

HP Connect-It

Integration System Version: 1.0

Service Anywhere Integration with UCMDB Configuration
Items Through Connect-It

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Overview

This guide describes the installation, configuration, and customization of Configuration Items (CIs) integrated with HP Universal CMDB (UCMDB, version 9 and version 10) and HP Service Anywhere, according to the universal data model (UDM) standards.

Audience

This guide is intended for Service Anywhere consultants who want to integrate CIs from UCMDB.

Other potential readers include:

- Service Anywhere architects
- Service Anywhere designers
- Service Anywhere developers
- Service Anywhere project managers
- Service Anywhere program managers
- Service Anywhere general R&D managers

Prerequisite

To install and configure the integrated system, you need to have a good knowledge of the following technologies:

- Service Anywhere
- UCMDB
- UDM
- Connect-It

Concepts

The integrated system synchronizes all CIs and relationships from UCMDB to Service Anywhere. The UCMDB is deployed on a customer on-premise environment while Service Anywhere is in the HP Software-as-a-service (SaaS) environment. The general process is as follows:

- **Installation:** Install the relevant software such as the UCMDB Topology Query Language (TQL) package and Connect-It.
- **Configuration:** Configure and tune the Connect-It scenario, UCMDB TQL, Service Anywhere, and firewall/proxy according to the customer's production environment.
- **Customization:** Depending on the Service Anywhere customization, the Connect-It scenario might need modification.
- **Initial loading:** Load all required CIs and relationships from UCMDB to Service Anywhere.
- **Schedule loading:** Delta synchronize new/updated CIs or relationships from UCMDB to Service Anywhere in proper schedule.
- **Error handling:** Resolve rejected CIs.

Solution topology

Figure 1 illustrates the architecture of the solution that integrates UCMDB, Connect-It, and Service Anywhere.

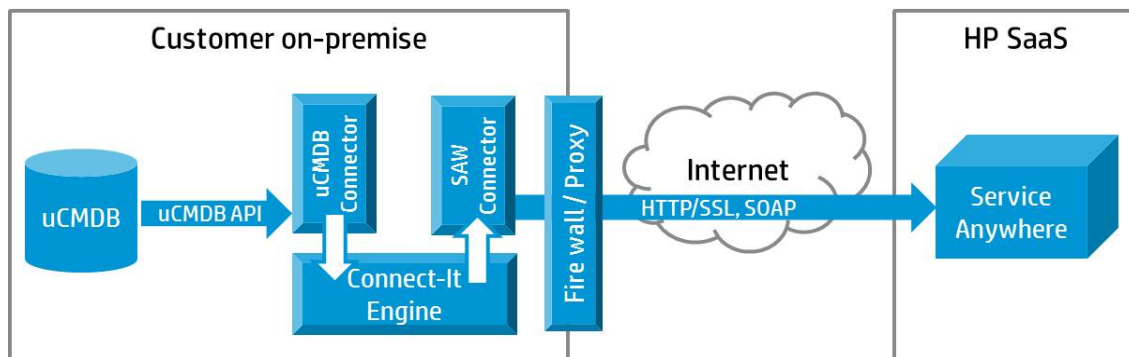


Figure 1. Solution topology

The solution consists of the following components and configurations.

Environment and installation:

- UCMDB and Connect-It are on-premise, with firewall and proxy set up.
- Service Anywhere is in HP SaaS.

Security:

- Secured with HTTPS/SSL: Refer to the Service Anywhere manual for server configurations; refer to the *Connect-It User Guide* for client configurations.

Design and implementation

This chapter describes the design, implementation, and customization of the integration scenarios.

UCMDB integration TQLs

The TQLs are designed with the following Service Anywhere blueprint:

- Forty object TQLs with one-to-one relationship.
- Two TQLs for business and infrastructure with many-to-many relationships.

Figure 2 shows the structure of the TQLs and relationships.

