Application Operations Guide
SAP IT Infrastructure Management

Target Audience

- Consultants
- Administators
- Others

CUSTOMER
Document version: 1.0 – 06/11/2012

Document History

 Caution

Before you start the implementation, make sure you have the latest version of this document. You can find the latest version at the following location: http://service.sap.com/instguides ▶ *SAP Components* → *SAP IT Infrastructure Management* ↵.

The following table provides an overview of the most important document changes.

Version	Date	Description
1.0	6/11/2012	New

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1 Getting Started

Designing, implementing, and running your SAP applications at peak performance 24 hours a day has never been more vital for your business success than now. This guide provides a starting point for managing your SAP applications and maintaining and running them optimally. It contains specific information for various tasks and lists the tools that you can use to implement them. This guide also provides references to the documentation required for these tasks, so you will sometimes also need other Guides such as the Master Guide, Technical Infrastructure Guide, and SAP Library.

SAP IT Infrastructure Management constitutes a flexible, efficient, and powerful tool that supports the establishment of a process and service-oriented IT organization and helps to automate its operation. Wherever administrative and support functions are essential to convergent system and network operations, SAP IT Infrastructure Management ensures quick and sound results.

The successful implementation of computer-assisted inventory and network management requires more than just simply choosing the right hardware and software. The decisive factors hinge on strategic preplanning and preparation tailored to the company-specific environments, needs and realities, along with adequate training and accompanying qualified consultation on system effectiveness.

SAP IT Infrastructure Management proactively monitors the status, availability, and performance of a heterogeneous IT landscape. Of modular configuration, it can be exactingly adapted to customer requirements. SAP IT Infrastructure Management can be used by multiple administrators who share responsibility for a network.

In large and distributed network and system environments, management tasks are handled by local administrators, each of whom irresponsible for one portion of the network.

For this purpose, components and modules of SAP IT Infrastructure Management can also run for distributed management functions.

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2 Monitoring of SAP IT Infrastructure Management

2.1 Performance Management

SAP IT Infrastructure Management comprises powerful tools for the displaying, evaluating, and storing of performance data, for example the history server and the performance monitor.

2.1.1 Performance Monitor

In offering you its extensive tabular and graphical display and evaluation functions, the performance monitor primarily serves for the comprehensive visualizing and analyzing of data. The objective is to ensure quick and easy evaluation and interpretation of real-time and historical performance data. The performance monitor allows the definition of values, which are to be saved to a long-term statistics database (history database). In the simplest case, these values would be the same values, which are preset for the real-time statistics. Alternatively, however, even summarized or only calculated values may be stored. An approach, which not only cuts down on memory but also enables considerably faster analyses.

2.1.2 History Server

The history server application runs in the background collecting data from the network, evaluating it, and then writing it to the history database. It manages all created configurations and prompts the poll server to read the data from the network components at set intervals (minimum polling interval of 10s; histories: 60s).
You can pause requests with a scheduling mechanism so that you can get a specific snapshot of the performance of a network at any given time.
The function puts methods for automatic compressing or deleting of data at your disposal, for example by converting minutes into hour values (mean averages), although the degree of detail can be set so as to include noncompressed data for a certain period of time.

2.1.3 Data Compression

The data compression mechanisms are organized into tasks. For example, one task can be set to compress data at a certain predefined time. Another will delete data from the history database while filing it to the archive database. Tasks are individually configurable and can be compiled into templates.
By automatically using preconfigured task templates, default settings always allow new statistics recordings to be generated without first requiring lengthy configuration procedures.
The history server comprises an automatic archiving function to file the data from a particular period of time into an archive. This applies both to statistics data as well as events.
This procedure ensures that the active history database will not be overtaxed and allows faster access to the stored information. The archive databases function as central stores of knowledge, enabling network event reproducibility for any point in time.

2.1.4 Threshold Monitoring

An event issues the exceeding of a preset threshold. These events themselves may be prioritized. The settings are made using included threshold sets based on empirical values.
You can copy the threshold sets as furnished, modify them according to your own needs, and assign them to the respective managed objects to be monitored. If such an exceeding of the settings be determined (for example an inadmissible number of errors per data packet transmission), the event is displayed at one of seven color-coded status levels based on the degree of exceedance.
Using the integrated object-sensitive help function, you can bring up information about the type of error message, possible causes, and suggested responses.

2.2 Fault Management

There are the following methods used for monitoring network and system environments:

- Status polling
- Event-driven monitoring
- Agent monitoring

2.2.1 Status Polling

Network monitoring derives from polling functions and analyzing event messages (SNMP traps). The usual procedure entails cyclically monitoring important network components. SAP IT Infrastructure Management refers to this process as status polling.

Features

- Configure polling intervals differently for different network nodes and even individual managed objects. Polling transpires with the following protocols:
  - ICMP/Ping
  - SNMP (v1, v2, simple), SNMPv3 (secure)
  - TCP, for example SMTP, FTP
  - HTTP, HTTPs
  - Windows Management Instrumentation (WMI) as part of SAP IT Infrastructure Management CIM implementation
  - Windows network functions
- It is irrelevant, which type of connection is used (ethernet, VPN, ISDN) since transmission of the cited protocols takes place at the OSI/layer 3 and is thus independent of topology.
  In this manner, backup paths and outbound connections can be realized. The active polling interval can be set to be device-specific.
- Typical monitoring includes:
  - Status and availability of important systems (active network components, server, and so on)
  - Status and availability of uplink ports
  - Response time of important components

  When requirements run higher, distribute the active polling across several systems.
- The response time itself may constitute a polling criterion. It is included in each polling package and, if required, may also be saved at the same time. The performance server handles the actual storage procedure. A threshold may also be set for this as well.

> Note
> Response time is not indicative of end-to-end monitoring since the package is always only between the management station and the respectively polled device.
> Do not allow the indicated methods to result in overloading the system, for example they are not to be used on a wholesale, across-the-board basis.

2.2.2 Event Driven Monitoring

This monitoring method is derived from the evaluation of event messages as sent to the network management system. Here, the network nodes are configured such that they will independently recognize network problems and report them to SAP IT Infrastructure Management (traps, syslogs, and forwarded events).
Configurable filter functions in Event Manager then analyze this information according to the defined requirements of each individual user. In practice, the approaches polling and event driven monitoring are used in combination.

Features

- Weighting
  Each selected property has its own factor for the initial computing of node availability. This weighting factor can be individually modified.
  The mean value thus determined for a node is again subjected to a weighting factor when calculating group availability. Similarly, the group along with its configured weighting factor is used for computing overall availability.
  The result is a hierarchical overview of the important components of a network and system environment for analysis in Web Console. With Reporting Package, this information can also be made available as a PDF document covering preset or self- defined periods of time.
- Maintenance intervals
  Maintenance intervals define those periods of time to be excluded from the calculating of percentile availability. These settings affect only the computation of availability, leaving SAP IT Infrastructure Management polling contingencies unchanged.
  Maintenance intervals can be defined comprehensively across-the-board, on a per node basis, or even for individual managed objects.
  Setting maintenance parameters is done with the Maintenance Scheduler. You can set a list of maintenance times. The effective maintenance interval is a function of overlapping individual periods.

More Information

Event Manager [page 12]

2.2.3 Event Manager

Employing the power of SAP IT Infrastructure Management means that you are not limited solely to preset or fixed software alarm functions. The type and scope of responses to individual errors are fully user-definable.
Even complex responses can be readily triggered such as audiovisual alarms simultaneous with, for example even system intervention (sets). The Event Manager is a system service and receives messages from individual SAP IT Infrastructure Management modules for example, from the poll server, and from external systems.

Features

All messages are uniformly formatted and processed as events. The following types of event messages can be processed:

- Trap events
  Upon changes to configuration, for example exchanging modules, or in the event of a port failure, SNMP nodes send traps to the SAP IT Infrastructure Management system. To avoid inundating the

management system, information can be prefiltered. This allows similar messages to be identified; they will then be suppressed for a definable period of time. The TRAP server, upstream the management system, forwards the filtered traps, or syslogs to the Event Manager.
The Event Manager recognizes trap messages sent from the nodes and resolves them to the greatest extent possible with the MIB database. This then leads to a trap event being assigned to the relevant node. Traps can be specially processed pursuant trap filter definitions, with the trap filters being configurable as to:

- Trap type (standard and private)
- Content (message)
- Individual subsystems (nodes)

- Syslog events
  Syslog events are the system alternative to traps. The TRAP server detects and processes them similar to traps and as with traps, content resolution is not necessary since they are already informative enough on their own.
- Filter
  Event Manager provides a set of pre-defined default filters. These covers most all of the standard functions and can also be expanded and/or modified according to the individual needs of the respective user.
  Each filter has its own number; searches run through the filters pursuant their sequential order. When a match is made to a filter condition, the responses as configured are executed.
  Filter conditions can be set for:
  - Node names, addresses
  - Node groups, node class
  - Message texts
  - Event type
  - Time based condition (scheduler)
- System log
  All events are recorded into the system log which is organized via the database. Report functions are used for evaluation purposes. The log can also be analyzed through the Web GUI/Console and is thus accessible to all (authorized) Web users.

2.3 Log Files

All log files within SAP IT Infrastructure Management have a maximum size. Log files are copied and cut as soon as they reach their maximum size. The maximum size per file has a standard value depending on the usage of the log. Plan a maximum of 500 MB for all log files. Usually, they do not exceed 100 MB.
The default severity of the log files is *Info*. Warnings and errors are logged with *Error* or *Warning* string in the message.

There are several types of log files available:

- Tracetype application files are used to log messages about access, error, and warnings of the application.
- Tracetype service files are used to log messages about startup, error, and warnings of a service that runs in the background.

