

System 800xA

Maintenance

System Version 5.1

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Maintenance

System Version 5.1

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About this User Manual

General



Any security measures described in this document, for example, for user access, password security, network security, firewalls, virus protection, etc., represent possible steps that a user of an 800xA System may want to consider based on a risk assessment for a particular application and installation. This risk assessment, as well as the proper implementation, configuration, installation, operation, administration, and maintenance of all relevant security related equipment, software, and procedures, are the responsibility of the user of the 800xA System.

This User Manual includes information as it pertains to maintaining 800xA Base System and Functional Area software.

User Manual Conventions

Microsoft Windows conventions are normally used for the standard presentation of material when entering text, key sequences, prompts, messages, menu items, screen elements, etc.

Feature Pack

The Feature Pack content (including text, tables, and figures) included in this User Manual is distinguished from the existing content using the following two separators:

Feature Pack Functionality_____

<Feature Pack Content>

Feature Pack functionality included in an existing table is indicated using a table footnote (*):

* [Feature Pack Functionality](#)

Unless noted, all other information in this User Manual applies to 800xA Systems with or without a Feature Pack installed.

Warning, Caution, Information, and Tip Icons

This User Manual includes **Warning**, **Caution**, and **Information** where appropriate to point out safety related or other important information. It also includes **Tip** to point out useful hints to the reader. The corresponding symbols should be interpreted as follows:



Electrical warning icon indicates the presence of a hazard which could result in *electrical shock*.



Warning icon indicates the presence of a hazard which could result in *personal injury*.



Caution icon indicates important information or warning related to the concept discussed in the text. It might indicate the presence of a hazard which could result in *corruption of software or damage to equipment/property*.



Information icon alerts the reader to pertinent facts and conditions.



Tip icon indicates advice on, for example, how to design your project or how to use a certain function

Although Warning hazards are related to personal injury, and Caution hazards are associated with equipment or property damage, it should be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process performance leading to personal injury or death. Therefore, fully comply with all Warning and Caution notices.

Terminology

A complete and comprehensive list of terms is included in *System 800xA System Guide Functional Description (3BSE038018*)*. The listing includes terms and definitions that apply to the 800xA System where the usage is different from commonly accepted industry standard definitions and definitions given in standard dictionaries such as Webster's Dictionary of Computer Terms.

Released User Manuals and Release Notes

A complete list of all User Manuals and Release Notes applicable to System 800xA is provided in *System 800xA Released User Manuals and Release Notes (3BUA000263*)*.

System 800xA Released User Manuals and Release Notes (3BUA000263)* is updated each time a document is updated or a new document is released.

It is in pdf format and is provided in the following ways:

- Included on the documentation media provided with the system and published to ABB SolutionsBank when released as part of a major or minor release, Service Pack, Feature Pack, or System Revision.
- Published to ABB SolutionsBank when a User Manual or Release Note is updated in between any of the release cycles listed in the first bullet.



A product bulletin is published each time *System 800xA Released User Manuals and Release Notes (3BUA000263*)* is updated and published to ABB SolutionsBank.

Section 1 Introduction

Overview

This instruction includes information as it pertains to maintaining 800xA Base System and Functional Area software. Information included in this instruction is as follows:

- [System Check](#) - To get full benefit of the system, it needs to be inspected on a regular basis.
- [Operation System Update](#) - It is increasingly important to keep the automation systems current with available security updates. ABB validates security updates from Microsoft with respect to relevance to and compatibility with System 800xA. By properly upgrading an automation system installation with security updates, it is possible to avoid or mitigate damage from attacks by certain types of malicious software.
- [Node Restart and System Shutdown/Restart](#)- Contains information on the order to start and stop a node or system.
- [Import/Export](#) - The Import/Export tool allows you to move applications to and from any 800xA System. The data is saved as objects and aspects in archive files (.afw). The Import/Export tool allows you to store and restore objects, aspects, and entities. It is possible to view the contents of an archive file.
- [Backup and Restore](#) - The backup and restore procedures consists of two different parts; backup of standard Windows system and backup of the System application data.
- [Single Node Replacement](#) - This covers the procedures that must be performed in order to recover from a node failure in a complete 800xA 5.1 System

(including all functional area information). The three possible recovery paths are as follows:

- [Reinstall Like New](#).
- [Reinstall and Restore](#).
- [Recover Node](#).
- [Information Management](#) - This section provides guidelines and reference information related to configuring and maintaining Information Management software.



Tools such as import/export and backup/restore, do not include referenced generic elements. The user should manually include generic elements for the afw file or ensure that the generic elements are already available in the target system.

Section 2 System Check

Introduction

To get full benefit of the system, it needs to be inspected on a regular basis.

System Check List

Some useful recommendations are listed below:

On an 800xA System node:

- Look at the system alarm, system event, and operator message lists for information from the 800xA System.
- Open the System Status Viewer for the Service Structure or the Node Administrator Structure to see if any 800xA System service is not in service or standby state.

On all 800xA System nodes:

- Open the Service Connection view to see the status of the service provider connections for the node.
- Open the Task Manager and add following process columns to the default: Peak Memory Usage, USER Objects, Virtual Memory Size, Handle Count, Thread Count and GDI Objects.
- Make a screen dump of the Task Manager Processes tab when the system is started and use this dump as reference to compare later on to see if there are any significant deviations.
- While in the task manager switch to the performance tab. Look in the Commit Charge square in the lower left corner. There are three values:
 - **Total** - Sum of all memory currently allocated by your processes.

- **Peak** - Highest total value achieved during the session.
- **Limit** - Total amount of memory, physical and virtual, available.

It is recommended that the Total/Commit Charge always is kept below the Total Physical Memory; i.e., more physical memory is added when necessary.

When the Total/Commit Charge is above the Total Physical memory, the page file is constantly accessed to swap programs in and out of memory, eroding disk i/o on the disk with the page file. The greater amount of memory used above the Total Physical Memory, the worse the system performance.

If Peak/Commit Charge, at any time, reaches the Limit/Commit Charge value you have an *insufficient memory problem* that might cause the processes to crash or just stop working. The page file can be increased, to help with peak memory usage. However, to avoid performance problems there should be enough physical memory available where Total/Commit Charge is always less than Total Physical Memory.

- Go to **Start > Settings > Control Panel > Administrative Tools > Event Viewer** and check for Errors Messages in the Application Log and the System Log.
- Go to **Start > All Program > Accessories > System Tools > Disk Defragmenter** and defragment the disk.

The file system must be in a consistent state at all times. Defragment disks on a regular basis using the defragmentation software provided with the operating system.



Windows 7 defragmentation is enabled by default. Windows Server 2008 defragmentation is not enabled by default and can be enabled, if desired.



It is recommended to defragment the Aspect Directory before defragmenting the hard drive where the Aspect Directory is stored. Refer to the Product Bulletin *800xA Operations, SV 3.x, 4.x, 5.x, Fragmented Aspect Directory Database (3BSE059394)* for the procedure on defragmenting the Aspect Directory.

- Size disks so they will be 25 percent empty for defragmentation purposes.
- Check the system for fragmented files on all nodes where trend and history logs reside, and defragment the applicable disks as required.

- History configuration impacts not only the History Server disks, but also Connectivity Server disks where trend logs are configured. Therefore, check the disks on Connectivity Servers where trend or history logs reside, and defragment them as required.
- Extensive use of the Bulk Configuration tool may cause disks to become fragmented. Check the system for fragmented files after any such procedure, and defragment disks as required.
- Configuration procedures that involve creating, deleting, and then recreating of a large quantity of objects may cause the associated disks to become fragmented. Check the system for fragmented files after any such procedure, and defragment disks as required.
- Deleting and then creating the Aspect System may cause associated disks to become fragmented. Check the system for fragmented files after any such procedure, and defragment disks as required.
- Go to **Start > Settings > Control Panel > Administrative Tools > Computer Management > Device Manager** and check that no hardware errors are indicated.
- In the 800xA System search for the Process Portal crash dump files (exceptions*.txt) in the following folders:
 - C:\ProgramData\ABB\Process Portal A\Dump\Crash
 - C:\ProgramData\ABB\Process Portal A\Dump\Hang
- Available disk size. Right-click on the local disk(s) via Windows Explorer and select Properties to check the size of the disk(s).
- Memory and CPU usage for various processes will vary. Establish a baseline and monitor them to determine how much memory growth and CPU load is normal or can be expected on each node in your system.

If there is inconsistency or strange behavior in the system, close and reopen a Workplace, restart a service or, in the worst case, restart a whole node.

It is also very important to do these inspections after a major disturbance in the system such as lost main part of the communication or many servers have been down (power, restart, etc.). After a disturbance, check the Workplaces if there are red crosses over alarm bands or alarm sequence bars (suspect that the alarm and

event list not updates properly), or white crosses on red background in process displays or that trend displays not updating. In these cases, return to operation by closing and reopening the Workplace.

Section 3 Operation System Update

Introduction

It is increasingly important to keep the automation systems up-to-date with available security updates. However, before an update is installed, it needs to be verified that it does not interfere with the operation of the automation system.

Windows and 800xA System Updates

ABB validates security updates from Microsoft with respect to relevance to and compatibility with System 800xA. For relevant updates that Microsoft classifies as critical, the goal is to communicate to customers within 24 hours the plan for validating each update, and within 7 days the result of the validation. For this communication, the *SolutionsBank/Field Alert, 3BSE041902, Microsoft Security Updates Validation Status* (continuously updated) instruction is available for download via ABB SolutionsBank. It also provides possibilities for customers to subscribe for e-mail notification on updates.

By properly upgrading an automation system installation with security updates, it is possible to avoid or mitigate damage from attacks by certain types of malicious software. However, the fact that a virus or worm at all finds its way into a system indicates, that there is an underlying security problem in the installation or in how it is managed. It is important to understand how a system becomes infected, and to take measures to prevent it. The white paper *IS Security Considerations for Automation Systems (3BSE032547)* provides advice on security measures that should be considered by users of automation systems. The white paper is also available for download via ABB SolutionsBank.

Section 4 Node Restart and System Shutdown/Restart

Introduction

This section contains information for restarting an individual node or stopping and starting an 800xA System.

Node Restart

Perform the node restart in the order presented in this section.

Client

There are no tasks involved, simply restart the node by performing the following:

1. Select **Start > Shut Down**.
2. Select Restart from the drop-down list box and click **OK**.



The time for a client to restart depends on the hardware but normally takes 1 to 3 minutes.

Redundant Aspect Server

1. Ensure that the redundant Aspect Servers are synchronized by opening the System Status Viewer and checking that the synchronization is ready (all services will be marked in green).



Do not restart the Aspect Server before synchronization is ready as this may result in a loss of data or a system crash.

2. Select **Start > Shut Down**.

3. Select Restart from the drop-down list box and click **OK**.



When the Aspect server is restarted it will start to synchronize with the already running nodes. The synchronization normally takes about 5 to 15 minutes depending on the system size.

Redundant Connectivity Server

Follow the same procedure as stated for the [Redundant Aspect Server](#).



Synchronization for a Connectivity Server normally takes about 3 to 7 minutes depending on the system size.

Combined Aspect Server and Connectivity Server

Follow the same procedure as stated for the [Redundant Aspect Server](#).



Synchronization for a Combined Aspect/Connectivity Server normally takes about 5 to 15 minutes depending on the system size.



In case of node gets isolated (disconnected) from the client server network, follow the steps below:

1. Shutdown the server.
2. Do a configuration change in the aspect directory.
3. Reconnect the server to the network.
4. Startup the server.

System Shutdown

Perform the following procedure when a shutdown of an 800xA System is required:

1. Stop all external clients to the 800xA System (OPC DA, HDA and AE clients that access the 800xA System) before a system shutdown.
2. From the Configuration Wizard, select **System Administration** and click **Next**.
3. Select the system to stop and click **Next**.

4. Select **Systems** and click **Next**.
5. From the Systems dialog box, select **Stop** and click **Next**.
6. From the Apply Settings dialog box, click **Finish**.



The 800xA System will shutdown within a couple of minutes. The time it takes to shutdown may be more or less depending on the size of the 800xA System.

System Restart

To restart an already configured 800xA System that was previously shutdown, perform the following procedure:

1. From the Configuration Wizard, select **System Administration** and click **Next**.
2. Select the system to restart and click **Next**.
3. Select **Systems** and click **Next**.
4. From the Systems dialog box, select **Start** and click **Next**.
5. From the Apply Settings dialog box, click **Finish**.
6. Start all external clients to the 800xA System that were previously shutdown (OPC DA, HDA and AE clients that access the 800xA System).

Section 5 Import/Export

Introduction

The Import/Export tool allows you to move applications (i.e. import and export data) to and from any Industrial^{IT} 800xA System. The data is saved as objects and aspects in archive files (.afw). The Import/Export tool allows you to store and restore objects, aspects and entities. It is also possible to view the contents of an archive file.

Engineering Repository

The Engineering Repository simplifies the Import Export between systems and the application backup by embedding the export import as context menus in Workplaces.

Main differences between Import Export tool and Engineering Repository are:

- Engineering repository focuses on entities as control applications, libraries.
- Afw files gets created in the background. No file handling is necessary.
- Engineering Repository is called up from the workplace context menu and not from the toolbar.
- Engineering Repository allows to define custom entities to manage objects which are not in any entity.
- Engineering Repository allows to define aspect category filters to prevent aspects as e.g. Operator notes to be overwritten in production systems.

