digital Certificates [page 286] for the prerequisite of installing the Microsoft hotfix 919477.

More Information

Use of Digital Certificates [page 286]

Logon Tickets and Assertion Tickets [page 284]

Trusted Relationships [page 286]

Configuring Authentication on the Server [page 140]

ICF Configuration [page 293]

Certificate Error Popups in the Browser [page 289]

Security Zones in Internet Explorer [page 295]

Allowlist [page 297]

1.3.7.1 Authentication and Single Sign-On with SAP Business Client

This chapter explains authentication and single sign-on (SSO) mechanisms with the SAP Business Client.

Firstly, some explanation of the technicalities of the SAP Business Client and a short introduction to SAP's own product for SSO, SAP Secure Login Service for SAP GUI is necessary.

SAP Business Client brings together web-based and Dynpro-based applications, potentially running on multiple systems, in one single shell. Therefore, SAP Business Client must adopt a combination of different authentication techniques to abstract the user from multiple logins and offer a seamless end-user experience.

SAP Business Client is shipped in two variants:

- SAP Business Client for Desktop
  A Microsoft Windows/.NET-based application that needs a local installation. It uses SAP GUI for Windows to run Dynpro-based transactions, and integrates Web applications using browser controls in its shell.
- SAP NetWeaver Business Client 3.6 for HTML
  A browser-based version using HTTP/s for connecting to a Application Server ABAP backend. SAP GUI transactions are rendered using the SAP GUI for HTML.

For SSO functionality, SAP ships its own product, SAP Secure Login Service for SAP GUI, that allows you to implement standard, token-based SSO to the web browser and the SAP GUI for Windows.

Let us now focus on the question of authentication and SSO with SAP Business Client for Desktop – for SAP NetWeaver Business Client 3.6 for HTML, the standard web SSO mechanisms, as listed below, apply.

Authentication Options

The SAP Business Client approach to authenticate a user against a system is to use the ICF logon, a browser-based authentication. When the user, during the course of his work, calls a web-based application, authentication is handled by browser controls that the SAP Business Client embeds for rendering Web content. For a Dynpro screen, however, authentication is handled by the embedded SAP GUI for Windows.

What are the options of authentication mechanisms with SAP Business Client? The following initial authentication mechanisms are used in SAP products and apply to SAP Business Client authentication depending on the scenario you are running:

Authentication Mechanism	Description
User ID and Passwords	This is the easiest mechanism, of course, but you need to roll-out and offer password reset and recovery functionality for your end-users, and it is strongly recommended that you have implemented encryption of the communication path (https) or you have your end-users send the passwords in clear text, making sniffing them extremely easy.
X.509 Client Certificates	An X.509 Client Certificate requires a Public Key Infrastructure (PKI), which issues and handles the whole certificate management for your users. You have the option to implement SAP Secure Login Service for SAP GUI instead, which generates certificates on the fly without the need to implement and deploy a costly PKI.
SAML Assertions	SAML assertions are a modern standard for web-based and cross-domain SSO. You need a so-called Identity Provider to issue SAML assertions for your users; this is also part of SAP Secure Login Service for SAP GUI.
SAP Logon Tickets	Logon tickets are an SAP proprietary mechanism. In the form of a digitally-signed cookie they offer authentication and SSO. You can generate Logon Tickets with SAP Business Client, with the SAP Enterprise Portal, or with SAP Secure Login Service for SAP GUI. **Note** Logon Tickets are no longer recommended by SAP unless you need to implement SSO for lower SAP Netweaver Application Server releases (<7.00).
SPNEGO and Kerberos	SPNEGO with Kerberos is the web variant for Kerberos, and for which you need SAP Secure Login Service for SAP GUI to implement.

Recommendations for Single Sign-On

The options for SSO depend on the scenario that you have implemented with SAP Business Client. The table below describes the available options:

Scenario	SSO Method Recommendation
SAP Business Client for Desktop embedding Web applications **only**	X.509 certificates, SAML assertions, SPNEGO with Kerberos, or Logon Tickets
SAP Business Client for Desktop embedding Dynpro applications (SAP GUI for Windows) **only**	SNC + X.509 certificates, SNC + Kerberos or Logon Tickets
SAP Business Client for Desktop embedding **both** Dynpro and Web applications, e.g. using Fiori Launchpad connection type	SNC + X.509 certificates, SNC + Kerberos or Logon Tickets

To summarize:

- If you are running only web applications with the SAP Business Client, then you can use the standard web SSO mechanisms as listed in the above table.
- If you have to access SAP Dynpro applications through the SAP Business Client for Desktop scenario, and you want this to be secured through encryption, then you must configure SNC (Secure Network Communication), encrypting the communication path, and use either X.509 certificates or Kerberos for SSO. For both options, SAP offers a product, SAP Secure Login Service for SAP GUI, that can generate X.509 certificates and/or support Kerberos.
- If you have a hybrid implementation, that is, some of your users are using SAP Business Client for Desktop and other users are using SAP NetWeaver Business Client 3.6 for HTML to access the same systems, then SAP strongly recommends that you leverage SAP Secure Login Service for SAP GUI as you can implement X.509 and Kerberos for both SAP Business Client variants).

For more information on SAP Single Sign-On, search for *SAP Single Sign-On* in the SAP Help Portal (http://help.sap.com) or on SCN (https://scn.sap.com).

1.3.7.1.1 Logon Tickets and Assertion Tickets

Use

Using Single Sign-On (SSO), users can authenticate themselves once and then log on to all of those systems that operate in the Single Sign-On environment without further intervention. This is based on the use of an HTTP cookie (`MYSAPSS02` cookie or logon ticket) that stores the user's identity.

Once the user has been authenticated, and if the server is appropriately configured, a logon ticket that is typically valid for the complete domain is set. The server can also be configured to set the cookie to be returned only to the specific server. Now, on all subsequent HTTP requests, the browser sends the cookie with the HTTP request. The targeted server can use the information within the cookie as credentials to authenticate the user.

SAP Business Client is a shell that can start different content areas, based on different UI technologies, for example, SAP GUI or HTML. Each of these content types has its own communication channel to the underlying server and needs authentication information to access the server. To pass authentication information securely

from the shell to the different content types, you must configure the server to use **logon tickets** (`MYSAPSSO2` cookies) or assertion tickets. Logon tickets also enable SAP Business Client to start applications against multiple systems and multiple clients.

> ⚠ Caution
>
> The activation and correct configuration of logon tickets is a prerequisite for using SAP Business Client with any server.
>
> It is important for SAP Business Client that all users must be **dialog** users, which can be configured in transaction *User Maintenance* (`SU01`). This is a prerequisite for SAP Business Client to enable the HTTP framework to issue a logon ticket and to enable SAP Business Client to display transactions based on SAP GUI.

Testing Logon Tickets with a Browser

Log on to a test system with a browser. If logon tickets are configured incorrectly, the following error message appears, which means that there is still a configuration error:

```
SSO logon not possible; browser logon ticket cannot be accepted
```

To log on, choose *Log On* and enter your user name and password in the usual logon screen that appears.

Testing Logon Tickets with SAP Business Client

Log on to a test system with SAP Business Client. In the usual logon screen , enter your user name and password and choose *Log On*. If logon tickets are configured incorrectly, an error message appears indicating that you need to check your SSO2 configuration settings.

Assertion Tickets

Assertion tickets are carried in the HTTP header. They differ from logon tickets in the following ways:

- Logon tickets are used for user-to-system communication, whereas assertion tickets are used for system-to-system communication.
- Logon tickets are transmitted as cookies, whereas assertion tickets are transported as HTTP headers.
- Validity of logon tickets is configurable, whereas the validity of assertion tickets is hard-coded (2 minutes).
- Logon tickets never identify a recipient, as they target multiple systems. Assertion tickets are always issued for a single recipient.

