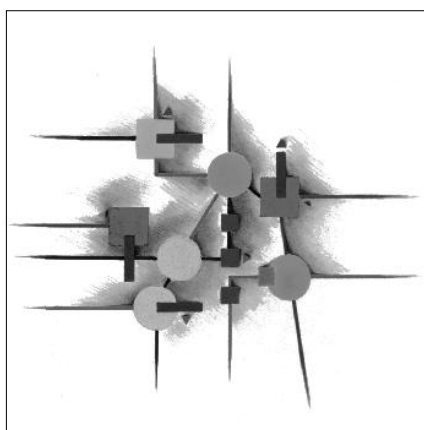


# SAP Business Connector Installation and Upgrade Guide



SAP SYSTEM

**Release 4.8**



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## Icons

Icon	Meaning
	Important
	Example
	Note
	Hint

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## Document Version

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## Welcome

Welcome to the SAP Business Connector. With the SAP Business Connector, XML-based business documents, the de-facto standard for doing business over the Internet, can be flexibly integrated with all SAP solutions. SAP customers can now leverage the power and flexibility of XML to seamlessly integrate their key business processes with those of their customers, partners, and suppliers for enhanced efficiency and improved cost-effectiveness. SAP customers can now have everything they need to exploit the Internet, free of charge, from just sending existing business documents wrapped as an XML message over the Internet to flexibly mapping and converting business documents according to your business partners' requirements. SAP Business Connector can be used for point to point communication as well as communication via the SAP marketplaces.

## Related Documentation

The following documents are companions to this guide. Some documents are in PDF format and others are in HTML.

Refer to this guide...	For...
<i>SAP Business Connector SAP Adapter Guide</i>	<p>This guide describes how to install, configure, and develop applications for the SAP Business Connector. It contains information for administrators who manage the system and for application developers who create applications that use the system. It explains how to integrate SAP BC with SAP products.</p> <p>You will find this book at:</p> <p><code>&lt;sapbc&gt;\Server\packages\SAP\doc\SAPBCSapAdapterGuide.pdf</code></p>
<i>SAP Business Connector Administration Guide</i>	<p>Information about using the Server Administrator to configure, monitor, and control the SAP Business Connector Server. This book is for server administrators.</p> <p>You will find this book at:</p> <p><code>&lt;sapbc&gt;\Server\doc\SAPBCAdministrationGuide.pdf</code></p>
<i>SAP Business Connector Developer Guide</i>	<p>Information about creating and testing SAP BC services and client applications. This book is for application developers.</p> <p>You will find this book at:</p> <p><code>&lt;sapbc&gt;\Developer\doc\SAPBCDeveloperGuide.pdf</code></p>
<i>SAP Business Connector Developer Tutorial</i>	<p>Information that orients you to SAP BC and shows you how to create a simple application. It includes basic conceptual information about SAP BC. This book is aimed at new users of SAP Business Connector.</p> <p>You will find this book at:</p> <p><code>&lt;sapbc&gt;\Developer\doc\SAPBCDeveloperTutorial.pdf</code></p>
<i>SAP Business Connector Developer Online Reference</i>	<p>Information about the controls in the SAP BC Developer application windows and step-by-step procedures describing how to perform tasks with the SAP BC Developer.</p> <p>You can access the online reference by clicking <i>Help</i> in an application window or dialog box.</p>

Refer to this guide...	For...
<i>SAP Business Connector Built-In Services</i>	<p>This guide describes the built-in services provided with a standard installation of SAP Business Connector and located in the WmPublic or WmDB Packages.</p> <p>You will find this document at:  <code>&lt;sapbc&gt;\Developer\doc\SAPBCBuiltInServices.pdf</code></p>
<i>Serialization of ABAP data in XML</i>	<p>In depth information about how ABAP data is serialized in XML messages. This serialization is used for RFC and BAPI parameters.</p> <p>You will find this document at:  <a href="http://service.sap.com/sbc-download">http://service.sap.com/sbc-download</a>            and here under Documentation, SAP_XML.zip            the document ABAPSerialization.html</p>
<i>RFC-XML Specification</i>	<p>In depth information about the RFC-XML specifications</p> <p>You will find this document at:  <a href="http://service.sap.com/sbc-download">http://service.sap.com/sbc-download</a>            and here under Documentation, SAP_XML.zip            the document RFC_XML.html</p>
<i>XML Format Specifications</i>	<p>In depth information about how RFCs, BAPIs and IDocs are formatted in XML.</p> <p>You will find this guide at:  <a href="http://service.sap.com/sbc-download">http://service.sap.com/sbc-download</a>            and here under Documentation, IFR-XMLFormatSpec.pdf</p>
<i>SAP Business Connector IDoc Class Documentation</i>	<p>In depth information about the IDoc Java classes.</p> <p>You will find this guide at:  <code>&lt;sapbc&gt;\Server\packages\SAP\pub\doc\api\index.html</code></p>
<i>SAP Business Connector API Reference</i>	<p>Descriptions of the Java classes and built-in services you use to create SAP BC services. This reference is for application developers who build SAP BC services.</p> <p>You will find this book at:  <code>&lt;sapbc&gt;\Server\doc\api\Java\index.html</code></p>
<i>Microsoft BizTalk Framework 1.0a Independent Document Specification</i>	<p>This add-on package introduces XML messages that are based on the Microsoft BizTalk Framework. Further information on this framework and the XML envelope it defines can be found on the web site <a href="http://www.biztalk.org">http://www.biztalk.org</a></p>

## System Requirements: Overview

The following describes the software requirements for the SAP Business Connector Server.

### Hardware Requirements

#### Basic recommendation

	Minimum	Recommended
Processor	Pentium II 233 MHz or equivalent	
Memory (RAM)	128 MB	256 MB
Free disk space	200 MB	depending on the amount of transactions stored in the file system; depending on number of additional packages and services

### Software Requirements

To use the SAP Business Connector Server, you must have an SAP R/3 V3.1H or higher or you must be under a mySAP.com license.

Additionally, you will need one of the following browsers installed either on the machine where the SAP Business Connector Server is installed or on any machine that can access the SAP Business Connector Server through HTTP:

- Mozilla Firefox 1.5 or later
- Microsoft Internet Explorer 6.0 or later



The SAP BC Installer requires a JRE version 5.0 or higher to be installed on the server.