For more information about Engineering Repository, refer to *System 800xA Configuration (3BDS011222*)*.

Application Change Management

Feature Pack Functionality

The Application Change Management (ACM) simplifies the Import Export between systems and application backup by embedding the export import as context menus in Workplaces.

Main differences between Import Export tool and ACM are:

- Provision to archive multiple versions of an object/entity in afw file format.
- Support for connecting more than one engineering system.
- Baseline for system in ACM host and roll back to required older baseline.
- Supports multiple versions of the configuration artifacts.
- Supports Activity log.

For more information on ACM, refer to *System 800xA Application Change Management (2PAA108438*)*.

Import/Export Tool Overview

The Import/Export tool should be used to transport small applications in the form of object types and/or object instances between configurations. For backup and restore actions, use the Backup/Restore tool described in [Section 6, Backup and Restore](#).



Do not export or import very large amounts of aspect objects at the same time. Operational disturbances might then occur because the Import/Export tool loads the system significantly.

An upper limit of about 50 000 objects at a time is recommended.

Do not export standard objects that are created as a result of creating the Aspect System, or as a result of adding the various system extensions.



In some configurations upload from an OPC server is used to create objects and aspects. This applies for example when using Generic OPC to connect to a 3rd party OPC server. If the uploaded objects have been extended with aspects such as graphic displays, it is important to make the import and upload in the right order. As a general rule the import should be done first and then the upload.



Run a consistency check on all imported items after an import as inconsistencies may exist. Refer to the Consistency Check section of *System 800xA Tools (2PAA101888*)* for more information.

Export can be done by drag and drop from the Plant Explorer to the Import/Export tool, via AfwExport.exe, or by using the Find Tool in the Plant Explorer. Import can be done by selecting Import in the Import/Export Tool or via AfwImport.exe.



If an object is a member of more than one structure, perform an export of that object for each structure.



Close your Plant Explorer when making a large import. If that is not possible, close the application that you are importing to. For example, if you are importing a control application, make sure the Control Structure in Plant Explorer is closed.



To Import / Export VB graphic aspects, the user should belong to Windows Local Administrators group.

The User Interface

The user interface is designed to resemble the Plant Explorer as much as possible. The Import/Export tool has two views; Structured View and Entity View (Overview).

- **Overview**

[Figure 1](#) shows the Import/Export tool in the Overview. It consists of three main areas; the entity area, the object browser and the aspect list.

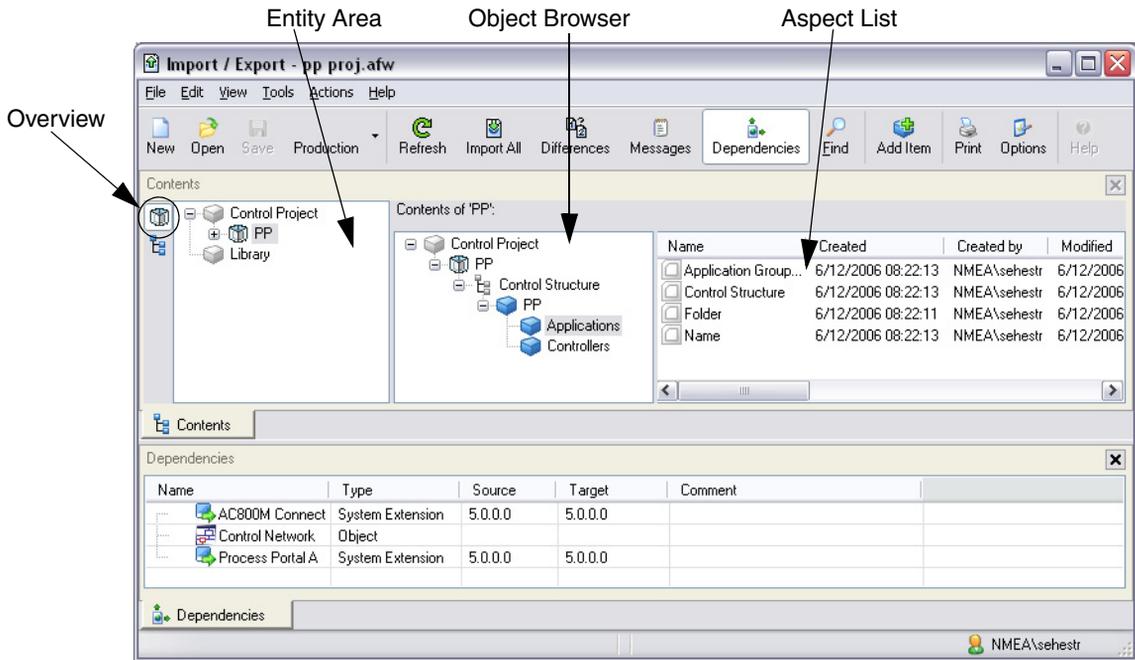


Figure 1. The Import/Export User Interface - Overview

The Overview presents the entity and entity extensions in the archive. This view gives a simplified overview of the actual objects and aspects in the archive which is of importance when working with engineering items such as libraries and control applications. From this view it is easy to for example selectively import specific control module types or function block types. In the case where the archive does not contain any entities this view is disabled.

Archive files created before 800xA 5.0 will not have the meta-data information about entities and therefore the Import/Export tool can not perform any entity-specific actions for those files. This means that an AC 800M control library exported before 800xA 5.0 will contain all objects and aspects that make up a control library and the control types.

Because it was exported before entities existed the Import/Export tool will handle them as objects and aspects when for example importing.

Archive files created in 800xA 5.0 or later will contain all the necessary meta-data information about entities and entity extensions to perform the necessary actions when making changes to the archive file, for example deleting an entity extension, or when importing an entity into the system.

- **Structured View**

Figure 2 shows the Import/Export tool in the Structured View. It consists of two main areas; the Object Browser and the Aspect List.

The structure view presents all objects and aspects arranged in structures. The icons of objects and aspects are only present if the application is connected to a running system. Note that if the icons are in the archive they will not be extracted and the generic object or aspect icons will be used.

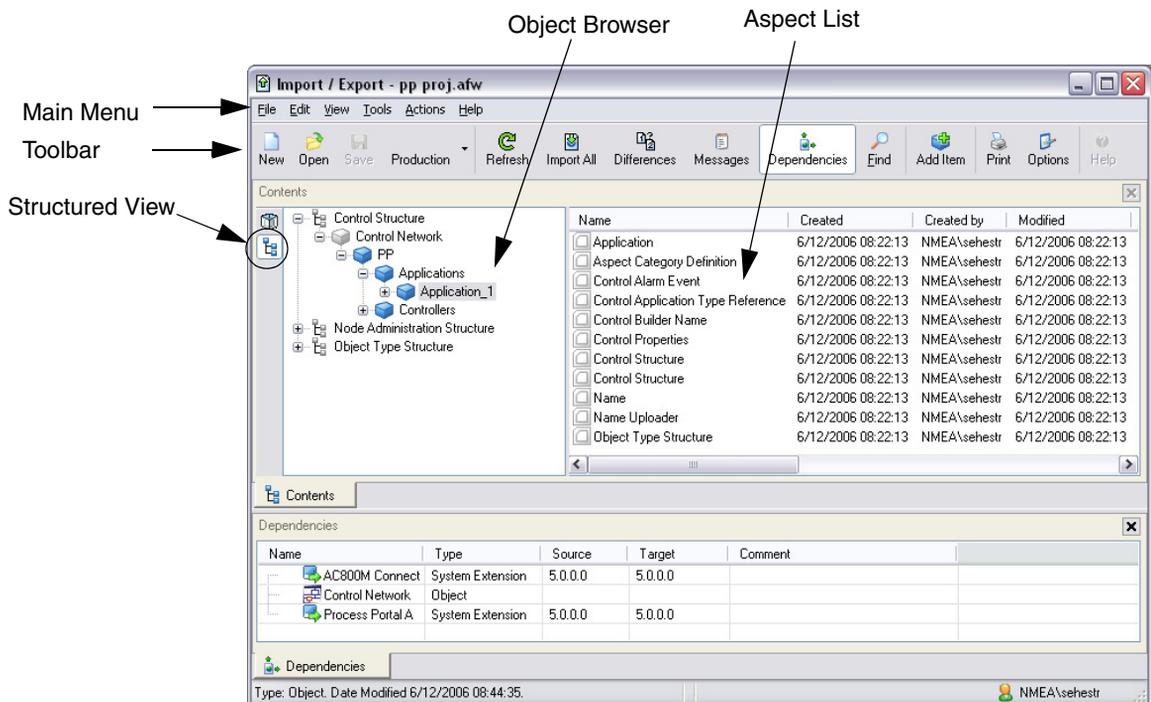


Figure 2. The Import/Export User Interface - Structured View

The figure above shows the Import/Export tool with a file opened and an object selected. The aspects of the selected object are shown in the aspect list. The window at the bottom shows dependencies that are required in order to import the objects and aspects into a system.

Reserve Information

When importing objects and aspects into a running system, the reservation state of those objects and aspects (if present in the system) can be an important piece of information.

Especially if there are objects and aspects that are reserved by another user because that prevents any other user from overwriting those objects and aspects. The reserve information can be displayed in the Import/Export tool if it is connected to a running system, see [Figure 3](#).

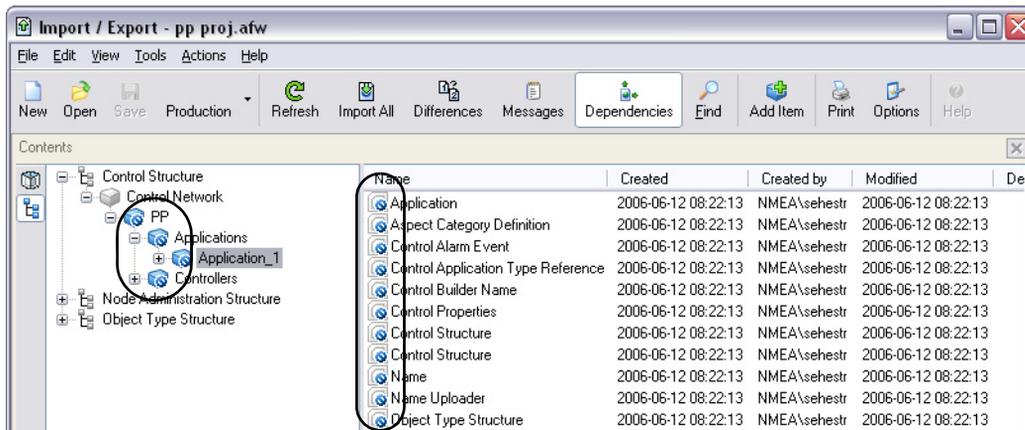


Figure 3. Reserve Information

Production Specific Aspects

In a system with environments enabled, there are cases when aspects can only be imported into the production environment. Any attempt to import such aspects into any other environment will not work and the import will either fail or those specific aspects must be skipped during the import.

If the Import/Export tool is connected to a system where environments are enabled, it is possible to highlight those aspects to make it clear what objects and aspects that

must be imported into the production system and what objects and aspects can be imported to other environments such as the engineering environment. See [Figure 4](#).

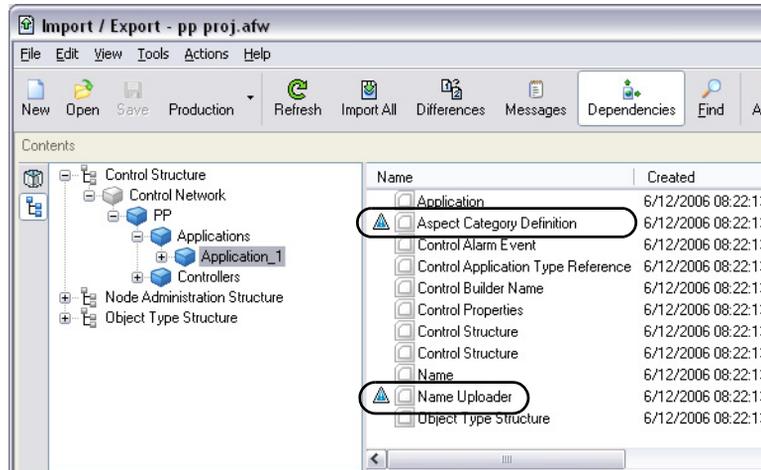


Figure 4. Production Specific Aspects

How to Use the Import/Export Tool

Exporting objects and aspects are done by either using drag and drop from the Plant Explorer or using the **Add Items** dialog, see [Figure 5](#).

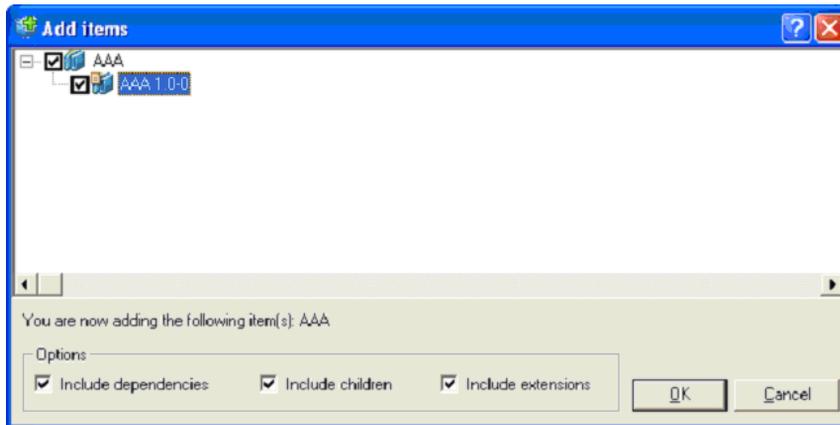


Figure 5. Add Items

In this dialog you can see a summary of what was dropped and also in what context. You can choose to import a larger context than by using drag and drop. As an example, if you drop an object that is part of a Control Module Type created through 800xA for AC 800M, the dialog will present the object dropped and the context it lives in; the Control Module Type and the Library. It is then possible to select to either add the Control Module Type or even the entire Library.