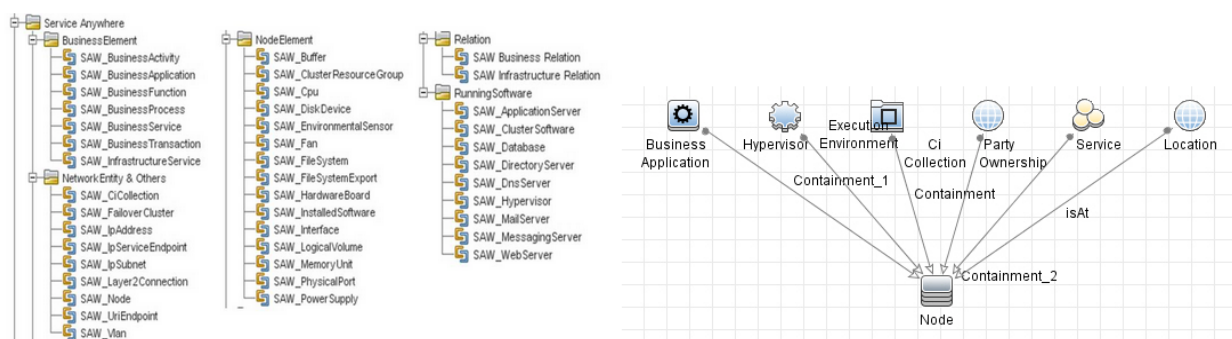


Figure 2. TQL design

Installation of the Service Anywhere TQL package

Install the TQL package by importing the `ServiceAnywhere.zip` package to UCMDB. For more information, refer to the UCMDB manuals for detailed instructions.

Figure 3 shows how the installed Service Anywhere TQL package looks like in UCMDB.

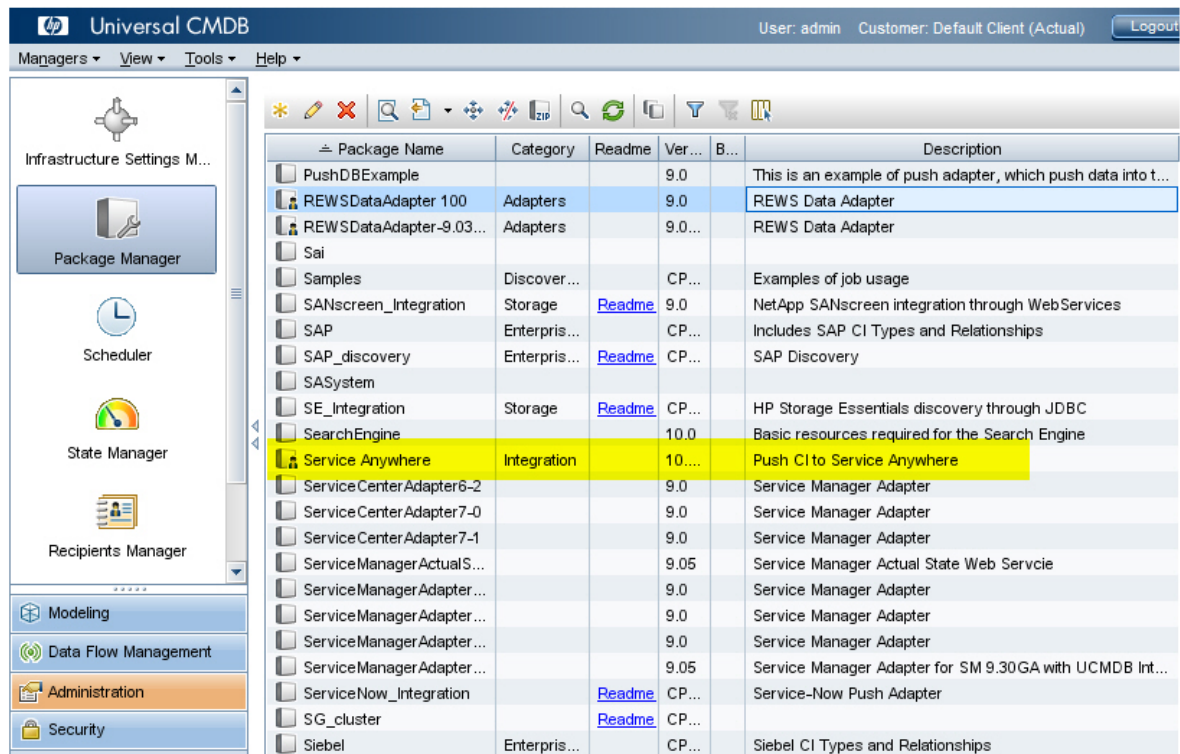


Figure 3. Installation of the Service Anywhere package

Note:The `ServiceAnywhere.zip` package is in the `Scenario` folder.

