

Configuring the Adaptive Computing Controller



Release 720



HELP.AC.ADAPTIVECOMPUTINGCONTROLLER

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Icons in Body Text

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

Additional icons are used in SAP Library documentation to help you identify different types of information at a glance. For more information, see *Help on Help* → *General Information Classes and Information Classes for Business Information Warehouse* on the first page of any version of *SAP Library*.

Typographic Conventions

Type Style	Description
<i>Example text</i>	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Cross-references to other documentation.
Example text	Emphasized words or phrases in body text, graphic titles, and table titles.
EXAMPLE TEXT	Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.
Example text	Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
Example text	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
< Example text >	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
EXAMPLE TEXT	Keys on the keyboard, for example, F2 or ENTER.

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Configuring the Adaptive Computing Controller

Use

For managing systems with ACC 7.1, you need the following two domains:

- A managed landscape that contains one or more systems.
- A managing environment that contains all components necessary to control the managed landscape.

You use this procedure to transform a set of systems into a managed landscape, and set up ACC 7.1 to form a managing environment.



ACC uses the central SLD to access information of the managed landscape. Hence, it is required that the local SLDs of each system synchronize their data with the central SLD

The configuration consists of two phases:

- *Initial Configuration of ACC in NWA*: The *NWA Configuration Wizard* is used for the initial configuration of ACC component. This setup involves reading values for configuration attributes from the administrator and setting the appropriate values in the Adaptive Computing Infrastructure (ACI) configuration manager.
- *Configuration of Adaptive Data in ACC*: The ACC application is used to configure application services, resources, networks, and adaptive pools.

Procedure

1. Configuring ACC

1. Implement the adaptive computing environment in your IT landscape.
To setup computers for management by ACC 7.1, install and register the SAP host agent package.
More information: [Setting Up the IT Landscape for ACC \[Page 6\]](#), [Using the SAP Host Agent in ACC 7.1 \[Page 7\]](#), [Enabling SAP Application Services for ACC \[Page 14\]](#)
2. If you have not configured the Adaptive Computing infrastructure using the *Configuring NWA for Double Stack System* or the *Configuring NWA for Java System* configuration wizard, then use the *Initial Setup for Adaptive Computing Controller* configuration wizard to configure ACC.
More information: [Wizard-Based Configuration of the ACC \[Page 20\]](#)
3. Configure the local SLD of the systems in the managed landscape.
More information: [Basic SLD Configuration \[Page 21\]](#)
For information on compatibility of SLD in the system landscape, refer SAP note 954820.
4. To execute custom functionalities when operations such as start and stop are performed using ACC, set up and enable the host agent user exits using ACC.
More information: [Setting Up User Exit \[Page 23\]](#)
5. To monitor ACC, use the standard NWA Log and Trace functionality.

More information: [Logging and Tracing \[Page 25\]](#)

6. Set up and configure the XML based archiving service for controller logs used by ACC.

More information: [Setting Up XML Data Archiving Service for ACC \[Page 28\]](#)

2. Configuring Adaptive Data in ACC

1. Configure services, resources, networks, and pools in ACC.

More information: [Configuring the Adaptive Computing Landscape \[Page 29\]](#)

2. (Optional) Enable ACC in Web Service Framework.

More information: [Enabling ACC in the Web Service Framework \[Page 33\]](#)

Result

You can now use the ACC application to manage large scale system landscapes containing services and resources.

More Information

[Troubleshooting ACC 7.1 Setup \[Page 40\]](#)



Setting Up the IT Landscape for ACC

Use

You use this procedure to implement an adaptive computing environment in your IT landscape.

For the adaptive computing environment, you require:

1. An SAPHOSTAGENT package to start or stop a service on computer systems, and monitor the status of computer systems.
2. The SAP application services implemented in a virtualized manner to make them adaptive enabled.

Procedure

1. Install the SAP Host Agent package and register it in the central SLD.

More information: [Using the SAP Host Agent in ACC 7.1 \[Page 7\]](#)

2. Enable the SAP application services to run in the adaptive computing landscape.

More information: [Enabling SAP Application Services for ACC \[Page 14\]](#)

3. Enable the server for ACC.

More information: [Enabling the Server for ACC \[Page 18\]](#)

Result

An IT landscape has been set up for ACC. If required, you can enhance the landscape by adding individual components such as application services and resources. For more information, see [Adaptive Computing Configuration \[Page 29\]](#).



Using the SAP Host Agent in ACC 7.1

Use

You configure the SAP host agent to enable the start and stop of services on every computer system, and monitor the status of computer systems.

Prerequisites

Check the Product Availability Matrix (PAM) at service.sap.com/pam to ensure that:

- Your OS version is on the list of the supported OS versions for SAP NetWeaver, as the Host Agent is not supported by every OS
- The minimum OS requirement is met before installing the Host Agent

Procedure

1. Installing the SAP Host Agent

The SAP host agent is automatically installed during the installation of all the components of SAP NetWeaver 7.1. You must not install the SAP host Agent.

More information: [Downloading and Installing Package SAPHOSTAGENT \[Page 9\]](#)



However, ACC 7.1 needs the latest version of the host agent. To upgrade the host agent, perform the following activities:

- i. Logon to the computer system with the *root* user
- ii. Create a temporary upgrade directory and extract the new host agent archive to it.

```
mkdir <upgrade_dir>
```

```
cd <upgrade_dir>
```

```
/path/to/SAPCAR -xvf SAPHOSTAGENT.SAR
```

- iii. Start the host agent upgrade procedure, by running the following command:

```
/saphostexec -upgrade
```

2. Registering the SAP Host Agent in the System Landscape Directory

To register a the SAP host agent with the SLD, call the executable `sldreg` on that host.

More information: [Registering Hosts with the SLD Using sldreg \[Page 13\]](#)

3. Installing SAPACOSPrep Partner Libraries (Optional)

The SAP Host Agent depends on *SAPACOSPrep* libraries that implement the functionality to manage virtual hostnames and data storage. Libraries shipped with the Host Agent allow managing virtual hostnames for Linux and Windows, and managing NFS-based data storage for Linux.

To get the SAPACOSPrep partner libraries for your specific environment, perform the following activities:

1. Contact your SAP technology partner representative.

SAP technology partners provide libraries for platforms and data storage solutions.

2. *SAPACOSPrep* partner libraries may require additional setup procedures. Follow the instructions provided by the partner.

For more information, refer service.sap.com/adaptive.

4. Preparing Linux machines for ACC 7.1

On Linux, the SAP host agent (and other 7.1 based SAP kernel components) require additional OS packages (*libstdc++* and *libgcc version 4.1*) that are not a part of the standard *SLES9* and *REHL4* distributions.

1. Install the *libstdc++* and *libgcc version 4.1* packages.

For more information, refer SAP Note 1021236.

2. If the packages are not yet available, then create the OS user *sapadm*.

The OS user is either a local user or a user managed by a central directory (For example, LDAP or NIS).

3. If the packages are not yet available, create the OS user group *sapsys* and add the *sapadm* user to this group.

4. If not yet available, then perform the following activities:

- a. Create the *saposcol* work directory */usr/sap/tmp*

- b. Create a temporary installation directory, and extract the SAP host agent archive to it.

```
mkdir <install_dir>
```

```
cd <install_dir>
```

```
/path/to/SAPCAR -xvf SAPHOSTAGENT.SAR
```

- c. Start the host agent installation procedure, by running the following command:

```
/saphostexec -install
```

5. Web Service Authentication

Ensure that the prerequisites for Web Service Authentication are fulfilled.

For more information, refer SAP Note 927637.

For example, to create a PAM authentication policy for service *sapstartsrv* on Linux, perform the following activities:

1. Create file */etc/pam.d/sapstartsrv* and add the following lines:

- `auth sufficient pam_unix2.so`

- `auth required pam_unix_auth.so`

- `account sufficient pam_unix2.so`

- `account required pam_unix_acct.so`

2. In case of *SLES10* ensure that *md5* is used as the default encryption method.

For more information, refer SAP Note 958253.

Downloading and Installing Package SAPHOSTAGENT

Use

The SAPHOSTAGENT package contains all of the required elements for centrally monitoring any host with the [Alert Monitor \[External\]](#) or the [SAP NetWeaver Administrator \[External\]](#). It is automatically installed during the installation of all of the components of SAP NetWeaver 7.1.



You can also install the host agent using the program *SAPInst*; the files required for this are on the kernel DVD for the current release. For more information, see the installation guide at service.sap.com/instguidesnw; to do this, choose the desired release and the *Installation area*.