It is also possible for you to include or exclude dependencies, children or extensions. Children is only available when an object or an entity has been dropped. Extensions are only available when an entity has been dropped.



Information about what references each aspect reports at the time of exports is saved even if dependencies are excluded. This information is used later to calculate missing dependencies and the import order.

Select **OK** to start the Export. The **Adding items** dialog will appear.

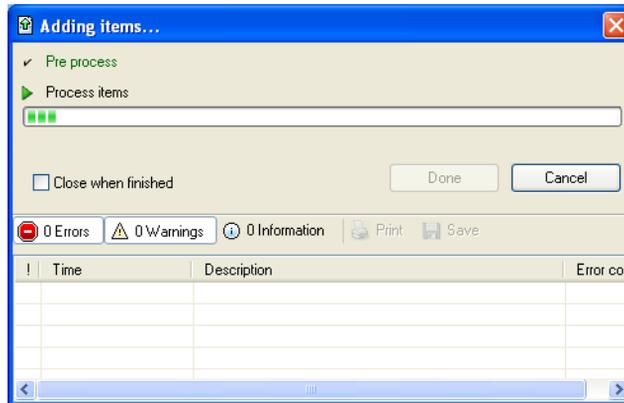


Figure 6. Adding Items Dialog Box

In this dialog you can cancel the export by selecting the **Cancel** button.

The Main Menu, Toolbar and Context Menus



Figure 7. The Main Menu and Toolbar

An action or option can be available from more than one place in the User Interface, like the toolbar or the context menu. The action or option is described in the **Menu** description.

The File Menu

The File menu includes the following options:

New. Click **New** to create an empty archive. If a file is already open and changes have been made, the user will get a question about saving the file before closing it.

Open. Click **Open** to open an archive file. If a file is already open and changes have been made, the user will get a question about saving the file before closing it, then the new file will be opened.

Close. Select **Close** to close the file. You will get a prompt to save the file if there are unsaved changes.

Locate. Allows you to locate a specific object or aspect in any afw-file on disc. From the result list it is possible to select the located archive file and open it to perform further actions.

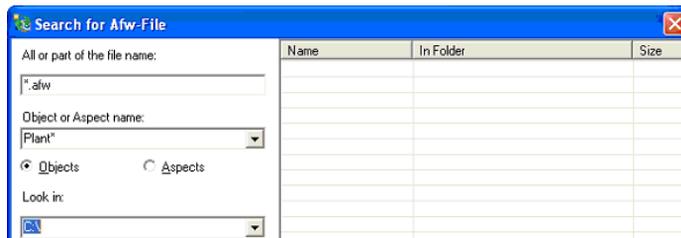


Figure 8. Search for Afw-file Dialog Box

Save. Click **Save** to save the file to disk and to perform the actual export.

Save As. Click **Save as** to save the file with a new name and to perform the actual export.



When an afw-file is saved, the Import/Export tool makes sure that the entire contents of the new file can be successfully written to the file-system. This is done before it actually saves the new contents to a temporary file and overwrites the old file. When the disc does not have enough space for the entire new file, a Save As dialog will be presented, so that a new location with enough space can be selected.

Properties. Select **Properties** from the menu to bring up the Properties dialog. In this dialog it is possible to set the properties that will be saved with the file.

With every archive file, the following properties are saved:

- Source System Name
- Source System id
- Source Environment name
- Source Environment id
- Creator
- Short description of file (optional)
- Tool name and version
- File Version

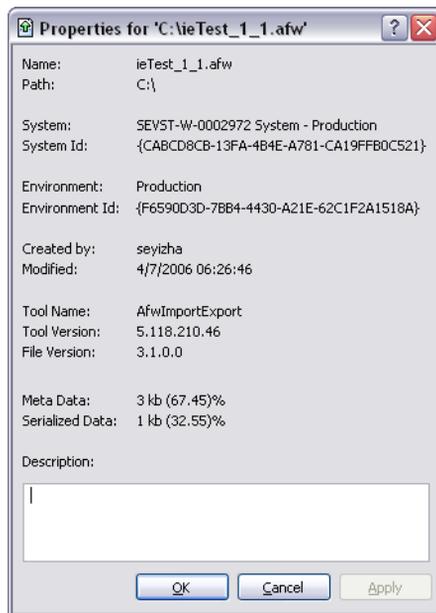


Figure 9. The Properties Dialog Box



The information in the Properties dialog box is also available via the context menu of an archive file. This is a good way to get information about old archive files before they are converted.

Exit. Select **Exit** to exit the tool. You will get a prompt to save the file if there are unsaved changes.

The Edit Menu

The Edit menu includes the following options:

Add Item. This option opens the Add Item dialog box in which you can add objects, aspects, entities and entity extensions to the afw-file.

Remove. This option removes the specified aspect, node, entity or entity extension from the archive file.

Select All. This option selects all objects (if you are in the object browser) and all aspects (if you are in the aspect list).

Find . Select **Find** in the Edit Menu to bring up the Find Tool dialog. In this dialog it is possible to search for objects and aspects within the archive file.

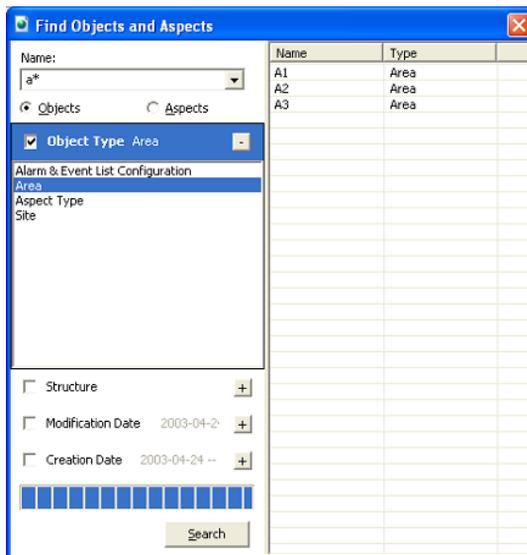


Figure 10. The Find Dialog Box

The example above shows a search for all objects starting with the “a” letter of the **Area** object type. The result is displayed in the list to the right.

The View Menu

The View menu includes the following options:

Differences. When the Difference dialog is launched from the View Menu or the **Difference** button in the toolbar, you can select to view differences between two archive files, two items in the same file, or the open file, the entire archive and another archive or a running system. See [Figure 11](#).

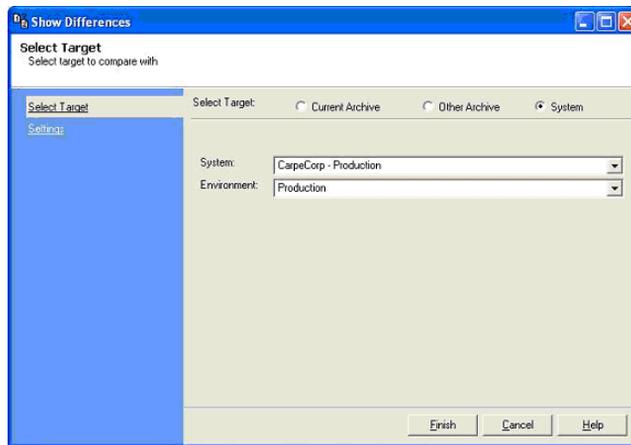


Figure 11. Show Differences Dialog Box - Entire Archive

When launched from the context menu (see [Figure 12](#)), it is possible to show differences between the selected aspect/object and another aspect/object that resides in the current archive, another archive, or the system.

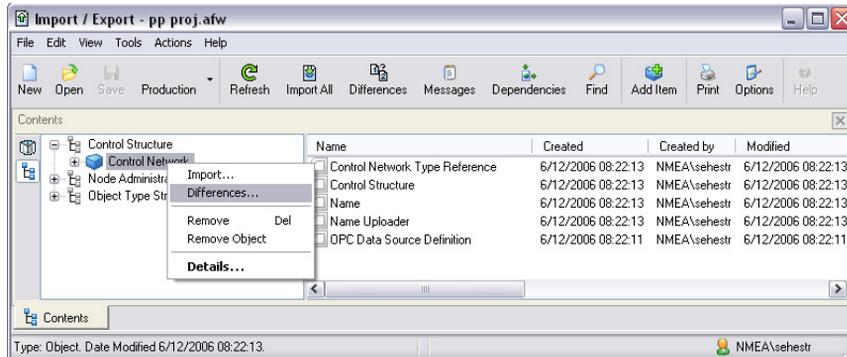


Figure 12. Show Differences Dialog Box via the Context Menu

When you have selected **Differences** from the menu the Difference setup dialog box will appear, see [Figure 13](#). Depending on what you selected to show the differences for, the setup dialog will contain the possibility to select what to compare with. For example, if you selected a single aspect, the difference setup dialog will select the corresponding aspect in the currently connected system. If you selected a single

object, the dialog will select the corresponding object in the currently connected system.

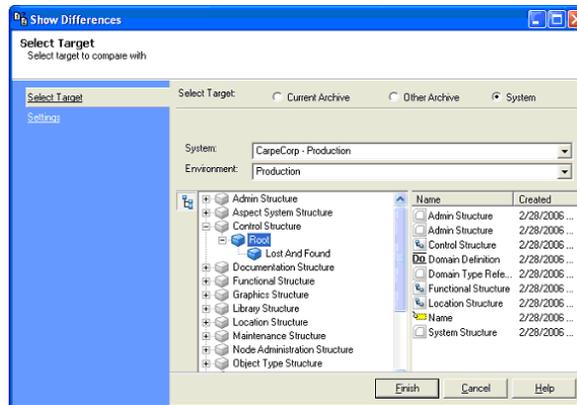


Figure 13. Show Differences for a Specific Item

The Settings tab in the Show Differences dialog contains the settings that should be used when the difference report is created. The default values are usually enough for most reports, but in some cases for example when there are a lot of objects and aspects to compare, changing the settings to only show the information needed, will increase the performance.



If the **System** radio button is selected, uncheck the **Show items that are in the “target” location** check box. Otherwise the capacity of the system might be decreased.

Check the **Exclude Aspect Structure** check box to skip all structure aspects when comparing objects.

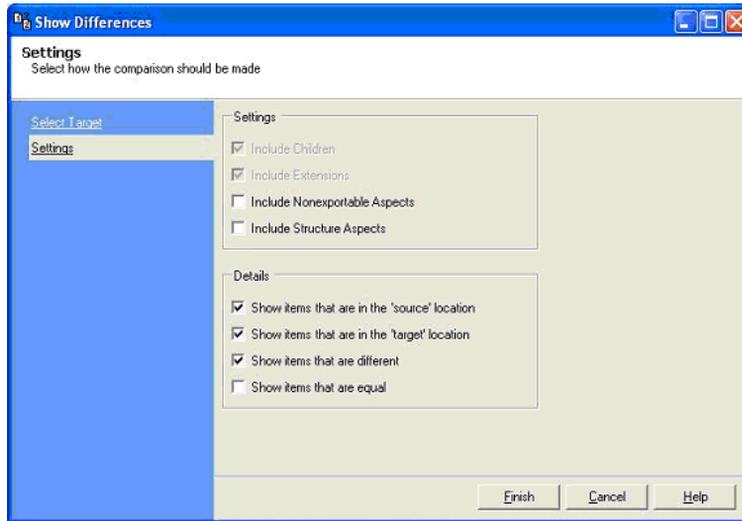


Figure 14. Show Differences - Settings

When the correct settings are made for the report, select **Finish**. The difference report will appear. The dialog can display the result in two different ways, the normal structural view as shown in Figure 15 or as a list as shown in Figure 16.

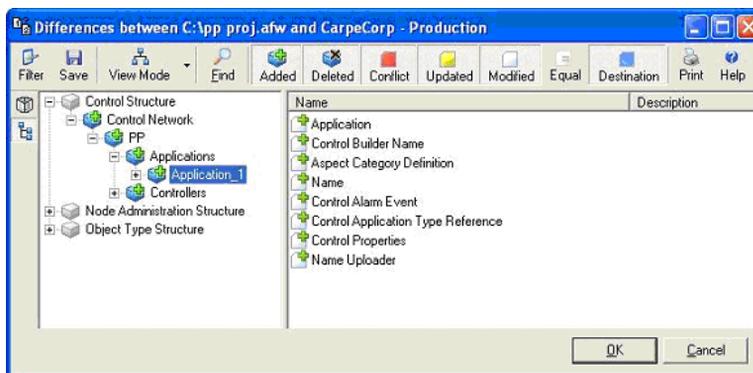


Figure 15. Difference Report - Structural View

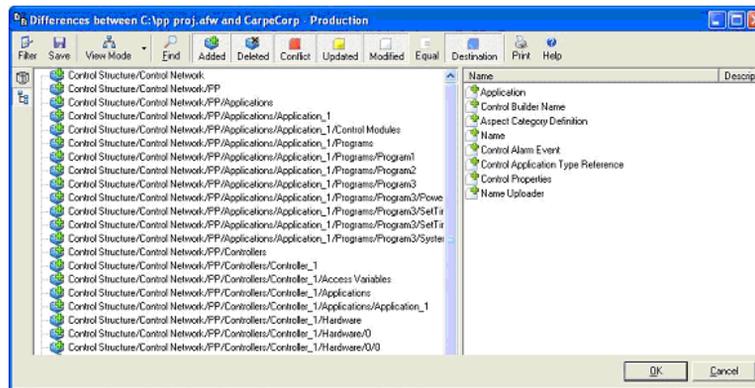


Figure 16. Difference Report - List View

The toolbar contains a button for each type of difference. Each type of difference can be toggled by pressing/depressing the corresponding button.