### Supported Platforms



For information on supported platforms please see SAP Note No. 1094412 .

## SAP System requirements for BAPI Support

For the BAPI functionality, the SAP Business Connector requires a special SAP support package. The support package contains some API extensions to retrieve metadata from the SAP business objects and the ALE services from the SAP Systems. So the API enhances performance of metadata retrieval and allows asynchronous calls to the SAP Systems via BAPI interfaces.

If support of asynchronous BAPI calls is not required, the SAP Business Connector will provide synchronous access to BAPIs without requiring modifications to the SAP System with Release 4.0A and later.

For SAP Systems before 4.0A, asynchronous BAPI calls via ALE are not supported at all. But by applying the SAP support package, the SAP Business Connector is able to handle synchronous BAPI calls via XML also for SAP Systems of releases 3.1H and 3.1I. Detailed information on how to get access and to implement the SAP support package please refer to SAP Note 214780, available via <http://service.sap.com/notes>.

## Creating Java Services on the SAP BC Server

BC 4.8 already comes with an internal Java compiler, so if you are using the built-in Java VM, you don't need to do anything. Only if you want to use the BC with a third party Java VM, you need to proceed as follows, if you want to create your own Java Services:

1. Install a JDK 1.5 on the SAP Business Connector Server. Please proceed according to the instructions provided with the product.
2. If not yet present, **add the following** to the machine's system path (environment variable PATH): a "." and the path to the javac compiler of the JDK.



### Example of how to do this on Windows:

- **Shut down all programs.**
- From the Windows menu open "**Start -> Settings -> Control Panel**"  
Here double click on "**System**"  
and choose "**Advanced -> Environment**"
- Under "**System Variables**" there should be an entry "**Path**" or "**PATH**".
- Select this and then **add the following** to the end of the Value:  
;C:\jdk1.5\bin;. and press "**Set**"
- Click on "**Apply**" and "**OK**" and
- reboot your computer.

3. The following is not absolutely necessary, but it is very helpful for writing Java Services: you can then use classes from the Server, the SAP Package and the Developer in your own programs. Check whether the environment variable called CLASSPATH contains the following entries:

```
.;
C:\sapbc\Server\lib\client.jar
C:\sapbc\Server\lib\server.jar
C:\sapbc\Server\packages\SAP\code\classes
C:\sapbc\Server\packages\SAP\code\jars\static\sapidoc3.jar
(where C:\sapbc has to be replaced according to your installation path).
```



## Sizing: Detailed Criteria

### CPU

For detailed information on CPU sizing see the PDF document *SAP BC Performance Test* <http://service.sap.com/sbc-download> (system requirements).

In particular this document helps you to adjust Business Connector parameters (in `<installDir>/config/server.cnf`) and hardware/operating system parameters for best performance.

For just "Internet-enabling" an SAP system, an average PC will be sufficient, while for heavy-load scenarios we recommend to use hardware comparable to that of an ordinary ITS.

The information provided in the current document generally refers to Business Connector releases 4.8.



For information on the JVM implementation procedure please see also SAP Note 629647.

### Disc Space

### Questions on sizing

Appropriate sizing for the SAP BC installation strongly depends on the business scenario you want to establish. For specifying your individual requirements you should answer the following questions first:

1. Is there a need for own development, and if so, how big do you expect your scenario to be? Small Package: <1MB, average Package: <5MB, big Package: 10MB
2. In what kind of scenario will you be using the Business Connector? Standalone: no further Packages needed except the self-developed ones, Elster Scenario: allow disc space for the Elster Packages (~1.7MB),
3. What kind of data flow do you expect? That is: what kind of messages (transactions) and their size, how many per day, for how long do you want to keep those in the Business Connector Message Store after they are completed (confirmed)?
4. Do you need to keep statistical information like the one written to `audit.log` and `session.log`? (See the SAP BC Administration Guide for explanation)

### Installation Size

A new installation of Business Connector 4.8 requires:

Size	SAP BC Server 4.8	Developer 4.8
	79MB+min 77MB for SAPJVM	44MB+min 77MB for SAPJVM

Usually, the Server is installed on a big machine which is maintained by the IT department, while the Developer(s) will be installed on the desktop PC(s) of software engineers who develop services and customer scenarios remotely on the Server. These services are also stored on the Server, so depending on the size of the developed application packages, if any, the customer should add a few MB for these Services: 1MB - 10MB (see *question a*).

**Transaction Store**

The storage space for the temporarily stored transactions has to be determined next (see *question c*).

Use the following formula:

$$(\text{Size of transaction}) \times (\text{Number of transactions per day}) \times (\text{Number of days you want to keep "confirmed" transaction for reference})$$

The size of one transaction can be calculated as follows:

1. Determine the current size of the directory  
`<installDir>/packages/WmPartners/pub/mailbox` including its subdirectories.
2. Send 100 "typical" transactions, which you will be using in production, through the Business Connector.
3. Measure the size of `.../mailbox` again as above and divide the difference by 100. Example: a "typical" ORDERS IDoc is between 13kB and 35kB.
4. The number, you get here, should be added as disc space for the "Message Store" (the directory `<installDir>/packages/WmPartners/pub/mailbox`). You might want to schedule the service `wm.PartnerMgr.xtn.Sweeper:sweepTRX` to administer the growth of the transaction store. Moreover

**Log files**

The log files need additional disc space. If the SAP BC is to run on a high debug level during the implementation and test phase, it may easily write 1GB per day. Typical data volumes with a standard debug level (4 or lower) may cause between 10kB and 40MB per day (depending on traffic). The biggest part is consumed by audit log and session log, which are used for statistical evaluations. You can turn off these logs to save disk space. Then the SAP BC needs only a few kB each day for the error log and server log. However, it is not recommended to turn off these logs. This will only save a few kB, and eliminates all possibilities for determining the cause of errors (see *Question d*).



**Example** of minimum disc space for an average Business Connector:

Component	Required disc space (MB)
Full Installation (without JVM)	79
SAP JVM (minimum, depends on platform)	77

Customer Packages (each)	~5
Message Store (1000 ORDERS per day, kept for two weeks)	280
Log files (kept for two weeks)	280
<b>Total</b>	<b>721</b>

How to turn off the logs...