These restrictions show that in a scenario without a logon ticket one authentication is needed per system and per client. For more information about how to avoid manual logon steps, see Use of Digital Certificates [page 286]. You need to test a certificate-based logon against each system and client in the browser first. It works for SAP Business Client only if it works in the browser.

Related Information

For more information, see SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com/nw74. Under Security Information, open Security Guide and choose *User Administration and Authentication* > *User Authentication and Single Sign-On* > *SAP NetWeaver Single Sign-On* > *Authentication Concepts* > *Authentication for Communication between Systems* > *Authentication Assertion Tickets*.

1.3.7.1.1.1 Trusted Relationships

Use

The second main use of logon tickets (unlike assertion tickets that are valid only for one system and one client) is to authenticate the user with other systems and clients. When accessing another system, the foreign system must also validate the digital signature and if correct, extract the user name from the cookie. For this to work, the two systems must be in a **trusted relationship** with one another. Effectively, both systems have information about the digital certificates of the other system, which allows them to verify signed information from the other system.

For a trusted relationship, all relevant systems must be configured to accept the logon ticket of the other system.

> ⓘ Note
>
> The SAP user ID must be the same on all systems.

More Information

- Trust Relationships between SAP Systems

1.3.7.1.2 Client Certificates

1.3.7.1.2.1 Use of Digital Certificates

Use

The expression Single Sign-On (SSO) is often used to express different aspects. Of importance is first the aspect of digital certificates that can be used for an initial authentication against a server. In this case, digital certificates are an alternative authentication, instead of the more typical basic authentication or form-based authentication. The use of digital certificates for authentication has a high set of prerequisites; the most important prerequisites are as follows:

- Configuration and usage of HTTPS
- Installation of the digital certificates in the secure store on each client

The problem of initial authentication is the only one that single sign-on solves.

The second aspect after an initial authentication is that authentication is required for each application that is started.

How can the user-supplied authentication from the initial authentication cycle be reused when starting each application anew. In this case, the user also expects a single sign-on working mode, where applications can be started with a new authentication cycle. This aspect is handled with logon tickets (`MYSAPSSO2` cookies) or assertion tickets (`SAP_SESSIONID` cookies). After the initial authentication, the server issues such a cookie that is effectively the user's name digitally signed so that whenever the cookie is presented again at the server, it is accepted as a form of authentication. For all subsequent requests, even when new applications are started, this ticket is part of the request to the server, therefore carrying the authenticated user name.

Within the Web context, digital certificates always refer to `X.509` certificates. A digital certificate binds a public key to a distinguished name that is issued by a certificate authority. The important aspect here is that a certificate is constructed (digitally signed by a certificate authority) so that the receiving party can validate the distinguished name again. The distinguished name usually takes the form `C=<country> O=<company> CN=<certificate_name>` and can include other attributes that uniquely name a person. There are standard procedures whereby a company can obtain and issue such certificates to each employee. The first step is to import the certificate into the browser. By doing so, the browser now has the identity in a digital format that can be verified again by the server. The next step is to update the ABAP server to be able to map the distinguished name onto a user name. This mapping can be configured with transaction *Call View Maintenance* (`SM30`), in the table `VUSREXTID`. The external ID is the distinguished name from the digital certificate and must be entered exactly the same into the table, including the preservation of case and spaces.

The browser must now send the certificate to the server. The moment the protocol is switched from HTTP to HTTPS, the certificate is automatically sent as part of the encryption layer that is used to secure the HTTPS connection. No further actions are required.

The switch from HTTP to HTTPS is triggered by the logon application that is configured within the ICF tree for the SAP Business Client node. This logon application (in its default configuration and only if HTTPS is available on the server) performs a protocol switch as a first step in the authentication process. If then a digital certificate is provided that can be mapped onto a user, the authentication process is completed automatically.

The configuration of HTTPS, the use of digital certificates, and logon tickets are closely related. For more information, see Configuring Authentication on the Server [page 140].

For more information about configuring SAP's servers to use digital certificates, see the referenced documentation. However, a few small topics that are relevant for SAP Business Client when using digital certificates are explained here. These are the options of using SAP's Passport service to obtain digital certificates, the prerequisite to the Microsoft hotfix 919477 when using digital certificates and a description of how certificate mapping needs to be configured on the server.

Using SAP as Supplier of Digital Certificates

Customers can use SAP Trust Center Services for issuing SAP Passports. Here the ABAP system functions as Registration Authority (RA) and SAP acts as Certification Authority (CA).

In this case, SAP Trust Center is used to obtain certificates for both the server and all clients. This is one way to set up a system landscape where digital certificates can be used for single sign-on. For more information, see Using SAP Passports Provided by the SAP Trust Center Service. For more information about SAP Trust Center Services and the certificate policy of the SAP Passport, see SAP Service Marketplace at *http://service.sap.com/~form/sapnet?_SHORTKEY=01100035870000437021&SCENARIO=01100035870000000202&*.

Certificate Mapping

There are standard procedures whereby a company can obtain and issue such certificates to each employee. It is outside the scope of this documentation to describe different companies that provide digital certificates. One idea is to use the SAP Passport service as described previously.

1. On the client, import the certificate into the browser, typically by choosing *Internet options* > *Certificates...* .
   The browser now has the user's identity in a digital format that can be verified by the server.
2. For each user on the ABAP server, map the distinguished name onto a user name in transaction `SM30`.
   1. Start transaction `SM30`.
   2. In the *Table/View* field, enter **`VUSREXTID`** and choose *Maintain*.
   3. Select `DN` as *Work Area* and choose *Enter*.
      Ensure there is an entry for assignment of external IDs to user names. The external ID is the distinguished name from the `X.509` certificate and must be entered into the table exactly as it is, including the preservation of case and spaces. The user name is the AS ABAP user name.
   4. Ensure that the *Active* checkbox is selected.
   5. Save your settings.

For more information, see Configuring the AS ABAP to Use X.509 Client Certificates.

Testing Single Sign-On

To test single sign-on, check that there is no authentication step. In a browser, start any URL on the server and check that the application is started directly without authentication. Likewise, in SAP Business Client, check that no authentication step is required.

Disabling Client Certificates (To Log On with a Different User)

> ⓘ Note
>
> Only relevant for Internet Explorer.

Usually, you log on to SAP Business Client using the client certificates, but for special cases you want to use a different user and an explicit logon screen. In the browser, open the security settings of the respective internet zone.

1. In Microsoft Internet Explorer, choose *Tools* > *Internet Options* .
2. On the *Security* tab, choose *Trusted sites* and the *Custom Level* pushbutton.
3. Under *Don't prompt for client certificate selection when no certificates or only one certificate exists*, select the *Disable* option.

For more information, see SAP Note 1638715.