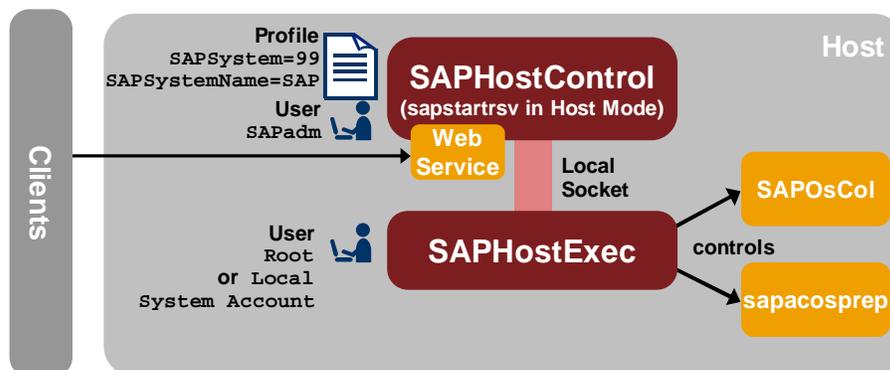
You only need to download and install the host agent in the following cases:

- You want to centrally monitor a host that does not have an SAP component.
- You want to perform an upgrade to the SAP NetWeaver 7.1 for an SAP NetWeaver component.



If you are using an SLD, register the host with the SLD after installing the host agent (see [Registering Hosts with the SLD Using sldreg \[Page 13\]](#)). You need this data in the SLD, for example, for the Adaptive Computing Infrastructure.

NetWeaver Management Agents on a Host



The SAPHOSTAGENT package contains the following elements, among others:

- saphostexec
- sapstartsv
- sapacosprep
- saposcol



For a description of these elements, see [Monitoring Hosts with SAPHostControl and saphostexec \[External\]](#).

Prerequisites

You have the archive **SAPHOSTAGENT . SAR**.

You can find **SAPHOSTAGENT . SAR** in the *SAP Software Distribution Center* of the *SAP Service Marketplace* (<http://service.sap.com/swdc>). Log on with your *SAP Service Marketplace ID* and go to the following folder:

In the navigation bar, choose *Download* → *Support Packages and Patches* → *Entry by Application Group* → *SAP NetWeaver* → *SAP NETWEAVER* → *SAP NETWEAVER MOBILE 7.1* → *SAP KERNEL 7.10 32/64-BIT/UNICODE* → *<operating system>* → *Database Independent*, and download the archive.

Installation Under Microsoft Windows

3. For the installation, there must be a **sapadm** user with administrator authorizations on the host and a **SAP_LocalAdmin** group. The procedure for Microsoft Windows XP is presented here as an example. In other versions of Microsoft Windows, the procedure will differ slightly:
 - a. Choose *Start* → *Settings* → *Control Panel* → *User Accounts*, switch to the *Advanced* tab page, and choose the *Advanced* button in the *Advanced user management* group box.
 - b. In the navigation bar, choose *Groups*. Choose the menu path *Action* → *New Group...*, and create a new group called **SAP_LocalAdmin**. Close the *New Group* window again.
 - c. In the navigation bar, choose *Users*. Choose the menu path *Action* → *New User...*, and make the required settings. Close the *Local Users and Groups* window again.
 - d. So that the user has the required authorizations, switch back to the *Users* tab page in the *User Accounts* window, and double-click the **sapadm** that you have just created. On the *Group Membership* tab page, add the user to the *Administrators* group.



The **sapadm** user requires authorization to create a service. If the user is a local administrator, it has this authorization. However, you can also alternatively set this specific authorization manually:

- i. On the Microsoft Windows host, choose *Start* → *Control Panel* → *Administrative Tools* → *Local Security Policy*.
 - ii. In the navigation bar, choose *Security Settings* → *Local Policies* → *User Rights Assignment*, and then double-click the line *Log on as a service*.
 - iii. Add the **sapadm** user to the list by choosing the *Add User or Group...* button and entering this user.
 - iv. Close the window by choosing *OK*.
4. The [SAPOSCOL working directory \[External\]](#) needs to exist on the host. If it does not already exist, create the directory **c:\usr\sap\PRFCLOG**, and release the directory **sap** as a share with the name **saploc**.
5. Decompress the **SAPHOSTAGENT . SAR** archive with the *SAPCAR* tool. Take *SAP Note 212876* into account when doing so. Normally, you use the following command for decompression, and execute it in the directory of the archive:

```
sapcar -xvf SAPHOSTAGENT.SAR
```

6. Among other things, the archive contains the **saphostexec** program. Install SAPHOSTCONTROL by entering the following command:

```
saphostexec -install
```

7. In the next step, a window appears in which you can enter information about the desired operation and the user to be used for the operation. Enter the password of the **sapadm** user.



The default setting for the user is `.\sapadm`, that is, **sapadm** is a local user. If **sapadm** is a domain user, delete the prefix `.\`.

Installation Under UNIX

1. You need to perform the installation under **root**. Therefore, switch to the **root** user.
2. The **sapsys** group needs to exist on the host. If it does not yet exist, create the group, for example with the command **groupadd**.
3. The user **sapadm** needs to exist on the host, and must be a member of the **sapsys** group. If the user does not yet exist, create the user, for example with the command **useradd**.
4. The [SAPOSCOL working directory \[External\]](#) needs to exist on the host. If it does not yet exist, create the directory **usr/sap/tmp**.
5. Decompress the **SAPHOSTAGENT.SAR** archive with the SAPCAR tool. Take SAP Note 212876 into account when doing so. Normally, you use the following command for decompression, and execute it in the directory of the archive:

```
sapcar -xvf SAPHOSTAGENT.sar
```

6. Among other things, the archive contains the **saphostexec** program. Install SAPHOSTCONTROL by entering the following command:

```
saphostexec -install
```

Installation on System i

1. You require a QSECOFR user for the installation. Therefore, log on with a user of this type.
2. For the following step, open a QP2TERM session, and change to the directory to which you downloaded the archive:

```
cd <archive directory>
```

3. Decompress the **SAPHOSTAGENT.SAR** archive with the SAPCAR tool. Take SAP Note 212876 into account when doing so. Normally, you use the following command for decompression, and execute it in the directory of the archive:

```
/<sapcar path>/sapcar -xvf SAPHOSTAGENT.SAR
```

4. The user profile **SAPADM** and the user group **R3GROUP** must exist on the host. If they do not yet exist, proceed as follows:
 - a. The archive contains the program **ilettools**. To create the **SAP_TOOLS** library that you require to create **SAPADM**, call this program as follows:

```
iletools ./ILE_TOOLS
```

- b. Exit the QP2TERM session and execute the following command sequence:

```
ADDLIBLE SAP_TOOLS
```

```
FIXSAPOWN SID(*NONE) LIB(SAP_TOOLS)
```

```
CRTSAPUSR USER(*SAPADM)
```

5. If you skipped step 4, now exit the QP2TERM session.
6. The SAPOSCOL working directory needs to exist on the host. If it does not yet exist, create the directory `usr/sap/tmp`. Ensure that you assign full authorization for `/usr/sap` and `/usr/sap/tmp` to the group `R3GROUP`.
7. For the following step, open a QP2TERM session again, and change to the directory in which you decompressed the archive.
8. Among other things, the archive contains the `saphostexec` program. Install SAPHOSTCONTROL by entering the following command:

```
saphostexec -install
```

This installs SAPHOSTCONTROL under the IFS directory `/usr/sap/hostctrl` and in the library `R3SAP400`.

Result

You have installed and started the following units on your host:

- The control program *saphostexec*
- The operating system collector *saposcol*
- The SAP NetWeaver Management agent *SAPHostControl* (*sapstartsrv* in host mode)



The installed programs are automatically started when the host is booted. On Microsoft Windows hosts, this is done by the services *SAPHostControl* and *SAPHostExec*; on UNIX hosts the automatic start is ensured by the startup script *sapinit* starting the required executables.

On System i, the programs are started by the auto-start job (**ADDAJE**) **SAPINIT** in subsystem **QUSRWRK**, which was created during the installation.

Uninstallation

If you want to uninstall the host agent again, use the following command:

```
saphostagent -uninstall
```

This stops the above executables and services and deletes the [Working Directory of the Host Agent \[External\]](#).



[Infrastructure of the SAP NetWeaver Management Agents \[External\]](#) Start Page



Registering Hosts with the SLD Using sldreg

Use

To register a host without an SAP NetWeaver component with the SLD, call the executable `sldreg` on that host.

Prerequisites

You have installed the SAPHOSTAGENT package on the relevant host (see [Downloading and Installing Package SAPHOSTAGENT \[Page 9\]](#)).