If the UCMDB infrastructure does not support multi-tenant, you need to remove the `rta` folder from the zip package before importing, as shown in Figure 4. Ignore the error messages about `rta`.

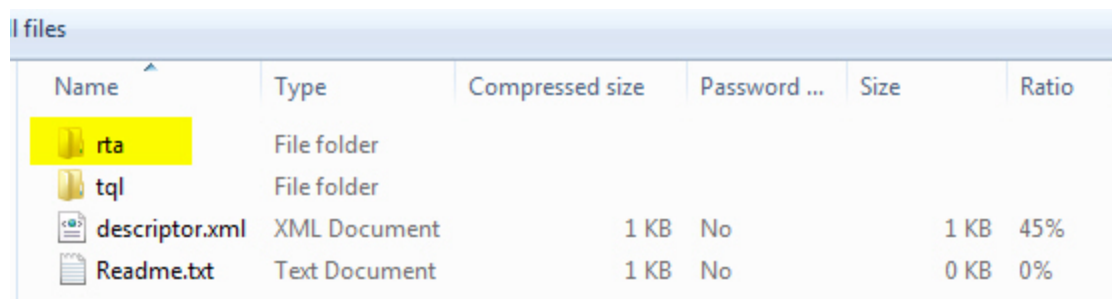
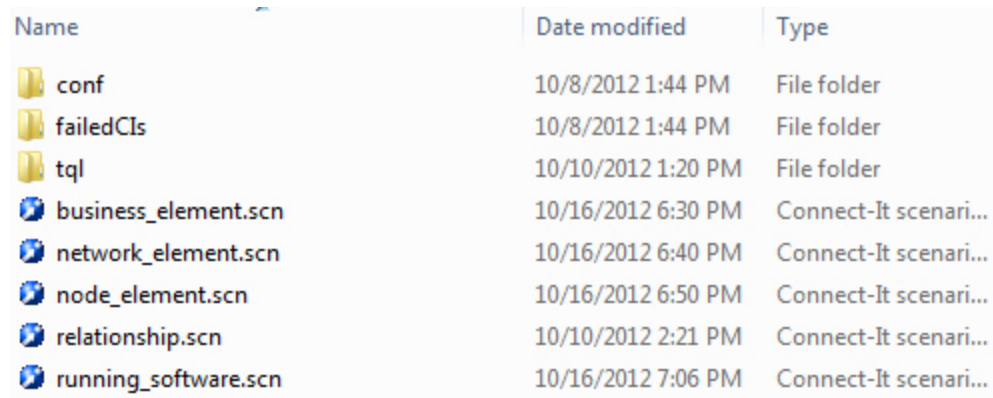


Figure 4. The `rta` folder

Scenario package

The scenario package is saved in the %Connect-It installation%\scenario\saw\ucmdbawsaw folder. **Figure 5** shows how the scenario package is organized in Connect-It.



Name	Date modified	Type
conf	10/8/2012 1:44 PM	File folder
failedCIs	10/8/2012 1:44 PM	File folder
tql	10/10/2012 1:20 PM	File folder
business_element.scn	10/16/2012 6:30 PM	Connect-It scenari...
network_element.scn	10/16/2012 6:40 PM	Connect-It scenari...
node_element.scn	10/16/2012 6:50 PM	Connect-It scenari...
relationship.scn	10/10/2012 2:21 PM	Connect-It scenari...
running_software.scn	10/16/2012 7:06 PM	Connect-It scenari...

Figure 5. The ucmbawsaw folder

The package contains the following files and folders:

- The `conf` folder saves constant files and `.dtd` files.
- The `failedCIs` folder saves CIs that were not successfully imported to Service Anywhere.
- The `business_element.scn`, `network_element.scn`, `node_element.scn`, and `running_software.scn` files are used to import single objects such as Node, CPU, or Business Application to Service Anywhere.
- The `relationship.scn` file is used to import many-to-many relationship into Service Anywhere. For more information, refer to the *UDM 1.6 specification* or Service Anywhere documentation.