1. **Audit Log:** Shutdown the Server and add the following parameter to the file `<installDir>/config/server.cnf` (or change it, if it is already there):  
`watt.server.auditLog=off`



As of SAP BC Release 4.6, you can change the values of the server.cnf parameters also via the **Server Administrator UI**. Choose *Settings -> Extended* and select the parameters you want to edit (see *SAP BC Administration Guide 4.8*, p.94ff. for details).

2. **Session Log:** Start an Integrator(Developer) and from the menu choose "Edit → Event Manager".
  - 1 From the dropdown box select "Session End Event", mark the line, which then appears in the table below and click the "Edit Row" button (the last button).
  - 2 Set the field "Enabled" to false.
  - 3 Do the same for the other two: "Session Expire Event" and "Session Start Event".
3. **Stats Log:** Proceed along the description on "Session Log", but disable the "Stat Event".

## Memory

### Questions on Sizing

- a) How many tasks will the Server have to handle simultaneously? I.e. how many RFCs, http requests, ftp connections, started Listeners and RFC Listeners will the Server have to handle **simultaneously** at the peak time of the day? This determines the number of sessions **n**.
- b) For how many SAP systems will the BC register an RFC Listener? How many threads do these Listeners have?
- c) How many messages (XML documents, IDocs, RFC calls) go through the Server **simultaneously** at the peak time of the day? Is there any expensive mapping to be done?

### Initial consumption

The 4.8 BC Server needs ~ 80MB RAM to start up and just run without any heavy load on it. Depending on the load and expected traffic on the Server you need to add the following:

### Consumption per session

Each task, the Server is to handle (incoming http request, email, ftp connection, incoming/outgoing RFC call) requires one "session" on the Server. If **n** is the number of sessions (see *question a*), add the following amount of RAM:

$\frac{1}{2} n \text{ MB}$
----------------------------

If **n** proves to be much bigger than 75, you should change the parameter **watt.server.threadPool=75**

in the config file (<installDir>/config/server.cnf), so the Server can handle more than 75 tasks in parallel. (Of course, if the size of your hardware doesn't support this, do not change this parameter...)

However, in this case you can also increase the value of the parameter **watt.server.threadPoolMin=10** to enhance performance.



As of SAP BC Release 4.6, you can change the values of the server.cnf parameters also via the **Server Administrator UI**. Choose *Settings -> Extended* and select the parameters you want to edit (see *SAP BC Administration Guide 4.8, p.94ff.* for details).

You will find more information on these parameters in the: *SAP BC Administration Guide 4.8, "Appendix B: Server Configuration Parameters"*.

The Server then provides a "pool" of unused sessions, and the next request can be processed immediately without waiting for a new session to be created.



**Note:** this procedure should be used with care to avoid unnecessary memory overload. E.g. if you keep a pool of 1000 Sessions and the Server never really needs more than 100, you will waste a lot of memory and resources.

### Consumption for RFC Listeners

In the next step you will need extra memory for every RFC Listener thread (see *question b*): for each Listener thread add 10MB. As this consumes a lot of memory, the number of threads for a Listener must be chosen with care.



**Note:** if the number of threads is too small, the SAP system cannot send RFCs in parallel, this means, the RFCs have to be queued until a Business Connector thread is free to process them. The SAP system's work processes, trying to send RFCs, are then blocked and the SAP system's performance slows down considerably. On the other hand, if the number of threads is too high, the Business Connector consumes a lot of memory. This may slow down Business Connector performance. To optimize the number of threads, determine the average number of work processes the SAP system will use for sending RFCs.

### Payload

Next you will have to calculate memory for documents that are to be processed simultaneously (see *question b*). Add the following to your memory:

**Payload consumption** = (document size x memFactor + RFCSize) x number of parallel documents  
 where  
**RFCSize** = 0, if no RFC is involved in transporting the document.  
**RFCSize** = ( 1063bytes x number of segments + 524bytes ) x number of IDocs in package,  
 if the IDocs are either sent or received via RFC.  
 memFactor = 3 + number of INVOKE statements in the Mapping Service (if there are mappings done between document formats and different XML dialects) + SSL  
**SSL** = 0 or 1, according to whether documents are encrypted with SSL or not

If in doubt, you should run a few tests and watch by how much the memory actually increases during processing of one document.



**Important:** By default the 4.8 BC starts with 128MB RAM. After you have calculated the memory, that your Business Connector should use, you have to modify the setting :  
 set JAVA\_MAX\_MEM=256M  
 in <installDir>/bin/server.bat (or server.sh on Unix), before starting the Server.



**Example** (Server handling 1000 ORDERS per day):

- The Server has one standard RFC-Listener with 3 threads.
- You expect a peak load of 3 documents in parallel which result in 3 parallel sessions. Allow another session for an Administrator or Developer to log on occasionally. Together with the session Created by d029267 the RFC-listeners this gives a total of 8 parallel sessions and 4MB.
- The Server is to handle a peak of 3 documents in parallel, and a customer Package is doing a bit of mapping when converting an IDoc to some other XML dialect. For a relatively small document of 20kB in a 50 segment IDoc this results in a memory consumption of  
 (20kB x 6 + 52.4kB) x 3= 517.2kB (we can round this up to 1MB)

Task	Required RAM (MB)
Server core functionality	80
Sessions	4
RFC Listeners	30

Document processing	1
Total	115

In this example you should be ok with roughly 128MB of memory for SAP BC alone. Adding a bit for operating system and other tasks, a 256MB machine will be more than sufficient.

## Miscellaneous

---

### Encryption

When using SSL to encrypt XML documents, the time needed to process a document will increase by a factor of 3. In this case, you therefore need to take a CPU from the next higher class.

You also have to change the formula for calculating the RAM needed for processing documents:

Increase memFactor by one.

---

### IDoc Packages

The performance can be vastly improved by using IDoc Package of a well chosen size. If the package size is too small, you don't take full advantage of the performance improvement, if it is too big, the Server may run out of memory or start swapping. It needs some testing to find the optimum size. It depends on the IDoc type as well as on the size of your machine.

---

### Connection Pool

Count the number of outbound (BC → SAP system) RFC connections you may need for one SAP system simultaneously. By default the RFC connection pool is limited to 10 concurrent connections. If this should not be sufficient, increase the parameter given below in the file <installDir>/config/server.cnf

**watt.sap.connection.poolSize=10**

You will find more information in the *SAP BC Sap Adapter Guide "Appendix B: Server Configuration"*.