Procedure

1. You are on the host that you want to register in the SLD.
2. Go to the following directory:
Microsoft Windows (language-dependent): `C:\Program files\SAP\hostctrl\exe`
UNIX: `/usr/sap/hostctrl/exe`
3. Call `sldreg` with the following command:
`sldreg -configure sldest.cfg`

Under UNIX, note the following:
For `sldreg` to access its libraries, the program needs the path `/usr/sap/hostctrl/exe` in the search path for libraries. Under Linux with a C shell, for example, you can achieve this with the following command:

```
# setenv LD_LIBRARY_PATH /usr/sap/hostctrl/exe:$LD_LIBRARY_PATH
```
4. Enter the connection data for the SLD with which you want to register this host:
 - SLD user that has been assigned the role `DataSupplierLD`
 - Password of the above user
 - Host and HTTP port of the SLD
 - Protocol (HTTP or HTTPS)
5. Confirm that you want to save this data in the encrypted file `sldest.cfg`.
6. Restart the host agent; this generates an XML file in the working directory of the host agent and transfers it to the SLD. This XML file contains all of the information about the host that the SLD requires.
 - Microsoft Windows: Restart the service `SAPHostExec`.
 - UNIX: Execute the following commands:

```
saphostexec -stop  
saphostexec pf=/usr/sap/hostctrl/exe/host_profile
```

Result

You have registered the local host with an SLD.

You can check if the registration was performed successfully. To do this, call the start page of the SLD with the URL `http://<host>:<port>/sld`, and choose *Technical Systems*. In the drop-down list *Technical System Type*, choose *Computer Systems*. The host that you have just registered is shown.



[Infrastructure of the SAP NetWeaver Management Agents \[External\]](#) Start Page



Enabling SAP Application Services for ACC

Use

You should adaptive-enable the services to be managed by ACC. For this, services should be implemented in a virtualized manner. This means that the application service is decoupled from the underlying computing node with its file systems and settings. This allows the services to move across the computing nodes in the AC landscape. There are also traditionally installed systems which cannot move across computing nodes.

Procedure

1. Setup all the application service relevant data on a central storage system.
2. Manage OS-related settings like users, groups, services, and hostnames using a central management tool like Network Information System (NIS) or LDAP (in case of Microsoft Windows, it is Microsoft Active Directory).
3. Install the application services on virtual hostnames to ensure that it is always reachable by the same hostname and IP address, irrespective of the resource on which it is running. To host the application services, the computing node must be assigned with its own physical IP address and the virtual IP address of application service.

More information: [Installing SAP Application Services on Virtual Hostnames \[Page 15\]](#)



Information about Hostnames and Networks

For more information about	See
Homogeneous System Copy	<ul style="list-style-type: none"> • service.sap.com/instguides → <i>NW04</i> → <i>Installation</i> → <i>SAP WebAS</i> → <i>SAP Web AS 6.40 SR1 and Related Documentation</i> → <i>Homogeneous and Heterogeneous System Copy</i> • SAP Notes: <ul style="list-style-type: none"> ○ 785848 Hom./Het.System Copy SAP Web AS 6.40 SR1 Java ○ 784931 Hom./Het.System Copy SAP Web AS 6.40 SR1 ABAP
SAP Web AS in Switchover Environments	service.sap.com

Network Integration of SAP Application Services	<code>service.sap.com/network</code>
Changing Hostnames of SAP Application Services	SAP Notes: 757692 Changing the hostname for J2EE Engine 6.40 installation“ 8307 Changing host name on R/3 host: What do you do? “

- To use the managed application services, you need to adjust the profiles. You need to ensure the following settings in the instance profile:

```
SAPLOCALHOST = <virtual hostname>
SAPLOCALHOSTFULL = <full qual. virt. hostname>
icm/host_name_full = <full qual. virt. hostname>
```

Installing SAP Application Services on Virtual Hostnames

Use

The current SAPINST implementations are now able to install directly on the virtual hostname (for more detailed information refer to the installation guide of the installed application). No preparation and subsequent work regarding the hostnames has to be done. To be able to install the Central Instance on a different hostname as the database it is important to use the distributed Installation.



The Adaptive Computing Controller is able to run different instances of an SAP application service in different computing nodes. For this, the instances must get their own virtual hostnames. This requires at least two different virtual hostnames for the database and the central instance (This is valid for ABAP only. Java EE has no central instance).

The convention used in Adaptive Computing environment is: `<service type>[<no>]<SID>`. For example,

Host Name	For
<code>db<SID></code>	Database instance
<code>ci<SID></code>	Central instance
<code>Trex<no><SID></code>	Trex instance
<code>scs<SID></code>	Scs instance
<code>App<no><SID></code>	Application servers

Depending on the network setup (e.g. user LAN, server LAN, and so on) there are more hostnames needed (server-, client- network, and so on). A hostname convention in this case could be `<service type>[<no>]<SID>[-network]`.

- On UNIX – Since SAPINST cannot handle NIS, deactivate NIS during the setup procedure. The consequence is that all users, groups, services are written to the local files. Ensure that the local IDs match the NIS IDs because NIS has to be reactivated after the SAPINST installation process. If the IDs do not match, there will be problems with different file owner permissions
- On Windows – SAPINST is able to integrate users and groups into MS ADS, just ensure the installation is done into the Windows domain.



Do not forget to cleanup the temporary directory used during the installation after each single installation step.

Procedure

1. Installing Central Services

The first installation step is the *Central service installation*. This needs to be done with the virtual hostname of the Central Instance.

```
sapinst SAPINST_USE_HOSTNAME=scs<SID>
```

During the installation routine the Database Host will be asked. Enter here the virtual hostname of the database.

The installation routine also requires the path to the JRE or JDK implementation on the local host. This depends on the local implementation. It is recommended to put the used Java package together with all the other SAP application service components on the storage system and mount it to the directory which is created especially for this SID. The implementation could look this way:

1. Create directory `/usr/lib/java_<SID>`
2. Copy the required Java components into the FS, together with all other components of the `<SID>`.
3. Mount the Java components to `/usr/lib/java_<SID>`
4. Enter the path `/usr/lib/java_<SID>`, when the installation routine asks for the “JDK Directory”. The SAPINST procedure sets all variables (JAVA_HOME, ...) for the user `<SID>adm` in the right way when the entered JDK is used.



On Windows – If a JRE or JDK implementation is required by the SAP application, it is recommended to install it on the local host manually or with the help of OS deployment tools.

2. Installing Database

The second installation step is the Java Database Installation. For this installation phase the virtual hostname of the database has to be used.

```
sapinst SAPINST_USE_HOSTNAME=db<SID>
```

The installation routine sets now all database related configuration to the virtual hostname of the database.

3. Installing Central Instance

The last installation step is the Java Central Instance Installation. Here again the virtual hostname of the Central instance needs to be used.

```
sapinst SAPINST_USE_HOSTNAME=ci<SID>
```

Result

Additional Steps after the initial Installation

On Windows

On each node the following local groups must be available:

- SAP_LocalAdmin
Members: <domain>\SAP_<SID>_GlobalAdmin
- SAP_<SID>_LocalAdmin
Members: <domain>\SAP_<SID>_GlobalAdmin

For creating the groups and adding the members use the following commands:

```
Net localgroup /add SAP_<SID>_LocalAdmin
```

```
Net localgroup SAP_<SID>_LocalAdmin /add adaptive\SAP_<SID>_GlobalAdmin
```

On each node the SAP<SID>_<Instance_nr> service should be available:

For creating the service use the following command:

```
sc create SAP<SID>_< Instance_nr> binPath=
"C:\usr\sap\<SID>\SYS\exe\run\sapstartsrv.exe
pf=C:\usr\sap\<SID>\SYS\profile\START_DVEBMGS<Instance_nr>_<virtual_hos
tname>" obj= adaptive\sapservice<SID> password= '...'
```



This can be done during OS deployment, manually or automated before starting the SAP application services.



Requirements for Managing Databases and SAP AS Instances

The Adaptive Computing Controller uses the Host Agent to control databases and SAP application server instances.

The Host Agent uses the Instance Agent to control application server instances.



Managing LiveCache Databases (UNIX only)

Use

To allow the Host Agent control on LiveCache Databases.

Procedure

1. Logon with <SID>adm user in the LiveCache database host.
2. Create an **xUSER** file with an entry for the control user with the user key **c**, execute:

```
xuser -u control,<password> -U c -d <DB name> -n <hostname> -s
INTERNAL set
```



This command is relevant to MaxDB version 7.4.3.

3. Verify the created XUSER file entry, execute:

```
dbmcli -U c db_state
```

4. Configure the standard LiveCache user, execute:

```
dbmcli -U c user_sap sap<DB name>,<password>
```



For more information about creating and authenticating XUSER entries, see *SAP Note 39439*.

For more information about setting the default LiveCache user, see *SAP Note 616555*.



Preparing the Server for Relocation Operation

Use

When an SAP system is installed on a server, the SAP installer adds the hostnames and network service names (for example: sapgw*) in the `/etc/services` file for mapping the SAP instances with the respective protocol of the server to which the SAP instance needs to be relocated. The server is prepared for the relocation operation once the entries are made in the file.