- **Added** - The item only exists in the source and importing it will add it to the destination.
- **Deleted** - The item only exists in the destination and importing the archive will delete that item. This typically applies for objects and aspects that are part of entities or entity extensions.
- **Conflict** - The item has been modified in the source and in the destination independently. Importing the archive will by default overwrite the change made in the destination.
- **Updated** - The item has been modified in the destination but not in the source, i.e. the data in the destination is newer. Importing the archive will by default overwrite that new change in the destination and that change will be lost.
- **Modified** - The item is newer in the source and importing it will by default overwrite the destination.
- **Equal** - The items are considered equal and importing the archive will not affect that object or aspect.
- **Destination** - The aspect only exists in the destination and importing the archive file will not affect that object or aspect directly.

It is possible to double-click on an aspect to see the aspect details for the source and target aspect. When double-clicking on an aspect, the Aspect Details dialog box in Figure 17 will appear.

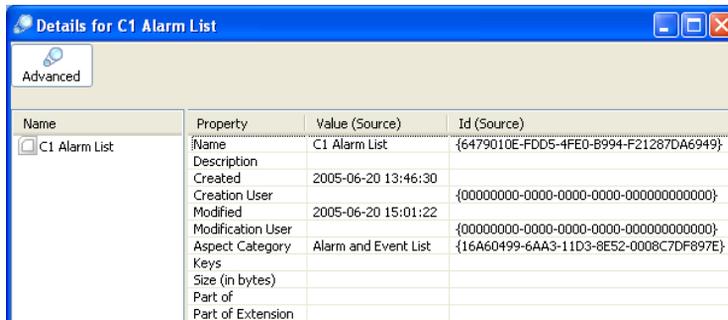


Figure 17. Aspect Details

The difference report can be saved to file. It can be opened in the Import/Export tool even though the archive file may not be loaded and the target may not exist or be different.

Messages. Select **Messages** in the View Menu or click the **Messages** button in the toolbar to show/hide the message window at the bottom of the Import/Export tool. The window displays all messages that have been generated within a session. See Figure 18.

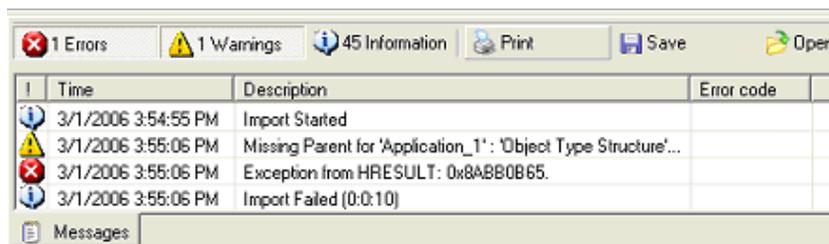


Figure 18. The Messages Window

From the context menu it is possible to clear, print or save messages. For some type of messages it is possible to navigate from the message context menu to the actual aspect or object. To do this select **Goto Aspect/Object** in the context menu. Messages can be filtered by status, for example so that only warnings and errors are displayed. If a message contains detailed information, you can to select **Details** from the context menu to read the complete message. It is also possible to load previously saved messages in order to find out what went wrong with a particular import or export.

Dependencies. Select **Dependencies** from the View Menu or click the **Dependencies** button to display the dependencies view. This view displays all dependent aspects, objects, entities, entity extensions and system extensions.

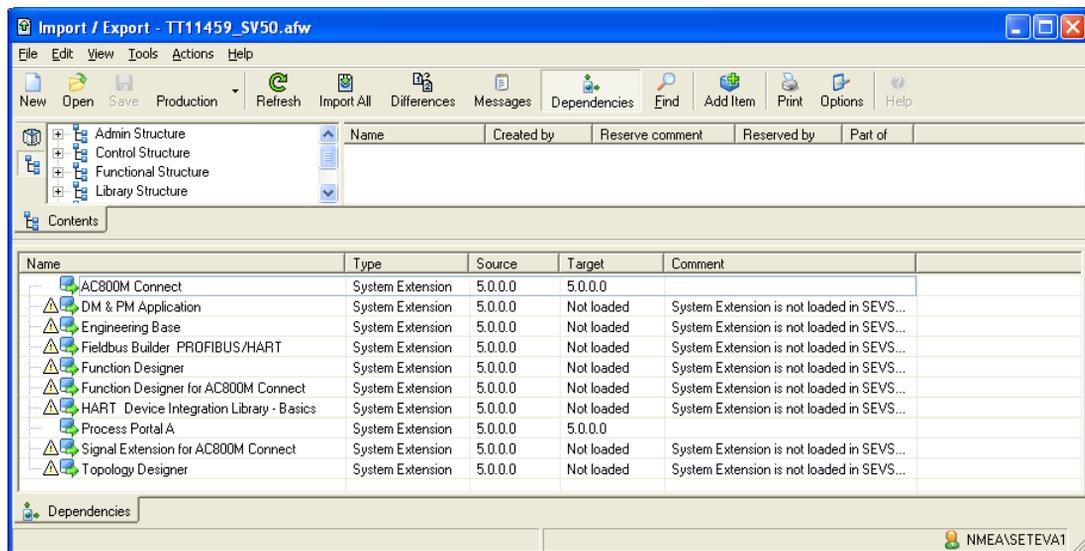


Figure 19. Dependencies Page

When the Import/Export tool is connected to a running system, the dependencies are also compared with that system and the dependencies page will display warnings for all inconsistencies.

For example, if an archive file requires a specific system extension and that system extension is not loaded in the system, it will be presented as a warning since it will affect the possible to import the objects and aspects into that system.



If you have an entity which contains an aspect that is related to an aspect within another entity, the related entity is shown in the dependency view.

Placements. The placements dialog shows the insertion point needed for the objects and aspects in the archive file. Any missing placement will be indicated as an error or warning in the dialog and can be corrected before import by selecting new insertion points in the system. Right-click on the missing placement and select a new insertion point from the system.



Some objects must be inserted at specific locations in the system. For example a Control Application must be inserted under a 800xA for AC 800M project.

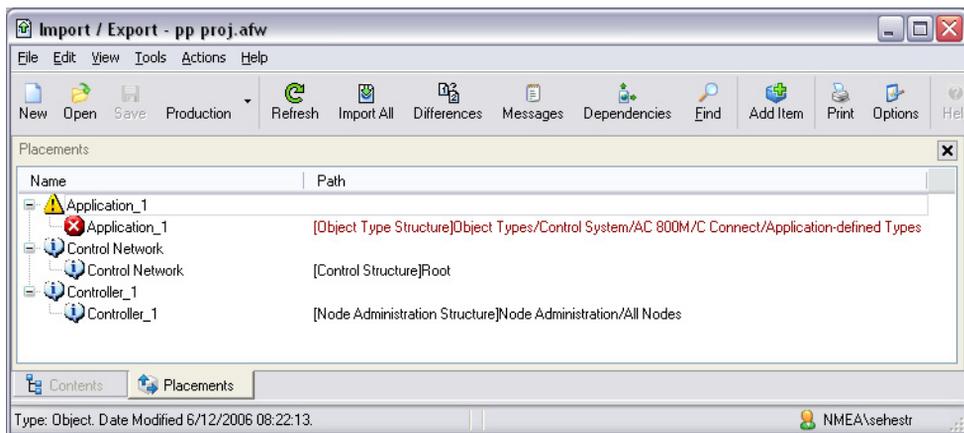


Figure 20. Placements View

Details

You can view extended information about aspect or objects by selecting details from the context menu.

Aspect Details. If you want extended information for one or several aspects, select it/them, right click and select **Details** from the context menu.

The Aspect Details dialog displays information about the aspect. See [Figure 21](#).

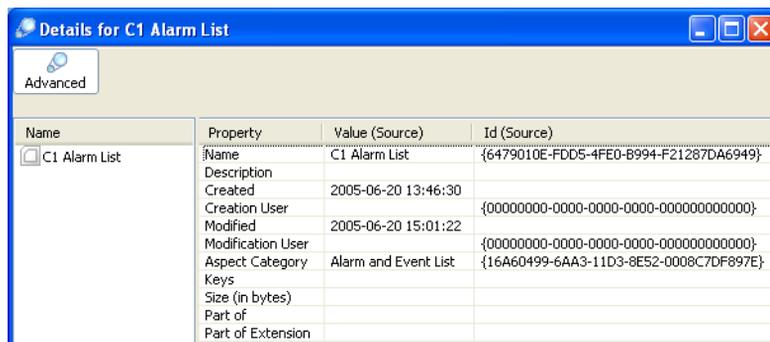


Figure 21. The Aspect Details Dialog Box

Object Details. To view extended information for an object; select the object and select **Details** from its context menu.

The Object Details dialog displays information about the object. See [Figure 22](#).

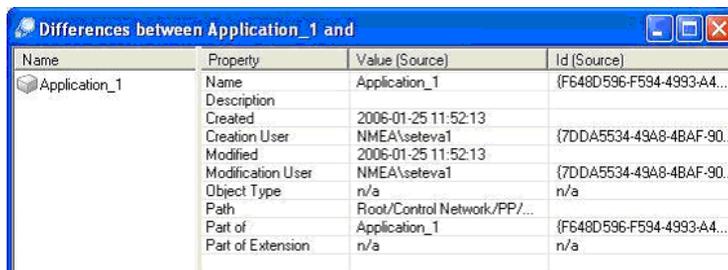


Figure 22. The Object Details Dialog Box

The **Restore Path** and **Translated Restore Path** areas are for fault finding. The Restore Path is information about the object's location during the export. It is represented by a list of structure nodes.

The **Restore Path** area contains the GUIDs of the structure nodes (<object-id> : <aspect-id>). The **Translated Restore Path** area also includes the restore-path, but translated in the selected system.



The information in the Object Details dialog is possible to copy. For example the ID/GUID number.

The Tools Menu

From the Tools menu the following options are found:

Select Target. Brings up the Select Target dialog. The dialog displays the system which the application is connected to by default. You can also select Environment.

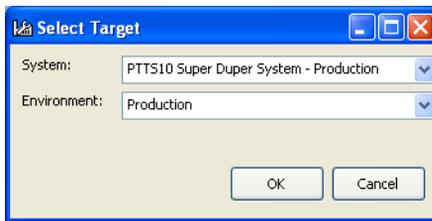


Figure 23. The Select Target Dialog Box

Options. This **Option** button brings up the Options dialog. In this dialog you can set application wide options of different kinds. It is possible to reset the options to the default options by selecting the **Reset** button. The Options dialog is divided into four parts all described below.

- **Presentation Options** - contain information that affect different aspects within the import export interface.

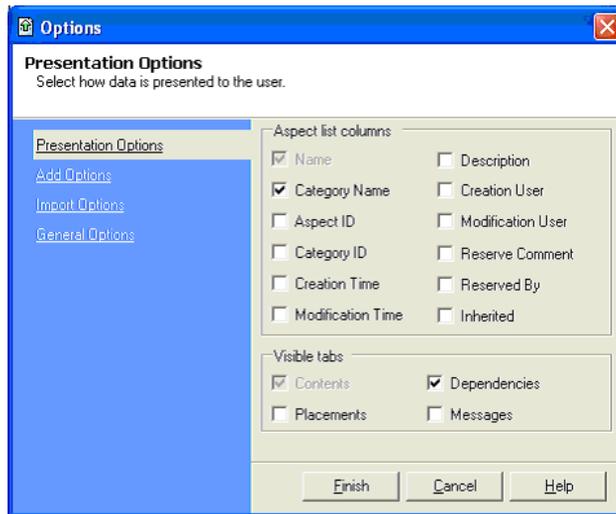


Figure 24. Presentation Options

- **Add Options** - controls the default behavior of the Import/Export tool when items are added to the import/export archive, either through drag and drop or via the **Add** button.

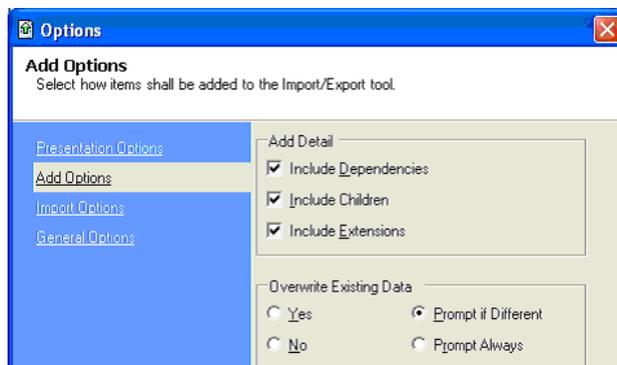


Figure 25. Add Options

If the **Include Dependencies** check box is selected, the tool will add the selected items in dependency order.