**Note:** The Server **must be shut down**, whenever you make any changes to the server.cnf.



As of SAP BC Release 4.6, you can change the values of the server.cnf parameters also via the **Server Administrator UI**. Choose *Settings* -> *Extended* and select the parameters you want to edit (see *SAP BC Administration Guide 4.8*, p.94ff. for details).

---

### Security

See the *Security Best Practices Guide* on <http://service.sap.com/sbc-download>

**Logging:** If the productive scenario involves thousands of Service Invocations in a short time period, a big performance improvement can be achieved by turning off "Audit Logging": To do this shut down the BC, edit the server.cnf and change the parameter `watt.server.auditLog` to `watt.server.auditLog=off`



As of SAP BC Release 4.6, you can change the values of the server.cnf parameters also via the **Server Administrator UI**. Choose *Settings -> Extended* and select the parameters you want to edit (see *SAP BC Administration Guide 4.8*, p.94ff. for details).

## Installation Options for the SAP Business Connector

For the installation of the SAP Business Connector on your local server you have to download the server components from the Service Marketplace download page <https://service.sap.com/sbc-download>.



Do not execute the same installer several times into the same destination directory. The installer may hang in this case. This remark applies for both installers, the BC 4.8 Server installer and the BC 4.8 Developer installer. Instead, perform an uninstall before you are re-installing into the same directory.



After installing the Business Connector, you should apply the latest fixes available from <https://service.sap.com/sbc-download> → Software Updates → Software Updates for SAP BC Release 4.8, in particular both the latest Service Release and CoreFix, **before** working productively. For the Developer, apply the latest Developer CoreFix.

## SAP Business Connector on Windows

### General Remarks



**Important:** You must have **administrator privileges** on your Windows system to execute the setup program. Otherwise the shortcuts to SAP Business Connector and the documentation files will not be created and the installation will end with a message 'Installation failed'. SAP Business Connector will however be functional.

On x86\_64 systems it is also important that a 64bit JVM is used by the installer. Otherwise the installer will not be able to add the required registry entries, which are used by the executables (BCStarter.exe and integrator.exe) to locate the installation.



**Note:** If the registry keys cannot be accessed by the executables, they exit with an error message on stderr telling that the registry could not be read. In such a case make sure that the registry key exists and that the user running the Business Connector process has at least read access to the required registry keys.



**Note** If the registry keys could not be generated by the installer due to **missing** privileges, you can still integrate them at any time by merging the corresponding file `<installDir>/support/registry.reg` into the registry

## Installing SAP Business Connector Server

1. Go to the download page and choose the download link for the SAP BC Server.
2. Check the table below to see the name of the correct file to use.

File Name (SMP)	Operating System	Encryption
BCServer48_x86.exe	Windows XP/ Windows Server 2003/ Windows Vista on 32bit hardware	128 bit
BCServerXpt48_x86.exe	Windows XP/ Windows Server 2003/ Windows Vista on 32bit hardware	56 bit
BCServer48_x64.exe	Windows Server 2003/ Windows Server 2008 on 64bit hardware	128 bit
BCServerXpt48_x64.exe	Windows Server 2003/ Windows Server 2008 on 64bit hardware	56 bit

For start the setup program by double clicking on your local file.

3. Follow the instructions of the SAP Business Connector Server setup program.



You have to choose, whether you want to install SAP Business Connector Server as a Windows NT service. If you are using SAP Business Connector Server in a productive system, do so. In the development phase it is not recommended. (See below for more information on how to run the SAP BC Server as a Windows Service.)

4. Check if the Visual Studio 2005 runtime DLLs are installed on your system: Open Control Panel / Add or remove programs and check if "Microsoft redistributable runtime DLLs VS2005 SP1" ((x86) for Win32 systems, (x86\_64) for Win64 systems) or Visual Studio 2005 is installed. SAP note 684106 describes how to install them on your system. Refer there to the solution described for SAP releases 7.10 (download installer vcredist\_xxx.exe from a Microsoft site).



Do not override an existing installation directory, if you haven't run the deinstallation of the previous version. See chapter Upgrading.



An installation log file is written to the installation directory.

If the installer shows warnings or errors at the end of the installation, you can run the installer once again in a special debug mode so that you see details about the installation progress. Hold down the <CTRL> key immediately after launching the installer and until a console window appears. Then do the installation. The installer will log output to this console window. Before exiting the installer, copy the console output to a text file for later review.



## Starting SAP Business Connector Server

After finishing the setup program you can start up SAP Business Connector Server via *Windows Start menu* → *Programs* → *SAP BC* → *SAP Business Connector Server 4.8*.



The startup may take a moment. You can then connect to the server with a standard web browser. The server listens on the port 5555 so the complete HTTP address would be `http://localhost:5555`

It may take a moment to load SAP Business Connector Server. If you get an error message trying to open the URL <http://localhost:5555> in your standard web browser, please wait an instant and then try again. If you are not on the PC you installed the SAP Business Connector on, you need to replace <localhost> with the name of the machine on which your SAP Business Connector is running on. e.g. <http://<otherPC>:5555>

You can also start SAP Business Connector from a command prompt. To do so, create a command window and go to directory `C:\sapbc48\server`. Start SAP Business Connector by typing `bin\server.bat -log none`. Thus you will see additional log information and error messages, which is helpful during development and when problems occur.



If you get the error message

'000028 B2BSRV0004C Initialization failed; no listening ports available',

the default port (5555), which SAP Business Connector uses, is already occupied. You should start the Server again with the option `server.bat -port xxxx` with a port xxxx different from 5555.

(Also check, if perhaps the Business Connector is already running! This would lead to the same error message, when you try to start it a second time...).

Logon to SAP Business Connector as "Administrator" with the predefined password "manage".



Change this password immediately after installing the SAP Business Connector. Otherwise, your system will be vulnerable to anyone who knows the default password. You should also change the passwords for the users Developer and Replicator, which come with default passwords. For further details, please refer to the SAP Business Connector Administration Guide.

## Running SAP Business Connector Server as an NT service



When applying the following instructions for service administration for your installation on **Windows Vista**, make sure to run the BCStarter.exe in a command prompt that was started in **Administrator mode**. Otherwise the operations with BCStarter.exe will fail due to missing privileges.