1.3.7.1.2.2 Certificate Error Popups in the Browser

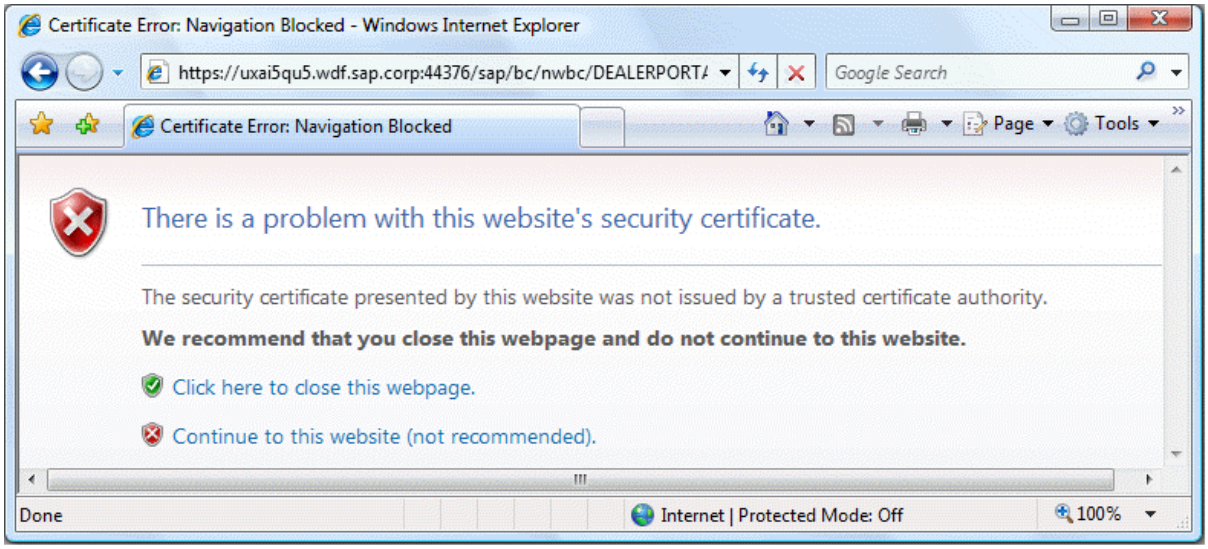
Use

> **Note**
>
> Only relevant for Internet Explorer.

Certificates work only if both the server and client have certificates that have a common root signing. The server and the browser often have certificates that are not mutually accepted or have an expired certificate.

For an example of how a certificate error behaves in a browser, log on to a test system with a browser, assuming this system has an erroneous certificate. If certificates are configured incorrectly, the error message `Certificate Error: Navigation Blocked` appears.

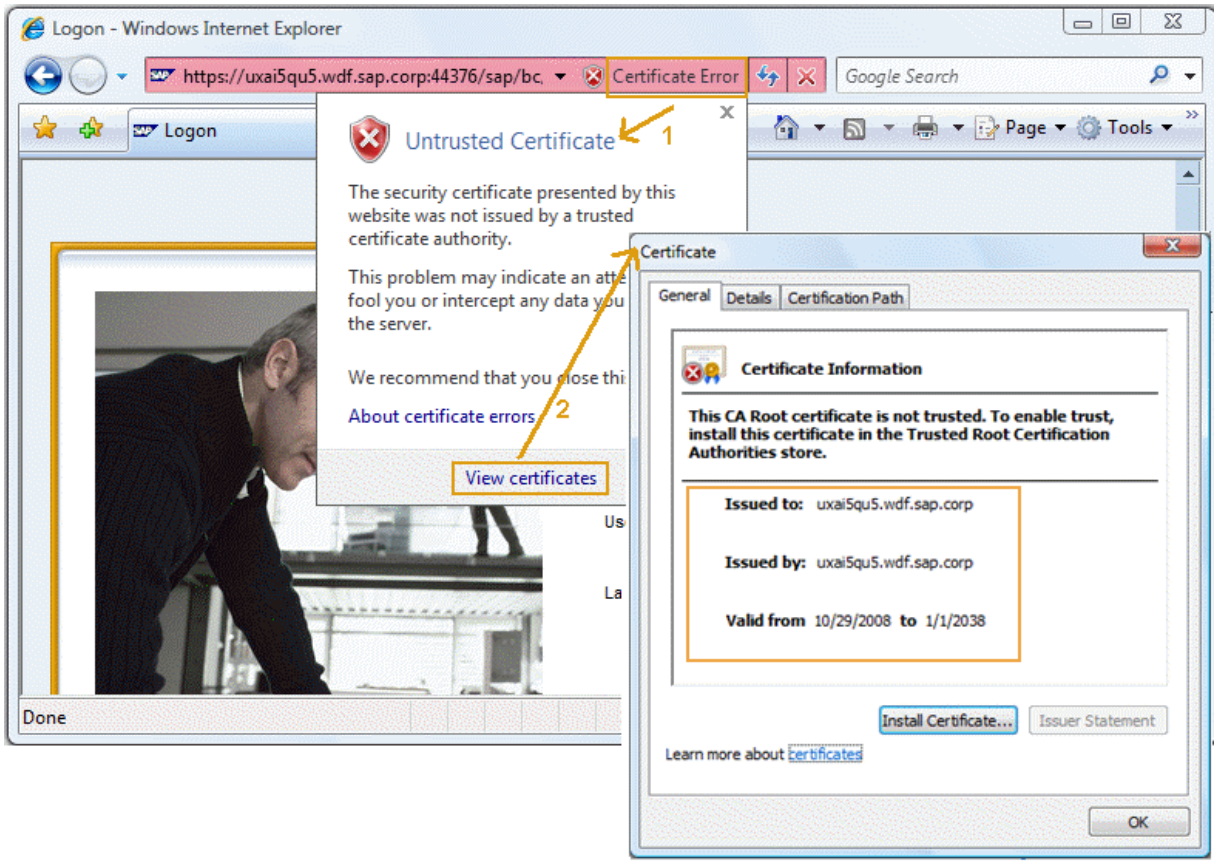
The following figure shows an example of this error message:



Choose *Continue to this website (not recommended)* to see a security report of the certificate error.

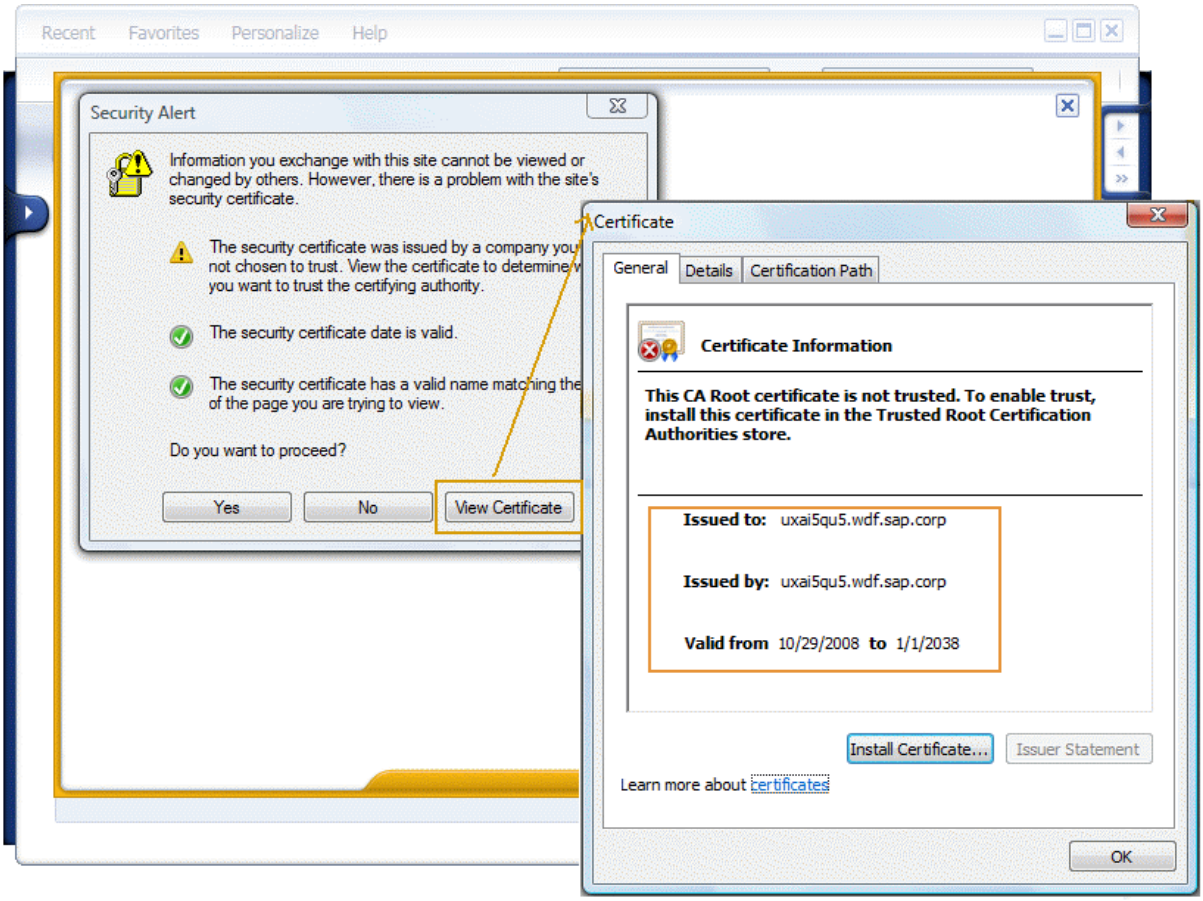
Choose *Certificate Error (Security Report)* and then *View certificates* for more information.