Scenario design

Figure 6 shows how each connector retrieves data from TQL views.

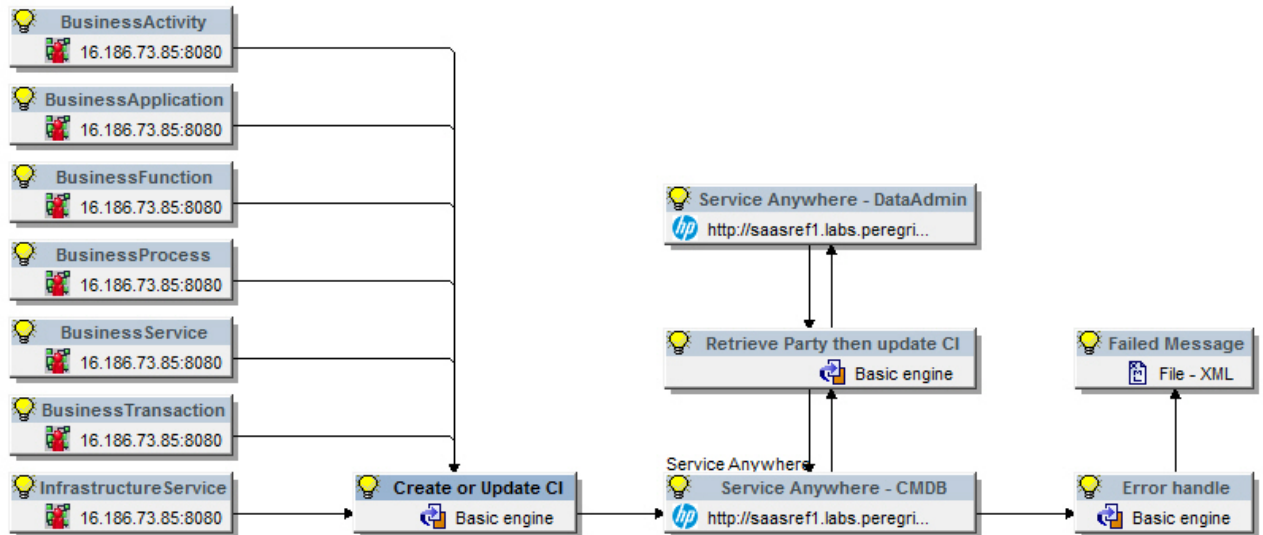


Figure 6. Scenario design

Some CIs such as `BusinessApplication` need to retrieve the party information (syspk) from the `DataAdministrator` WSDL of Service Anywhere, and then update again.

As shown in **Figure 7**, the criteria of retrieving party is defined by `Name`, you can modify it with a different field or mapping logic according to your business context.