You can change the settings without reinstalling SAP BC Server:

Run `BCStarter -i` (in `<sapbc>\Server\bin`).

Choose via the Windows start menu *Settings* → *Control Panel* → *Services*.

Select the service *SAP Business Connector 4.8* and choose Startup...

Mark Startup Type Automatic and choose OK.

In case you want to run multiple instances of the Business Connector on one host, proceed as follows:

1. Install each instance of the Business Connector into its own installation directory.
2. Each instance needs to use a different "Primary Port". The easiest way to achieve this, is to start each Business Connector once from the command prompt using the command  
`C:\<installDir>\bin> server.bat -log none -port xxxx`  
 Wait until the message "Initialization complete" appears and then shut down the BC again using the URL "http://localhost:xxxx". After that this instance of the BC will use xxxx instead of 5555 as the default port from now on.
3. If you have already installed an NT Service earlier using the default way (with "BCStarter -i"), we recommend to uninstall it now, in order to avoid a possible confusion of which NT Service will start which installation. (Mixing the two different variants may lead to quite unexpected results.)
4. Register each NT Service by going to `C:\<installDir>\bin>` again and executing the command  
`BCStarter -i -s "Name of Service" -p "C:\<installDir>"`  
 Here the "Name of Service" can be freely chosen. For example if you have two installations in `C:\sapbc47\Server_Prod` and in `C:\sapbc47\Server_Test`, the commands could look like  
`BCStarter -i -s "BC 4.7 Productive" -p "C:\sapbc47\Server_Prod"`  
`BCStarter -i -s "BC 4.7 Test" -p "C:\sapbc47\Server_Test"`
5. If you want to uninstall one of these NT Service again, you can do so with the command  
`BCStarter -u -s "Name of Service"`

## Installing SAP Business Connector Developer

1. Go to the download page and choose the download link for the SAP BC Developer.
2. Check the table below to see the name of the correct file to use.

File Name (SMP)	Operating System	Encryption
BCDeveloper48_x86.exe	Windows XP/ Windows Server 2003/ Windows Vista on 32bit hardware	128 bit
BCDeveloperXpt48_x86.exe	Windows XP/ Windows Server 2003/ Windows Vista on 32bit hardware	56 bit
BCDeveloper48_x64.exe	Windows Server 2003/ Windows Server 2008 on 64bit hardware	128 bit
BCDeveloperXpt48_x64.exe	Windows Server 2003/ Windows Server 2008 on 64bit hardware	56 bit

3. Start the executable and follow the instructions of the SAP Business Connector Developer setup program.

### Starting SAP Business Connector Developer

After finishing the setup program you can start up SAP Business Connector Developer via *Windows Start menu* → *Programs* → *SAP BC* → *SAP Business Connector Developer 4.8*. Logon to the SAP Business Connector Server with a valid user ID and password.

## SAP Business Connector on Linux and Unix

### Installing SAP Business Connector Server



For information on supported platforms please see also SAP Note No. 1094412.

Here are the necessary components for installing SAP Business Connector (available on the Service Marketplace download page <http://service.sap.com/sbc-download> :

Platform	Files	Encryption
Linux on x86 hardware	BCServer48_x86.bin/ BCDeveloper48_x86.bin	128 bit
	BCServerXpt48_x86.bin/ BCDeveloperXpt48_x86.bin	56 bit
Linux on amd64 hardware	BCServer48_amd64.bin/ BCDeveloper48_amd64.bin	128 bit
	BCServerXpt48_amd64.bin/ BCDeveloperXpt48_amd64.bin	56 bit
Solaris SPARC 64bit	BCServer48_sun64.bin/ BCDeveloper48_sun64.bin	128 bit
	BCServerXpt48_sun64.bin/ BCDeveloperXpt48_sun64.bin	56 bit
AIX 64bit	BCServer48_aix64.bin/ BCDeveloper48_aix64.bin	128 bit
	BCServerXpt48_aix64.bin/ BCDeveloperXpt48_aix64.bin	56 bit

To install and run SAP Business Connector Server on Linux/Unix, perform the following steps:

1. Define the path where a JDK resides by setting the environment variables for the Java Development Kit installation for example in csh:
  - **setenv JDKDIR <your JDK dir>**
2. Before running the installer, make sure that you have enough temporary disk space available. The installer requires approximately 350MB of free disk space in your system temp folder.



In the following, whenever you are prompted for the installation directory, always specify the directory with the full (absolute) path name. Relative paths will not work!!

You may choose one of three modes for performing the installation. (Replace the name "BCServer48.bin" with the correct name corresponding to your platform and encryption strength.)

1) **Console mode (default)**

If you are installing on a remote Linux machine and can't display the graphical user interface, type the following at the command line:

```
./BCServer48.bin
```

2) **GUI mode**

To use the GUI mode, which displays a graphical user interface, type the following at the command line:

```
./BCServer48.bin -i gui
```

3) **Silent mode**

If you want the installation to run without any user interaction, type the following at the command line:

```
./BCServer48.bin -i silent
```



**Warning:** This will perform a "Typical" installation. Use Console or GUI mode if you need to customize your installation.

If the installer shows warnings or errors at the end of the installation, you can run the installer once again in a special debug mode so that you see details about the installation progress. Enter one of the following (based on which shell) at the command line prior to executing the installer:

```
export LAX_DEBUG=true or
```

```
setenv LAX_DEBUG true or
```

```
LAX_DEBUG=true or
```

```
set LAX_DEBUG or whatever would be appropriate for the Linux/Unix shell.
```

Then run the installer again. The output that is produced can help in finding the reason for the warnings/errors.



**Note:** if you run the installer more than once (you may do this to install additional components), the installer may list inaccurate information about file sizes.



**Note:** The installation procedure may take **several minutes!**



**Note:** An installation log file is written to the installation directory.

You can now start SAP Business Connector Server:

In your installation directory, enter **bin/server.sh**.

Using a web browser, logon to SAP Business Connector (<http://hostName:5555>) as "Administrator" with the predefined password "manage". Change this password immediately after installing the SAP Business Connector. Otherwise, your system will be vulnerable to anyone who knows the default password.



**Note:** If you haven't done so already during installation, you have to provide a license key, otherwise SAP Business Connector Server will shut down after 30 minutes:

- Choose *Settings* from the navigation bar. The *Server Settings* screen appears.
- Select *License Key*, then *Edit License Key*.
- Enter your license key in the field *License Key* and press *Save Changes*. You can now run SAP Business Connector Server without time restriction.