Procedure

Follow this procedure for adding entries to the `/etc/services` file:

1. Log on to the server that you want to configure and use.
2. Open the `/etc/services` file in a notepad for editing.
3. Add all the entries mentioned in the below table (or just copy them from the server where the SAP system was installed.):

Service Names	Default Ports	Description
sapms<SID>	3600/tcp	SAP Message Server
sapdp00 – sapdp99	3200/tcp – 3299/tcp	SAP Dispatcher
sapdp00s – sapdp99s	4700/tcp – 4799/tcp	SAP Secure Dispatcher
sapgw00 – sapgw99	3300/tcp – 3399/tcp	SAP Gateway
sapgw00s – sapgw99s	4800/tcp – 4899/tcp	SAP Secure Gateway
sql30	7200/tcp	MaxDB
sql6	7210/tcp	MaxDB
sapdbni72	7269/tcp	MaxDB

More information about the service names and ports used by other SAP components refer to the “TCP/IP Ports Used by SAP Applications” document in the following location: <http://service.sap.com/security> -> Security in Detail -> Infrastructure Security.



Individual data entries must be made for the ranges (for example, `sapgw00`, `sapgw01` and so on) mentioned in the above table. Enter the data in the following format:

<code>sapdp01</code>	<code>3201/tcp</code>	<code>#SAP Dispatcher</code>
<code>sapdp02</code>	<code>3202/tcp</code>	<code>#SAP Dispatcher</code>

4. Save the file.

After making all the entries in the `/etc/services` file, it is ensured that the required

- o hostnames and network service names are known, and
- o the operating system users and groups are available for all the SAP systems that needs to be relocated to a specific server.



Wizard-Based Configuration of the ACC

Use

You can use this procedure to:

- Configure the Adaptive Computing Controller (ACC) components of the SAP NetWeaver Administrator.
- Change any configuration settings that were made, while configuring the Adaptive Computing infrastructure using either the Configure NWA for Double Stack System or the Configure NWA for Java System configuration wizard.

Prerequisites

You have ensured that the *SAP NetWeaver Administrator* is configured using either the *Configure NWA for Double Stack System* or the *Configure NWA for Java System* configuration wizard (depending on your CEN system type).

More information: [Wizard-Based Configuration of the NWA \[External\]](#)

Procedure

1. Log on to the central *SAP NetWeaver Administrator* using the link `http://<host>:5<instance #>00/nwa`.
2. Choose *Configuration Management* → *Scenarios* → *Configuration Wizard*.
3. In the *Show* dropdown, select *All Configuration Tasks*.
4. Select the wizard *Initial Setup for Adaptive Computing Controller* and choose *Start*.
Decide whether you want to select the *Typical* or *Custom* configuration mode, and choose *Next*.
The *Typical* mode represents a configuration with default settings.
5. Enter the default credentials for the SAP Host Agent.

6. If the custom mode of configuration was selected, then enable or change the functional features according to the requirement.

Input Field	Description
<i>Allow multiple application servers on one host</i>	Select this indicator to allow the start of multiple application servers on one host.
<i>Allow multiple services on one host</i>	Select this indicator to allow the start of multiple services of any type on a host by selecting the desired host manually.  We recommend that only experienced administrators use this function. Contact SAP to obtain a license key for the function.
<i>Allow configuration of credentials individually per Host Agent</i>	If you need to use different authentication for host agents on different hosts, select this indicator. You can then store different user/password combinations in the configuration interface of the ACC.
<i>Authentication required for Instance Agents</i>	Select this indicator to define whether authentication is required for communication with instance agents.
<i>Execute user exit scripts</i>	Select this indicator to allow the execution of user exit scripts. For more information, see the online help for the ACC.
<i>Automatic Mount Point Creation</i>	Select this indicator to allow automatic mount point creation. Once the option is selected, the local directory structure is automatically created and manual user intervention is not required for mounting the file systems.
<i>Automatic Mount Point Deletion</i>	Select this indicator to allow automatic mount point deletion.
<i>UI refresh rate (in seconds)</i>	Set the period (in seconds) after which the interface of the ACC is refreshed.
<i>Wakeup interval (in seconds) for Process Manager</i>	When starting or stopping an instance, a process runs that starts the required process steps. This <i>Process Manager</i> checks after the delay set here (in seconds) whether the next process step can already be executed.
<i>Refresh interval (in seconds) for Host Agent Data Provider</i>	Performance data for hosts (such as CPU utilization or memory space usage) is stored in a cache. Set the period (in seconds) after which this cache is refreshed here.
<i>Refresh interval (in seconds) for SLD Data Provider</i>	Set the period (in seconds) after which the SLD Data Provider transfers current data for the system to the SLD.
<i>Refresh interval (in seconds) for Service State Data Provider</i>	Set the period (in seconds) after which the status of the services is refreshed.

<i>Refresh interval (in seconds) for Registry Refresh</i>	Set the period (in seconds) after which the register is refreshed.
---	--

7. Choose *Next*, and wait till the configuration of ACC is complete.



Basic SLD Configuration

The SLD is configured during NWA installation. For more information about configuring SLD using NWA, see service.sap.com/instguides.

The SLD and the ACC reside together on a SAP WebAS Java.

Register all the application services and computing nodes in the SLD to configure ACC.



Before registering managed application services in the SLD, the affected systems must be virtualized (running on virtual hostnames). All the instances (CI, APP, SCS, and so on) of an application service must be up and running during the registration.

Register managed ABAP Application Services into SLD

Use RZ70 of the managed ABAP application service to register an ABAP engine of the managed WebAS in a central SLD. If the RZ70 is not available, the application service must be patched to the level where this transaction is available.

The two entries required needed to register the Technical Systems in the SLD are the hostname and the service of the used SAP Gateway.

- The hostname of the used gateway (For example, cisgw0).
- The name of the service for the Gateway (For example, sapgw42).

After *Activate Current Configuration* (F8) and *Start Data Collection* (F5), the application service is registered in the SLD.

If the field with the *Data Collector Programs* is empty, select *Proposal* to fill in the right programs.

If this action is successful the application service should appear in the SLD. Call the SLD using the following link:

`http://<hostname>:5<system_number>00/sld`

Navigate to Technical Landscape. The registered application services should appear in this list.

Register Managed Java EE Application Services into SLD



The Visual Administrator is no longer part of WebAS 7.1. This functionality is replaced by NWA. For the new ACC, the registration is done using NWA. Refer the latest NWA documentation for more details.

To register the Java EE engine of a managed Java EE application service in a central SLD for WebAS 6.40, the Visual Administrator of this application service has to be used.



Before registering managed application services in the SLD, the affected systems must run on virtual hostnames.

After registration, the application service should display the Send Result as *Success*. Additionally in the register *Information* tab, the application service is visible in the SLD in *Technical Systems, Web AS J2EE*.

For information on J2EE registration on the SLD, refer SAP note 673144.

If the J2EE registration fails, refer SAP note 885523.

More Information

If computer systems are incorrectly registered in the SLD, refer SAP note 979277.

If you have transferred the registration data of technical systems into the SLD and this data is not updated in the SLD, refer SAP note 1084145.

If a database system is registered incorrectly in the SLD, refer SAP note 1052457.



Setting Up User Exit

Use

You can provide hooks for executing custom functionality while starting or stopping application services using the ACC user exit function.



By default, ACC user exits are disabled.

Procedure

8. Enable the execution of the user exit commands in ACC.

More information: [Wizard-Based Configuration of the ACC \[Page 20\]](#)

9. Configure the hook command parameters in the profile of the host agent on the managed hosts.

These parameters define the path to the program or script to be executed and the argument format. The following hook commands can be defined:

Hook Command Profile Parameter	Description
<code>service/hook/sap_control</code>	Hook command for SAP application server instance control operations
<code>service/hook/db_control</code>	Hook command for database control operations

On UNIX, for example, you can set these parameters as:

```
service/hook_command/instance_control =
/usr/sap/hostctrl/exe/instance_control_hook.sh %p %s %n %h
```

By default, the profile of the host agent is named `host_profile` and is located at:

Unix	Windows
<code>/usr/sap/hostctrl/exe</code>	<code>c:\Program Files\SAP\hostctrl\exe</code>



If the path to the program or script contains blanks, it has to be enclosed in quotation marks ("").

- Restart the host agent to apply these profile parameter settings. To restart the host agent, execute the following steps:

Step	Unix	Windows
1	Login as Root User	Login as Administrator
2	# cd /usr/sap/hostctrl/exe	> net stop SAPHostExec
3	# ./saphostexec -stop	> net start SAPHostExec
4	# ./saphostexec pf=/usr/sap/hostctrl/exe/host_ profile	

More information:

[Working with User Exit \[Page 24\]](#)



Working with User Exit

The instance control hook command is called before and after starting or stopping an SAP application server instance, whereas the database control hook command is called before and after starting or stopping a database.