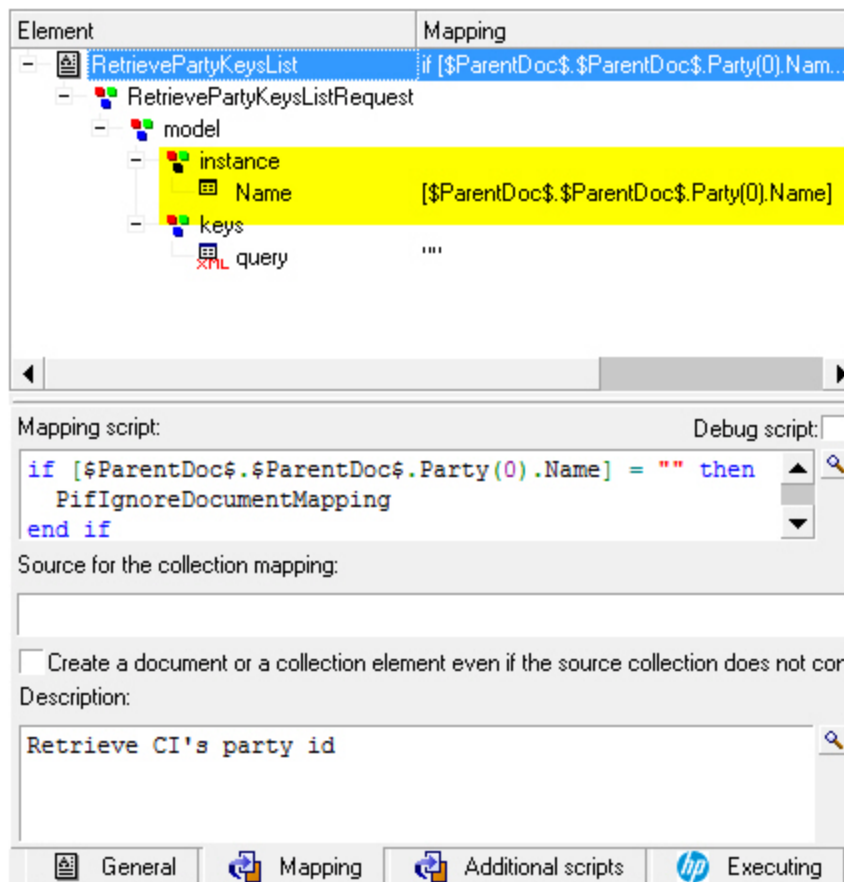


Figure 7. Retrieving party information

- Service Anywhere Web service creates methods that can support both creating and updating behaviors.
- A Service Anywhere CI ID is mapped to the UCMDB CI global ID. For example, the **isContainedIn.BusinessFunction** method should be mapped to a relationship CI's global ID (**BusinessFunction**), as shown in **Figure 8**.
- **MonitoredBy** is mapped to a constant such as "UCMDB".
- **TimeZone** is mapped to a constant such as "Beijing".
- **Constant** can be modified by a developer or a user.

Element	Mapping
- CreateBusinessApplication	
- CreateBusinessApplicationRequest	
- model	
- instance	
BusinessCriticality	[business_criticality]
Description	[description]
DisplayLabel	[display_label]
GlobalId	[global_id]
ID	[global_id]
isContainedIn.BusinessFunction	[BusinessFunction(0).global_id]
isContainedIn.BusinessService	[BusinessService(0).global_id]
isContainedIn.CiCollection	[CiCollection(0).global_id]
isOwnedBy.Party	[Party(0).global_id]
MonitoredBy	PifConstant(MONITORED_BY)
Name	[name]
Tags	[tags]
TimeZone	PifConstant(TIMEZONE)
- keys	
ID	[global_id]

Figure 8. Mapping

Make sure that you check each response after you create or update the CI for Service Anywhere. If the status is not "Success," a message will be saved to an XML file in the `failedCIs` folder.

Figure 9 shows how Connect-It generates a message when it creates many-to-many relationships. The message contains the failed method and CI identifier, UCMDB global ID, CItemType, Display_Label, and the related CI global ID.

Element	Mapping
- SAWResponseMessage	if [CreateBusinessApplicationResponse.status] = "SUCCESS" then PifIgnor...
- messages	
- message	
- module	[CreateBusinessApplicationResponse.messages.message.module]
- severity	[CreateBusinessApplicationResponse.messages.message.severity]
- Response	
- message	[CreateBusinessApplicationResponse.message]
- query	[CreateBusinessApplicationResponse.query]
- returnCode	[CreateBusinessApplicationResponse.returnValue]
- schemaRevisionDate	[CreateBusinessApplicationResponse.schemaRevisionDate]
- schemaRevisionLevel	[CreateBusinessApplicationResponse.schemaRevisionLevel]
- status	[CreateBusinessApplicationResponse.status]
- SAW	
- ID	[CreateBusinessApplicationResponse.model.keys.ID]
- Method	"CreateBusinessApplication"
- UCMDB	
- CItemType	[\$ParentDoc\$. \$ParentDoc\$.root_class]
- Display_Label	[\$ParentDoc\$. \$ParentDoc\$.display_label]
- GlobalID	[\$ParentDoc\$. \$ParentDoc\$.global_id]
- Related_GlobalID	

Mapping script:	Debug script
-----------------	--------------

```

if [CreateBusinessApplicationResponse.status] = "SUCCESS" then
  PifIgnoreDocumentMapping
end if
  
```

Figure 9. Error reporting

Make sure that you check the process report to avoid the possibility that Connect-It cannot send data to Service Anywhere due to the invalid data format. The process report is shown in **Figure 10**.