## Installing SAP Business Connector Developer

To run SAP Business Connector Developer on Linux/Unix the same restrictions apply as for the server. To install SAP BC Developer perform the same steps as for a server installation. Then:

You may choose one of three modes for performing the installation. (Replace the name "BCDeveloper48.bin" with the correct name corresponding to your platform and encryption strength.)

### 1) Console mode

If you are installing on a remote Linux machine and can't display the graphical user interface, type the following at the command line:

```
./BCDeveloper48.bin
```

### 2) GUI mode

To use the standard mode, which displays a graphical User interface, type the following at the command line:

```
./BCDeveloper48.bin -i gui
```

### 3) Silent mode

If you want the installation to run without any user interaction, type the following at the command line:

```
./BCDeveloper48.bin -i silent
```



**Warning:** This will perform a "Typical" installation. Use Console or GUI mode if you need to customize your installation.

You can now start SAP Business Connector Developer:

- In the directory <sapbc>/Developer, enter `bin/integrator.sh`.

- Use a web browser and logon to SAP Business Connector as "Administrator" and change the predefined password "isdev" of the user "Developer". Change this password immediately after installing the SAP Business Connector. Otherwise, your system will be vulnerable to anyone who knows the default password.

## Using Encryption with SAP BC

The standard installation of the SAP Business Connector includes strong encryption with a 128 bit key. It is available directly from Service Marketplace. On the *Connectors* page follow the link *Download* and answer the questions conscientiously.

### Setting Up SSL Properties

To set up SSL properties for your SAP Business Connector Server, please refer to the *SAP Business Connector Administration Guide*:

### Using Private Keys and Certificates

If you want to use private keys and certificates with SAP Business Connector you can download and install the *SAP Business Connector Certificate Toolkit*., which is included in the installer of the SAP Business Connector Developer 4.8

For further information please refer to the *Certificate Toolkit Guide* , which is included in the installation.

## Upgrading SAP Business Connector from Older Versions



**Important:** As a precautionary measure, be sure to back up your Server 4.x directory before beginning the upgrade.

The following notes give only a quick overview about the upgrade. Please refer to the SAP BC Migration Guide for detailed information about the upgrade.

### Upgrade from SAP BC Server Version 4.x

If your current SAP BC 4.x runs on an OS platform which is supported by BC 4.8, meaning you can and want to install BC 4.8 on the same computer, proceed as follows:

1. Shut down SAP BC Server 4.x.
2. Uninstall SAP BC Server 4.x. See "Uninstalling SAP BC Server and SAP BC Developer" for instructions.



**Important:** Do not delete the files and directories that are left in the 4.x Server\_directory directory. Those files contain important user-created and configuration data.

3. Install SAP BC Server 4.8 in the Server 4.x installation directory. See “Installing SAP BC Server” for instructions. If this is not possible, due to the supported platform changes, refer to the SAP BC Migration Guide.
4. If you’re upgrading from SAP BC 4.6, open a command shell in the directory `<sapbc>\Server\packages\WmPartners\config` and execute the command  

```
java -cp ..\..\..\lib\client.jar com.wm.util.UpgradeMessageStore -update
```
5. Determine whether you have made any changes to these files:

Platform	Files
Windows	Server.bat, repostore.bat, or repoui.bat
Linux/Unix	Server.sh, repostore.sh, or repoui.sh

If so, reapply those changes.

6. Start SAP BC Server 4.8. All configuration settings should transfer correctly. If you need to migrate the settings from an installation at a different location, follow the instructions of the *SAP BC Migration Guide*.

If you have to install the BC 4.8 in a new directory and want to migrate your configuration and transaction data from an existing BC 4.x installation, refer to the SAP BC Migration Guide.

## Upgrade SAP BC Developer

### Upgrade from SAP BC Developer Version 4.6/4.7

You can install SAP BC Developer 4.8 over an existing installation of SAP BC Developer 4.6/4.7. See “Installing SAP BC Developer” for instructions.

1. Uninstall SAP BC Developer 4.6/4.7. See ‘Uninstalling SAP BC Server and Developer’ for instructions.



**Important:** Do not delete the files and directories that are left in the 4.6/4.7 SAP BC Developer directory. Those files contain important user-created and configuration data.

2. Install Developer 4.8 in the BC Developer 4.6/4.7 installation directory. See ‘Installing SAP BC Developer’ for instructions.
3. Start SAP BC Developer 4.8. All configuration settings should transfer correctly.



## Starting and Stopping the SAP BC Server

The SAP BC Server must be running in order for clients to execute services. If you are using the server in a development environment, it must be running in order for your developers to build, update, and test services using the SAP BC Developer.

### To start the SAP BC Server on Windows

1. Click **Start**.
2. In the **Program** menu point to the **SAP BC** folder, then point to the **Server** folder.
3. Click the **SAP BC Server** icon.

Alternatively, if the BC Server is installed as a “Windows NT Service”, you can start and stop it from the Windows Service Control.

### To start the SAP BC Server on Linux/Unix

1. Locate the `server.sh` script file that you modified for your environment when you installed the server.
2. Execute this script.



Note: Run this script when logged in as a non-root user. Running the script as root might reduce the security of your system.

### Starting the Server from the Command Line

There are times when it is useful to start the server from the command line. Starting the server this way allows you to override certain settings in the configuration file. It also lets you start the server in “debug” mode, so you can record or display server activity.

1. At a command line, type the following command to switch to the server’s home directory:

```
cd <sapbc>\server
```

2. Type the following command to start the server:

For Windows:        `bin\server.bat -switch -switch ...`

For Linux/Unix:     `bin/server.sh -switch -switch ...`

where *switch* is any of the following:

Switch	Description
<code>-port portNumber</code>	Specifies the port on which the server listens for HTTP requests. <i>portNumber</i> specifies the TCP/IP port number

**Example:** `-port 8080`

This switch overrides the value assigned to `watt.server.port`.

**Note:** To use port 80 (the standard for HTTP) or port 443 (the standard for HTTPS), UNIX users must be running as "root." For security reasons, a better method is to use a higher number port (5555 for HTTP and 8080 for HTTPS), and if necessary have the firewall remap port 80 to the desired port.