If the **Include Children** check box is selected the application will add the selected object's children.

If the **Include Extensions** check box is selected the application will add the selected Extensions.

- **Import Options** - controls the default behavior of the Import/Export tool when items are imported to a system.

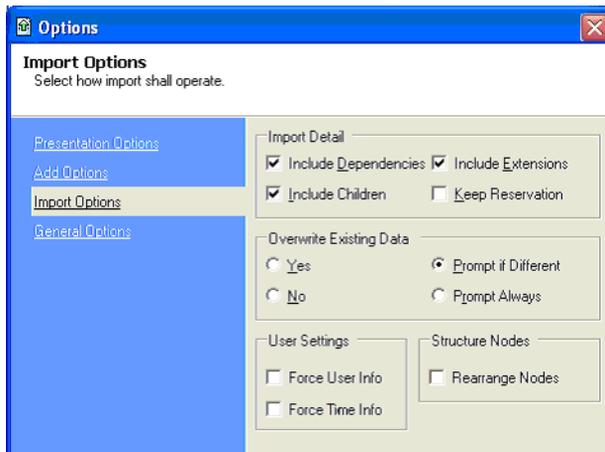


Figure 26. Import Options

The **Import Detail** area has four check boxes:

- If the **Include Dependencies** check box is selected, the tool will import the selected items in dependency order.
- If the **Include Children** check box is selected the application will import the selected object's children.
- If the **Include Extensions** check box is selected the application will import the selected Extensions.
- **Keep Reservation** will automatically reserve the imported items after the import is complete.

In the **Overwrite Existing Data** area, the following four radio buttons are available.

- **Yes** - Always overwrite old data with new data, never bother the user with questions about over writing existing data.
- **No** - Never overwrite old data with new data and do not bother the user with questions about over writing existing data.
- **Prompt if Different** - Prompt the user if new data is different than existing data.
- **Prompt Always** - Always prompt the user before overwriting any existing data.

When importing objects and aspects, information about the creation and modification user is the same as in the afw-file. For example, if you create a new object and make an export, the object will get your creation user information. When this file is imported, the object will retain the user information stored in the afw-file, and therefore you will still be the imported object's creation user.

In some cases, the user-information in the afw-file is not valid, e.g. the creation user is a system extension, and you don't want this information to be imported into the system. When the **Force User Info** option is enabled, the Import/Export tool will change the creation and modification user to the user doing the import. When the **Force Time Info** option is enabled, the Import/Export tool will change the creation and modification time of the objects and aspects to the time when the import is done.

The structure of objects and aspects in an afw-file is used only when objects are imported for the first time. If an imported object and structure node already exists in the system, the position of the object will be retained. This happens even if the user says **Yes** to overwrite the existing object. By checking the **Rearrange Nodes** option, the Import/Export tool will rearrange existing objects so that the layout of the structure becomes identical to the structure layout in the afw-file.

- **General Options** - controls additional functions of the Import/Export tool itself. When the **Close When Finished** check box is selected the progress dialog will automatically close when the an operation succeeds. The **Drag from Import/Export** controls if the user can drag objects or aspects from the

Import/Export tool into either another Import/Export tool or the Plant Explorer. Please note that this operation is not the same as importing the object or aspect. It creates a copy of the object or aspect.

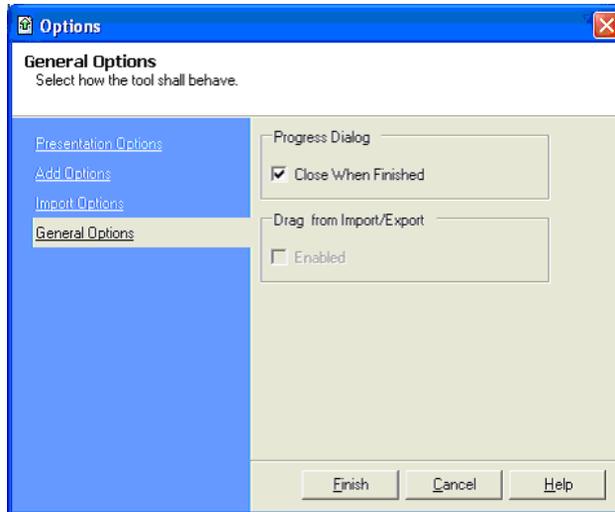


Figure 27. General Options

The Actions Menu

The Actions menu includes the following actions:

Import / Import All . Select Import/Import all from the Actions menu or click the **Import** button to bring up the Import dialog. By clicking the **Import** button in the toolbar the entire archive will be imported.

This functionality is also available from the context menu of both aspects and objects. When the Import dialog is opened from the context menu, it will by default import the selected aspect, object, entity or entity extension but it is possible to change to import the entire archive.

- **Import Items**

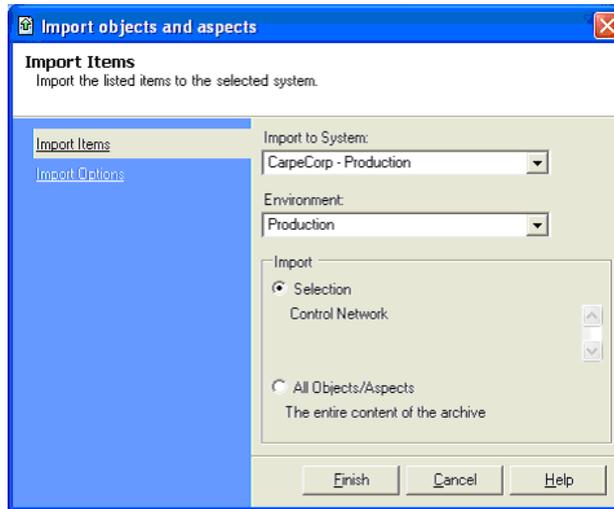


Figure 28. Import Items Dialog Box

In the **Import to System** drop-down menu you select to which system the import will be made, and to which Environment in the **Environment** drop-down menu.

In the **Import** area it is possible to select which system the import will be made to, whether or not to include children or dependencies.

It is possible to filter out aspects by simply deleting them from the archive before importing. The aspects can either be deleted manually one by one from the aspect list, or by using the Find Tool and delete the aspects from there.

When importing entities, the import performs differently then when just importing objects and aspects. When objects are imported, the aspects in the system are merged with the aspects in the archive file which means that the result is the combination of the aspect in the archive and the aspects in the system.

When an entity is imported, any additional objects and/or aspects in the system are deleted. If the archive file contains an entity and it has one or more subentities, the import will replace/overwrite what is included in the archive file. Subentities only present in the system but not in the archive file will be

merged into the structure. If the archive file contains an entity with one or several entity extensions, import will make sure that only those entity extensions present in the archive file are present in the system after the import. Any additional entity extension will be deleted.



When importing a library with a library version, other existing libraries will not be deleted. When importing a control project, other existing libraries will not be deleted.

- **Import Options** - Has the same function as in the Options dialogs in the Tools Menu. But when you select your options in this dialog, the new options will override the default options for this particular import you are about to do. See [Options](#).

Messages. Have a submenu from where you can clear, save or print the selected message.

The Help Menu

The Help menu includes:

Contents. Select this option to launch the on-line help for the Import/Export tool.

About. This option displays the current tool version and file format.

Detailed Difference Report

Detailed Difference Report is a feature that easily produces documentation, reduces customer burden for testing and verification of changes during QA procedures promoting better change management practices. It works in environment enabled architectures or single systems.

Detailed Difference Report uses Afw file to compare archive file to the current system configuration.

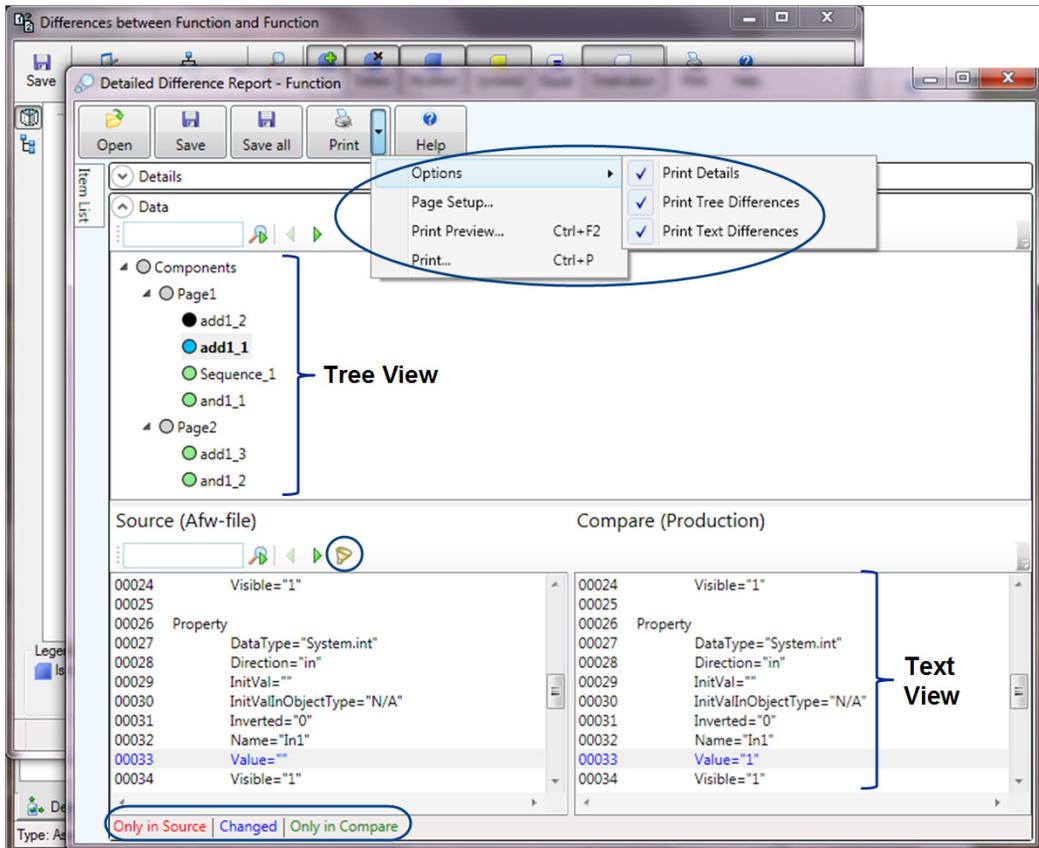


Figure 29. Detailed Difference report

Below are two different data view in Detailed Difference Report:

1. **Tree View:**

An overview of the difference in function diagram with a tree like structure is displayed.

2. Text View:

Selecting individual components on the tree view, detailed difference is displayed.

For example: Aspect properties such as DFO, aspect objects.



For sequence logic, text view displays the overall differences of the sequences.

Detailed Difference Report provides more detailed information on configuration changes in:

- Control Logic (Control Builder M and Function Designer).
- Process Graphics 2.

It supports save and print features as shown in [Figure 29](#). It has a filter feature to check the changes made to the function diagrams.

It enhances readability by color indication.

Benefits of Detailed Difference Report

- a. Enhanced change management for graphics and control logic.
- b. Complements Audit trail ends and shows the changes.

The below table depicts the aspects and their support details to tree and text differences:

Table 1. Tree and Text Differences Supported by Aspects

Aspects	Tree Differences	Text Differences
Process Graphics 2	X	X
Function - General	X	X
Function - Sequence Programming Language		X
Control Builder		X

Additional Information

Upgrading Files

The application supports old file formats through a conversion scheme that is used when performing the actual load.

Dependencies

The Import/Export function is dependency aware. This behavior can be switched on or off by the user (see [Dependencies](#)).

Dependency aware export means that dependencies are brought in automatically and exported to the same file as the dependant aspect. If an aspect depends on another aspect or object that is part of a system extension; a note is made in the file, but the aspect/object is not exported.

To view dependencies for an aspect, select the aspect and click the **Dependencies** button in the toolbar. The dependency list will display all dependencies to objects, aspects, entities, entity extensions and system extensions.

The imported file might be dependent on a specific version of the System, a System Extension or a Library. In this case, it is necessary to resolve the dependencies by installing them - before continuing the import.

A notification of missing dependencies will be displayed at the time of import.

Working with Dependencies

When a user works with import/export to move engineering-solutions or part of engineering-solutions between systems, there are a number of issues that affect how the data should be transported:

- Size of the data to transport. How many objects and aspects, but also how many bytes they take up on disc and how complex that data is to import. The recommendation is to put each library in a separate afw-file, and each control project in a separate afw-file. If libraries are small they can be put in the same file, but at the end, each customer must trim the procedure of how much data can be put in an afw-file since it also depends on the performance of the available hardware.

- Distribution of dependent data. Are dependent libraries distributed as system extensions separately, or must the user include them.
- Relevance of dependent data. Should all data be included, or should dependent data be selectively included by the user. As an example, the libraries could already be at the target system for some other reason and therefore only the control project needs to be exported.

When it comes to dependent data, there are basically two different workflows that needs to be used depending on the state of other work being done in the source system. How engineering tasks are performed will affect how the user should use import/export.

- Sequential Workflow.
Engineering tasks are performed by one or several users in sequence.
- Parallel Workflow.
Engineering tasks are performed by one or several users in parallel, and the different engineering tasks needs to be delivered at separate points in time.