Element	Mapping
- SAWResponseMessage	if [ErrorNumber] = 0 then PifIgnoreDocumentMappingend if
- messages	
- message	
- Date	[Logs.Date]
- LogType	[Logs.LogType]
- Msg	[Logs.Msg]
- Path	[Logs.Path]
- ProcessReport	
- Date	[Date]
- DocumentType	[DocumentType]
- DocumentTypeID	[DocumentTypeID]
- ErrorNumber	[ErrorNumber]
- Ignored	[Ignored]
- Pending	[Pending]
- Success	[Success]
- WarningNumber	[WarningNumber]
- UCMDB	
- CIType	[\$ParentDoc\$. \$ParentDoc\$.root_class]
- Display_Label	[\$ParentDoc\$. \$ParentDoc\$.display_label]
- GlobalID	[\$ParentDoc\$. \$ParentDoc\$.global_id]
- Related_GlobalID	

Mapping script:

```

if [ErrorNumber] = 0 then
  PifIgnoreDocumentMapping
end if

```

Figure 10. Process report

All failed CI messages will be saved to the `failedCIs` folder, every single CI will be saved to different files. The file name is composed of 6 digits.

Note: Because some fields are only available in UCMDB version 10, you will receive the following error messages when you open the connector against UCMDB version 9.

- Name 'disk_type' is not defined in element 'DiskDevice'.
- Name 'disk_size' is not defined in element 'DiskDevice'.
- Name 'secondary_wins' is not defined in element 'Interface'.
- Name 'primary_wins' is not defined in element 'Interface'.
- Name 'gateways' is not defined in element 'Interface'.

Therefore, you must customize the related scenario file (`node_element.scn`). To do this, follow these steps:

- Remove `CreateDiskDeviceRequest.model.instance.DiskType` and `CreateDiskDeviceRequest.model.instance.DiskSize` from the mapping, then

remove `disk_type` and `disk_size` from the `DiskDeviceSrc` document type in the `DiskDevice` connector.

- Remove `CreateInterfaceRequest.model.instance.PrimaryWins`, `CreateInterfaceRequest.model.instance.SecondaryWins`, and `CreateInterfaceRequest.model.instance.Gateways` from the mapping, and then remove `secondary_wins`, `primary_wins`, and `gateways` from the `InterfaceSrc` document type.

Managing Connect-It scenario in the Service Console

HP recommends that you manage scenarios in the Service Console, as shown in **Figure 11**. For more information, refer to the *Service Console* section of the *Connect-It User Guide*.