The following figure shows an example of the certificate information in the browser:



Similarly, when you call the same URL in SAP Business Client, a corresponding error message is displayed. For example, log on to a test system with SAP Business Client. If certificates are incorrect, a security message appears. To display more information about the certificates, choose the *View Certificates* pushbutton.

The following figure shows an example of the certificate information in SAP Business Client:



> ### Note
>
> For IE browser the popups still look like this. However, for Edge browser the warning is displayed as an HTML page similar to the standalone browser.

There are a number of possible reasons for a certificate failure. The following table summarizes common causes:

Problem	Description	Possible Solution
The certificate has not been trusted.	The browser did not trust the certificate issued by the server and required the user to intervene and determine if trust should be established or not. When users connect to your SAP system with their browser, a security alert appears indicating that the user does not trust the certificate issued by the server.	Install the server certificate. Refer to your browser documentation for details. Alternatively, if you are using self-signed certificates, consider using a certification authority (CA) signed certificate. This prevents the situation where all users must face this alert. **More information**: Protecting the Application Server's Keys

Problem	Description	Possible Solution
The certificate has expired.	The server certificate has expired. The browser did not trust the certificate issued by the server and required the user to intervene and determine if trust should be established or not.	We recommend obtaining a new valid certificate. The exact procedure for obtaining the certificate depends on the CA. For the SAP CA, follow the instructions provided by the SAP Trust Center Service at https://support.sap.com.
The name on the certificate does not match the name in the URL.	The browser has determined that the subject of the certificate issued by the server does not match the name used in the URL. This requires the user to intervene and determine if the user still wants to connect to the target system.	Make sure the name in the certificate subject and the name in the URL match. • Change the URL that took the user to your server. Use the correct domain name that appears in the subject of the certificate. • If this is not possible, install a new certificate with the correct domain name in the subject.

In summary, certificate errors in SAP Business Client are observed similarly when a browser is started for the same URL. Such errors are **not** related to SAP Business Client, but they represent problems in the configuration of the underlying digital certificate infrastructure (either server-side or client-side).

1.3.7.1.3 SPNEGO and Kerberos

SAP Business Client was originally designed to enable users to access data using multiple UI technologies from a single ABAP back-end system. To make data access secure, SAP recommends combining SAP Business Client with **SAP Single Sign-On**.

This solution is both simple and secure.

SAP Secure Login Service for SAP GUI offers support for SPNEGO for ABAP.

Prerequisites

SAP NetWeaver Business Client 4.0, SAP Secure Login Service for SAP GUI, SAP NetWeaver 7.3

Procedure

Setting up SPNEGO for ABAP is a simple and straightforward process that involves the following, manual configuration steps:

1. Install the Secure Login Library on the AS ABAP backend.
2. Set the system parameters `spnego/enable` and `spnego/krbspnego` in the Application Server ABAP, and configure the key Tab generated by the Active Directory Server in transaction `SPNEGO`.
3. Map the user's Kerberos principal name to the ABAP user name using transaction `SU01`.

Leveraging this Kerberos-based SSO technology, you can implement an SAP Single Sign-On solution for your SAP Business Client quickly and easily, and without the need for a Java stack.

With SAP Secure Login Service for SAP GUI and SAP Business Client, you can simply reuse your Windows domain authentication for SSO, even across different domains.

Connecting Securely to Single and Multiple ABAP Backend Systems

To do this, search for *NWBC Meets Single Sign-On* on SCN.

1.3.7.2 ICF Configuration

Use

As SAP Business Client is an HTTP-based application framework, it also supports the usual security concepts offered by Internet Communication Framework (ICF).

Whenever SAP Business Client (as a shell, not the content area) accesses the ABAP server, this is handled by the **NWBC HTTP handler** `CL_NWBC_HTTP`. You can find this handler in the ICF service tree (transaction *HTTP Service Hierarchy Maintenance* (`SICF`)) under `/sap/bc/ui2/nwbc` (when using UI services runtime) or `/sap/bc/nwbc` (when using SAP Business Client runtime). To allow SAP Business Client to access the server, the corresponding node must be active in the ICF tree. In addition, there is an **external alias** defined and shipped:

- For UI services runtime: `/ui2/nwbc` points directly to the ICF path `/sap/bc/ui2/nwbc`.
- For SAP Business Client runtime: `/nwbc` points directly to the ICF path `/sap/bc/nwbc`.

The alias can also be security-relevant, but not for access control.

For security reasons, the only services that should be active in the HTTP service tree are those services that are really needed. If you activate nodes at a higher level, the whole part of the service tree below this level is also active and accessible through HTTP.

The second security-relevant aspect of the ICF nodes are all logon configurations that are handled using the ICF layer.

> ⚠ Caution
>
> This ICF node controls only access of the SAP Business Client shell to the server; it does **not** control or enforce any access needed by an application to run. This is controlled by the different relevant frameworks.
>
> For example, for Web Dynpro ABAP applications a large number of additional ICF nodes need to be activated.

Similarly, if other types of applications, such as BSPs or BI are loaded, their relevant ICF nodes must also be active.

Below the `nwbc` node in the ICF tree, some special nodes exist that are explained in detail in Active Services in the ICF [page 161].

From a security viewpoint, the following nodes play a role:

Node for Users of UI Services Runtime	Node for Users of NWBC Runtime	Security-Relevance
`/sap/bc/ui2/nwbc`	`/sap/bc/nwbc`	Must be active to use productively
`/ui2/nwbc`	`/nwbc`	Should be available to use productively
`/sap/bc/ui2/nwbc/nwbc_launch`	`/sap/bc/nwbc/nwbc_launch`	We recommend that this node be **deactivated**.
`/sap/bc/ui2/nwbc/nwbc_test`	`/sap/bc/nwbc/nwbc_test`	We **highly** recommend that this node be **deactivated**.
`/sap/bc/ui2/nwbc/nwbc_testcanvas`	`/sap/bc/nwbc/nwbc_testcanvas`	We **highly** recommend that this node be **deactivated**.
`/sap/bc/ui2/nwbc/nwbc_debug`	`/sap/bc/nwbc/nwbc_debug`	We **highly** recommend that this node be **deactivated**.
`/sap/bc/ui2/nwbc/exprt_sapportal`	`/sap/bc/nwbc/exprt_sapportal`	We recommend to deactivate this node, unless the functionality is explicitly used with an enterprise portal in your system landscape.
`/sap/bc/ui2/nwbc/nwbc_ext2int`	`/sap/bc/nwbc/nwbc_ext2int`	If you want to use the side panel, this node must be active.