`-home directoryName`

Specifies the server's home directory.

*directoryName* specifies the complete path for the home directory.

**Example:** `-home D:\bctest\server`

This switch overrides the value assigned to `watt.server.home`.

`-debug level`

Specifies the level of detail you want the server to maintain in its server log.

*level* is a number from 1 to 10 that indicates the level of detail you want to record in the log.

**Specify:**            **To record:**

<b>1</b>	Critical messages only
<b>2</b>	Error and critical messages
<b>3</b>	Warning, error, and critical messages
<b>4</b>	Debug, warning, error, and critical messages
<b>5-10</b>	Informational, debug, warning, error, and critical messages  The server records more levels of informational messages the higher you set the number.

This switch overrides the value assigned to `watt.debug.level`.

`-log destination`

Specifies where you want the server to write its log information. Specify one of the following for *destination*:

<b>Option</b>	<b>Description</b>
---------------	--------------------

<i>filename</i>	Specify the name of the file where you want the server to write log information.
none	Display log information on the computer screen. When you use this option, the server records a timestamp in the log file, but does not record any other log information in the log file.

This switch overrides the value assigned to `watt.debug logfile`.

---

## What Happens When You Start the Server?

When you start the SAP BC Server, it performs a series of initialization steps to make itself ready for client requests. The server:

1. Establishes the operating environment by using the configuration parameters located in the configuration file (`sapbc>\server\config\server.cnf`).
2. Initializes components that perform internal management.
3. Loads information about all the enabled packages and their services that reside in the `<sapbc>\Server\packages` directory. If a package depends on other packages, the server loads the prerequisite packages first. The server does not load disabled packages.
4. Executes the startup services for each loaded package.
5. Initializes the guaranteed delivery engine. The server checks the job store for pending guaranteed delivery transactions. It retries the pending transactions as the guaranteed delivery configuration settings specify.
6. Schedules internal system tasks, such as log rotation.

---

## How to Tell if the Server is Running Correctly

To determine whether your server is running, start your browser and point it to the SAP BC Server.

If the server is running, you will be prompted for a name and password.

If the server is not running, your browser will issue an error message similar to the following:

```
"Cannot open the Internet site http://localhost:5555."  
"A connection with the server could not be established."
```

---

## Shutting Down the SAP BC Server

Shut down the server to stop the SAP BC Server and all active sessions:

1. Open the Server Administrator if it is not already open.
2. In the upper right corner of any Server Administrator screen, click *Shutdown and Restart*.
3. Select whether you want the server to wait before shutting down or to shut down immediately.

*Delay number minutes or until all client sessions are complete.* Specify the number of minutes you want the SAP BC Server to wait before shutting down. It then begins monitoring user activity and automatically shuts down when all non-administrator sessions complete or when the time you specify elapses (whichever comes first).

*Perform action immediately.* The server and all active sessions terminate immediately.

4. Click *Shutdown*.

---

## Viewing Active Sessions

Before you shut down or restart the server, you can view the sessions that are currently active:

1. Open the Server Administrator if it is not already open.
2. In the *Server* menu of the navigation area, click *Statistics*.
3. Click on the current number of sessions.

---

## Restarting the SAP BC Server

Restart the server when you need to stop and reload the SAP BC Server. You should restart the server when:

- **You make certain configuration changes.** Some configuration changes require the server to be restarted before they take effect: Server Thread Pool Min/Max Threads, Scheduler Thread Pool Max Threads, Clustering Status, Remote Servers, Repository of Server Aliases, and Extended Settings.
- **You want to incorporate updated services that cannot be dynamically reloaded.** This typically occurs for non-Java services.

1. Open the Server Administrator if it is not already open.
2. In the upper right corner of any Server Administrator screen, click *Shutdown and Restart*.
3. Select whether you want the server to wait before restarting or to restart immediately.

*Delay number minutes or until all client sessions are complete.* Specify the number of minutes you want the SAP BC Server to wait before restarting. It then

begins monitoring user activity and automatically restarts when all non-administrator sessions complete or when the time you specify elapses (whichever comes first).

*Perform action immediately.* The server and all active sessions terminate immediately. Then the server restarts.

4. Click *Restart*.

---

## Server Recovery

If a hardware or software problem causes the SAP BC Server to fail, restart the server using the normal start-up procedure. The server will automatically perform clean-up and initialization processes to reset the operating environment.

As part of the recovery process, the server automatically:

- Reloads the cache environment to its pre-failure state.
- Restores the transaction manager's guaranteed delivery queues

---

## Site-Specific Services

Although the server itself does not require you to take any special steps after a server failure, services that your site has created might have their own unique recovery requirements. Consult with your developers for information about these requirements.

---

## Recovery and the Log File

If the SAP BC Server fails before midnight and is not restarted until after midnight, the daily log file will not be closed as it should. Instead, the server will append the new day's information to the previous day's log file, and the file will contain two day's worth of information.

If you want to prevent this from happening, you must manually close the previous day's logs before you restart the server. To close the log file, rename or move all the .log files using the naming conventions described in the *SAP BC Administration Guide* ('Working with Log Files').

## Using the Server Administrator

---

### What Is the Server Administrator?

The Server Administrator is an HTML-based utility you use to administer the SAP BC server. It allows you to monitor server activity, manage user accounts, make performance adjustments, and set operating parameters.

You can run the Server Administrator from any browser-equipped workstation on your network. (The Server Administrator is a browser-based application that uses services to accomplish its work.)

---

### Starting the Server Administrator

To use the Server Administrator, simply open your browser and point it to the port on the host machine where the SAP BC Server is running.



**Important:** The SAP BC Server must be running in order to use this utility. If the server is not running, your browser will issue an error similar to the following:

“Cannot open the Internet site http://localhost:5555.”  
 “A connection with the server could not be established.”

---

### To start the Server Administrator

1. Start your favorite browser.
2. Point your browser to the host and port where the SAP BC Server is running.

#### Examples

If the server were running on the default port on the same machine where you are running the Server Administrator, you would type:

*http://localhost:5555*

If the server were running on port 4040 on a machine called QUICKSILVER, you would type:

*http://QUICKSILVER:4040*

3. Log on to the server with a user name and password that has administrator privileges.

If you just installed the SAP BC Server, you can use the following default values:

User Name: *Administrator*

Password: *manage*



**Important:** Use the *exact combination* of upper and lower-case characters shown above— user names and passwords are case sensitive.