Using argument format identifiers, you can control the arguments that are appended to the program.

Format Identifier	Argument Description
%p	Hook name will be expanded to "prestart", "poststart", "prestop", "poststop"
%s	SAP system identifier (SID)
%h	Hostname (the hostname which is assigned to the application)
%t	Application type. For example: DB, SAP
SAP Instance specific	
%n	Instance number

For example, starting an SAP application server instance with SID C11, instance number 00, and instance hostname cic11 results in the following hook command calls (assuming the instance control hook command parameter is defined as described above):

```
/usr/sap/hostctrl/exe/instance_control_hook.sh prestart C11 00 cic11
```

```
<instance start operation>
```

```
/usr/sap/hostctrl/exe/instance_control_hook.sh poststart C11 00 cic11
```

By evaluating these arguments, the script can perform operation and application service- specific tasks.

On UNIX, the hook command is called in the context of the corresponding SAP system administrator user (<sid>adm).

On Windows, the hook command is called in the context of the local system account.

The host agent evaluates the exit code of the hook command to determine the result of the command and to decide whether the start or stop operation should be continued or not. The exit codes are interpreted as:

Exit Code	Description
0	Hook command terminated successful
4	Hook command terminated with warning
Else (any other exit code)	Hook command terminated with error

The execution of the operation is continued if the hook command terminated is successful or with warning. The operation is aborted if the hook command is terminated with error.



Logging and Tracing

ACC comprises two types of logs:

- Java EE engine logs and traces
You can view these logs using the *NWA Log Viewer*.
- ACC Controller logs
You can view these logs using the *Controller Log* function in ACC.
More information: [Working with Controller Logs \[External\]](#)

Logging and tracing are essential to analyzing problems.

SAP NetWeaver Administrator provides features for viewing and configuring Java EE engine logs and traces.

For more information on SAP NetWeaver Administrator Monitoring and Logs and Traces, refer [Problem Management \[External\]](#)

Java EE Engine Logging and Tracing

Viewing and configuring Java EE engine logging and tracing is integrated with SAP NetWeaver Administrator.

ACC uses the following functions in SAP NetWeaver Administrator for inspecting and configuring Java EE log and trace entries:

- *Log Viewer*: The Log Viewer plug-in helps in viewing information about system problems and displays all log and trace records logged by applications or servers. Careful monitoring of logs and traces can help you predict and identify the sources of problems. You can use predefined perspectives and right filters to speed up the process of gathering required information.
More information: [Log Viewer \[Page 26\]](#)
- *Log Configurator*: The Log Configuration plug-in provides functionality for inspecting and modifying the log configuration, changing the severity of log controllers, and resetting the current log configuration to default.
More information: [Log Configuration \[Page 27\]](#)

 The logging and tracing functionality is provided by the standard NWA log and trace functionality. You do not require any special configuration for this type of logging. However, tracing must be explicitly configured.

In the *Log Configuration* tool of the SAP NetWeaver Administrator, the ACC uses the following locations while creating Java EE log and trace entries:

- Logging Categories
 - ROOT CATEGORY/Applications/AdaptiveComputing/Engine
 - ROOT CATEGORY/Applications/AdaptiveComputing/apps
 - Tracing Locations
 - ROOT LOCATION/com/sap/tc/lm/aci/apps/mbeanreg
 - ROOT LOCATION/com/sap/tc/lm/aci/apps/modelsrc

Under *modelsrc*, you have separate tracing locations for engine, resources, service, taskplnr and util.

 - ROOT LOCATION/com/sap/tc/lm/aci/apps/wd
- Under *wd*, you have separate tracing locations for acenable, services, ui and util.



Log Viewer

Use

The **Log Viewer** allows you to view all log and trace messages that are generated in the whole SAP NetWeaver system landscape. These log messages assist you to monitor and diagnose problems.

You can access the Log Viewer tool by choosing *SAP NetWeaver Administrator* → *Problem management* → *Logs and Traces* → *Log Viewer*.

Integration

In the SAP NetWeaver Administrator you can configure the Log Viewer from the Log Configuration tool.

More information: [Log Configuration with the SAP NetWeaver Administrator \[Page 27\]](#).

Features

The Log Viewer tool allows you to:

- View list and text formatted logs and traces on selected systems in a set of predefined views.
- More information: [Predefined Views \[External\]](#).
- View application and system logs. The messages in log files provide hints to the cause of problematic application behavior.
 - Know the certain system problem via the trace messages.

- View logs and traces from an AS Java that is not running, by connecting to a Standalone Log Viewer server



The **Standalone Log Viewer Server** is relevant only for viewing log records from the older systems 7.0.

For systems 7.1, you can use the newly created offline connecting tool: the **SAP Host Control Agent**.

- View ABAP log messages
- Manage with debugging
- Control the amount of displayed log data
- Filter and view logs and traces
- Search log and trace records
- Merge list formatted logs and traces
- View archives of logs and traces
- Create your own custom views to view a certain set of log records
- Import and export custom views

More Information

[How to Work with the Log Viewer \[External\]](#)



Log Configuration with the SAP NetWeaver Administrator

Use

The **Log Configuration** tool in the SAP NetWeaver Administrator provides options for configuring online the severities of log controllers in the whole system or in a certain system instance.

Features

Log Controllers

Log controllers are objects that manage the writing of log and trace messages. Two types of log controllers are available:

- *Location* – describes messages that originate from delimited source code areas. It is used to store and emit trace messages. Since trace messages are meant for developers and support engineers, they are organized along code packages. In the SAP NetWeaver Administrator, locations are named as **tracing locations**.
- *Category* – describes messages specific to distinguished problem areas. It is used to store and emit log messages. Typical problem areas are: databases, networking, security

auditing, and others. In the SAP NetWeaver Administrator, categories are named as **logging categories**.



The configuration steps for both logging categories and tracing locations are the same. Therefore, the steps in the configuration procedures treat them as a whole.

Severity levels

The severity denotes the level of importance or relevance of a certain message.

The increasing order of the severity levels is:

- ALL – The lowest severity. Controller with such a severity logs all the messages regardless of their severity.
- DEBUG – For debugging purpose, with extensive and low level information.
- PATH – For tracing the execution flow, for example, used in the context of entering and leaving a method, looping and branching operations.
- INFO – Informational text, mostly for echoing what has already been performed.
- WARNING – Announces that the application can recover from an anomaly and fulfill the required task, but needs attention from a developer/operator.
- ERROR – Announces that the application can recover from an error, but it cannot fulfill the required task due to the error.
- FATAL – Announces that the application cannot recover from an error, and the severe situation causes fatal termination.
- NONE – The highest severity. Log controllers with such a severity suppress all the messages logged into them, except for the messages with the same severity.

Activities

[Configuring Log Controllers \[External\]](#)



Setting Up XML Data Archiving Service for ACC

Use

You must set up and configure XML Data Archiving Service for ACC Controller Logs.

For more information about Java EE Archiving Service, see *SAP NetWeaver Library -> Administrator's Guide -> Configuration of SAP NetWeaver -> General Configuration Tasks -> Data Archiving -> XML Data Archiving Configuration Steps for JAVA Applications*.

Procedure

1. Create a relevant user for setting up data archiving.

More information: [Creating Users \[External\]](#)

2. Set up the communication between the archiving client (application system) and the XML Data Archiving Service (XML DAS) using destination service.

More information: [Creating a Destination \[External\]](#)

3. Configure the XML Data Archiving Service (DAS) by creating a home path and assigning an archive store. You must enter the archive store as `ca_acc_log` for ACC Log Archiving setup.

More information: [Configuring the XML Data Archiving Service \[External\]](#)



Configuring the Adaptive Computing Landscape

Use

The *Adaptive Computing Controller* (ACC) provides a *Configuration* function to make all the technical settings and perform configuration tasks on the landscape managed by ACC.

You use this procedure to configure services, resources, pools and networks. When you have configured the services and resources, you can start, stop and relocate the services using the configured resources.

Procedure

1. In the *Adaptive Computing* tool, choose *Configuration* from the navigation panel.
2. To configure the pools and networks in ACC, choose *Pool & Network Configuration*.
More information: [Configuring Pools and Networks \[Page 29\]](#)
3. To configure the resources to be managed by ACC, choose *Resource Configuration*.
More information: [Configuring Resources \[Page 30\]](#)
4. To configure the traditionally installed systems and application services to be managed by ACC, choose *Service Configuration*.

More information: [Configuring Services \[Page 31\]](#)



Configuring Pools and Networks

Use

You configure pools and networks in ACC, to separate the adaptive landscape

You configure the adaptive pools for a logical separation in the adaptive landscape. A pool is defined by a pool name, which must be unique within an adaptive managed environment

You configure the network data for a physical separation in the adaptive landscape. A network is defined by a network name, which must be unique in an adaptive managed environment with a network mask and a broadcast address. Networks run services on resources.