Related Information

ICF Scenarios
External Aliases
Active Services in SICF
Activating and Deactivating ICF Services
Maintaining Logon Procedures
Active Services in ICF [page 161]

1.3.7.3 Security Settings for Browser Controls

Security settings for browser controls within SAP Business Client.

Use

You can choose from three browser controls: Edge or Internet Explorer.

If the browser control *Edge* is chosen, then HTML content is rendered with the Microsoft Edge Webview2 control. This control is utilizing the second generation of Microsoft's Edge browser which is based on the open source web browser Chromium. The control depends on the Microsoft WebView2 runtime which is not shipped with the SAP Business Client. If you want to use the Edge control, you must download the runtime from Microsoft and install it separately.

If the browser control *Internet Explorer* is chosen, then HTML content is displayed with the web browser control of the .NET framework, which reuses libraries of Microsoft Internet Explorer. Hence security corrections for this browser control are delivered by Microsoft via Microsoft Update. SAP recommends to follow the Microsoft update strategy for Microsoft Internet Explorer, when using this browser control.

> → Recommendation
>
> SAP recommends to use the so called 'Evergreen Versions'. This ensures that updates for this runtime are installed automatically once they are made available by Microsoft. In case a fixed version of this runtime is used, the security risk of rendering web pages with an outdated Chromium browser applies.

The WebView2 runtime contains binaries of the Edge browser which are adapted for use with the WebView2 control. Security corrections for the WebView2 runtime are delivered by Microsoft via Microsoft Update, and therefore are independent of SAP Business Client patches.

1.3.7.3.1 Edge

Security settings for browser controls within SAP Business Client for Edge.

Use

The Edge browser control of SAP Business Client is based on the Microsoft WebView2 control. In a simplified view, the WebView2 embeds and remotely controls a dedicated Edge browser which is contained in the WebView2 runtime distribution. Security settings for the Edge browser can be administrated in the Edge browser UI, through registry settings and policies. To avoid side effects on applications embedding the WebView2 control when changing security settings for the standalone Edge browser, Microsoft decided to ignore security settings for the Edge browser in the WebView2 control. They announced to provide a way to separately configure security settings for the WebView2 control in the future. Until then, the Edge browser control in SAP Business Client runs with default security settings.

The WebView2 runtime distribution is not delivered by SAP. You have to download it from Microsoft and install it separately. Security corrections for the WebView2 runtime are delivered by Microsoft via Microsoft Update, and, therefore, are decoupled from SAP Business Client patches.

Security settings

Currently there are no dedicated security settings for the Edge control in the SAP Business Client administrator configuration file.

Allowlist

However, the allowlist concept is used independently of the browser control in SAP Business Client. If possible, the navigation for not allowed targets will be aborted before a browser navigation takes place. If this is not possible (e.g in case of browser in place navigation), the Edge control will interrupt not allowed navigation targets and mark them as forbidden. This behavior is equivalent to SAP Business Client with IE and Edge web browser controls.

1.3.7.3.2 Internet Explorer

Security settings for browser controls within SAP Business Client for Internet Explorer.

Use

Internet Explorer implements the Windows Internet Options zone model. This security model helps protect your computer from unsafe operations by using security zones and levels. Internet Explorer uses security zones that let you control the level of access given to your computer by the Web pages that you open. Having the appropriate security settings in place reduces the risk of damage to your system.

You assign Web sites to different security zones. For example, Web sites are assigned to the Internet zone if they are not listed in the trusted and restricted zones. To prevent navigation to a Web site that may cause damage to your system, add it to the list of restricted Web sites. For each zone, you can maintain security levels (for example, medium or high) manually. You can select the default level for a zone and customize the settings based on your security requirements. For example, you can disable the option to allow ActiveX controls to run without prompt.

How Security Zones in Internet Explorer Apply to SAP Business Client

The Windows Internet Options zone model applies to SAP Business Client in the following ways:

- SAP Business Client for Desktop renders HTML content using the Internet Explorer and thus uses the Windows Internet Options zone model. The Windows Internet Options zone model is also used for navigation to SAP GUI transactions.
- SAP NetWeaver Business Client 3.6 for HTML can only benefit from the Windows Internet Options zone model when you run it in Internet Explorer.

The settings you or your administrator defines in Internet Explorer apply to any navigation to Web content from SAP Business Client as well. Your system administrator must ensure that security zones with appropriate security levels for each zone are defined for any Web content that your system accesses.

With this security model in place, no additional protection for your system is required. In addition, SAP Business Client provides a allowlist infrastructure with the same effect as Windows Internet Options zone model to allow navigation only to safe Web sites once you have defined allowlist entries. You may still define the allowlist, though this is not required in case appropriate security settings have been made using the Windows Internet Options zone model.

> ⚠ Caution
>
> SAP Business Client navigates to a Web site regardless of the security zone defined for this site. If a Web site is listed in restricted zones only the trusted content is displayed on the site.

Activities

To maintain security settings in Internet Explorer, choose *Tools* > *Internet Options* > *Security*.

More Information

Allowlist [page 297]

1.3.7.4 Allowlist

Use

You need to protect your system from security risks that result from navigating to external Web sites that may damage your system. This can be achieved by restricting the access to Web sites. This can be done with the settings within the browser controls. Additional allowlists are not required, but can be defined.

For example, an ABAP transaction on system `ABC` calls a remote transaction on system `XYZ`. To allow this navigation, you need to create an allowlist entry for system `XYZ`. Another example for an external target is a Web navigation to *http://www.google.com*.

You can define allowlist entries in the following locations, depending on the back-end system type (SAP BC, SAP FIORI) and release:

- File in the admin folder. This option is valid for both SAP BC and for SAP FIORI system entries.
- Table `HTTP_WHITELIST` in ABAP back end. This option is valid only for SAP BC system entries with ABAP back end.
- UCON: Managing HTTP Whitelists. This option is valid only for SAP FIORI system entries. See UCON documentation for details.

To disable the allowlist, do not define any entry. That is, leave the allowlist empty (default). For allowlist entries, you should always specify the fully qualified domain name that includes the domain. For `file://` URLs, you can also specify UNC paths to network shares.

Example: *file://\\myhost\myshare\some\path**

In all cases, an entry for the connected system is created automatically (dynamically) on the client.