Sequential Engineering Workflow. Engineering tasks are handled one by one in the engineering system. When an engineering task has been completed it is delivered to the production system, and the next engineering task is started.

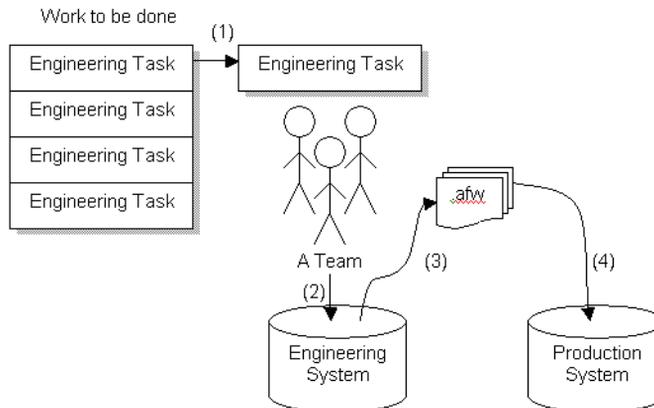


Figure 30. Stage for the Sequential Engineering Workflow

In this example (see [Figure 30](#)), a new library has been developed and an existing control project has had one application modified and a new application was also developed. The A-Team now needs to deliver the library and the modified project to the production system.

1. The engineering team gets an engineering task to perform in the engineering system.
2. The team creates a new library in the engineering system. A new application is added to an existing project and another application is modified.
3. The modifications are exported. In this case, the project utilized only a few libraries so all necessary data could be transported in one afw-file. The export is then made by dragging the project to the Import/Export Tool, and checking the **Include dependencies** check box.

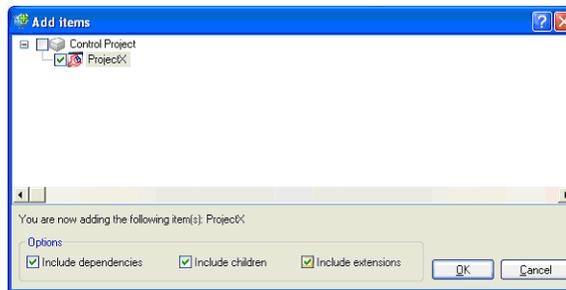


Figure 31. Add Items Dialog Box

Before pressing save, the team checks that no irrelevant objects or aspects were included in the export. See [Figure 32](#).

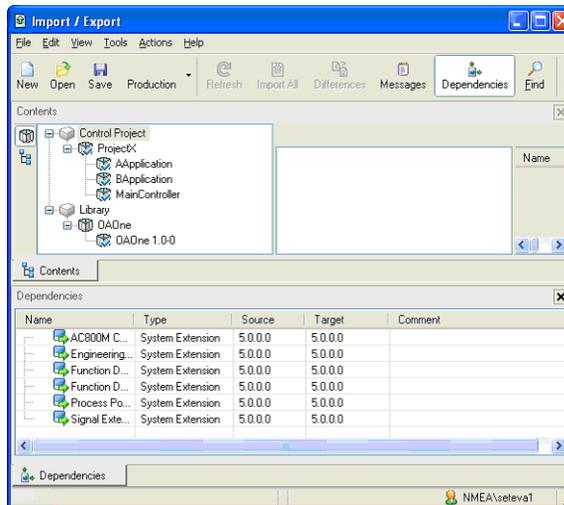


Figure 32. Import/Export Tool

4. The afw-file is moved to the production system and imported.

Parallel Engineering Workflow. Several teams of engineers are working in parallel on different tasks in the engineering system. When an engineering task is finished it is delivered to the production system while the other engineering tasks are still being performed.

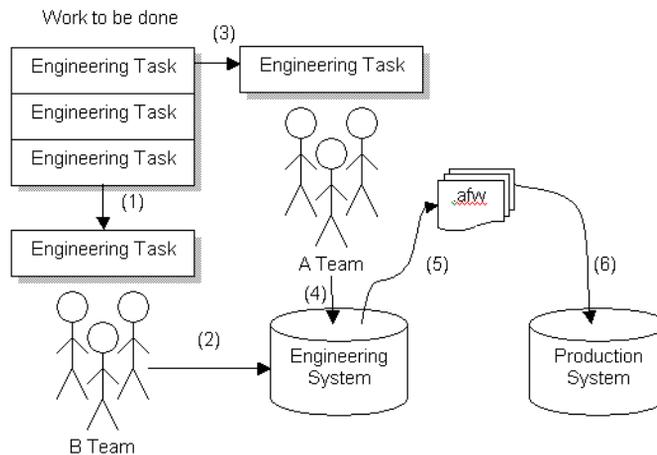


Figure 33. Stage for the Parallel Engineering Workflow

In this example (see [Figure 33](#)), two teams are working with different engineering tasks in the same control project. A-Team is making minor modifications to A-Application in the project while B-Team is making modifications to B-Application. B-Team has also added two new libraries to the project that only B-Application is using.

1. B-Team gets a large engineering task that involves modifications to application B-Application.
2. B-Team starts to modify B-Application and also starts the development of two new libraries OB-One and OB-Two. The two libraries are included in the project and are connected to the B-Application only.
3. A-Team gets a small engineering task that involves minor modifications to the application A-Application.
4. A-Team makes the modifications to A-Application.

5. A-Team exports the application by dragging it to the import/export tool. In this case, they know that B-Team is working on the other application in the same project and they also know that none of their work is finished so it is important that no B-specific modifications are included in the export. A-Team leaves the default settings in the add-form and adds the application to the tool.

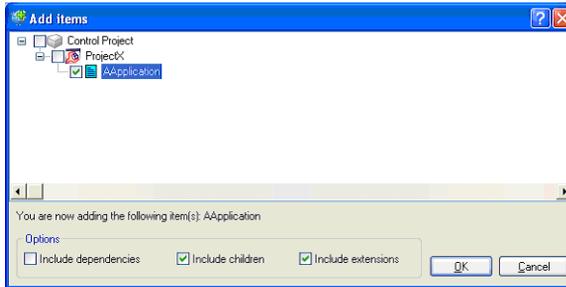


Figure 34. Add Items

In the dependency-list they see that the application has dependencies to OA-One library and to the project. They know that OA-One library is not being modified by B-Team and includes that dependency.

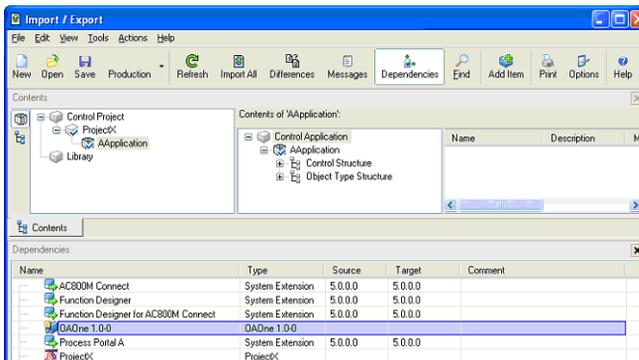


Figure 35. Import/Export Tool

The project is however being modified by B-Team and therefore it is not included in the afw-file because it already exists in the production system. A-Team clicks save to create the afw-file.

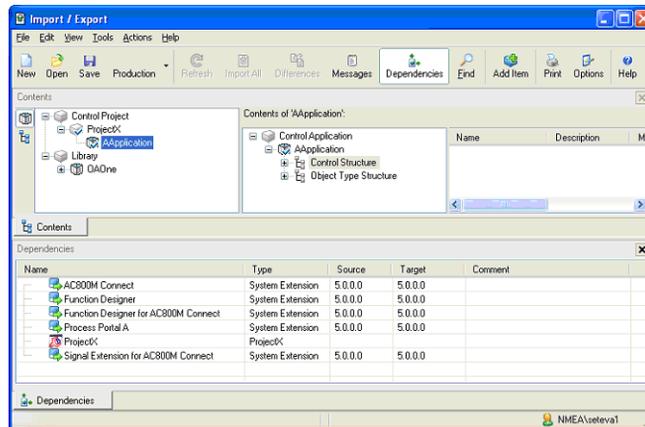


Figure 36. Import/Export Tool

- The afw-file is delivered to the production system and imported.

Audit Trail

The Import/Export components support Audit Trail. It means that all operations performed by these components are published in the Audit Trail log. Information about when the operation occurred and which user performed it will also be visible here.

Common Import/Export Scenarios

Importing/Exporting Fieldbus-Related Structures

For importing/exporting fieldbus-related topologies like an HSE Subnet or an Control Project entity, the workflows given in this subsection shall be followed.

Preconditions:

- a. Identical versions of 800xA software installed in source and target system.
- b. Same system extensions installed in source and target system.
- c. Device Type objects installed in the source system are also installed in the target system.

The following steps have to be carried out in the source system:

1. Open the 800xA Plant Explorers Object Type Structure.
2. Check the following folders for already installed device types:
 - FF Libraries Object Type Group (for FOUNDATION Fieldbus).
 - Field Devices Object Type Group (for HART).
 - PROFIBUS Devices Object Type Group (for PROFIBUS).
3. Record the name and version of the listed device types.



Expand the sub-tree of the mentioned Fieldbus folder and create a screenshot. Print the screenshot for use with the subsequent steps in the section. Also it will be helpful to take Device Library Wizard log file. This file will give information about all the Device types which has been installed on the source system.

The following steps have to be carried out on all system nodes in the target system:

1. Start the Device Library Wizard: **Start > All Programs > ABB Industrial IT 800xA > Device Mgmt > Device Library Wizard.**
2. Select **Extract Device Types > Extract Device Types via Manual Selection.**
3. Click **Browse** and navigate to: 800xA Device Library DVDs of the required Fieldbus protocol.
4. In the Browse dialog, select all Field Device Types as listed or printed in Step 4 for the specific fieldbus protocol and start extracting.



The file name of the corresponding Device Type object and the name displayed in the Device Library Wizard can be looked up in the document DLW Mapping Table, 2PAA101821* provided on 800xA Device Library DVDs.

5. Repeat the extraction steps for each used fieldbus protocol.



The Installation DVDs may not contain all required Device Types. Missing Device Types must be downloaded via ABB SolutionsBank (<http://solutionsbank.abb.com>)

6. Navigate back to the main window of the Device Library Wizard.

7. Select **Device Type Administration**.
8. Select **Install Device Types**.
9. Select the fieldbus protocol, for which Device Types shall be installed.
10. Select all Device Types previously identified to be required in the target system and follow the install procedure.
11. Optionally navigate back to **Install Device Types** and repeat steps 14 to 15 for the other fieldbus protocols.
12. Exit the Device Library Wizard.

FOUNDATION Fieldbus

Workflow for exporting an HSE Subnet from a source system and importing it into a different target system.

The following steps have to be carried out in the source system:

1. Use the Import/Export Tool to export the HSE Subnet from the Control Structure. Do not select 'Include Dependencies' from the import options. Individually include items from the dependencies window to be included in the export file. This applies especially to items not created by the system.
2. Option: Use the Import/Export Tool to export the FFLibraries Object Type Group from the Object Type Structure. Do not select 'Include Dependencies' from the import options. Individually include items from the dependencies window to be included in the export file. This applies especially to items not created by the system.

Perform this step only, if:

- a. the FF Libraries have been expanded by importing FF devices in Fieldbus Builder FF (in contrast or in addition to adding device type object with the Device Library Wizard) or
- b. device types have been modified by editing the FF Libraries in Fieldbus Builder FF or by editing the FFLibrary in the Object Type Structure of Plant Explorer.

The following steps have to be carried out in the target system:

Perform [Step 1](#) through [Step 3](#) only, if the FFLibraries Object Type Group has been exported in the previous [Step 2](#). Otherwise continue with step 4.

1. Option: Use Import/Export Tool to import the FFLibraries Object Type Group from the export file to the target system.
2. Option: Run Upload FF Library to move duplicate object types to the duplicate structure.
3. Option: Move additional aspects from the object types in the duplicate folder to the corresponding object types in the FF device type folder.
4. Use Import/Export Tool to import the HSE Subnet from the export file to the target system.
5. Run Update Library on all HSE Subnets.
6. Run Upload HSE Subnet on all HSE Subnets.

PROFIBUS

PROFIBUS Device Types are included and available in the system as Hardware Libraries (HWLibs). A PROFIBUS Hardware Library for a specific device type, which is delivered by ABB and installed via Device Library Wizard, contains a Basic Library and so called Extension Libraries. Extension Libraries can be modified, but will result in a new major version of the library type.

If the installed Hardware Libraries have not been changed manually by the user, the following workflow must be performed:

1. Use Import/Export Tool in the source system to export the Control Project with PROFIBUS Device Type instances from Control Structure.



ABB recommends exporting the Control Project entity for PROFIBUS without dependencies (refer to [Dependencies](#) for more details). Including dependencies will export additional system structures and references, which results in huge file sizes.

2. Store the export file on a media, which can be used on the target system.

The following steps have to be carried out in the target system:

1. Use Import/Export Tool to import the Control Project from the stored export file to the target system.

If the installed Hardware Libraries have been changed manually by the user (e.g. new created extension library), the following workflow must be performed:

1. Use Import/Export Tool in the source system to export the Control Project entity using PROFIBUS Device Type instances from Control Structure.
Include Dependencies.
2. Store the export file on a media, which can be used on the target system.
3. Navigate in the Plant Explorer to the modified extension library and click the **Export Library** button on the Library Definition aspect to export the modified extension library. Store the file on the media. Repeat this step for all modified PROFIBUS extension libraries, if applicable.