Features

All log files can be found in `<your installation directory>/theGuard!`.
The following list shows the most important log files.

Name	Tracetype	Log File Name in `theGuard!`
NetworkManager	Application	NetworkManager\
Class Manager	Application	NetworkManager\nmClass.log
Device Manager	Application	NetworkManager\nmDevice-Server.log
Window Spitter	Application	NetworkManager\NMWinspit.log
Database Administrator	Application	nmdba.log
Service Pack Installer	Application	spinstall61.log
Communication Server	Service	NMComSrv.log
NetworkManager Discovery Engine	Service	NMDiscoverySrv.log
Browse Server	Service	NMBrowse.log
Trap Server	Service	NetworkManager\nmTrapsrv.log
Database Server	Service	NMDBSrv.log
Agent Server	Service	nmagentsrv.log
Scheduling Server	Service	nmsSched.log
Multi Site Server	Service	NMMSsrv.log
Poll Server	Service	NetworkManager\PollServer.log
Event Server	Service	NMSEvent.log
Control Center Server	Service	tGCCServer<#>.log;tGCC-Server<#>.svclog
Request Server	Service	tGRequestServer.log
Relation Server	Service	Nmrelationsrv.log

Some application-specific and configuration changes are stored in the database and can be retrieved via the event log. If you want to filter for these types of event logs, filter for object type *System*.

3 Management of SAP IT Infrastructure Management

SAP provides you with an infrastructure to help your technical support consultants and system administrators effectively manage all SAP components and complete all tasks related to technical administration and operation.

3.1 Starting and Stopping

3.1.1 Starting

All SAP IT Infrastructure Management modules are based on Microsoft Windows Services managed by the Process Monitor server. An administrative user interface is accessible by using the Process Administrator depicted as a small icon in the Microsoft Windows tray. You can access the client functions via the object context menu.

Procedure

1. Start the *Process Administrator* manually via ▶ *Start* → *All Programs* → *SAP* → *SAP IT Infrastructure Management* → *Process Administrator* ↵.
   When the *Process Monitor* is started, all server modules, for example database server, poll server, event server, start if the auto start flag is enabled. This ensures that monitoring and long-term recordings continue without logon.
2. Start the modules manually with the tool button or the *Process Administrator* menu with ▶ *File* → *Start all Autostart Modules* ↵.
3. Start the application itself from the Microsoft Windows start menu, the *Process Administrator*, or the *Process Administrator* tray icon:
   - ▶ *Start* → *All Programs* → *SAP* → *SAP IT Infrastructure Management* → *SAP IT Infrastructure Management* ↵.
   - SAP IT Infrastructure Management icon in the *Process Administrator* dialog.
   - In the *Process Administrator* via the context menu ▶ *Start* → *SAP IT Infrastructure Management* ↵.

   The initial credentials are:
   - User: `superuser`
   - Password: `public`

If the necessary services do not run, they start automatically. A dialog box keeps you informed about the progress of the startup process.

3.1.2 Stopping

You can end the SAP IT Infrastructure Management application in the *Process Administrator* dialog.

Procedure

1. The *Process Administrator* offers following options:
   - Closing all GUI modules
     In a multi-user-environment (terminal server), only the current session is affected when shutting down the GUI modules. The shutdown menu provides the options for shutting down to the respective level.
   - Closing SAP IT Infrastructure Management and all of its server components.
2. A progress dialog shows the status of the shutdown procedure.
   The shutdown procedure does not affect the *Process Monitor* or associated clients.
3. To find a list of currently running modules, from the *Process Administrator*, choose *View* → *Running Module Processes*.
   Shutdown all Modules empties this list.

Note

In addition, check the status with Microsoft tools like Microsoft Windows Task Manager. All relevant processes start with `NM`, `nm`, and `tG`.
Use Microsoft Windows Server Manager as additional application to check the status of the SAP IT Infrastructure Management processes and navigate to *Configuration* → *Services*. Stop all services that start with `NM`, `nm`, and `tG`. Only the *NM ProcessMonitor Server* service is in running state.

3.2 Configuration

The configuration user interface of SAP IT Infrastructure Management is used for configuring and managing the software system. It runs on the server on which the software system is installed and is accessed by using a Microsoft Windows terminal session, except for small parts, which are provided as a web site.
The configuration user interface features one main window that is the core of the application's user interface. You can access all other windows of the configuration user interface from this main window. All other dialogs open from the main window.
The Process Administrator is a separate application that is not accessed through the main window.

3.2.1 Process Administrator

The Process Monitor deals with the monitoring of the individual modules within SAP IT Infrastructure Management, documenting their status, memory usage, and versions. The client appears as icon in the Microsoft Windows system tray.

Features

You can also call up the client's functions via the following context menu:

- *Options*: change Process Monitor runtime parameters.
- *Communication Server Options*: open settings for communication server.
- *Licenses*: open and edit overview of all installed licenses.
- *Exit*: quit Process Monitor client.

> Note
> The Process Monitor client starts all the GUI modules. If you exit it, the proper functioning of SAP IT Infrastructure Management can be limited.

- *Process Monitors*: register multiple Process Monitors when installing on multiple computers. The default process monitor registration is *localhost*.
- *Running Processes*: open process list of running modules.

3.2.2 Main Window

The main SAP IT Infrastructure Management window is divided into several sections, each providing access to a specific feature set. The main window opens when the configuration user interface of the application is started.

Features

- Menu bar: access to all functions of SAP IT Infrastructure Management.
- Shortcuts: quick and direct access to the most important functions.
- Severity level: indicates which filters are active and how many polling results are currently allocated to the respective filters.
- Navigation bar: quick access to all SAP IT Infrastructure Management applications.
- Status bar: information on user currently logged on and settings.

3.2.3 Site Manager

The Site Manager is used for the management of several installation sites of SAP IT Infrastructure Management.

Features

- Open the Site Manager window by choosing *Manage* → *Site Manager* from the menu bar of the main window. The Site Manager provides a menu bar consisting of *File*, *Subsite*, *Reservations*, *NAT Entries*, and *Help*. The menus correspond to the three lists that are shown in the main area of the window, showing sites, reservations, and NAT entries.
- Edit subsite
  Open the *Edit Subsite* dialog by selecting *Subsite* → *Add* or *Subsite* → *Modify*.
  The dialog contains general settings about the subsite.
- Reserve address
  The *Reserve Address* dialog is used for reserving address ranges. Open the *Reserve Address* dialog by selecting *Reservations* → *Reserve address* from the menu.
- Reserve subnet
  The *Reserve Subnet* dialog is used for reserving subnets. Open the *Reserve Subnet* dialog by selecting *Reservations* → *Reserve subnet* from the menu.
- Edit NAT entry
  The *Edit NAT Entry* dialog is used for editing NAT entries. Open the *Edit NAT Entry* window by selecting *NAT Entry* → *Add NAT Entry* or *NAT Entry* → *Modify NAT Entry* from the menu.

3.2.4 Settings

The *Settings* dialog is the dialog for the basic settings of SAP IT Infrastructure Management main application.

Features

Open the *Settings* dialog by selecting *Config* → *Settings* from the menu of the main window.
The dialog contains a series of tabs, each of which displays a dialog with parameters and settings for the application.
The tabs and the areas that are covered by each tab are the following

Tab	Functions
Formatting	Defines the date and time format. This format is used to show for example, history and current log entries.
Polling	Allows to define basic individual polling settings.

Tab	Functions
Preferences	Parameters governing the appearance of objects in the map.
Applications	Summarizes your options for SAP IT Infrastructure Management applications.
HTTP Polling	Defines the options for extended polling via HTTP protocol.
MIB Options	Enter the directory path to be used as the base directory for the automatically created MIB browse files in the output root directory input field.
Alert Options	Sets the global parameters applying to pager and email filter actions.
Provisioning	Specifies which control characters, at the end of a macro line, are sent to the device for which the line end type is set as default.
Default Settings	Specifies which filter and sorting criterion are to be initially used when opening Node Manager dialog.
Policies	Allows to set thresholds for the number of automatically generated poll instances.
CCM	You need the optional license for linking the Cisco Call Manager to display this dialog.

3.2.5 Profile Configuration

The *Profile Configuration* dialog displays all existing profiles together with their associated filters and maps as well as a listing of all users and the profiles automatically loaded upon logon.

Features

Open the *Profile Configuration* dialog by choosing *File* → *Profile Configuration* from the menu bar of the main window.
Assign users to profiles at the left-hand side, defining the master profile in the list in the middle. The *Profile Items* group at the right-hand side lists all the defined filters and maps.

3.2.6 Database Administrator

The Database Administrator serves to manage the databases used by SAP IT Infrastructure Management applications as well as to control SAP IT Infrastructure Management's database server.

Features

- SAP IT Infrastructure Management database server runs in the background and does not have a particular user interface. You can start or stop the database server, or change the configuration using the Database Administrator.
- Open the Database Administrator via the Microsoft Windows start menu.
- The Database Administrator dialog shows a tree structure on the left, leading from the hosts to the individual databases. On the right, tabs present dialogs in which the databases can be maintained, for example *Logfile*, *Maintenance*, and *Config*.

3.2.7 User Management

User management is performed via the user interface elements: *User Groups* and *Users*.

Features

- User Groups
  In this dialog you define the user groups and their properties for the installation of SAP IT Infrastructure Management.
  Open the *Groups* dialog via *Config* → *User Groups* from the menu of the main window.
  The dialog shows a list of all user groups and their description and provides the possibility to add, modify, or delete a user group.
- Users
  In this dialog you define user accounts.
  Open the *User Edit* dialog via *Config* → *Users* from the menu of the main window.
  The window consists of the following dialogs:
  - *Current User*
    Information about the user who is currently logged on is displayed. You can enter user attributes and a password.
  - *User Admin*
    Selecting *Add* or *Modify*, another dialog opens in which you can enter the details of the user account. The default profile and the password are set. Moreover, the user type and permission level are defined.