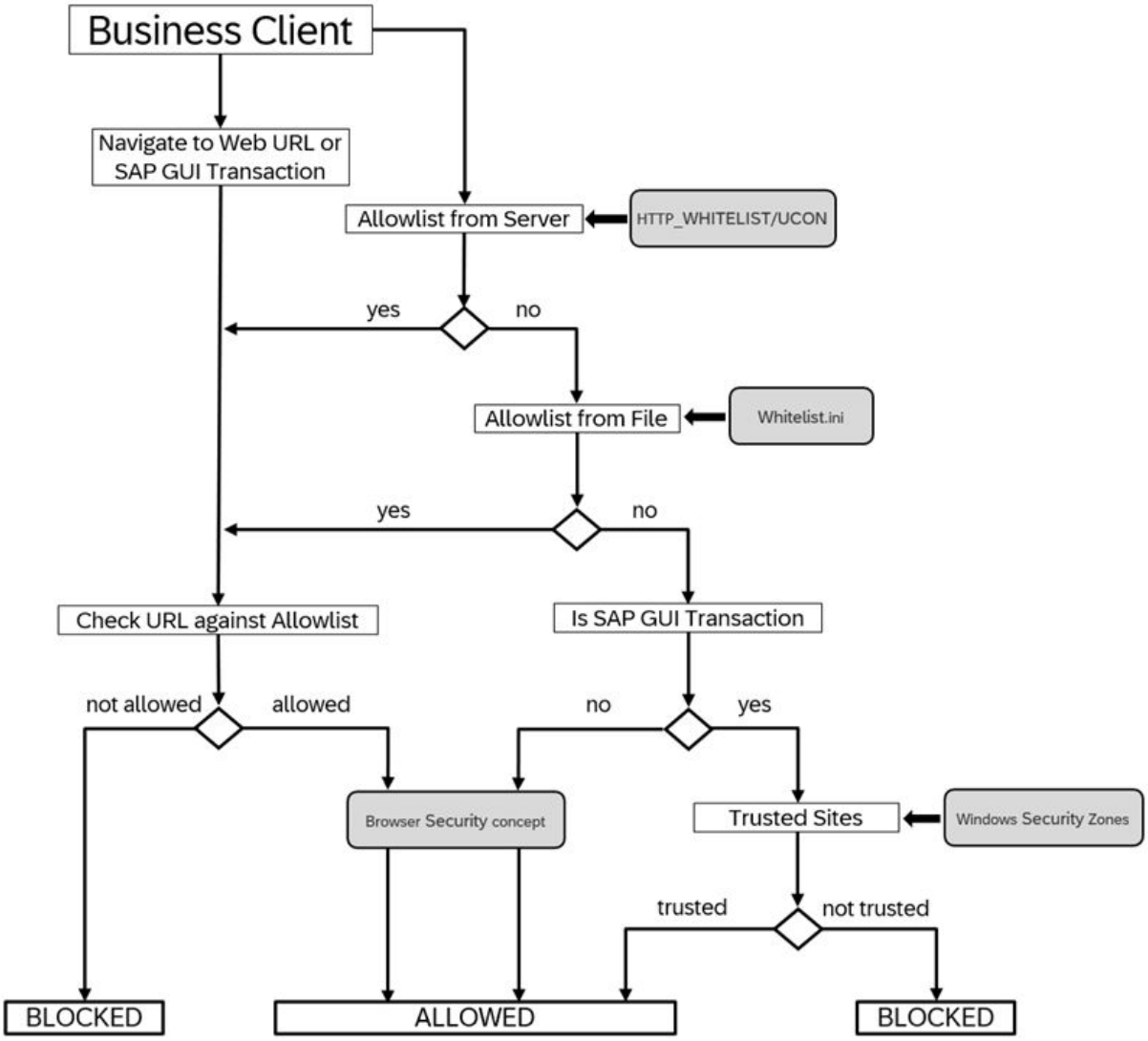
The following table shows which combination applies depending on the release and back-end system type and also specifies the location where to define the allowlist:

SAP Business Client Release	Back-End System	Location
Any	SAP Business Client server version* <3.5, SAP FIORI or Portal system entry	File
3.5 or higher	SAP Business Client server version* 3.5 or higher	Back end (HTTP_WHITELIST for ABAP Back end)/ Front end (UCON for FIORI Front end) or file, if table (HTTP_WHITELIST or UCON) is empty

(*) To find the SAP Business Client server version in SAP Business Client for Desktop, choose *Help* > *About SAP Business Client* > *System Info*.

The SAP Business Client server version is always 3.5 with SAP NetWeaver 7.0 EHP3/7.31 or higher.

The following sketch depicts the sources of entries for the AllowList and the sequence as well as the priority with which they are read, determining whether navigation to a specific destination is allowed or blocked.



More Information

Security Settings for Browser Controls [page 295]

For more information about table `HTTP_WHITELIST`, see Security Risk List.

1.3.7.4.1 Defining an Allowlist Using File

Use

The allowlist is maintained in a single text file in the admin folder.

For Microsoft Windows Server 2003 this file is located in *%ALLUSERSPROFILE%\Application Data\SAP\NWBC\Whitelist.ini*.

For all other operating systems this file is located in *%ALLUSERSPROFILE%\SAP\NWBC\Whitelist.ini*.

The file format is very similar to standard Windows `INI` files. Each system is initiated by a header consisting of the SID (for SAP EP connections it is the connection name) embedded in square brackets, for example **[ABC]**. Be aware that the system ID is case-sensitive.

Following the header line, each allowlist pattern is stated in a separate line, for example, ***:// *.mydomain.com:*/***.

The file can contain comments that are initiated by a semicolon, for example:

; this is a comment line

It is possible to define global allowlist patterns that are applied for all systems. These are defined in the [*] section.

A allowlist pattern for standard `http`/ `https`/ `ftp` URLs consists of four parts: the protocol, the host, the port, and the path. It is possible to use wildcards to generalize the pattern:

- The protocol must be specified either complete or using a * for any protocol. It is not possible to define only parts of the protocol, for example, this is not allowed: **http*://**
- The host can be generalized by using a single * at the very beginning, for example, ***.myhost.mydomain**
- The port is optional. In case you do not state the port, the default port for the protocol is used, that is `80` for `http`, `443` for `https`. A * stands for any port.
- The path can be generalized by using a single * at the very end, for example, **/allowed/path/***

It is also possible to specify other protocols like **file:** or **mailto:**. These are handled as having only two parts, the protocol and the path.

Example

An example `Whitelist.ini` file could look like this:

```
; global entries for all systems

[*]

*://*.mydomain.com:*/*

; system ABC

[ABC]

*://*.google.com/*

; a connection against an SAP portal using the connection name 'My Portal
Connection'

[My Portal Connection]

; for simplicity a * can be used to allow all * (equivalent to *://*:*/*)

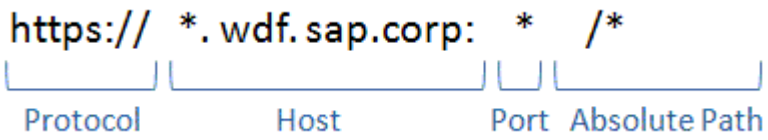
*
```

1.3.7.4.2 Defining Allowlist in HTTP_WHITELIST in ABAP back end

Use

For SAP Business Client, the generic table `HTTP_WHITELIST` in the ABAP system has been extended with the `entry_type NWBC`. With this, an administrator can specify that URLs that are included in roles or that are displayed in the side panel are to be trusted. You can access table `HTTP_WHITELIST` in transaction *Data Browser* (`SE16`).

The syntax is as follows:



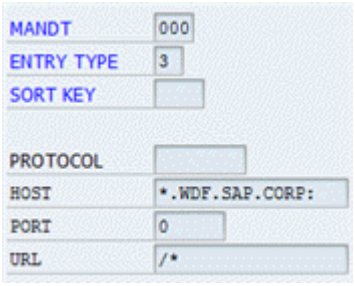
To enable navigation links of a system in table `HTTP_WHITELIST`, in the *HOST* field, you must either specify the domain (for example, `*.wdf.sap.corp`) or all application servers for a more restrictive access.

Prerequisites

NWBC is version 3.5 or higher and is connected to ABAP 7.03/7.31 or higher.

Example

A typical example of an allowlist entry looks like this:



In this example, every application that resides in `*.wdf.sap.corp` is to be trusted in SAP Business Client. Value `0` for port means any port. Table `HTTP_WHITELIST` does not contain any entries and allows access to the connected system. This corresponds to a single entry **`*://<fully-specified-system host>:*/*`**. That is, navigation to targets in the same system is allowed, but navigation to external targets is not allowed by default. An example for an external target is *http://www.google.com*. To allow navigation to external targets, make entries in table `HTTP_WHITELIST`.

> **Note**
>
> You must enter **03** for ENTRY_TYPE in back ends < 7.03 directly as this value is not available in the value help.