Procedure

1. Configuring Pools

5. If there are already pools in the landscape, the *Referencing Resources* and *Referencing Services* columns display the number of resources and services already assigned to the pool.

6. To create a pool or change the description of the pools in the adaptive landscape, choose *Edit*.
7. To create a new pool, choose *Add* and enter a name and description of the new pool.
8. If you have made any changes, choose *Save*.

2. Configuring Networks

1. To configure the networks, select the *Networks* tab page.
2. If there are already networks in the landscape, the *Referencing Resources* and *Referencing Services* column displays the number of resources and services already assigned to the network.
3. To add a network or change the current network information in the adaptive landscape, choose *Edit*.

You can now change the *Network Mask* and *Broadcast Address* information of the networks.
4. To add a new network, choose *Add* and enter the network mask and broadcast address.



Configuring Resources

Use

This procedure enables the resources in the landscape to be managed by ACC. When the resources are configured ACC can start, stop and relocate services according to the availability of the resources.

You can configure multiple resources simultaneously using *Mass Configuration*.

Procedure

1. The *Resource Configuration* section displays all the resources in the landscape. Select the resource you want to configure.
2. The *Resource Configuration Summary* section displays the *resource*-related information from the SLD. To configure the resource, choose *Edit*.
3. In the *Basic Configuration* step, perform the following activities:
 - a. To include the *resource* in the managed landscape of ACC, select the *AC Managed* checkbox.
 - b. Assign the *Resource* to a pool, by selecting a relevant pool from the *Pool* dropdown
 - c. You can view and change the host agent information of the resource in the *Host Agent Configuration* section.



You can change the host agent information only if the *Allow configuration of credentials individually per Host Agent* checkbox was selected during the configuring of ACC using the configuration wizard.

To check if the host agent is running, choose *Test Connection*.

- d. Choose *Next*.
4. In the Resource Properties section, you can perform the following activities:

- a. If the host agent is installed on the resource, and the resource is capable of mounting remote services, select the *AC Enabled* checkbox.
 - b. To make the resources available for the services, select the *AC Operational* checkbox.
 - c. Enter the SAP availability of the resource in the *Capabilities* section.
 - d. To assign an interface facility to the resource choose *Add*, from the *Network Assignment* table.
 - e. To retrieve the available interface IDs from the host agent, choose *Retrieve from Host Agent*.
 - f. To add an interface facility manually, enter the interface ID in the *New Interface Id* field, and choose *Add Interface Id*.
 - g. Assign the required interface facility to a network.
 - h. Select the required interface facility, and choose *Next*.
5. To apply these configuration settings to other resources, perform the following activities in the *Mass Configuration* step:
- a. Select the resources in which you want to configure the current settings.
Use the `Ctrl` key to select more than one resource.
 - b. Choose *Save & Apply Mass Configuration*.



Configuring Services

Use

This procedure enables ACC to manage SAP systems by configuring the application services. SAP systems comprise of application services that are components, which run on one or more servers.



To need to perform this procedure on each service that you want to manage using ACC.

You can configure multiple application services simultaneously using the *Mass Configuration* function.

Prerequisites

6. In the *Service Configuration* area, expand the relevant system, and select the service that you want to include in the managed landscape of ACC.
7. The *Service Configuration Summary* section displays service-related information from the SLD. To configure the service, choose *Edit*.

Procedure

1. Including Services in the Adaptive Computing Landscape

In the *Basic Configuration*, perform the following activities:

1. To include the *Service* in the managed landscape of ACC, select the *AC Managed* checkbox.

2. Assign the *service* to a pool by selecting a relevant pool from the *Pool* dropdown.
3. Enter information about the service in the *Additional Information* section.
4. If required edit the credentials of the Instance Agent.



In case of a database instance, you need to edit the database administrator credentials.

5. To check if the instance agent is running, choose *Test Connection*.



In case of database instance, choose *Test Credentials*.

6. If you are configuring SAP instances, then enter information about the instance start profile path, by choosing *Retrieve from Instance Agent*.

2. Adaptive Enabling Services

In the *Service Properties* step, perform the following activities:

1. If the *Service* is installed with virtual host name, select the *Installed with Virtual Host Name* checkbox.
The *Virtual Hosts* section displays the virtual host name of the *Service*.
2. To enable flexible assignment of the *Service* to resources, select the *AC Enabled* checkbox, and perform the following activities:
 - a. Assign the virtual hostname to a network by selecting the required option from the *Network* dropdown
 - b. To assign additional virtual hostnames to the service, choose *Add*.
Provide information as required for virtual hostname added.
3. Enter information about the SAPS and memory requirements of the service.
4. Select the type of resource required by the *service* from the *Required Resource Type* table
5. Choose *Next*.

3. Configuring Mount Points

If the service was AC enabled in the previous step, then in the *Mount Points* step you can:

1. Prevent ACC from managing the mount points, by selecting the *OS Managed Mounts (Automounter)* checkbox.
- or
2. Enable ACC to configure and manage your mount points, by performing the following activities:
 - a. To add a mount point to the service, choose *Add*.
 - b. Choose the required storage type based on the file system, and the storage technology used.
 - c. Depending on the *Storage Type* selected, provide the other mounting details.

Provide information using the following table:

Field Name	Description	Example Values
Storage Type	Specify the data storage type. All other	Valid values are,

	arguments depend on this value.	NETFS (network file system), DFS (distributed file system), or SR (generic storage resource).
Mount Point	Specify the mount point of the file system. Applicable to the NETFS and DFS storage type only.	/usr/sap/c11
Export Path	Specify a file system name (For example, the export path of a network file system). Or Specify the storage resource identifier.	For NETFS and DFS, Hostname:/path/to/export For SR, cic11 .
Mount Option	Describe the mount options of the file system. Applicable to the NETFS and DFS storage type only.	rw, hard, or intr
FS/SRID Type	Define the type of the file system. Applicable to the DFS and SR storage type only.	For DFS, sanfs . For SR, fc_san .
Partner ID	Specify the vendor of the storage solution. Applicable to the DFS and SR storage type only.	IBM, or EMC

3. Choose *Next*.

4. Performing Mass Configuration

To apply these configuration settings to other services, perform the following activities:

1. Select the services in which you want to configure the current settings.
Use the **Ctrl** key to select more than one service.
2. Choose *Save & Apply Mass Configuration*.

To save your configuration settings, Choose *Save*.



Enabling ACC in the Web Service Framework

You can enable some of the ACC functions such as CXI and CCI using Web Service. This is used by external partners or client applications that do not have the ACC UI framework. You can adaptive-enable the resources using the Web Service. The Web Service is addressed using the Web Service Framework of the SAP Java EE Engine.

More information: [Web Services \[External\]](#)



If you want to utilize CCI, CXI, and Server Enabling functions of ACC through Web Service, you must install the java crypto library into the server using Deploy View.

More information: [Managing Secure Storage in the File System \[External\]](#)

If you encounter any problems while downloading or setting up, contact the security product management of crypto software team.

Web Service enables the following three functions of ACC:

- **Controller Command Interface (CCI)**
The client applications can start, stop, and relocate application services using CCI.
More information: [Controller Command Interface \(CCI\) \[Page 34\]](#)
- **External Change Log Interface (CXI)**
The client applications can write change log entries into the ACC Controller Log using CXI. It enables ACC to log or track for example external changes to a file system made by the administrator or a third party program within the adaptive enabled landscape.
More information: [External Change Log Interface \(CXI\) \[Page 37\]](#)
- **Server Enabling**
The client applications can adaptive-enable the resource by using the Server Enabling interfaces.
More information: [Server Enabling \[Page 39\]](#)



Controller Command Interface (CCI)

You use CCI to start, stop, and relocate application services.

The CCI function has one interface: handleCCI

Field	Description
<i>Interface Name</i>	handleCCI
<i>Function</i>	Controller Command Interface
<i>Parameter</i>	<p>The parameter of the interface is:</p> <ul style="list-style-type: none"> • request (String): The xml formatted request string. This request string must follow the CCI request format. <p>More information: CCI Request Format [Page 34]</p>
<i>Return</i>	Return the response xml string.