For more information, see the *Security Guide for SAP IT Infrastructure Management*.

3.2.8 Object Groups

The *Groups* dialog shows all available groups into which nodes can be sorted.

Features

Open the *Groups* dialog by selecting *Config* → *Object Groups* from the menu bar of the main window. The window shows all groups in their hierarchical structure. Use *Add*, *Modify*, and *Delete* to manage the object groups. Arrow buttons on the right side and at the bottom can be used to move the selected groups in the hierarchy.

3.2.9 Discovery Control

The AutoDiscovery function looks for addresses in your networks, classifies them and adds them to the database of SAP IT Infrastructure Management. An automatic name determination including host name resolution plus type determination (router, switch, hub) is integrated.
The *Discovery Control* dialog is the central definition dialog of all discovery activities of SAP IT Infrastructure Management.

Features

Open the *Discovery Control* dialog with *Manage* → *Discovery control* in the menu of the main window.

- Discovery scan definition
  With *Scan* → *New* or *Scan* → *Change* a wizard opens guiding you through the settings of the discovery scan.
  Use *Prev*, *Next*, *Cancel*, and *Help* at the bottom of the dialogs to navigate back and forth in the wizard, cancel the definition wizard or display help.
  1. In the first dialog, select the type of discovery scan you would like to perform, for example *Normal discovery or topology scan*, *Provisioning scan*, or *Inventory scan*.
  2. The second dialog contains general fields such as the name of the profile. Define in this dialog which parts of the network or nodes you would like to scan. Use the buttons on the right, to open dialogs to for selecting network segments, IP ranges, node names, classes, or groups, which are to be scanned. *Configs* opens a dialog in which you can define detailed settings, such as SNMP communities, poll settings, excluded or virtual addresses, and many more.
  3. In the third dialog, define which information is to gather during the discovery scan. Activate the checkboxes to start the discovery of the selected information. Open a dialog for the definition of protocol settings (SNMP or WMI) with *Protocols*.
  4. In the fourth dialog, select groups for automatic node assignment after the scan. Add, change, or delete a group from the list with the buttons on the right.
  5. The fifth dialog shows a summary of the discovery definition. Save the defined profile with *Save profile*.
- Edit task
  With *Scan* → *Schedule* you open a dialog that contains fields for the name, description, and owner of the task to be scheduled. Edit the schedule for the discovery by selecting one of the entries in the list at the bottom of the dialog.

3.2.10 Policy Manager

The *Policy Manager* dialog shows the monitoring policies that have been defined.

Features

- Open the *Policy Manager* dialog with ▶ *Config* → *Policy Manager* ↵ from the menu bar of the main window.
  The dialog shows groups or classes in the list on the left-hand side, depending on the selected tab. The list on the right-hand side shows the poll templates that are assigned to the selected group or class. Depending on the selected tab, either node templates or MO templates are shown.
- Define the current poll settings that are to be assigned via *Baseline Configuration* at the bottom of the dialog. A dialog opens with the following functionalities:
  - Accomplish the assignment of polling templates to MOs and nodes at the tabs *Node Templates* and *Managed Objects Templates*.
  - Define polling templates that can be assigned to node or MO groups at the *Poll Templates* tab.
- Poll template properties
  Open the *Poll Template Properties* dialog by choosing ▶ *Add* → *Status poll template* ↵ from the *Poll Templates* dialog of the Policy Manager. The poll template can be defined in detail in this dialog. Depending on the selected tab in this dialog, edit and set the following properties:
  - Enable/disable the polling status at *Common Attributes* and you specify whether this polling status will also be taken as the node status. Set the parameters for the polling here.
  - Modify the necessary polling data at *Poll Details*.
  - Earmark for evaluation of availability, which occurs in Performance Manager or the web user interface each poll entry at *Availability*.
  - Save the response time of each polling action to obtain a later evaluation of response time of each polling action at *Response Time*. Save also response times, like polling, at other time intervals to reduce their number.
  - Make free-text comments at *Comment*.
- Select Threshold sets
  Use the *Select Threshold Set* dialog to manage threshold sets for the poll templates. Open the *Select Threshold Set* dialog by selecting *Assign threshold set* or *Modify threshold set* from the *Poll Template Properties* dialog tab *Poll Details*.
  The dialog displays a list of all threshold sets that have been created, sorted by MO type. Use the buttons on the right-hand side to move the thresholds up or down. Use the buttons at the bottom to create new threshold sets or modify existing ones. Add then a new threshold item to an existing threshold set by selecting *Add threshold item* at the bottom of the dialog.

3.2.11 Node Manager

Node Manager displays all network devices detected automatically by SAP IT Infrastructure Management and also those network devices entered manually. It constitutes the central node database dialog of the SAP IT Infrastructure Management system.

Features

- Open the Node Manager with *View* → *Node Manager* from the menu.
- Menu bar
  The menu bar consists of *File*, *Edit*, *View*, *Manage*, and *Help*
- Toolbar
  Find several buttons for quick access to functions that are also available in the menus in the toolbar. Furthermore, a filter is available to filter the node types to be displayed.
- Selection area
  Use the selection area on the left hand side to decide which nodes have to be displayed. Select from groups, classes, networks, vendors, contents of business view, pure network nodes, user groups, and domains. Additionally, search for certain node criteria. The selection area is commonly used to limit the nodes to be displayed to be able to find exactly the nodes that you are looking for.
- Content area
  The content area displays the elements selected in the selection area and/or the toolbar filters. Depending on the selected tab, either nodes, addresses, poll definitions, MO instances, or other elements and displayed. This implies that one row contains one node if the node list is shown, while other lists might show several elements per node. The content area displays each element with a set of properties as columns. You can decide which properties should be displayed.
- Context menu
  Use the context menu to access functions to be performed on the selected element.

3.2.12 Edit Node Dialog

All node's properties are maintained at this screen. This is the same dialog used to create a network device manually. Monitoring parameters can be specified for the device in this dialog.

Features

- Open the *Edit Node* dialog by selecting *Properties* from the context menu of the Node Manager.
  The following tabs are available on the *Edit Node* dialog:
  - Edit the master data of the node such as name, groups, and icons at *Attributes*.
  - Change polling properties and status correlation rules for the node at *Poll Settings*.
  - All the addresses supported by a device as detected by AutoDiscovery are listed at *Addresses*.

- Find an overview of all the MO types, which can be defined for the selected device class as well as all MO instances already recorded for the node at Objects. Define monitoring parameters per each MO instance and mainly serve the monitoring of ports, slots, and segments. Assign threshold sets to generate a warning upon being exceeded. At the highest level, the tree view shows all available MO types.
- Make settings regarding the export of data to a central site at *Multi Site*.
- See the default settings for the node and change it per protocol at *Poll Defaults*.
- The tabs *System*, *XML*, *Templates*, and *Browse* provide further functionality related to the selected node.

■ Polling properties

This dialog contains information about the polling configuration and the possibility to change the configuration. Open the polling properties with *Edit status poll entry* from the *Edit Node* dialog. The dialog provides the following tabs:

- Enable/disable the polling status and specify whether this polling status will also be taken as the node status at *Common Attributes*. Set the parameters for the polling.
- Modify the necessary polling data at *Poll Details*.
- Earmark for evaluation each poll entry, which occurs in Performance Manager or the web user interface, at *Availability*.
- Save the response time of each polling action to obtain a later evaluation of response times, which also occurs in Performance Manager or the web user interface, at *Response Time*. Save response times – like polling – at other time intervals to reduce their number.
- Make free-text comments at *Comment*.

■ Edit correlation

This dialog allows the correlation of object statuses to the combined (correlated) status of a node. Open the status correlation dialog with *Status correlation* from the *Edit Node* dialog tab *Poll Settings*. The dialog contains several areas in which different elements are contained. The elements to be correlated are listed on the left-hand side. In the middle column, the individual correlation rules, as well as the statuses, are listed. On the right-hand side, the correlation rule for the node can be combined by dragging the elements, rules, and statuses from the left into the window on the right. The correlation path is displayed in the window, so that you can see the results of your definition instantly.

On the toolbar on the top of the window, you can toggle the display of these dialogs by using the respective buttons. Furthermore, see a correlation status of the past by selecting a timestamp from the toolbar. Save or discard the correlation rule by using the respective toolbar buttons.

3.2.13 Device Manager

The Device Manager is an application to visualize graphically manageable devices.

Features

- Open the Device Manager by selecting the node in the Node Manager, or open it from the context menu of the Node Manager.
  The Device Manager automatically detects the subsystem type and loads a file with the specifications of the respective functions of the subsystem.
- The Device Manager displays a graphical representation of the selected node and provides a menu with which you can implement device-specific functions.
- The Device Manager dialog contains a menu bar with the following menus: *File* (providing basic functionality), *Window* (providing display options), and *Help*. The Device Manager supplies a toolbar with shortcut buttons, which are specific to the device type and provide functionality to display device data and the modify device options. With these shortcut buttons, you can open certain dialogs depending on the functionality of the button and the device type.
- The left-hand side of the Device Manager dialog shows a hierarchic list view and provides detailed information about the system variables of the node. The node structure is shown in a hierarchic view below this list. It allows the filtering of the displayed data and the selected slot or port.
- In the main area, the node is displayed graphically. If applicable to the device type, you can click on additional buttons to retrieve additional device information. Below the graphical representation, device data is displayed in the form of a table.