The following table shows example entries:

Example	Description
`https://*.sap.corp:*/*`	Any machine in the domain, any port, and any path are valid.
`https://mymachine.sap.corp/*`	The same machine, any port, and any path are valid.
`http://mymachine.sap.corp:55100/nwbc/is/cool/*`	The same machine, the given port, and any subpath are valid.

To match local files, an allowlist entry using the `file:` protocol is needed. For example, to allow access to all documents in `c:\temp`, the corresponding allowlist entry is `file:///c:/temp/*`.

In table HTTP_WHITELIST use:

PROTOCOL = “file”

HOST = “” <leave empty>

POST = “” <leave empty or 0>

URL = “c:/temp/*”

However, while technically possible, you should consider if access to a local resource makes sense. Documents specified in your role tree (for example, using transaction *Role Maintenance* (PFCG)) must be available on all end user machines and under the same path.

1.3.7.4.3 Allowlist Checks in NWBC for HTML

NWBC for HTML checks every navigation against an allow list defined in database table *HTTP_WHITELIST* or via Unified Connectivity, when in database view */UI2/NWBC_CFGCV* the configuration parameter *ALLOW_LIST_ENTRY_TYPE_FOR_NAV* is set.

The value of this parameter must contain a valid “entry type” of the database table *HTTP_WHITELIST*. For NWBC for HTML, there is no separate entry type in *HTTP_WHITELIST*. So existing data sets can be reused, that were already maintained for similar use cases. For example, using the entry **type 03** for NWBC for Desktop:

PATH_FILTER	*
NAME	ALLOW_LIST_ENTRY_TYPE_FOR_NAV
VALUE	03

If the (new) UCON functionality is enabled (and thus the older *HTTP_WHITELIST* is disabled), the chosen entry type will be mapped to UCON’s related context type.

1.3.7.5 Enabling Single Sign-On with Secure Login Client for SAP Business Client

As of SAP NetWeaver Business Client 4.0 administrators can configure this integration in the admin configuration file. When users try to connect to a system for which the *Use Secure Login Client* setting is activated, SAP Business Client triggers Secure Login Client to create a X.509 certificate.

The Secure Login client exists for Microsoft Windows and Mac OS X operating systems. The windows component provides security protocols and credentials for SAP GUI (SNC, SSF) and Web-based SAP NetWeaver access (SSL). SLC comes with the following optional and complementary end user token support:

- X.509 from Smartcard via Microsoft vendor CSP
- X.509 from Softtoken via Microsoft CSP
- X.509 from certificates that have been configured in the Secure Login Server
- Microsoft Kerberos (non X.509) using SPNego for ABAP

Use cases are as follows:

1. Profile with Certificate Request On Demand
   Secure Login Client (SLC) can use authentication mechanisms like user name and password or several other authentication mechanisms like RSA token. Dependent on the Secure Login Server profile the SLC integration of SAP Business Client prompts you to enter your credentials in order to receive a short living user X.509 certificate to skip the Web-based logon process of SAP Business Client.
2. Mobile User
   A mobile user connects to his offline machine and then creates a VPN connection. In this case it is similar to use case 1. The SLC integration of SAP Business Client is able to create a short living X.509 certificate to skip the Web-based logon and grants access to the SAP Netweaver Application Server.
   The Secure Login Client is installed and configured on your computer. For more information about how to configure the relevant settings for this integration, see the admin configuration file at %PROGRAMDATA% \SAP\NWBC \NwbcOptions.xml.
   For more information, see SAP Library for SAP NetWeaver on SAP Help Portal at http://help.sap.com/nwsso ▶ *SAP NetWeaver Single Sign-On 2.0* ▶ *Secure Login Implementation Guide* ▶ *Secure Login Client* ▶ *Secure Login Client Installation* ▶.

Related Information

Administrator Configuration [page 72]

1.3.7.6 Protection Against Clickjacking (Framing Protection)

Clickjacking is an attempt to trick users into clicking hidden or masked user interface elements without the user realizing it. The user thinks he or she is clicking on the underlying element in the presented context, but is actually clicking on an action chosen by the attacker.

> ⓘ Note
>
> This topic is **not** relevant for SAP Business Client for Desktop.

To prevent malicious applications from using SAP NetWeaver Business Client (NWBC) for HTML for clickjacking attacks, protect the NWBC for HTML applications by enabling clickjacking framing protection.

Clickjacking framing protection ensures that your application only runs in trusted environments when other applications frame it. If clickjacking framing protection determines it is not already in a safe environment, clickjacking framing protection detects the origin of the framing window and compares it against a fixed value or list. The function prevents NWBC for HTML applications from being embedded into other web applications, unless you trust the application source. You define trusted domains in an allowlist for clickjacking framing protection.

> ⓘ Note
>
> Consider allowing domains (such as *.example.com) for ease of maintenance, but weigh this risk against your current security measures for your network infrastructure.

To enable the global clickjacking framing protection functionality for NWBC for HTML as well as for any other UI frameworks being exposed in the SAP Business Client, maintain the allowlist for clickjacking framing protection.

For more information, search for *Using an Allowlist for Clickjacking Framing Protection* in the SAP NetWeaver documentation in the SAP Help Portal http://www.help.sap.com (see under *http://help.sap.com/netweaver* > *Security Guide* > *Security Guides for SAP NetWeaver Functional Units* > *Security Guides for the Application Server* > *Security Guides for AS ABAP* > *SAP NetWeaver Application Server for ABAP Security Guide* > *Special Topics* >).

From a SAP NetWeaver Business Client for HTML perspective, note the following prerequisites for enablement of clickjacking framing protection:

- For SAP NetWeaver Business Client version 3.5, at least patch 48 (SAP Note 2201092) must be implemented
- For SAP NetWeaver Business Client version 3.6, at least SAP_UI service pack 14 must be implemented

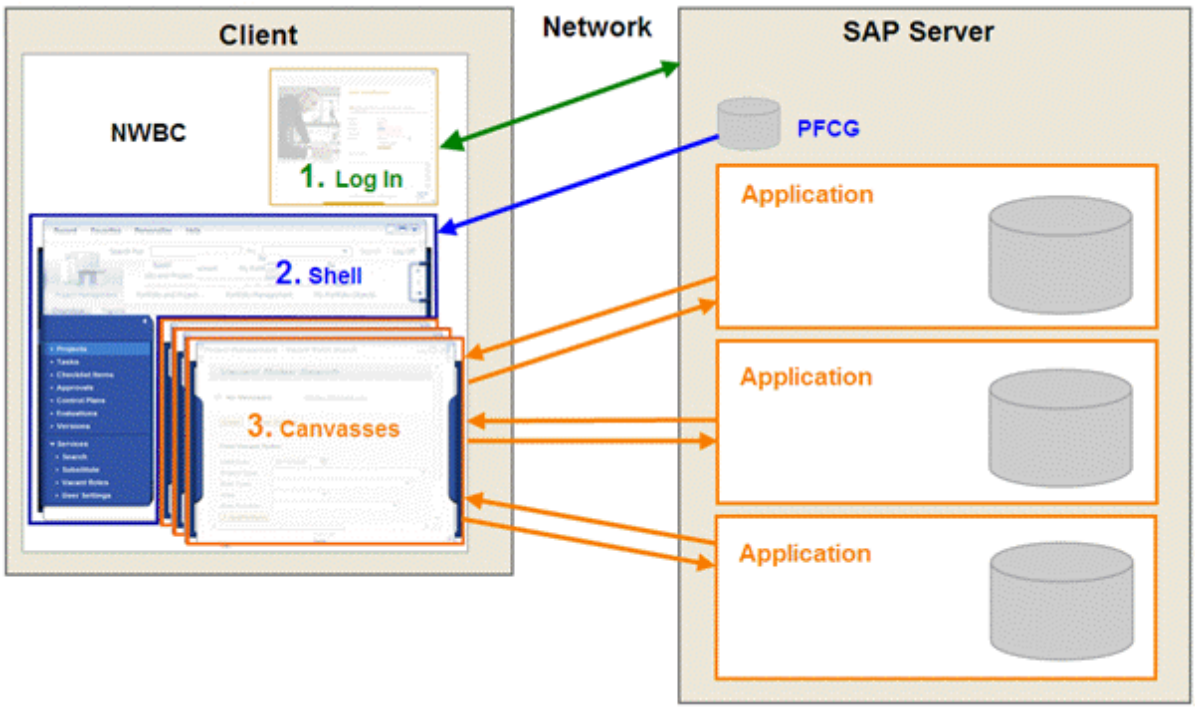
1.3.8 Performance Aspects

Use

The information for this topic is valid only for SAP Business Client for Desktop using the NWBC connection type, and for NWBC for HTML.