CCI Request Format

The request has to be a XML message in the following format:

```
<?xml version="1.0" encoding="UTF-8"?>
<ACC_EXTERNAL_REQUEST>
```

```
<REQUEST_TYPE>
  [1] <!-- (fixed value, reserved for later usage) -->
</REQUEST_TYPE>

<REQUEST_ID>
  [0...2**32-1]
</REQUEST_ID>

<REQUEST_TIMESTAMP>
  <!-- Timestamp format: yyyy-mm-dd hh:mm:ss.fffffffff
        (for details see Java Doc)
        Time zone: UTC -->
</REQUEST_TIMESTAMP>

<SERVICE>
  <SERVICE_ID>
    <!-- ID of the service, like set in the ACC -->
  </SERVICE_ID>
  <COMMAND>
    [START, STOP, RELOCATE]
  </COMMAND>
  <HOST_NAME>
    <!-- Physical host name, string format -->
  </HOST_NAME>
  <SERVICE_FLAGS>
    <FORCE_START_ON_SMALL_SERVER>
      [TRUE, FALSE(default value)]
    </FORCE_START_ON_SMALL_SERVER>
  </SERVICE_FLAGS>
</SERVICE>

<REPLY_LOG>
  [TRUE, FALSE]
</REPLY_LOG>
</ACC_EXTERNAL_REQUEST>
```

REQUEST_TYPE tag

Has to be set to 1, reserved for future use.

REQUEST_ID tag

Integer number in the range from 0 to $2^{32}-1$. The value of this tag is not analyzed by the ACC and can be used by the program calling the Controller Command Interface for its own purposes.

REQUEST_TIMESTAMP tag

Time stamp is in the format `yyyy-mm-dd hh:mm:ss . ffffffff`. For details please refer to the Java documentation Time Zone UTC. The value of this tag is not analyzed by the ACC and can be used by the program calling the Controller Command Interface for its own purposes.

HOST_NAME tag

The internal behavior of the ACC for the commands START and RELOCATE depends on the value of the tag HOST_NAME.

- HOST_NAME is set:
 - START: The ACC will start the requested service on the host <HOST_NAME>. If a service is already running on this server, the ACC rejects the command and sets an error value $\neq 0$ (this limitation is currently restricted to ACC 1.0).
 - RELOCATE: The ACC will stop the requested service and re-start it on the host <HOST_NAME>. The host on which the actual running service has to be stopped is determined by the ACC itself (see also STOP). For the host where the service has to be started, the same rules apply like for START. The ACC checks whether the host is able to run the new service before stopping the service. If the target host is not usable, it does not stop the service and reports a corresponding error code.
- HOST_NAME is not set:
 - START and RELOCATE: The host where to start the service is determined by the internal assignment rules of the ACC.
- HOST_NAME is ignored for the STOP command. The host on which the actual running service has to be stopped is determined by the ACC itself.

SERVICE_FLAGS tag

The SERVICE_FLAGS tag is optional. It can contain several flag tags inside. If the whole SERVICE_FLAGS tag is not available, all the possible flag tags inside will be taken into account with their default values. Also if a flag tag inside the SERVICE_FLAGS tag is not available, the default value of the flag is taken.

Currently only the flag FORCE_START_ON_SMALL_SERVER is supported. Its values can be TRUE and FALSE (default value).

This flag is used to determine whether the requested service can be started on the requested server even if this server does not meet the SAPS and memory requirements of the service.

The required performance of a service is indicated by the value "Required SAPS". A service with a "Required SAPS" value of N can not be started on a server which offers M SAPS and $N > M$ normally. The same rule applies for "Required Memory". With the graphical user interface, the user can overrule this behavior manually. The flag FORCE_START_ON_SMALL_SERVER leads to the same behavior. The following table shows the functionality in detail:

FORCE_START_ON_SMALL_SERVER tag	N ≥ M	N < M
TRUE	no effect	service starts
FALSE (default value)	no effect	service does not start, return code 7
not set	no effect	service does not start, return code 7

(M = "Required SAPS"/"Required Physical Memory" of service, N = SAPS of server/Free Memory of server)

REPLY_LOG tag

If the REPLY_LOG is set to TRUE, the ACC includes the complete command log of the requested command in its reply message.



External Change Log Interface (CXI)

You use CXI to write change log entries into the ACC Controller Log using CXI. It enables ACC to log or track for example external changes to a file system made by the administrator or a third party program within the adaptive enabled landscape.

The CXI function has one interface: handleCXI

Field	Description
<i>Interface Name</i>	handleCXI
<i>Function</i>	External Change Log Interface
<i>Parameter</i>	<p>The parameter of the interface is:</p> <ul style="list-style-type: none"> request (String): The xml formatted request string. This request string must follow the CXI request format. <p>More information: CXI Request Format [Page 37]</p>
<i>Return</i>	Return the response xml string.



CXI Request Format

The data transmitted to the change log external interface is transferred over a secure connection (see also partner interface) in the form of an extensible markup language (XML) document. This document is built up as follows:

```
<?xml version="1.0" encoding="ISO-8859-1" standalone="yes"?>
<ac:document xmlns:ac="http://service.sap.com/adaptive">
  <ac:changelog_external_interface version="[1]">
    <ac:log_entry>
      <ac:line>[2]</ac:line>
    </ac:log_entry>
  </ac:changelog_external_interface>
</ac:document>
```

```

    </ac:changelog_external_interface>
</ac:document>

```

- [1] – Version number of the external change log interface (attribute required)
- [2] – Changed filename including absolute path (required)

<ac:document /> – root element.

<ac:changelog_external_interface /> – This tag encloses all the transferred information. The attribute “version” tells the ACC which interface version should be used. We will start with version 1.0. The version format is two digits separated with a dot.

<ac:log_entry /> – This tag encloses the file list. This tag corresponds with one change log entry. That means that one entry in the CA_ACC_LOGHEADER table is made which references to the corresponding CA_ACC_LOGCHANGE entries (for implementation see logging/tracking of configuration changes specification). Only one <ac:log_entry>-tag is allowed in version 1.0.

<ac:line /> – Each file has its own line. Everything in between these tags is corresponding to one entry into the *Value_new* column within the CA_ACC_LOGCHANGE table. The sequence of these tags is unbounded.

Example XML for the entries:

```

<?xml version="1.0" encoding="ISO-8859-1" standalone="yes"?>
<ac:document xmlns:ac="http://service.sap.com/adaptive">
  <ac:changelog_external_interafce version="1.0">
    <ac:log_entry>
      <ac:line>/usr/sap/AI4/sys/profile/DEFAULT.PFL</ac:line>
      <ac:line>/usr/sap/AI4/sys/profile/J2E_JC00_P115345</ac:line>
      <ac:line>/usr/sap/AI4/sys/profile/J2E_SCS01_P115345</ac:line>
      <ac:line>/usr/sap/AI4/sys/profile/START_JC00_P115345</ac:line>
      <ac:line>/usr/sap/AI4/sys/profile/START_SCS01_P115345</ac:line>
    </ac:log_entry>
  </ac:changelog_external_interface>
</ac:document>

```



Server Enabling

You can adaptive-enable the resource by using the Server Enabling interfaces.

The Server Enabling function has four interfaces that are described below:

- getServerAttr

Field	Description
<i>Interface Name</i>	getServerAttr
<i>Function</i>	This interface is to retrieve the resource attribute values.
<i>Parameter</i>	<p>The parameters of the interface are:</p> <ul style="list-style-type: none"> • serverName (String): The resource name as shown in the <i>Resource</i> view of the ACC. • attrName (String): The attribute name. The attribute name must be one of these server attributes and are case sensitive: CPUCache, CPURate, IPAddress, MachineType, NumberOfCPU, OpSys, OpSysBits, OpSysRelease, PerformanceInSAPS, and PhysicalRAMinMB.
<i>Return</i>	Return the attribute value.

- setServerAttr

Field	Description
<i>Interface Name</i>	setServerAttr
<i>Function</i>	This interface is used to set the resource attributes.
<i>Parameter</i>	<p>The parameters of the interface are:</p> <ul style="list-style-type: none"> • serverName (String): The resource name as displayed in the <i>Resource</i> view of the ACC. • attrName (String): The attribute name. The attribute name must be one of these server attributes and are case sensitive: CPUCache, CPURate, IPAddress, MachineType, NumberOfCPU, OpSys, OpSysBits, OpSysRelease, PerformanceInSAPS, and PhysicalRAMinMB. • attrName (String): The attribute value.
<i>Return</i>	<p>Return true or false:</p> <ul style="list-style-type: none"> • true: Set the resource attribute successfully. • false: Set the resource attribute failed.

- detachServer

Field	Description
<i>Interface Name</i>	detachServer
<i>Function</i>	This interface is used to adaptive-disable the resource.

<i>Parameter</i>	<p>The parameters of the interface are:</p> <ul style="list-style-type: none"> • serverName (String): Adaptive-enabled resource name. • pool (String): Pool name that the resource belongs to. • interfaceName (String): Physical interface of the network. • networkName (String): Network name that the resource belongs to.
<i>Return</i>	<p>Return true or false:</p> <ul style="list-style-type: none"> • true: Adaptive-disable the resource successfully. • false: Adaptive-disable the resource failed.