3.2.14 Dependency Viewer

The Dependency Viewer shows the dependencies or relations between objects.

Features

- Open the *Dependency Viewer* dialog via *Business Process Management* and any of the available options from the context menu items of the Node Manager.
- Topology trees
  The *Topology Tree* dialog displays the information as detected by the discovery server with respect to the current network topology as well as any changes made in configuration and topology. Open the *Topology Trees* window with *View* → *Topology Tree view* in the menu of the main window.

3.2.15 Events

The following describes the dialogs concerning events that occur in the IT infrastructure. They create event records in SAP IT Infrastructure Management. An event may be messages and pieces of information generated by the monitoring functionality or directly generated by a monitored device.

Features

- Display of events
  The event dialogs shows the events that are created in the system. Open the event dialog with ▶ *View* → *Current log* ↵ or ▶ *View* → *History log* ↵ in the menu of the main window.
- Event correlation
  The *Event Correlation* dialog shows the list of event filters and provides UI elements to define new filters and corresponding actions. Open the *Event Correlation* dialog with ▶ *Config* → *Event correlation* ↵ in the menu of the main window.
  - The dialog shows all predefined event filters. A series of actions to be executed is assigned to each filter when activated. A filter consists of a unique filter number, a short description of what the filter is designated for, the node to which it applies, the message to be filtered for, and to what type of event it pertains.
  - The *Event Correlation* dialog has a toolbar with buttons to start, stop or temporarily halt filters listed on the main window. Enable active alerting when SAP IT Infrastructure Management is started by activating the *Perform initial actions* box. The slider bar allows to set a limit on the severity level for an initial action. Set the slider bar to the far left to run initial actions for all severities. Set it to the far right, no initial actions will be executed. In all other cases, only the log action and/or a DB action will be executed when “initial events” are generated. Use Formatting to make settings for the date and time functions.
  - Below the filter list, a series of buttons is presented to manage the event filters. Open a dialog to add a new filter ▶ *Add* → *Filter* ↵. Delete the currently selected filters with *Delete*. Modify the currently selected filter with *Edit*.
  - Open the dialog in which you can enter the properties of the event filter in detail with ▶ *Add* → *Filter* ↵ or *Edit* from the *Event Correlation* dialog. To define the actions that have to taken when an event filter is active, select an event filter and select ▶ *Add* → *Single Action* ↵ or ▶ *Add* → *Action set* ↵.
  - Define action sets, consisting of several actions that are to be taken concurrently with *Action Sets* from the *Event Correlation* dialog.
- Customize action sets
  Define and modify action sets in the *Customize Action sets* dialog. Open the dialog with *Action Sets* in the *Event Correlation* dialog.
  - The dialog consists of two lists: Find the list of action sets on top. The list at the bottom shows the list of corresponding single actions when an actions set is selected.
  - *Add*, *Delete*, and *Edit* is available for both lists. Activate, stop or temporarily halted both, complete actions sets and single actions from these actions sets, in using the respective buttons below each list.

3.2.16 Maps

The Map dialog enables a network to be depicted graphically. Network components can either be generated manually or brought over and added from Node Manager per drag and drop.

Features

- Open the *Map* dialog with *View* → *Map* from the menu of the main window. Access the *Map* dialog with *Find node* in map from the context menu of the Node Manager.
  The *Map* window is subdivided into:
  - The menu bar contains the menus *File*, *Edit* (for managing and modifying the map), *View* (for modifying the map display options), *Manage* and *Help*.
  - Below the menu bar, the toolbar shows shortcut buttons that allow quick access to functionalities also available through the menus.
  - On the left-hand side of the window, the submap area shows the hierarchy of all maps created.
  - Additionally, find an overview of the currently selected map.
  - The map is displayed either graphically or in list view in the content area, depending on the tab selected on top.
  - Select different views in list form at the bottom of the dialog. These lists show the elements of the map in logical, physical, or VLAN view, the latter two of which are only available if a topology is presented.
- Create a new submap in the hierarchy with *File* → *New* → *Submap*. After you have created a map and have added nodes, the nodes are presented in the graphical alignment selected by the user. The view contains P-Severity and the S-Severity for a brief overview.
- The Automap is a specific map. You cannot create it manually, but automatically. Use *File* → *New* → *Automap* from the Map dialog to define in more details which data should be shown in which graphical representation, as well as which nodes should be included (by network segment, IP range, node name, class).

3.2.17 VLAN Manager

The VLAN Manager dialog depicts all the information found by discovery server on the current VLAN configurations. Only those nodes which SAP IT Infrastructure Management recognizes as switches are displayed.

Features

- Open the *VLAN Manager* dialog with *Manage* → *VLAN Manager* from the menu bar of the main window.

- The *VLAN Manager* dialog features a menu bar with the menu *File*, *View*, and *Help*. *View* contains options to toggle the view of the data. The toolbar below the menu bar contains buttons for quick access to functionalities that are also available in the menu.
- The window is divided into the following sections:
  - In the tree view on the left, the VLAN definitions are listed according to name. All the nodes which have a VLAN of this name are listed beneath.
  - In the table on the right, information about the object, selected on the tree view on the left, are presented. The structure and type of information depends on the view and the selected object.

3.2.18 CI Relations

Relations between CIs (nodes), called CI relations, are set in the web user interface.

Features

- Open the web UI with the respective URL in your web browser or use *Open WebConsole* from the navigation bar of the main of SAP IT Infrastructure Management window.
- In order to display CIs, navigate to *Asset & Inventory* in the IT Service Management section of the menu on the left.
- Select *Group Overview* or *Overview* from the menu to show the CIs in the database.
- In the content area on the right-hand side, all nodes and MOs are listed, filtered by type. Select the MOs type by the tabs above the list. The data presented resembles the data shown in the Node Manager. The toolbar with functionality to search, filter, and export the data is placed on top of the content area.
- To create or edit CI relations, select the CI or MO to open the context menu and select *Edit CI Relations*. The CI relations are presented in list form. Add new relations with *Add*. You can also describe the *CI Relation Type*, *CI Type*, and *Name* to create a new relation instantly. Use *Search* to find existing relations.
- Use the *CI Relations Types* dialog for creating the types of relations, which in turn can be assigned to relations when they are created. Open the *CI Relation Types* dialog with the icon *CI Relation Types* in the *Edit CI Relations* dialog, or select *Settings* → *Administration* → *Asset & Inventory* → *CI Relation Types* from the main menu. The window shows a list of all CI relations types including their properties and icons to edit or delete them. Open the editing screen by using *Edit* next to an existing relation or *New Relation Type* at the bottom of the window.

3.2.19 Reporting

Reports are generated and defined in the web user interface (web UI).

Features

Open the web UI by opening the respective URL in your web browser or using *Open WebConsole* from the navigation bar of the main SAP IT Infrastructure Management window. Navigate to *Reports* in the *Infocenter* section in the menu on the left-hand side and choose one of the following:

- *AdHoc Reports* shows a list of pre-defined reports that group all CIs. Select one of the reports to navigate to the next section of the dialog providing a list of fields to filter the CIs, which should be included in the report. Start the report with *Submit*.
- *Cube Reporting* shows a list of all available cube reports. Next to each report, you can set parameters or edit, run, filter, or delete a report.
  At the top of the page, define with *Register new report* new reports, while *Edit* leads to the same page of an existing report. Choosing one of the latter options, a new page opens in which you can define the title, description, topic, base template, and status.
  Parameters leads to a page, in which you can define the parameters of the report. It consists of two columns with buttons to change entries. The left column contains lists with all available items. The right column contains a list of all selected item. The buttons in the middle are used to move selected items from one list to another. The lists are available for grouping options, details of the report, and filters.
  Filter leads to a page on which the filter set on the *Parameters* page are defined in detail.
- The page *Generate Report* opens a wizard for report generation. At the first page of the wizard select topic and type of the report and then continue with *Next*. Set the details of the report in the second wizard. Navigate with *Next* or *Back*. *Next* opens the third wizard, which shows a summary of the settings. Generate the report with *Generate Report*.
- *Search Report* opens a page with a series of fields that can be used for searching a report. Activate the search with *Search*.
- *Schedule Report* opens a page that allows the scheduling of a report. At the first page of the wizard select topic and type of the report and then continue with *Next*. Set the details, including scheduling options, of the report in the second wizard. Navigate with *Next* or *Back*. *Next* opens the third wizard to define the rendering format and subscribers. *Next* opens the fourth wizard containing a summary of the settings and *Schedule Report*, which schedules the selected report.

3.3 Administration Tools

3.3.1 Main Window

After starting SAP IT Infrastructure Management and logging on with either SAP IT Infrastructure Management authentication, Microsoft Windows authentication or Single Sign-On, SAP IT Infrastructure Management main window appears. It centralizes the functions of the SAP IT Infrastructure Management system and assists in the administration of the network.

The main window of SAP IT Infrastructure Management presents the following functions:

- The menu bar and the shortcut buttons provide access to the functions of the main application.
- The severity level status displays, which filters are active and how many polling results are currently allocated to the respective filters.
- The navigation bar consists of several tabs to administer the SAP IT Infrastructure Management system and to provide access to all SAP IT Infrastructure Management applications.

3.3.1.1 Authentication Sets

When configuring communication with network components, additional authentication is necessary to prevent unauthorized access to the component information. SAP IT Infrastructure Management consolidates information such as logon, data encryption into authentication sets.
You configure authentication sets (SNMPv3, Telnet/SSH/FTP, WMI/WBEM) to specify authentication information on secured access for the cyclic polling of the relevant components via SNMPv3 protocol. Logon information for automated Telnet and SSH polling by the Device Config Management is also stored in authentication sets. To query CIM information, it is necessary to specify the (Microsoft Windows) user accounts, which have the appropriate authorization. Specifying these user accounts can be done with authentication sets.