The following steps have to be carried out in the target system:

1. Use Import/Export Tool to import the export files from the media to the target system.
 - a. First import all manual exported extension libraries
 - b. Import after the extension libraries the Control Project.

HART

The following steps provide a workflow for exporting HART device types from a source system and importing it into a different target system:

1. Use Import/Export Tool in the source system to export the Control Project entity using HART Device Type instances from Control Structure.
Important:
 - a. Include dependencies if the HART Device Types Objects (or any of the entity children) have been modified by the user.
 - b. Do not include dependencies if the HART Device Types Objects (or any of the entity children) have **not** been modified by the user.
2. Store the export file on a media, which can be used on the target system.

The following steps have to be carried out in the target system:

1. Use Import/Export Tool to import the Control Project from the stored export file to the target system.

PLC Controller Type Objects with Dependencies

When exporting PLC Controller Type Objects with dependencies, the result may be a faulty export of ObjectTypes. Two Objects with same name can show up on same level in up to three different places. This usually occurs when exporting Soft point objects with Calculation Aspects. This has an impact on exporting and importing Soft point objects without PLC connect.

If you have created your own composite object types, take the following actions before proceeding with import/export:

1. Export the objects without dependencies.
2. Export the object type from the Object Type Structure without dependencies.

Information Management

Log sets and archive groups do not get exported as dependencies to log templates automatically by the system. When the user exports a log configuration and includes dependencies, only the control structure object and the library structure for the log template are exported. To move the log template to another system, this needs to be done manually by the user. If log sets are not used and if the archive groups are not referenced on the log template or log configuration aspects, the below steps are not required. Perform the following steps to export and import log configurations with log sets and archive groups if the archive groups are referenced:

1. Export logset(s) and archive group(s) into their own export file.
2. Export the log configuration which will pull the log template along as a dependency.
3. Import the logset(s) and archive group(s).
4. Import the log template.
5. On the log template for the IM log (IM Definition tab):
 - a. Select the logset if one was set on the previous node.
 - b. Select the archive group if one was set on the previous node.

6. On the log template for the IM log, set the Service Group to the desired service group.
7. Import the log configurations.
8. If the archive group(s) was set up via the Node Administration Structure, re-initialize group and re-specify logs.

Precautions when Importing/Exporting Aspects

The Import/Export tool can be used to restore graphic aspects, and for such aspects there are restrictions for both Import and Export.

Import Aspects

You probably want to restore the graphic elements and hence preserve existing unique identities, i.e you want the graphic display to look the same as it did.

If the graphic element is created with a new unique identity, previous references to the aspect will not work.

When a graphic aspect is exported, the object the aspect belongs to needs to be exported as well to keep all identities intact.

The object can in turn belong to a hierarchy of objects, and in this case the whole structure needs to be available when the graphic aspect is imported. This means that the entire object structure needs to be exported, though not necessarily in the same afw-file.



When exporting a graphic element to another system, it is important that the systems have the same logical color definitions.

Resolving Errors and Conflicts

While importing, there might be situations where you have to make a decision for the import to be able to continue. One common situation is that the parent of the

object that's being imported, does not exist in the system. In such a case the following dialog will be presented.

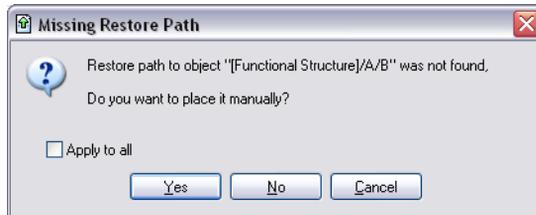


Figure 37. The Import/Export Placement Dialog Box

In the example above we have tried to import an object named B, but its parent (named A) is not present in the system.

Another example is if you have imported an aspect that already exists; you need to resolve this by choosing whether to replace that aspect or skip it and continue with the rest of the import. It is possible to let the application make the same decision every time a similar incident occurs.

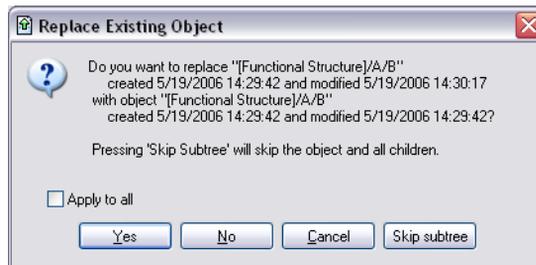


Figure 38. Replace Object Dialog Box

Every decision you make is logged and visible in the message window (see [Messages](#)).

When trying to import an aspect whose aspect category is missing in the target system, the user is presented with a Skip & Continue/Cancel dialog, where it is possible to either skip the aspect and continue with the import, or cancel the import.

When a general error occurs importing an aspect or object, the user is presented with a Skip & Continue/Cancel dialog, where it is possible to either skip the faulty aspect/object and continue with the import, or cancel the import.

Section 6 Backup and Restore

Introduction

This section describes the procedures that must be performed in order to save and restore a complete 800xA 5.1 System (including all functional area information). [Figure 39](#) is a flowchart that outlines the steps required to save and restore 800xA. The procedures must be performed in case the upgrade procedure will not be successful and you will be required to return to the previous system state. It is recommended that the save procedures also are performed on a regular basis.



800xA for DCI is not included with the initial release of 800xA 5.1 and thus 800xA for DCI backup and restore instructions are not documented in this user manual. Alternate backup and restore instructions will be provided with the 800xA for DCI 5.1 release documentation.

The procedures required are:

- Save function-specific information using various tools and utilities.

- Use the 800xA backup and restore utility to save the Aspect directory and other 800xA system information.

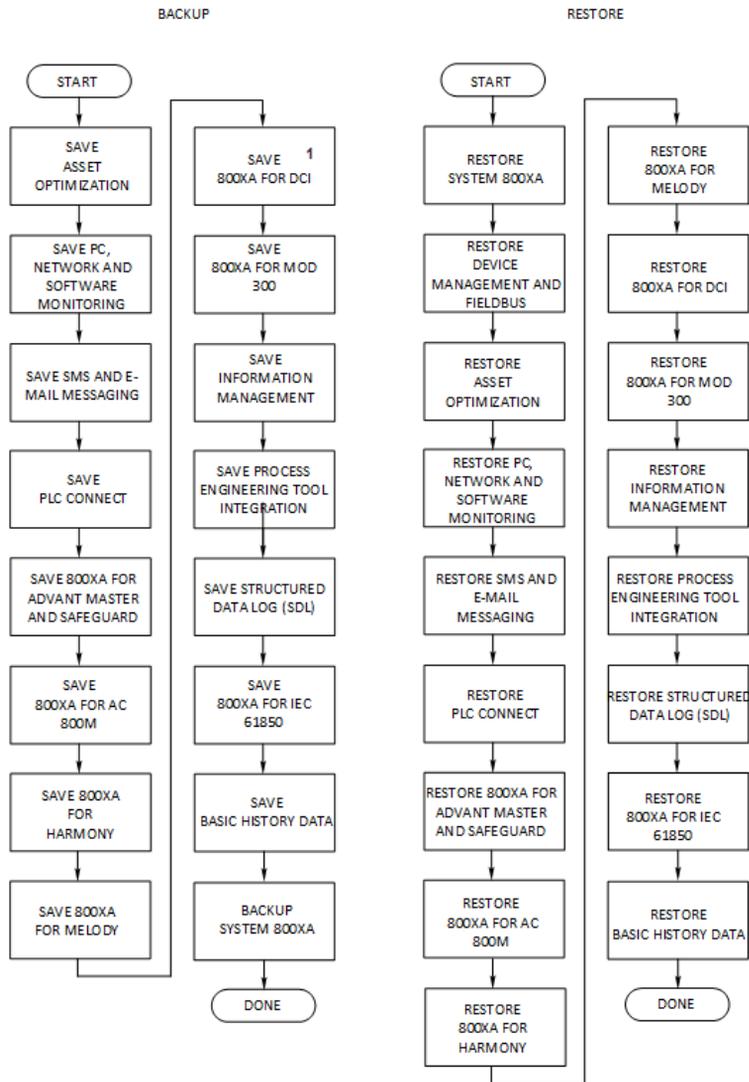


Figure 39. Backup and Restore Workflow

1. Not included with the initial 800xA 5.1 release.

Precautionary Issues

It is possible for software and data to become corrupted. In that case there are third party backup/restore and hard drive clone/image utilities that could be used.

A limited number of hardware failures can also be compensated when using these utilities. It is important to understand the limitations associated with these utilities.

In some cases (e.g. corrupted data, corrupted software, or hard disk failures), these utilities can be useful, while in other cases (such as replacing a workstation), these utilities may be of limited use.

It is recommended that cloning/imaging software are used to save (and restore if necessary) an image of the workstation hard drives, after installation of third party software and/or after installation of software.

The 800xA Import/Export utility can be used to save 800xA information in smaller parts at a time. The 800xA backup utility is the functional equivalent of exporting all 800xA system information at one time. The critical difference between these utilities is that individually exported parts of 800xA information can be imported back into the original system or into a completely different system, while backed up 800xA information only can be used to restore a whole system. Read more about 800xA Backup and Restore in [How to make a Full Backup](#) on page 124.

It is very important to understand that the following procedures are written to save the entire 800xA system and restore the 800xA system exactly as it was saved. Thoroughly understand the following critical restoration limitations before saving the system:

- The 800xA system can only be restored and recovered to an equivalent 800xA system.
- All 800xA software must be of the same level (version, service pack, roll up, etc.) as when the backup was made.
- The same system extension, as when the backup was made, must be installed.
- The Domain server must contain the same configuration as when the backup was made.

Refer to [Requirements](#) on page 100 for a complete list of the restoration requirements and limitations.

Save Function-Specific Information

Some information specific to certain functional areas, is not saved during an 800xA system backup. The information that must be saved manually is detailed in the following subsections.

Asset Optimization

Use the following procedure to back up Asset Optimization information (perform only the steps applicable to the system):

1. Asset Monitoring:



Asset Monitoring directories will be found on every Asset Optimization Server node and any other node defined as an Asset Monitoring Server.

- a. If Runtime Asset Monitors are being used in the system, save the Runtime Asset Monitor data directory (DeviceRunTimeMSLogicStore) to a safe media. This directory is located in the following directory:

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\Optimize  
IT\Asset Optimization\AssetMonitorEnvironment\Bin
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AssetMonitorEnvironment\Bin
```

- b. If XY Profile Deviation Asset Monitors are being used in the system, save the XY Profile Deviation Asset Monitor data directory (XY_Reference_Profiles) to a safe media. This directory is located in the following directory:

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\Optimize  
IT\Asset Optimization\AssetMonitorEnvironment\Bin
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AssetMonitorEnvironment\Bin
```

- c. If Counter Check Asset Monitors are being used in the system, save the Counter Check Asset Monitors data directory named {66E71F7B-90D6-4E62-9881-38388B24CBDF} to safe media. This directory exists for each AO Server in the system. These directories are located in:

```
<install drive>:\OperateITData\AoEng\<<AO Server ID>\AmCat\<<Counter Check ID>
```

Where each <AO Server ID> directory represents one AO Server instance running on the selected node. The <AO Server ID> directory name is formatted as two consecutive GUIDs, for example, {F9C150F5-2929-4A12-BC28-E00ED6DB1585}{B925E77F-2A82-41C6-A981-FAB4386D5701}.



For correct system operation it is important that only the directories identified by the Counter Check Asset Monitor category GUID be saved, as other data in the tree structure above these directories will not be consistent with a restore.

2. Maximo Integration:



If using Maximo Integration, the Maximo Integration information (Maximo equipment ID and maximo credential aspects) **MUST** be saved from all Asset Optimization Server nodes. Reference the Service Structure for the name of the Asset Optimization Server.

- a. The IBM Software's Maximo system is separate from the 800xA system and the system in use should be backed up. Follow Maximo standard practices for Maximo system backup.
- b. The MxDef files provide the mapping between the 800xA System environment and the Maximo system. If the MxDef files were customized as per the instructions in the *System 800xA Asset Optimization 5.1 Configuration (3BUA000118*)*, backup the customized MxDef files to safe media.

Backup the customized MxDef files from the following location:

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\  
Optimize IT\Asset Optimization\AOECSConnector  
\MaximoDef\CustomDef
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AOECSConnector\MaximoDef\CustomDef
```

- c. Backup the AOMaximoModel.xml file to a safe location. The ECS model for Maximo also needs to be modified if MXDef files are customized. Hence in this case a backup of AOMaximoModel.xml is necessary. The model file is available in the following location:

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\Optimize  
IT\Asset Optimization\AOECSConnector\ECSDefinitions
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AOECSConnector\ECSDefinitions
```



The pending fault reports residing in the system are available in the following directory structure. Backup the entire OptaoACDs folder.

```
<<install drive>>:\OperateITData\OptaoACDs
```

3. SAP/PM Integration:



If using SAP/PM Integration, the SAP/PM Integration information (SAP equipment ID and SAP credential aspects) must be saved from all Asset Optimization Server nodes. Reference the Service Structure for the name of the Asset Optimization Server.