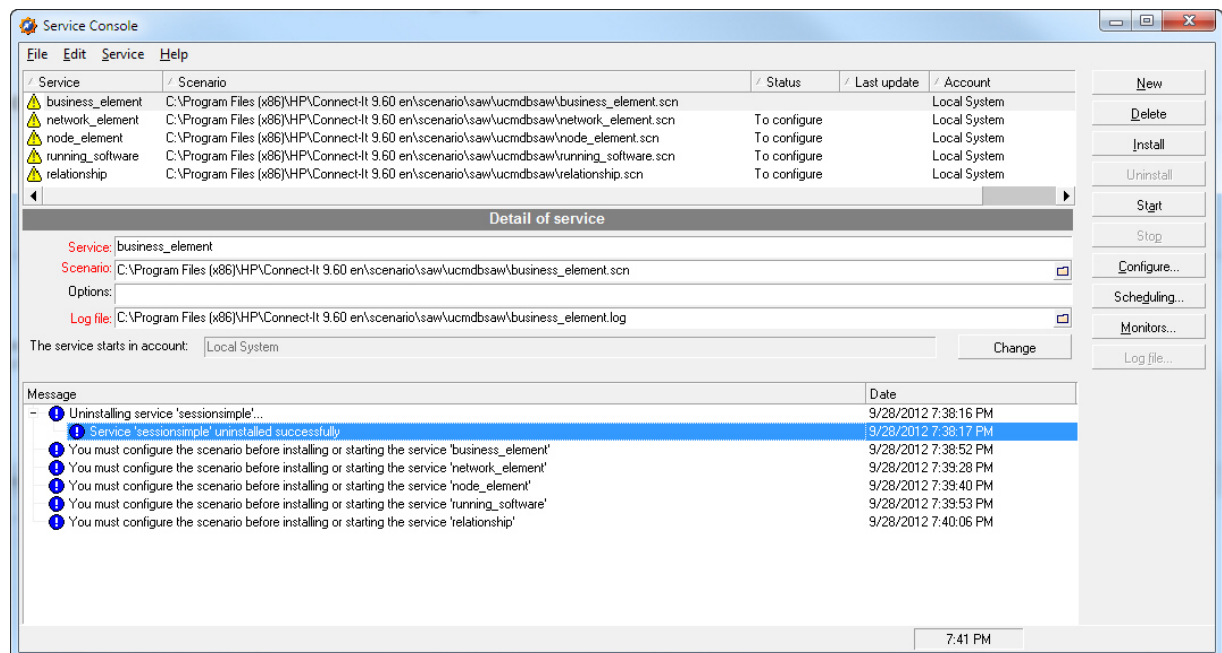


Figure 11. Managing scenarios in the Service Console

Scheduler and scheduling

As shown in **Figure 12**, you need to define the scheduler for integration, pull mappings in the scheduler in the **Editing scheduling** window, and adjust the produce sequence.

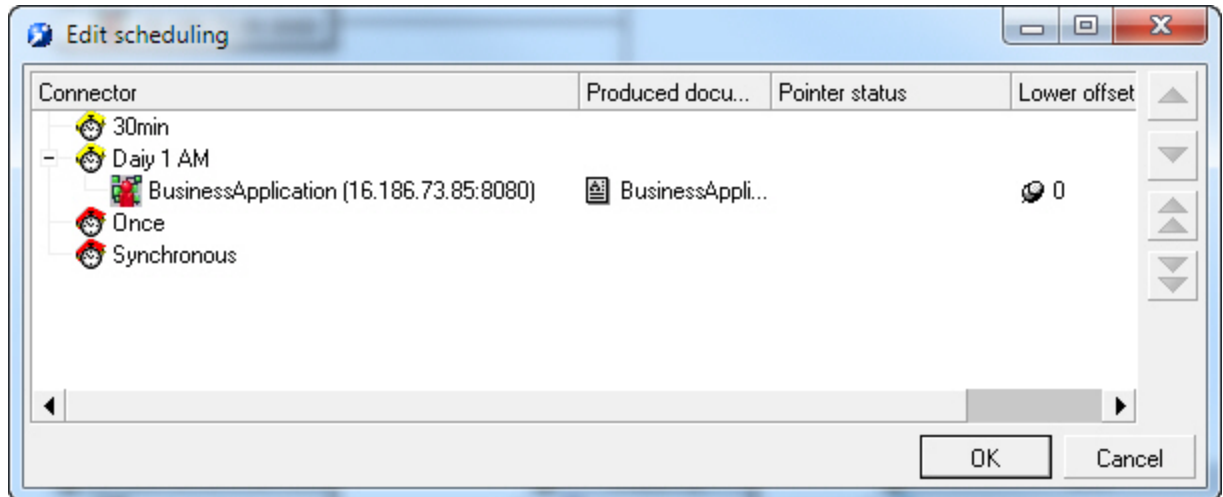


Figure 12. Scheduling

Initial loading

Before the initial loading of CI, you must follow these steps:

1. Load LDAP data into Service Anywhere because CIs refer to LDAP entities (Organization, Functional Group, Person).
2. Evaluate the production context, including (but not limited to):
 - Data volume per CI type/relationship
 - Network performance
 - Service Anywhere session limitation

Depending on the evaluation, HP recommends that you split the data into small segments when importing to Service Anywhere so that each segment can be loaded in a shorter amount of time. Thus, when an issue occurs, it can be easily monitored, fixed, and reloaded.