Features

- Authentication sets are defined by the system administrator (Superuser user level) and apply to both the system functions as well as user-initiated actions on the network components.
- An authentication set can be assigned to individual nodes or node groups and can be available throughout the system to communicate with these nodes. It is specified which users and user groups are authorized to use an authentication set for polling.
- Authentication sets which are not assigned to a user or user group can only be used by the system itself, for example in status polling.
- Open the Authentication Sets dialog from the main window of SAP IT Infrastructure Management ▶ *Config* → *Authentication set* ↵.
  For more information, see the configuration guide for SAP IT Infrastructure Management.

3.3.1.2 Object Groups and Managed Object Type Groups

You can define groups to which you can assign the network devices. To have a clear presentation of managed object instances, you can classify managed object types into groups

Features

- To configure groups, choose from the main window of SAP IT Infrastructure Management ▶ *Config* → *Object groups* ↵.
  The groups are arranged hierarchically, whereby the top-level groups are preset by the system and cannot be changed.
  For more information, see the configuration guide for SAP IT Infrastructure Management.
- To classify managed object types into groups, choose from the main window of SAP IT Infrastructure Management ▶ *Config* → *Managed Object type groups* ↵.

3.3.1.3 Discovery Control

You can define basic settings for AutoDiscovery and create and start pre-defined scan profiles.

Features

- Open the dialog from the main window of SAP IT Infrastructure Management ▶ *Manage* → *Discovery control* ↵.
- The *Scan* section contains information about the subarea of the network to be scanned, the actions to be performed and special scanning options, which may deviate from the global settings.
  Once you have defined a scan profile, you can activate it at any time. You can have individual profiles run on an automatic time-controlled basis and thus, keep your node and topology data fully up-to-date as far as on current status.
- The *Profiles* tab lists all defined scan profiles. When you select one of these entries, the network areas and actions as assigned are displayed.
- The *Scan log* tab lists all previous discovery runs. The associated network areas and actions are listed.
  For more information, see the configuration guide for SAP IT Infrastructure Management.

3.3.2 Node Manager

Node Manager shows all network devices detected automatically by SAP IT Infrastructure Management as well as those entered manually. It consists of the central node database window to SAP IT Infrastructure Management system.
The right-hand part of Node Manager shows different aspects of the individual nodes, for example node attributes, poll definitions, and MO instances.
The left-hand area of Node Manager shows selection filters to limit the number of represented nodes to certain categories, for example groups, classes, vendors, and networks.

3.3.2.1 Map View: Graphical Network Representation

SAP IT Infrastructure Management provides a structured graphical display of your network. With the help of this network representation, the map, you are able to decide in how the components should be displayed. Maps are tree structures and organized hierarchically. The branches are submaps. A map thus visualizes how individual submaps are nested.
Configure the graphical representation by dragging the nodes over from the Node Manager into a submap. Position the nodes where you want them to be. They are displayed as icons and can be connected to each other using graphic plotting functions. These connections can serve to visualize status information. Available functions include labeling and the integration of background images.
Configure the graphical depiction as a topological or logical view, or as a mixture of the two, with as many nested submaps as desired. For example, you can select the individual buildings located on company grounds as your basis. When clicking on the building icon, a window opens indicating the rooms or premises in which the different devices are located. An alternative display contains a block diagram showing the system functions and relationships.

Features

- Auto Map Feature
  Apart from the submaps, which you can modify, every submap can also be specified as an Auto Map. Via filter functions, you can define which nodes of a network are to be displayed in this submap. For example, possible filter configurations might include:
  - IP segment or IP address range
  - node type, class, or group
  - nodes with neighbor nodes connected by so many hops (neighbor view)
  - active nodes (routers, switches, hubs) or all nodes

  This function considerably facilitates map maintenance since you do not need to perform manual updates.
  The nodes, which correspond to the selected filter criteria, are positioned automatically. In principle, you can choose from four layout algorithms:
  - orthogonal
  - hierarchical
  - symmetrical
  - circular

  The connections between the nodes correspond to the physical structure of the network as identified by the topology server. They are adapted to the current network configuration every time the window is called up. Another feature of the AutoMap is the VAA technology. The VAA technology stands for Visual Assisted Analysis, meaning a method, which supports the perceptional ability of the human eye in separating essential information from complex contexts.
- Topology Window

Another feature is the map view which provides a display that can be modified by you which in turn results in quick recognition of the overall physical and logical network topology in relation to the particular node selected. When a node is highlighted in the map view, it is automatically detected in the physical tree and then displayed in the topology window along with all of its connections to neighbor nodes.
From this view, nodes can be dragged and dropped into the user-defined map. When doing so, any other nodes or objects (managed objects, for example, ports, interfaces) which are directly connected to the selected node are likewise included and the connections are visualized in the map with lines.
Automatic linking of the depicted connections to the associated managed object (port/interface) also takes place so that defined polling entries immediately color-code the status of the given network connections.
The topology window can also be switched between the various logic (layer3), physical (layer 1, 2), or (optional) VLAN view displays according to the needs and can be masked or shown at any time similarly to the navigation window. Above and beyond the map, which you can modify, the physical network structure, detected by the topology server or the VLAN-referenced structure of the network is displayed in a separate window.

- Navigation Window
  You can define the number of submaps and the depth of nesting with no limits. So as not to lose the overview, an explorer-like representation of the entire hierarchy displays at the left-hand side of each map window. In multiuser operation, the representations displayed may vary according to personal user preference.

3.3.2.2 Indication of Status by Color

The status of each device and submap is indicated with background colors: Status identification transpires by means of cyclic polling or mapping of events (for example, traps).
Changing colors give an overview of the entire network status at all times. Since the background colors correspond to the messages in a message list (log), the task of locating the respective component is simplified and accelerated, even within larger network representations.

3.3.2.3 Provisioning

Given that most of today's system environments are highly complex, heterogeneous, and based on years of ongoing expansion and upgrading, securing a clear overview of configuration details and software versions becomes more difficult. Although software distribution and release management is already prevalent among user systems, software-supported administration of network and system

components encompassing the logging of changes is still difficult. With the provisioning module, SAP IT Infrastructure Management provides the functions able to tackle this task.

3.3.2.4 Auto Discovery

The discovery server detects all active nodes within a network, identifying, and allocating them to logical views (layer 3) along with all given attributes (such as, for example, addresses). This is an integrated function of the topology server.

3.3.2.5 Topology Server

The topology server runs in the background as an independent application searching for linked and active network nodes. Upon demand or at definable times, all relevant configuration data will be read from the network components, automatically classified according to type, and saved to the system database.
The following particularities are specifically detected:

- names (from NameServer, local windows configurations)
- addresses (MAC, IP)
- node type
- available SNMP (Simple Network Management Protocol) functions
- available inventory information
- available TCP ports
- available HTTP and HTTPs functions (web server)

The topology server checks this configuration data during each run and saves any changes. These changes are then logged and, contingent upon the pertinent settings, may also trigger an alerting of the system administrator, for example upon detecting a new address in the network. You can have new automatically detected devices populate the maps according to your own specifics.

3.3.2.6 Discovery Scan Profile

All settings necessary to run discovery can be stored in scan profiles.
These settings comprise:

- network segments to either be searched or excluded
- IP address ranges to either be searched or excluded
- specific nodes to either be checked or excluded
- passwords, communities

- general settings
- more specific settings
- log actions

The functions described can be combined to a large extent. Scan profiles run at definable times set with the Scheduler.

3.3.2.7 Topology Tree

An explorer-like display containing the nodes and their ports/interfaces is used to facilitate analyzing the information. The display is of hierarchical grouping, thus portraying the physical and logical connections.
A top node is defined to form the root of the tree, giving you a selected view of the network connections. An analysis of routes between nodes always displays the path toward the top node (node1 – top node – node2).
The topology trees contain all connection data active at the time of the scan. Older trees remain as is, comparing them allows for analyzing changes in the network.
A prerequisite is the availability of the respective network component's data (address tables) via SNMP.

3.3.2.8 Route Tracing

Topology Manager also provides route tracing capabilities. Simply select a node and click. The route through to the top network node is displayed instantly. You can also select a target node at the same time and receive a fully graphical representation of all the connecting components and elements beginning from the start node all the way through to the target node. Connecting components (ports, interfaces, VLANs) are called managed objects.
An important extension of route tracing is signal path analysis (signal path view). The signal path indicated in the traced route is displayed with the respective properties of the MOs (for example, ports). These properties are compiled into sequences and polled online over the entire signal path of the managed objects.
The result is a clear and concise table containing all the important configuration and/or performance values for all the managed objects in the signal path.
This method allows the end-to-end connections for any given network component or end device to be analyzed in detail, making the cause of a problem immediately identifiable. Signal path analysis can be used in all system environments. As a tool for analyzing problems, it quickly proves to be an invaluable asset to any administrator.

3.3.2.9 Node Properties

In this dialog, all node properties are maintained and you can specify monitoring parameters for the device.