---

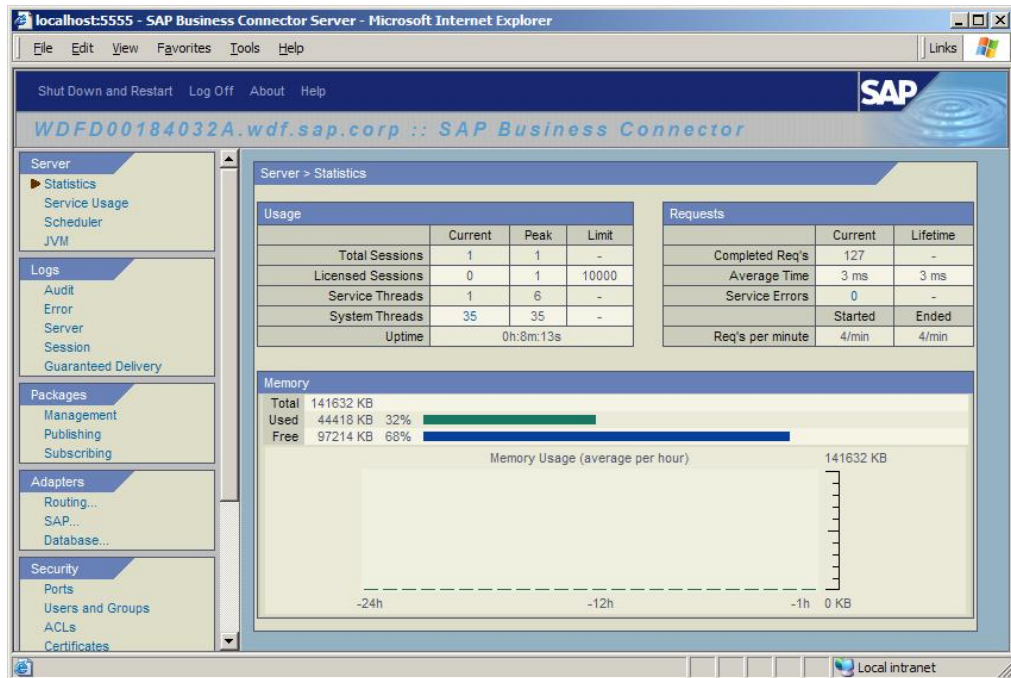
If you change the password, be sure to select one that is difficult to guess. For example, use a mixture of upper- and lower-case letters, numbers, and special characters. Do not use a name, phone number, social security number, license plate or other generally available information.

---

## Basic Operation

When you start the Server Administrator, your browser displays the **Statistics** screen.

### The Server Administrator Screen



The navigation area on the left side of the screen displays the names of menus from which you can select a task. To start a task, click a task name in the navigation area. The server displays a screen that corresponds to the task you select.

## Getting Help

You can obtain information about the Server Administrator by clicking the *Help* link in the upper right corner of any Server Administrator screen. The help system displays a description of the parameters for the screen and a list of procedures you can perform from the screen. From this window, click *Show Navigation Area* to view the help system's table of contents from which you can search for a specific procedure or screen description.

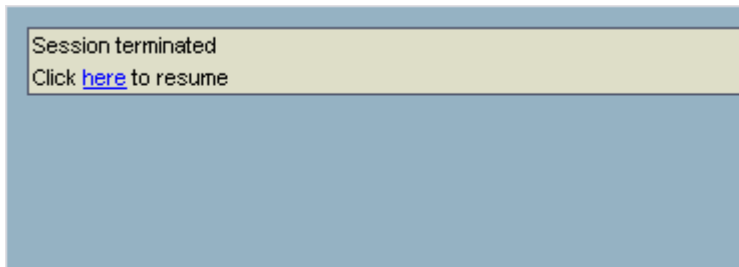
## Logging Out of the Server Administrator

Log out of the Server Administrator when you no longer need to continue your current session. When you log out, the server cleans up your session.

If you are going to be away from your PC, you might also want to log out of the Server Administrator to prevent someone from accessing the Server Administrator with your user name from your PC.

### To log out of the Server Administrator

1. Click *Log Off* in the upper right corner of any Server Administrator screen.  
The SAP BC Server displays a dialog box to ensure you want to log out.
2. Click *OK* to log out of the Server Administrator.  
The browser displays the following screen:



To resume use of the Server Administrator, click *here*.

---

## The Configuration File

Configuration settings for the SAP BC Server are stored in the server configuration file (server.cnf). This file resides in the <sapbc>\server\config directory and contains parameters that determine how the server operates.

Typically, you will use the Server Administrator to set parameters in the server.cnf file, but there may be times when you need to edit the file directly with a text editor.

For a list of parameters in the server.cnf file and their default values, see the *SAP BC Administration Guide* ('Server Configuration Parameters').

## Uninstalling SAP Business Connector

Both uninstallers leave all those files on the disk that have been added to the installation directory after installation, i.e. they are not uninstalled. This includes in particular all configuration files in the config folder, or the generated runserver script in the bin folder. An uninstall log is written to the installation directory.

Thus uninstalling a previous release and installing a new version into the same directory allows a smooth upgrade procedure without losing configurations and custom services.

### SAP BC Server

#### Windows:

You can uninstall the BC Server simply from the *Start Menu* → *Settings* → *Control Panel* → *Add/Remove Programs*. If this does not work properly, for example because the installation had been done with a user that did not have administrator privileges, you can still manually uninstall as described in the Linux section.

#### Linux/Unix:

1. On the command line you change to the following directory:  

```
<sapbc>/Server/Uninstall_SAP Business Connector  
Server 4.8
```
2. Type in `java -cp uninstaller.jar uninstall`
3. When prompted if you want to completely remove SAP Business Connector Server, select *Yes*.
4. When prompted if you want to delete all changed files, select *Yes to All*.



5. After the uninstallation is completed, you need to manually delete the folder `<sapbc>/Server` and all of its subfolders, which had been created after the installation, if you don't want to keep them for upgrading to a newer release.

### **SAP BC Developer**

Uninstalling the SAP Business Connector Developer is done in an analogous manner to uninstalling the Server, except for the uninstaller directory name: Use `<sapbc>/developer/Uninstall_SAP Business Connector Developer 4.8` instead.