There are several ways to split the data:

- Load mapping in sequence. Each scenario file contains several mappings for each CI. You can enable one CI mapping at a time. Meanwhile, you can turn on the parallel option to speed up the procedure.
- Modify the TQL filter in UCMDB to split a large volume of data into smaller segments.
- Load the data in either service mode or command-line mode to avoid the large number of logs generated by GUI mode.

After initial loading, you may set a start time in an .ini file to start a delta scheduler. You may run the scenario in schedule mode to create an .ini file, then modify it per document type, as shown in **Figure 13**.

```
[Node]
NodeSrc=7 | 2012-10-12 14:24:00 |
[NEXT_WAKEUP]
1min=2012-10-12 14:25:00
[SESSION_STATE]
OPEN_SESSION_STATE=2012-10-12 14:24:00.652
```

Figure 13. The .ini file

Performance

This chapter describes how to optimize the system.

UCMDB TQL optimization

You can reduce the data volume by configuring the TQL filter, especially during the initial loading for huge data to import. For example, there are 100,000 items in one TQL. To optimize the TQL, you can split it into 16 segments by putting a filter on the global ID that ends with 0, or 1... or f. This can share the 100,000 items in 16 small segments, about 8,000 items in each. After one segment is loaded, you need to change the TQL filter to shift to the next segment.

UCMDB Connector optimization

To improve the read performance from UCMDB, you can adjust the chunk size, which controls the number of items read from UCMDB in one batch. By default, the chunk size on the UCMDB server side is 100,000, and the Connect-It UCMDB connector build-in size is 50,000. Configurations in Connect-It will override the UCMDB server-side configurations for related sessions. By default, each chunk on the server side is kept alive for 5 minutes, and then all chunks are cleared from UCMDB. However, Connect-It may not have completed the processing. In this case, you need to decrease the chunk size, or increase the timeout value for the chunk on the UCMDB server.

You can use the JVM option to adjust that value according to your requirements.

The syntax is: `-Dcit.ucmdb.chunksize=n`

where *n* is the number of items in one chunk.

There are two places you can apply this option:

- Global level: Configure the Connect-It JVM from the Java menu. This operation applies to all UCMDB connector instances running on the Connect-It server. Because this option is a server-level configuration, you need to configure the Connect-It server that is running the related scenario during the deployment.
- Connector level: Configure in the UCMDB connector wizard. This option only applies to particular UCMDB connector instances.

By default, UCMDB connector has enabled the sub-query option.

If you are using UCMDB version 10.01, version 9.05 with CUP 7, or later versions/patches, the sub-query option can improve the performance by getting a smaller volume of items from UCMDB. If you are not using those versions, you can disable this option to avoid the risk of data loss.

The JVM option is as follows:

To enable sub-query (the default behavior): `-Dcit.ucmdb.subquery=1`

To disable sub-query: `-Dcit.ucmdb.subquery=0`

Service Anywhere Connector optimization

Parallelize: Using the parallel feature can invoke Service Anywhere Web service in multi-processing mode to improve the performance. To turn on the parallel feature, enable the **Parallelize document consumption** option in the Service Anywhere wizard, and then configure the **Number of extra processes allocated to consumption** parameter. Usually, five to ten processes are sufficient. Notice that each process costs one session in Service Anywhere. Therefore, you need to check for the maximum session setting in Service Anywhere, and avoid exceeding that number. Otherwise, Service Anywhere will return an error or a timeout message. Usually during the initial loading, it is recommended that you use a big number to handle huge data. During daily delta loading, use a small number or turn off this option to avoid interruption to interactive users' sessions in Service Anywhere.

Compress: You can turn on the **Compress the SOAP request** and **Accept compressed SOAP response** options in the Service Anywhere wizard, to compress your request/response package under a poor network condition. Because Service Anywhere server will compress and uncompress the request/response, it may also cause a performance downgrade even if the network is not a bottleneck. You must carefully test the performance before using this option.

Scenario optimization

If you do not need all CIs or relationships to be pushed from UCMDB to Service Anywhere, you can disable irrelevant mapping from the scenario.

You can configure different scenarios to run in parallel. But you still need to notice the maximum Service Anywhere sessions.