Features

- In *NodeManager*, to open the *Edit Node* dialog, choose *File* → *Properties*.
- The following settings are available:
  - *Attributes*: This tab contains the attributes of a node. You can also enter a network device manually. Establish monitoring parameters for the device and modify the addresses. Enter basic data of a network device here.
  - *Poll Settings*: Polling is the cyclic querying of a device. It serves to monitor status and to determine whether a device is operational or not. Find the results of polling in the *Current log* dialog. If the node is also in the map, it is updated according to preset filters.
  - *Managed Objects*: This tab offers an overview of all MO types, which can be defined for the selected device class, as well as all managed object instances already specified for the respective node. Define monitoring parameters for each MO instance. This serves for the monitoring of ports, slots, and segments. Define threshold sets to generate alarms when the value is exceeded.
  - *Poll Details* and *Threshold Sets*: To add polling tasks, on the *Managed Objects* tab, choose the superordinate MO in the tree and, from the context menu, choose *Add*.
    To add or modify threshold values, in the *Poll Details* dialog, choose *Assign/Modify threshold set*.
    For more information, see the configuration guide for SAP IT Infrastructure Management.

3.3.2.10 Performance Data

You can record performance data.

Features

- In NodeManager, you can navigate to the *MO Instances* tab and select one or more MOs.
- From the context menu, select *Create property history* and the *Select Properties* dialog appears.
- Select the performance data you want to be recorded.

3.3.2.11 Event Logs

If an event occurs in the system, for example, the failure of a device, this is automatically logged in the system database.

Features

- A status is assigned to each event. The following statuses are possible to identify the system user's processing status:
  - *Open*: initial status of newly entered events
  - *Closed*: already processed by the user and released for automatic archiving/deletion
  - *Assigned to user*: assigned to a user for processing
  - *Acknowledged*: acknowledged by the user, no longer taken into account when calculating dynamic object status
  - *Ignored*: no longer taken into account when dynamic object status is calculated
  - *Reopened*: by a user or the system
  - *Deleted*: tagged as deleted, released for automatic deletion from the database in the next archiving cycle
- Upon the event's occurrence, the system automatically evaluates the results through all active filter configurations and profiles at that point in time. The log actions defined there generate process log entries, which are stored in the system database and which are displayed in history or current logs to users with the respective profile.
  For these users, log entries can take on the following status conditions:
  - *Closed*
  - *From event*: this status resulting from the status of the event, which generated the log entry
- While the status of a log entry is related to the filter configuration from which it results, the event status has system-wide relevance. If you change the log status, it only affects those users who have opened the same filter configuration. If you change the event status, the status of all associated log entries in the system is affected.
- Close a log entry (Closed state) either manually or automatically by the system. Event entries are automatically closed by the system when all log entries generated by the respective event are on *Closed*.
- The respective last event generated by a polling configuration is designated as status relevant since it maintains the dynamic status. Log entries assigned to these events cannot be set to *Closed* or *Deleted* since the dynamic status information would otherwise be lost. If you try to close these entries, a corresponding message is displayed and the entry remains open.

3.3.2.12 Event Correlation

Define event filters that SAP IT Infrastructure Management can react to events like traps or polling requests. An event filter establishes a certain type of event to which the system has to react. To trigger a response, you have to link one or more filter actions to each event filter.
Action sets assist to consolidate a group of actions, which have to be executed always concordantly and, as such, are linked to one or several filters.

Features

- You can select *Config* → *Event Correlation* to open the *Event Correlation* dialog and to set filters.
- The dialog offers the defined filters and their respective actions hierarchically. A filter consists of a unique filter number, a short description of what the filter is selected for, and a series of parameters, which exclusively describe the event for which the filter is defined.
- It is also possible to create a filter directly from either one of the event logs.
  For more information, see the configuration guide for SAP IT Infrastructure Management.

3.4 Backup and Restore

Back up your system landscape regularly to ensure that you can restore and recover it in case of failure. The backup and restore strategy for your system landscape should not only consider SAP systems but it should also be embedded in overall business requirements and incorporate your company's entire process flow.
In addition, the backup and restore strategy must cover disaster recovery processes, such as the loss of a data center through fire. It is most important in this context that you ensure that backup devices are not lost together with normal data storage (separation of storage locations).
SAP IT Infrastructure Management *Database Administrator* allows you to set up an automatic, time controlled internal backup of the active database configuration during running operation. Both, Microsoft Access databases as well as Microsoft SQL databases can be backed up. If available, you can also use external backup possibilities.
Since databases are subject to continual change (map editing, logging on and off), you should back up databases at short intervals for example, daily. Meanwhile, to increase the level of security, a database backup directory is supposed to be always located on a different computer.

3.4.1 Internal Backup Concept

SAP IT Infrastructure Management provides different possibilities for internal backups.

Features

- For automatic backup and compression of the corresponding databases, you use the maintenance dialog of the Database Administrator. You can use the following options:
  - Backup/Scheduler
  - Compact/Scheduler
- For Microsoft Access databases, you create copies of the single database files.
- For Microsoft SQL databases, you create backup files for each single database similar to the performance of a full backup within Microsoft SQL Server Management Studio.

- When using the internal backup possibility in combination with Microsoft SQL databases, the recovery model settings of the corresponding databases within the Microsoft SQL Server have to be compulsory set to *Simple*.
- The created backup files are stored in the defined backup directory path.
- By default, backup files older than 28 days are automatically deleted.

3.4.2 External Backup Concept

Using MS SQL databases, further external backup possibilities are provided from the MS SQL Server Management Studio.
Besides a full backup of the single databases, you can also perform separate transaction log backups to recover to a specific point in time, assuming that your backups are complete up to that point in time. Using the external MS SQL Server backup possibility in combination with transaction log backups, the recovery model settings of the corresponding databases within the MS SQL Server have to be set to *Full*. For MS SQL Server databases with the full recovery model, the transaction logs of these databases have to be separately backed up at regular intervals. Otherwise, the transaction log file is continuously growing. It is not compulsory to choose the same recovery model (here full) for all corresponding databases. Since all configurations and node-specific data is stored in the system database, which is the most important database, it makes sense to set the recovery model of this database to *Full* and set the recovery models of all other corresponding databases to *Simple*. For more details concerning the management of SQL Server databases, please refer to a Microsoft SQL Server manual.

3.4.3 Internal Restore Concept

You cannot directly restore complete databases within SAP IT Infrastructure Management Database Administrator. However, the internal export and import data functions are useful to copy one database to another. The MIB database cannot be exported or imported. When exporting or importing, data is overwritten at the target database.

3.4.4 External Restore Concept

The recommended way to restore databases is to use the possibilities, which are provided from the corresponding external database applications. Microsoft Access databases will not be restored, but only copied back from the defined backup folder to the database installation folder. MS SQL databases will be restored by using the restoring functions, which are integrated in the Microsoft SQL Server Management Studio. For more details on how to restore MS SQL Server databases, please refer to a Microsoft SQL Server manual.

3.4.5 System Images

Despite the fact that all important information is stored in the databases, we recommend to create complete images from all involved systems from time to time.

3.5 Periodic Tasks

This chapter describes all manual tasks required to run periodically to keep the application running smoothly over time. Such tasks may be required on component level and are therefore relevant in each scenario that uses the component. It is important that you monitor the successful execution of these tasks on a regular basis.

3.5.1 Checking Availability of Services and Processes

The SAP IT Infrastructure Management application is divided into modules, services, and processes.

Procedure

1. To open the list showing the running modules, open the Process Monitor client, the Process Monitor dialogue and choose *View* → *Running Module Processes*.
   The *Running Module Processes* list provides information about all running modules. Every module has a context menu for additional operations.
   A Microsoft Windows service is assigned to each SAP IT Infrastructure Management server module, which is the main information base on services being started and running correctly. The SAP IT Infrastructure Management services start with `NM` and `tG`.
2. Check the list if the following services are started. Problems occur if services stay in status *Starting* or *Stopping*:
   - NM Agent Server
   - NM Browse Server
   - NM Business Connector
   - NM Communication Server
   - NM Database Server
   - NM Device Server
   - NM Discovery Server
   - NM Event Server
   - NM MultiSite Serve
   - NM Object Buffer Server

- NM Poll Server
- NM ProcessMonitor Server
- NM RelationServer
- NM Schedule Server
- NM Trap Server
- NM Window Spitter Server
- tG Business Connector Server
- tG Control Center Server

Note

You can monitor multi-user-modules and helper processes in the Microsoft Windows Task Manager.

3.5.2 Checking Memory and CPU Utilization

Checklist

- ☐ To check memory and CPU utilization for SAP IT Infrastructure Management processes, use the Microsoft Windows Task Manager. The processes of server and multi-user-modules, helper processes, SQL server processes, and IIS related processes are relevant.
- ☐ To identify SAP IT Infrastructure Management processes, proceed as follows:
  - ☐ processes starting with `NM` and `nm`.
  - ☐ processes starting with `tG`.
  - ☐ BusinessConnectorSvC.exe
  - ☐ sqlservr.exe
  - ☐ SQLAGENT.EXE
  - ☐ ReportingServicesService.exe
  - ☐ w3wp.exe
- ☐ The SAP IT Infrastructure Database Server `nmdbsrv.exe` is the process, which consumes most of the memory as this process handles every data access to the SQL databases. Find additional helpful information on the *Performance* tab and the Resource Monitor of the Microsoft Windows Task Manager.

3.5.3 Checking Disk Utilization

To check the disk utilization, use Microsoft Windows Explorer.

Checklist

- ☐ Partition C is used for the operating system and relating applications. The Microsoft SQL Server with its database files and the SAP IT Infrastructure Management application is installed on partition D.
  If there are problems with free disk space, check following folders:
  - ☐ `C:\Users`
  - ☐ `C:\ProgramData\Microsoft\Windows\WER\ReportQueue`
  - ☐ `D:\SQL_DB_Backup`
  - ☐ `D:\Program Files\Microsoft SQL Server\MSSQL10_50.MSSQLSERVER\MSSQL\DATA`
- ☐ The application can also be used to monitor the disk utilization and alert if a defined threshold is exceeded.