To understand the performance profile of SAP Business Client, you need to begin by looking at the architecture.

The figure below shows the architecture and is followed by an explanation:



1. On startup, SAP Business Client runs the **logon** procedure and authenticates the user at the back end (depicted in green).
2. The **shell** reads role-related information from the server-side PFCG store to provide navigation means between different SAP applications (depicted in blue).
3. The user interfaces of each of these applications are embedded in a **content area** running inside SAP Business Client. These content areas are reading and writing application data (depicted in orange).

> ⚠ Caution
>
> SAP Business Client does **not** change the performance behavior of the contained applications. The shell adds some additional performance on top but this happens in a constant way and does not relate to the performance behavior of the application. The application footprint is the same as if it were running in a standalone scenario.

This chapter describes different performance aspects of SAP Business Client:

- Performance Analysis
  Explains performance aspects of SAP Business Client and the influence that SAP Business Client could have on the back-end performance

- Measuring Performance
  Describes different tools that can help you with performance measurements
- Session Management
  Describes session management regarding the side panel

More Information

Performance Analysis [page 306]

Measuring Performance [page 308]

Session Management [page 308]

1.3.8.1 Performance Analysis

Use

Logon

In the context of performance, logon is not considered separately, as it is a one-off process over the lifetime of SAP Business Client running. Standard authentication processes are used for any other HTTP access to the server, for example, by Web Dynpro ABAP, BSP, and so on. Logon is very much influenced by the form of authentication used, for example, form-based authentication versus digital certificates. The logon is standard ABAP and **not** SAP Business Client-specific.

Desktop Shell

SAP Business Client for Desktop is a program running completely on the local client computer. On startup, it retrieves the navigation tree from the `PFCG` store with a few HTTP requests. After this, the shell has no further contact to the server, but caches the complete navigation tree on the client.

Client	The SAP Business Client itself does not need much client system resources. However, since it integrates different technologies such as SAP GUI for Windows and the Microsoft Internet Explorer web browser control, the requirements of those technologies have to be considered as well. Detailed hardware requirements of SAP Business Client for Desktop are listed under 2446515.
Network	2 HTTP requests with a typical payload of 50 KB (this depends on the role setup) to read the complete navigation tree. Further sporadic small HTTP requests are fired to the server to resolve navigation targets that are needed to start additional applications. This data is fetched once on demand only and is from then onwards cached on the client.

Server	1 ABAP session with a lifetime of 15 seconds and main memory consumption of approximately 3 MB.

Conclusion: The performance footprint on the network and server can be ignored as it is only relevant for the startup process. Only the client footprint is relevant for the desktop shell.

HTML Shell

SAP NetWeaver Business Client 3.6 for HTML is running inside a browser on the client. Each shell interaction triggers a roundtrip to the server to render the next view of the shell. This impacts both the network and server.

Client	Browsers need minimal resources to render the HTML representation of the navigation tree. This can be ignored.
Network	Each shell interaction step: 1 HTTP request with a typical payload of 20 KB.
Server	Each interaction step: 1 ABAP session with a lifetime of 15 seconds and main memory consumption of approximately 3 MB.

Conclusion: The HTML shell creates a continuous but low-performance footprint on both network and server.

Content Area

SAP Business Client does not change the performance profile of the contained content or of applications.

As to the SAP GUI content, SAP Business Client starts a normal SAP GUI to run any specific transaction. SAP Business Client does have a higher overhead to start the SAP GUI content and start the transaction inside the new SAP GUI content area. However, once the SAP GUI content is running, we have a normal SAP GUI running with the transaction, giving exactly the same performance footprint as when the transaction is running standalone.

Similarly, when starting any Web Dynpro ABAP application, SAP Business Client hosts a browser control in which the Web Dynpro ABAP application is running. It is exactly the same application running in the same browser as the application running standalone. Again the performance impact of the application in an SAP Business Client content area is similar to that of the application running standalone.

Side Panels

Similar to applications running in the content area, SAP Business Client itself does not change the performance profile of any application running in a side panel. The same performance aspects apply to an application running in the content area as an application (or the same application) running in a side panel. However, what is important is that the side panel hosts the application as a completely separate instance running into a separate server session. For example, if a specific transaction is running in the main content area with an application based on Web Dynpro ABAP in the side panel, two server sessions are open in parallel: one for the SAP GUI transaction running in the content area and one for the Web Dynpro ABAP application running in the side panel. As such, the performance footprint of such a scenario is effectively the sum of the resources used for the transaction and that of the side panel application.

SAP GUI Sessions

Using **`/n<Transaction Code>`** in the quick launch reuses the existing SAP GUI canvas and navigates to the new transaction, thus improving performance.

SAP Business Client initializes a SAP GUI process and communication layer between SAP Business Client and SAP GUI immediately after the system connection is established. This enhances the performance when starting the first transaction after logon.

1.3.8.2 Measuring Performance

Use

Use the following tools to measure performance for SAP Business Client:

- **Client**
  Microsoft Windows Task Manager shows you the memory consumption on the client side. For SAP Business Client for Desktop the relevant task is called `NWBC.exe`. For SAP Business Client for HTML, the browser process is relevant. For Internet Explorer the task is `NwbcBrowserHost.exe` and for Edge the task is `msedgewebview2.exe`.
- **Network**
  - With HTTP sniffers, you can measure the performance footprint on your network. A standard HTTP sniffer is, for example, Fiddler.
    For more information, see *http://www.fiddler2.com*.
  - HTTP requests for the shell:
    - All HTTP requests for the shell start with the prefix `/nwbc`.
    - Do not measure those requests for JavaScript and image files as they are cached by your browser anyway.
    - If you are running the Edge browser control, you can use the browser developer tools (for example shortcut F12) to analyze the network requests.
- **SAP Server**
  Use transaction *User List* (`SM04`) to get additional information on the server-side ABAP session serving the requests for the shell.

Do not mix measurements of the login procedure with measurements for the shell and contents in the content area. During a typical user session, the login happens only once while the shell and the contents are executed many times.

1.3.8.3 Session Management of Side Panel

Use

For each main application, you can define multiple side panel applications. When you open the application, SAP Business Client loads the first side panel application automatically, the others stay inactive. Only when you select an inactive side panel application, SAP Business Client loads this side panel and starts the session. When you deselect a side panel application, the session is kept active in the background even though you cannot see the user interface anymore. By doing so, there is no delay for the users when they switch back to a previously loaded side panel application. In addition, the state of the side panel application stays the same.

When the user navigates away from the main application, all sessions for related side panel applications are also terminated. One exception from this rule is that the new main application has the same side panel application as the previous one. In this case, the session of the side panel application is kept. This is the case when you click in the SAP Business Client navigation panel and navigate within the application itself. Closing the side panel does not terminate the sessions of the contained side panel applications.

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