- attachServer

Field	Description
<i>Interface Name</i>	attachServer
<i>Function</i>	This interface is to adaptive enable the server.
<i>Parameter</i>	<p>The parameters of the interface are:</p> <ul style="list-style-type: none"> • serverName (String): Resource name as displayed in the <i>Resource</i> view of the ACC. • pool (String): Pool name that the resource belongs to. • interfaceName (String): Physical interface of the network. • networkName (String): Network name that the resource belongs to.
<i>Return</i>	<p>Return true or false:</p> <ul style="list-style-type: none"> • true: Adaptive-enable the resource successfully. • false: Adaptive-enable the resource failed.



Troubleshooting ACC 7.1 Setup

Use

You can use the workarounds mentioned in the procedures below for any of the following problems that occur while using the ACC 7.1:

1. The computer systems or services in the *Resources* view show incorrect status.
2. Authorization exceptions occur while logging into the ACC.

3. SLD exceptions occur while logging into the ACC.
4. *Permission denied* exception occurs when you start, stop, or relocate a service.
5. *Invalid Credentials* exception occurs when you start, stop, or relocate a service.
6. Stopping Instance Agent Fails with *HTTP 401 Unauthorized Error*.

Procedure

Computer Systems or Services Report an Incorrect Status

When the computer systems do not show a green status, or the status of the services reported is incorrect, you can perform the following checks:

1. Check the availability of SAP Host Agents
 - a. Logon to the computer system data provider test page using the URL
`http://<host>:<port>/tc~lm~itsam~core~computersys~web/csdp_test.jsp`
 - b. Choose *Show availability information(directly from SAP_ITSAMComputerSystems)*.
All your AC managed computer systems should appear as *available:true* in the list.
If there are computer systems that appear as *available:false* in the list:
 - i. Check if the host is reachable from the manager system (for example, by pinging the host) and the host agent port (typically '1128') is not blocked.
 - ii. Check if the host agent is running on the specific host.
2. Check if the NetWeaver Scheduler is Switched On
 - a. Logon to the *SAP Java EE Config Tool*.
 - b. Navigate to *services*, and choose the *scheduler* service configuration.
 - c. Make sure that the key *enableJobExecution* has the value `true`, and the key *removeTasksOnSingletonStart* has the value `false`.
 - d. If you changed the values of the keys in the previous step, then save the changes and restart the Java AS cluster.
3. Check if Prefetch Jobs are scheduled
 - a. Logon to the *SchedulerAdministrator* using the URL
`http://<host>:<port>/SchedulerAdministrator`.
 - b. Navigate to *Scheduler tasks*.
Make sure that at least four *PrefetchJobs*, and one *RoutingJob* is listed.
 - c. If the jobs are missing, execute the configuration wizard that configures ACC in the SAP NetWeaver Administrator again.
4. Check if Prefetch Service Data Providers are running without errors
 - a. Logon to the *SchedulerAdministrator* using the URL
`http://<host>:<port>/SchedulerAdministrator`.
 - b. Navigate to *List completed jobs*, and open the *Log* of any currently completed *PrefetchJob*.
You should see the following output:



If there are log messages with severity warning like *WARNING Data provider SAP_ITSAMComputerSystemDataProvider was not found*, execute the configuration wizard that configures ACC in the SAP NetWeaver Administrator again.

5. Check if Computer System Data Provider is Working

- a. Logon to the computer system data provider test page using the URL
`http://<host>:<port>/tc~lm~itsam~core~computersys~web/csdp_test.jsp`
- b. Enter the host name of any of your AC managed computer systems and choose *Get prefetched computer system data*.

The timestamp must not be older than several minutes, as the data provider is triggered each 60 seconds.

6. Check if Service Status Data Provider is working

- a. Logon to the computer system data provider test page using the URL
`http://<host>:<port>/tc~lm~itsam~core~acservicestatus~web/statdp_test.jsp`
- b. Choose *get status for all SAP instances*.

The application displays the status information of all AC managed instances as it was collected by the prefetch service.

The timestamp must not be older than several minutes, as the data provider is triggered each 60 seconds.

Authorization Exception Occurs when logging into ACC

Authorization exceptions occur when logging into ACC when the user does not have the required permission. In this case you can:

1. Logon to the UME, and create a new role (for example, ACC_Admin) and assign the following 10 actions:

Type	Service / Application	↑	Name
UME	tc~lm~aci~engine~app		OperationExceptionHandler
UME	tc~lm~aci~engine~app		ServerEnable
UME	tc~lm~aci~engine~app		Archiving
UME	tc~lm~aci~engine~app		Configuration
UME	tc~lm~aci~engine~app		Operation
UME	tc~lm~aci~engine~app		ServiceEnable
UME	jmx		JmxManageAll
UME	tc~lm~aci~engine~app		Schedule
UME	tc~lm~aci~engine~app		Observing
UME	tc~lm~aci~engine~app		CustomizeLink

2. Assign this role to the *Administrators* group, and to all users who work with ACC.

SLD Exception Occurs when logging in into ACC

ACC 7.1 requires an SAP SLD model version 1.5.18 or higher. An SLD exception occurs when the model version of the SLD is less than 1.5.18. In this case of SLD exception, perform the following checks:

1. Check the current SLD model version.
 - a. Logon to the SLD Administration UI using the URL `http://<host>:<port>/sld`.
 - b. Choose *Administration* → *Details*.
 - c. On the *Data* tab page, check the model version of namespace *sld/active*.
This version needs to be 1.5.18 or higher:
2. If the SLD model version is lesser than 1.5.18, download a newer version.
 - a. Choose *Administration* → *Import*.
 - b. Select the downloaded model (.zip file) and choose *Import...*

Permission denied exception occurs

When the user does not have sufficient permissions to execute protected operations (For example, start or stop instance), the *Permissission denied* exception occurs.

The host agent connection user (*sapadm*) requires the write permissions to the *sapstartsrv* executable in the executable directory of the host agent (UNIX: `/usr/sap/hostcontrol/exe`).

Perform the following activities:

1. Ensure that the *sapstartsrv* executable is owned by the user *sapadm* and that this user has write permissions.
2. Connect to the host agent with the *sapadm* user or any other user that has write access to the to the *sapstartsrv* executable.

Invalid Credentials exception occurs

The host agent authenticates the connection user (*sapadm*) with the help of operating system user authentication facilities (For example, PAM on UNIX). The host agent throws the *Invalid Credentials* exception if this authentication fails, when you start, stop or relocate a service.

Perform the following activities:

1. Ensure that the connection user is available on the host, and you are using the correct password.

2. On UNIX, verify your PAM setup.

For more information, refer SAP note 927637.

Stopping Instance Agent Fails with HTTP 401 Unauthorized Error

On Unix, the host agent (the sapcontrol program – which is used by the host agent to control an instance) relies on a unix domain socket to make a trusted connect to the instance agent.

The instance agent removes this socket when stopping the instance. The sapcontrol tries to connect via HTTP to the instance agent and results in the error, when you stop or relocate an instance.

Aug 14, 2007 7:58:44 AM	ACC	 Information	Executing the operation process step with ID 'process-62133f70-4a2b-11dc-c88d-01
Aug 14, 2007 7:58:44 AM	ACC	 Information	Using the following arguments. ServiceID: 'SystemID.P31.Number.05.InstanceHost.sc HostAgentProtocol: 'http', HostAgentUser: 'sapadm', HostAgentPort: '1128'
Aug 14, 2007 7:58:44 AM	ACC	 Information	Executing the stop of instance on host 'blade12' now (calling 'stopInstance()' on Hos
Aug 14, 2007 7:58:58 AM	sapcontr	 Information	14.08.2007 08:58:45
Aug 14, 2007 7:58:58 AM	sapcontr	 Information	Stop
Aug 14, 2007 7:58:58 AM	sapcontr	 Information	OK
Aug 14, 2007 7:58:58 AM	sapcontr	 Information	14.08.2007 08:58:55
Aug 14, 2007 7:58:58 AM	sapcontr	 Information	StopVWait
Aug 14, 2007 7:58:58 AM	sapcontr	 Information	OK
Aug 14, 2007 7:58:58 AM	saphostc	 Information	sapcontrol terminated successfully
Aug 14, 2007 7:58:58 AM	sapcontr	 Information	14.08.2007 08:58:57
Aug 14, 2007 7:58:58 AM	sapcontr	 Information	StopService
Aug 14, 2007 7:58:58 AM	sapcontr	 Information	FAIL: HTTP error, HTTP/1.1 401 Unauthorized
Aug 14, 2007 7:58:58 AM	saphostc	 Error	sapcontrol terminated with error
Aug 14, 2007 7:58:58 AM	ACC	 Error	Error occured when trying to stop instance. (OperationException: 'Command Executi

As a solution, upgrade the instance agent.

For more information, refer SAP Note 877795.