3.5.4 Checking Service and Process Termination

To check if all services and processes of SAP IT Infrastructure Management are stopped, use on of the following ways:

Checklist

- ☐ Running Module List
  If all SAP IT Infrastructure Management processes and services are stopped, this list is empty.
- ☐ Windows Services dialog
- ☐ Microsoft Windows Task Manager
  If all SAP IT Infrastructure Management processes and services are stopped, the process overview does not contain the following items:
  - ☐ processes starting with `NM`, `nm`, and `tG`
  - ☐ `BusinessConnectorSvC.exe`
  - ☐ `w3wp.exe`

3.5.5 Checking If Web Environment Is Running

Checklist

- ☐ To check if the Internet Information Server (IIS) is running, do one of the following:
  - ☐ Scan the Microsoft Windows services dialog for *World Wide Web Publishing Service*.
  - ☐ Start the IIS Manager from the *Start* menu. If the context menu displays the *Stop* option, the IIS is running.

  For more information, see *Checking Availability of Services and Processes* [page 40].

- ☐ The web environment starts up if the SAP IT Infrastructure Management services are not running, but as soon as queries to the database are executed, an error occurs. Usually, there are three services that starts with the Web environment, most important the database server.

3.5.6 Checking If External User Connections Are Terminated

It is necessary to ensure that all external user connections are terminated, for example before installing a service pack. External user access the system either via remote desktop sessions or Web browser sessions.

Checklist

- ☐ Check the remote desktop sessions:
  1. Open Microsoft Windows Task Manager and switch to the *Users* tab.
  2. To terminate all sessions, choose *Log Off* from the single user context menus. Do not log off from your own session.
- ☐ Check the Web browser sessions:
  To ensure that all Web browser sessions are terminated, reset the Internet Information Server (IIS).

3.5.7 Checking TCP Connections

Checklist

- ☐ To display the TCP ports used by SAP IT Infrastructure Management:
  1. Choose the Microsoft Windows Services file `C:\Windows\System32\drivers\etc\services`.
  2. Open the file with an editor, for example Notepad.
- ☐ To check the availability of a specific port:
  - ☐ 1. Open the `cmd.exe` file.
  - ☐ 2. Use the following telnet command, for example for the local Communication Server:
    `C:\>telnet localhost 42379`.
    If the system displays an empty screen and no error message, the connection test was successful.

3.5.8 Checking Service Pack Version

Checklist

- ☐ From the context menu, choose *About*.

The dialog displays the installed service pack version of SAP IT Infrastructure Management.

3.5.9 Purging Data

Purging data in regular intervals can help to improve performance and to keep the database clean. To purge data in the *Database Administrator* on the *Maintenance* tab:

Checklist

- ☐ *Purge Deleted Nodes*
  Removes all nodes, which are deleted in SAP IT Infrastructure Management irrevocably from the system database.
  The system is not able to restore the nodes in the *Node Manager*.
- ☐ *Purge Eventlog Archivee*
  Removes all event log entries, which are swapped out to a yearly archive irrevocably from the archive databases.

3.5.10 Importing Inventory Data

You import inventory data to the SAP IT Infrastructure Management database in regular intervals. You can also schedule the imports automatically.

Procedure

1. From the `?:\REALTECH\theGuard!\ServiceCenter\bin` directory, choose the`XML2SC6.EXE` command line program.
   The program enables the import of the corresponding XML file to the database.
2. In the program, adapt the XML file name parameter as follows:
   `XML2SC6 [-f:<XML-file name>`

    Note
   The recommended coding is UTF-8. UTF-8 files are identified by an initial sequence of 3 bytes (0xEF, 0xBB, 0xBF). If the coding is not UTF-8, a standard coding is used.
   All characters of the XML file are treated as an ISO 8859-1 (alias ISO Latin-1) character set. The characters 0 to 0x20 are excluded because they represent control characters, which cannot be entered into the database.

3. The XML files follow the following structure:

>>> MISSING TARGET TEXT FOR TEXT-ID: 'SourceCode' (language: en) <<<

```
<Inventory xmlns:sql="urn:schemas-microsoft-com:xml-sql">
<INVSwInstalledWhat [Software-entries]/>
<nmname [Node-entries (contains inventory data)]>
<Inv_...[various hardware data]/>
<Inv_InstSoftware [software installed on this node (reference
to INVSwInstalledWhat)]"/>
</nmname>
</Inventory>
```

4. To check the syntax and semantics of the XML files used, the following XSD files are provided in the XML2SC6 application's directory:
   - `nmsubtype.xsd` defines only the tags of the new interface and forces an error message upon detecting `Inv_*` tags.
   - `InvNdNMsubtype.xsd` defines both the tags of the new interface as well as `Inv_*` tags.

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4 High Availability

The redundancy option offers increased reliability of network monitoring using SAP IT Infrastructure Management. To increase the reliability, an additional instance of SAP IT Infrastructure Management is installed on a second server (redundancy server).

Features

SAP IT Infrastructure Management redundancy server takes over the following tasks:

- Replication of all data on the active system to the backup system at regular, freely configurable intervals
- Status monitoring of the active system
- Takeover of polling functions upon failure of the active system
- Restoration of collected data to the active system after a failure

Active server and redundancy server act like two separate SAP IT Infrastructure Management installations with the following restrictions:

- Data replication between the active system and the redundancy system takes place at regular intervals. Changes made on the redundancy system while the active system is running are lost when the next replication occurs.
- Polling on the redundancy system is only activated when the corresponding active server is recognized as inactive. This applies both to status polling and to the recording of statistics data.
- When a status change of the active system occurs (active/inactive), respective actions start automatically to synchronize the data with the backup system.

Status monitoring and data backup is performed by SAP IT Infrastructure Management Multi Site Server service. This service is registered with the installation and activated automatically when starting the SAP IT Infrastructure Management application. In a failure of the active server, the redundancy server enables polling and takes over the tasks of the active system. When the active server is reactivated, polling is stopped on the backup system. The user has now the opportunity to transfer collected data of the backup system to the active system.
Due to the separate installations, it is possible to open different profiles on the backup and the active system. Define special filter configurations and event actions that are used automatically in case of failure of the active system. Note that the configuration of these profiles has to take place on the active system, because this data is transferred to the redundancy system cyclically. Changes on the redundancy system are lost upon the next data backup.

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5 Troubleshooting

5.1 Installing Service Pack Takes Long

If the installation of a service pack takes a long time, proceed as follows:

Checklist

- ☐ Back up your databases before starting the installation procedure.
- ☐ Deactivate any virus scanning software during the installation procedure.
  If you do not deactivate the virus scanning software, each single file is checked by this software and the installation takes longer.

5.2 Accessing SAP IT Infrastructure Management Not Possible

If you are starting SAP IT Infrastructure Management, all missing processes are started automatically. The fist and most important service is the database service. All other services are started thereafter. An administrator may kill SAP IT Infrastructure Management modules or powers from the whole system. This is why some of the databases are not closed correctly. The database server recognizes these problems and checks all databases. This check takes a long time in large environments.

Procedure

1. Start SAP IT Infrastructure Management.
2. Enter your user ID and password.
3. If the startup procedure terminates without a logon screen, check the database connection as follows:
   a) Choose ▶ *Start* → *Database Administrator* ↵.
   b) If the database connection is successfully established, see line *Connected with NM Database Server*.
   c) Start the database connection using *Start* from this window.
   You cannot start SAP IT Infrastructure Management user interface without an established database connection.

5.3 Improving Performance of SAP IT Infrastructure Management

SAP IT Infrastructure Management consists of interactive client applications and central servers (system services). All components are integrated within one consistent user interface and they are linked to the central database. The client applications required to log in to the central server, are registered there and then accepted to the other client applications. This is the core of the system with as many other processes as necessary grouped around this core kernel to cope with the respective tasks. Client applications run as Microsoft Windows or web applications. Neither Microsoft Windows applications nor the server necessarily have to run on only one computer. They can also be distributed throughout the network according to the given requirements. All of the applications, which are necessary to guarantee the basic operation, are delivered as one package – the base system

Checklist

- ☐ In large network operations, it may be necessary to increase system performance. A recommendation for improving system performance is to increase memory size or utilize multiprocessor systems.
- ☐ The database is the definitive supporting basis of SAP IT Infrastructure Management, with the database server managing all its related data. The database size depends on number and configuration of monitored items and their properties. Provide enough disk capacity to run and back up the databases. For this reason, you can increase application performance by checking the database backup and maintenance workflows. It can be helpful to delete data not necessary from the database.
  To do so, proceed as follows:
  In *Database Administrator*, on the *Maintenance* tab, choose ▶ *Purge Data* → *Deleted Nodes* ↵.

5.4 Dealing with Error Messages

Distinguish error messages that appear on the web front end and on the server relating to the Microsoft Windows GUI.

Checklist

- ☐ Error messages in the browser can relate to different problems that can be triggered by the browser, for example a plug-in, the network connection, or the current application. Therefore, configure Microsoft Internet Explorer to show more technical information: Choose ▶ *Internet Options* → *Advanced* ↵ and then choose the *Show friendly HTTP error messages* option.
- ☐ Error messages within the Microsoft Windows GUI typically relate to a module or service that has terminated irregularly or did not respond in time. To check if the SAP IT Infrastructure

Management processes are consuming a high amount of memory or CPU capacity, see *Checking Availability of Services and Processes* [page 40] and *Checking Memory and CPU Utilization* [page 41].

5.5 Starting SAP IT Infrastructure Management Service

There are two options to start the SAP IT Infrastructure Management services using either the *Process Administrator* or the Microsoft Windows services dialogue:
To start a service via *Process Administrator*, proceed as follows:

1. In the *Process Administrator*, select ▶ *File* → *Start all Autostart Modules* ↵.
2. Check if a service is set to startup type *Disabled* and correct this in the Microsoft Windows Services dialog. Set all SAP IT Infrastructure Management services to *Automatic* or *Manual*.

To start a service using Microsoft Windows services dialogue, proceed as follows:

1. If a service stays in the status *Starting* or *Stopping*, terminate the process in the Microsoft Windows Task Manager.
2. Start the service in the services dialog.
   This can lead to inconsistency within the service stack and the service dependencies. In this case, only a restart of the server can lead back to a consistent system condition.

5.6 Displaying Web Contents Correctly

Check the general requirements:

Checklist

- ☐ ■ Microsoft Internet Explorer Version 6 SP 1 or higher is mandatory. Microsoft Internet Explorer 7 is recommended. Other browsers are not supported.
- ☐ ■ To have full access to all web GUI functions, enable writing access to the IIS virtual directory.
- ☐ ■ Microsoft Internet Explorer has to accept cookies, which allow JavaScript and popup windows, record the session status and, if possible, reload the data at each visit of a new page.
- ☐ ■ Screen resolution is at least 1280x1024 pixels. Although lower resolutions are supported, images end up being distorted and operation is more complicated.
- ☐ ■ In some web applications, the context menu is not working correctly. This happens if you use Microsoft Internet Explorer 8 without compatibility mode. To enable compatibility mode, in Microsoft Internet Explorer choose ▶ *Tools* → *Compatibility View* ↵.

5.7 Dealing with Failed Authentication

Checklist

- ☐ The name of the current user must have a corresponding entry in the SAP IT Infrastructure Management user database because the associated profile data is required.
- ☐ Since logon ensues through IIS via the integrated Microsoft Windows logon, the user needs to be created with the same name, both, in SAP IT Infrastructure Management and at Microsoft Windows user level. The passwords can vary.
- ☐ The Microsoft Windows user can be a local user on the SAP IT Infrastructure Management server or a domain user.

5.8 Establishing Connection to Database Server

SAP IT Infrastructure Management database server `nmdbsrv.exe` is one of the most important and most used components of the SAP IT Infrastructure Management application. Problems with the database server can have impact on almost all other components.
One of the most frequent error messages is that the connection to the database server has been lost.

Procedure

To establish the connection, proceed as follows:

1. Create a dump file from the process `nmdbsrv.exe` and create copies from the log file folders to send them to the SAP IT Infrastructure Management support.
   To create a dump file for a specific process:
   a) Open Microsoft Windows Task Manager and switch to the *Processes* tab.
   b) Select a process, open the process context menu and choose *Create Dump File*.
   If the dump file has been created successfully, a dialog appears telling where the dump file is located.

   
   Note
   Since the dump file size can be high, we recommend creating a ZIP-archive from the dump file.

2. Stop and start the SAP IT Infrastructure Management application.

5.9 Resolving Landscape Browser Error Message Trust Not Granted

In Landscape Browser, when you choose *More Details* or *Relations*, an error occurs. The error message *Trust Not Granted* informs you that the Realtech certificate has not been installed correctly.

Procedure

1. In your Web browser, go to the following address:
   `http://<hostname>/controlcenter/default.asp`
2. Download and install Microsoft .Net Framework 4.0.
3. Download and install the Realtech certificate.

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6 Support Desk Management

Support Desk Management enables you to set up an efficient internal support desk for your support organization that seamlessly integrates your end users, internal support employees, partners, and support specialists with an efficient problem resolution procedure.

6.1 Remote Support Setup

You use the Netviewer software client to enable a support specialist to have remote access to your equipment.

Prerequisites

The system requirements for the Netviewer software client are the following:

- Microsoft Windows 98 or above (including Windows Vista)
- Open Port 80

Procedure

Note

Use the Netviewer software client only when being asked to by a support specialist.

1. Download and start the Netviewer software client at the following address:
   https://support.realtech.com/netviewer/netviewer_en/media/netviewerK.exe
2. Confirm the security warning and choose *Run* to start the Netviewer software client.
3. Confirm the security warning and choose *Run*.
   The Netviewer software client starts on your computer.
4. Enter the session number that your support specialist gives to you.
   The session starts automatically.
5. Follow the instructions of your support specialist.

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A Reference

A.1 The Main SAP Documentation Types

The following is an overview of the **most important** documentation types that you need in the various phases in the life cycle of SAP software.

Cross-Phase Documentation

SAPterm is SAP's terminology database. It contains SAP-specific vocabulary in over 30 languages, as well as many glossary entries in English and German.

- Target group:
  - Relevant for all target groups
- Current version:
  - On SAP Help Portal at http://help.sap.com → *Glossary*
  - In the SAP system in transaction STERM

SAP Library is a collection of documentation for SAP software covering functions and processes.

- Target group:
  - Consultants
  - System administrators
  - Project teams for implementations or upgrades
- Current version:
  - On SAP Help Portal at http://help.sap.com (also available as documentation DVD)

The **security guide** describes the settings for a medium security level and offers suggestions for raising security levels. A collective security guide is available for SAP NetWeaver. This document contains general guidelines and suggestions. SAP applications have a security guide of their own.

- Target group:
  - System administrators
  - Technology consultants
  - Solution consultants
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/securityguide

Implementation

The **master guide** is the starting point for implementing an SAP solution. It lists the required installable units for each business or IT scenario. It provides scenario-specific descriptions of

preparation, execution, and follow-up of an implementation. It also provides references to other documents, such as installation guides, the technical infrastructure guide and SAP Notes.

- Target group:
  - Technology consultants
  - Project teams for implementations
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

The **installation guide** describes the technical implementation of an installable unit, taking into account the combinations of operating systems and databases. It does not describe any business-related configuration.

- Target group:
  - Technology consultants
  - Project teams for implementations
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

Configuration Documentation in SAP Solution Manager – SAP Solution Manager is a life-cycle platform. One of its main functions is the configuration of business scenarios, business processes, and implementable steps. It contains Customizing activities, transactions, and so on, as well as documentation.

- Target group:
  - Technology consultants
  - Solution consultants
  - Project teams for implementations
- Current version:
  - In SAP Solution Manager

The **Implementation Guide (IMG)** is a tool for configuring (Customizing) a single SAP system. The Customizing activities and their documentation are structured from a functional perspective. (In order to configure a whole system landscape from a process-oriented perspective, SAP Solution Manager, which refers to the relevant Customizing activities in the individual SAP systems, is used.)

- Target group:
  - Solution consultants
  - Project teams for implementations or upgrades
- Current version:
  - In the SAP menu of the SAP system under ▶ *Tools* → *Customizing* → *IMG* ↵

Production Operation

The **technical operations manual** is the starting point for operating a system that runs on SAP NetWeaver, and precedes the application operations guides of SAP Business Suite. The manual refers

users to the tools and documentation that are needed to carry out various tasks, such as monitoring, backup/restore, master data maintenance, transports, and tests.

- Target group:
  - System administrators
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

The **application operations guide** is used for operating an SAP application once all tasks in the technical operations manual have been completed. It refers users to the tools and documentation that are needed to carry out the various operations-related tasks.

- Target group:
  - System administrators
  - Technology consultants
  - Solution consultants
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

Upgrade

The **upgrade master guide** is the starting point for upgrading the business scenarios and processes of an SAP solution. It provides scenario-specific descriptions of preparation, execution, and follow-up of an upgrade. It also refers to other documents, such as upgrade guides and SAP Notes.

- Target group:
  - Technology consultants
  - Project teams for upgrades
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

The **upgrade guide** describes the technical upgrade of an installable unit, taking into account the combinations of operating systems and databases. It does not describe any business-related configuration.

- Target group:
  - Technology consultants
  - Project teams for upgrades
- Current version:
  - On SAP Service Marketplace at http://service.sap.com/instguides

Release notes are documents that contain short descriptions of new features in a particular release or changes to existing features since the previous release. Release notes about ABAP developments are the technical prerequisite for generating delta and upgrade Customizing in the Implementation Guide (IMG).

- Target group:

- Consultants
- Project teams for upgrades

- Current version:
  - On SAP Service Marketplace at `http://service.sap.com/releasenotes`
  - In the SAP menu of the SAP system under *Help* → *Release Notes* (only ABAP developments)

Typographic Conventions

Example	Description
<Example>	Angle brackets indicate that you replace these words or characters with appropriate entries to make entries in the system, for example, “Enter your **<User Name>**”.
Example → *Example*	Arrows separating the parts of a navigation path, for example, menu options
Example	Emphasized words or expressions
Example	Words or characters that you enter in the system exactly as they appear in the documentation
http://www.sap.com	Textual cross-references to an internet address
/example	Quicklinks added to the internet address of a homepage to enable quick access to specific content on the Web
123456	Hyperlink to an SAP Note, for example, SAP Note 123456
Example	■ Words or characters quoted from the screen. These include field labels, screen titles, pushbutton labels, menu names, and menu options. ■ Cross-references to other documentation or published works
Example	■ Output on the screen following a user action, for example, messages ■ Source code or syntax quoted directly from a program ■ File and directory names and their paths, names of variables and parameters, and names of installation, upgrade, and database tools
EXAMPLE	Technical names of system objects. These include report names, program names, transaction codes, database table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE
EXAMPLE	Keys on the keyboard

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Any Java™ Source Code delivered with this product is only to be used by SAP's Support Services and may not be modified or altered in any way.

Documentation in the SAP Service Marketplace

You can find this document at the following address: http://service.sap.com/instguides

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