- a. Although the SAP/PM system is separate from the 800xA System, it is a good idea to back up the system in use. Follow SAP/PM standard practices for the third party SAP/PM system backup.
- b. The SAPPMDf files provide the mapping between the 800xA System environment and the SAP/PM system. If the files were customized as per

the instructions in the *Industrial^{IT} 800xA, Asset Optimization, Configuration Manual (3BUA000118*)*, backup the customized SAPDef files to a safe media.

The customized SAPPMDef files for SAP version 4.7 are located in:

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\Optimize  
IT\Asset  
Optimization\AOECSCconnector\SAPPMDef\CustomDef
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AOECSCconnector\SAPPMDef\CustomDef
```

- c. The ECS model for SAP also needs to be modified if SAPPMDef files are customized. Hence in this case a backup of AOSAPModel.xml is necessary. Backup the AOSAPModel.xml file to a safe location. The model file is available in the following location:

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\  
Optimize IT\Asset Optimization\AOECSCconnector  
\ECSDefinitions
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AOECSCconnector\ECSDefinitions
```



The pending fault reports residing in the system are available in the following directory structure. Backup the entire OptaoACDs folder.

```
<<install drive>>:\OperateITData\OptaoACDs
```



The DMS Calibration Integration approach is changed 800xA 5.1. Reconfigure the DMS Calibration Integration based on an engineered solution. Contact ABB technical support for more information.

PC, Network and Software Monitoring

Use the following procedure to save PC, Network and Software Monitoring information:



This procedure is only necessary if there are user defined Script, Resource, and Assembly files in the 800xA System.

1. If there are user defined Script, Resource, and Assembly file, they need to be backed up. Assuming the default directory was selected during PC, Network and Software Monitoring installation, the user files are located in:

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Scripts\User
```

```
...\Program Files(x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Assemblies\User
```

```
...\Program Files(x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Resources\User directory
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Scripts\User
```

```
...\Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Assemblies\User
```

```
...\Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Resources\User directory
```

Copy the files in these directories to a safe location.

SMS and E-mail Messaging

Save all GSM Device hardware information. Record information for the GSM device on the SMS and E-mail Messaging GSM Hardware Setup Worksheet shown in [Table 2](#).

Table 2. SMS and E-mail Messaging GSM Hardware Setup Worksheet

Item	Setting/Value
Spooler Settings	
Activate Outbox Spooler	Checked (check and leave checked)
Activate Inbox Spooler	Checked (check and leave checked)
Interval for Checking for Incoming Messages	Value: _____ Seconds Minutes (circle 1)
Port Settings	
COM Port	Value: COM _____
Baud Rate	Value: _____
Data Bits	Value: _____
Parity	Value: _____
Stop Bits	Value: _____
PIN and Properties	
Query PIN	Checked or Unchecked (circle one)
PIN (only if Query PIN is checked)	Value: _____
Save PIN (only if Query PIN is checked)	Checked or Unchecked (circle one)
Own Number (telephone number of SIM card (including Country Code) in GSM hardware)	Value: _____
Initialization String for GSM Hardware	Value: _____ _____ _____ _____

Table 2. SMS and E-mail Messaging GSM Hardware Setup Worksheet (Continued)

Item	Setting/Value
General Service Properties	
Name (GSM service provider)	Value: _____
Port	Value: COM _____
SMSC	Value: _____
Default Country Code	Value: _____
Default Prefix	Value: _____
Number of Attempts	Value: _____
Splitting Service Properties	
Splitting	Checked or Unchecked (circle one)
Optimize Splitting	Checked or Unchecked (circle one)
Enumerate Splitting	Checked or Unchecked (circle one)
Narrowband Sockets	Checked or Unchecked (circle one)
Messaging Service Properties	
Add Before Message	Blank (verify and do not change)
Use for Delivery Notification Only	Unchecked (verify and do not change)
Default Option	0 (verify and do not change)
Message General Properties	
Replace CR LF for Incoming Messages	Checked or Unchecked (circle one)

PLC Connect

To backup PLC Connect information:

1. If the PLC Connect IEC60870 feature is installed and configured, the IEC configuration must be saved. Refer to *System 800xA 5.1 PLC Connect Configuration (3BSE035041*)* for more information.

2. If the PLC Connect Communication Server Pre Treatment function is being used in the application (refer to *System 800xA 5.1 PLC Connect Configuration (3BSE035041*)* for more information), make a backup of the PreTreat2.dll and PreTreat3.dll files. Pretreat2.dll and PreTreat3.dll are located in the \ABB Industrial IT\Operate IT\PLC Connect\Bin folder on the PLC Connect Connectivity Server.



The path is the default location of these files. If they have been placed somewhere else, make a backup from that location.

3. Make a backup of the VB application projects for PreTreat2.dll and PreTreat3.dll.
4. If the Event Server Pre Treatment function is being used in the application (refer to *System 800xA 5.1 PLC Connect Configuration (3BSE035041*)* for more information), make a backup of PreEvent.dll. PreEvent.dll is located in the \ABB Industrial IT\Operate IT\PLC Connect\Bin folder on the PLC Connect Connectivity Server.



The path is the default location of the file. If it has been placed somewhere else, make a backup from that location.

5. Make a backup of the VB application projects for PreEvent.dll.

800xA for Advant Master and Safeguard

1. Make an RTA Board backup.



Before restoring these files, ensure that the node being restored is running the same character conversion language used by the node from which the files were backed up.

Save the following files in the \ProgramData\ABB\AC400Connect\AdvantBase\Data\RTA\Init\ folder and record which files belong to which workstation:

- \DATHR1.CD
 - \DATHR2.CD
 - \DATHR3.CD
2. The MB300 node, network address, REVERSED_SYNCH_MODE, and PU410 redundant cable supervision settings for the RTA board in the RTA Board Control aspect must be documented for re-configuration.

3. If the configuration for Alarm and Event, or Data access is done in the Connectivity Servers, save the **AdvDsMasterAdapter.csv** and **AdvMbAeOPCServer.csv** files located in the *<installation path>\bin*.

800xA for AC 800M

Use the following procedure to save the 800xA for AC 800M information:

1. Control Builder stores its settings (systemsetup.sys) on disk. Copy this file, located in the Control Builder working folder, to a safe media.
2. Save OPC configurations by selecting **File > Save Configuration** in the OPC Server Panel.
3. The OPC Server stores configuration files (*.cfg) and settings (systemsetup.sys) on disk. Copy these files to a safe media. The systemsetup.sys file is located in the OPC Server working folder. The configuration files are stored in the Files folder in the same location.

Backup all Control Builder projects using the ordinary 800xA System backup/restore utility. This utility also includes cold retain files stored by the OPC Server.

800xA for Harmony Backup



If the Harmony Configuration Server is not in synch with the Aspect Server the synchronizer should be run prior to performing any backup operation.



The sessions on screen status entries are appended to a backup or restore log file. The user must manually erase any unwanted entries or Rename/Delete the log file to start a fresh log. The log file is created in the temporary directory for the currently logged in Windows account. The screen form contains a log file icon that opens the log file in a Notepad application window for viewing, printing, or editing of the log file.



Must be run on each Server containing an 800xA for Harmony Configuration Server while logged in to the 800xA Installing account or another local administrator account.



Do not use a SQL Server generated backup done through a SQL Maintenance Plan or manually through the SQL Enterprise Manager for the restore operation. The 800xA for Harmony backup/restore utility does not support this format. Ensure that your Maintenance Procedures include an 800xA for Harmony backup utility generated backup each and every time you do a backup of your Aspect System. These two backups must be synchronized at the time of a restore operation.

Backup

Use the following steps to back up an existing configuration:

1. Log into the 800xA for Harmony Configuration Server with the 800xA Installing account or another local administrator account.
2. Select **Start > Programs > ABB Industrial IT 800xA > 800xA for OCS Systems > Harmony > Configuration > Backup Configuration**, select the **Connect** button to manually initiate the connection to the configuration database.
3. The filename is auto generated using the Configuration Server name, date and time (ConfigServer_20020521_1034.bak for example). The backup file name can be changed from the default as needed.



Refer to the MSSQL file folders for the .bak files generated upon successful backup.

4. The **Backup** button manually initiates the SQL database backup operation. Only one single backup is stored per file. If the backup file already exists it is overwritten.
5. If completed successfully, the **Exit** button is activated and the user can then exit to quit.
6. Repeat the above procedure for other 800xA for Harmony Configuration Server application servers.

800xA for AC 870P/Melody

The following is a general information about the Melody Configuration Backup and Restore:

- The sessions on screen status entries are appended to a backup or restore log file. The user must manually erase any unwanted entries or Rename/Delete the log file to start a fresh log. The log file is initially created in the Windows Server 2008 accounts temporary directory location. The screen form contains a log file icon that opens the log file in a Notepad application window for viewing, printing, or editing of the log file.
- Must be run on the Melody ConfigServer while logged in the 800xAInstaller account or an 800xA administrator account.



Recommendations: Typically, run the Backup option after creating a database for the first time. Run the Backup option before doing an upgrade or making significant changes the system configuration. Run the Restore option when the system becomes corrupt or after and upgrade takes place

Access

This feature is accessed through **Start > (All) Programs > ABB Industrial IT 800xA > 800xA for AC 870P Melody > Configuration** on the ConfigServer node.

Function

The 800xA for AC 870P/Melody Backup or Restore feature allows the user to manually initiate a backup or restore that supports either the full backup or full restore of the SQL 800xA for AC 870P/Melody configuration contained in its SQL database. The backup or restore operation sequences through all steps are required to complete the operation requested.

The user backup process consists of the user selecting an aspect system name and file location to contain a standard SQL backup set and initiating the backup for the Melody ConfigServer. This includes the Melody Connectivity Server backup because of the snapshot done in the same procedure. The user restore process consists of the user selecting an existing SQL backup set filename and initiating the restore operation.



For support during the ConfigServer backup the Microsoft SQL-Server online help is also available.

Backup Industrial IT Melody Composer

The Composer backup and restore procedure is described in the *AC870P / Melody Composer Installation (2PAA100254*)*.

Backup ConfigServer



The backup has to be stored on a local disk or on a tape connected to the local workstation. A backup via network drive is **not possible**.



During the backup, configuration changes **must not** be performed.

Use the following procedure to save 800xA for AC 870P/Melody information:

1. Log in to the 800xA Installer account or an 800xA administrator account account on the ConfigServer node.
2. Use the 800xA for AC 870P/Melody Config backup / restore utility to create a backup of the Melody Config Server database.
 - a. Select **All Programs > ABB Industrial IT 800xA > 800xA for AC 870P Melody > Configuration > Backup Configuration**
 - b. Click **Connect** in the 800xA for AC 870P/Melody Configuration Backup/Restore window.



This initiates the connection to the configuration database using the current Windows Server 2008 account security. This account must have Administrative access to the system and ConfigServer database.

The file name is auto generated using the ConfigServer name, date and time.

Example: ConfigServer_20020521_1034.bak

- c. Click **Backup**.



Clicking on the **Status Log** icon shows the log file. This text file can be saved.



The **Backup** button manually initiates the SQL database backup operation. Only one single backup is stored per file. If the backup file already exists it is overwritten.

- d. Click **Exit** when the backup is complete.

Batch

This section is only required when using Batch with 800xA for AC 870P/Melody. Successful backup of the Batch configuration requires that Object IDs of the various Batch objects be preserved.

Perform the following backup procedure:

1. Export the Functional Structure and Procedure Structure using the Import/Export tool.
2. Use the Melody Backup Configuration utility to save the ConfigServer configuration.
3. Backup the Melody Composer project.

800xA for MOD 300

AdvaBuild[®] is the engineering tool used to backup 800xA for MOD 300 control system information. The *AdvaBuild Administration User Guide (3BUR001977*)* instruction provides information needed to manage the AdvaBuild projects.

There is no additional data needed for 800xA for MOD 300 other than performing the system backup. For long term maintenance, refer to the *800xA for MOD 300 5.1 Configuration (3BUR002417*)* instruction, Appendix F, for more information on customized data settings.

Information Management

The following procedures can be used to backup all information related to Information Management software. Information Management software includes:

- Inform IT History (includes Archive)
- Inform IT Display Services
- Inform IT Application Scheduler
- Inform IT Data Direct
- Inform IT Desktop Trends
- Inform IT Open Data Access

- Inform IT Calculations

Not all components require additional steps to backup local files. An Information Management server will have all the software installed while other nodes will have only some of the software used. For each component that is configured and used on a node, all the files should be backed up occasionally. The following procedure provides the steps to perform the backups.

Node Types

The IM software run on 3 basic node types.

- Information Management 800xA Server
- Information Management 800xA Client, with optional Desktop Tools components.
- Desktop Tools installation

For a given node type, the backup steps depends on the type of software installed and the software used on the node. If software is installed and not utilized, there will be nothing to backup. The following steps identify how to backup an Information Management 800xA Server node. The steps to backup the other node types will reference the server backup procedure.

Backup of Information Management Server

The following step will backup the Information Management Server:

1. Use PAS to stop all Information Management processes and the Inform IT History service provider for this node.



The procedure can be performed by using the pasgui command in the Run dialog box (**Start > Run**).

- a. Use the Windows Taskbar to select:

Start > Programs > Administrative Tools > PAS > Process Administration

- b. Click **Stop All** in the PAS dialog box. This will stop the Inform IT History Service Provider.

To make a backup:

1. Select **Start > All Programs > ABB Industrial IT 800xA > Information Management > History > Backup and Restore**.
2. Verify the Create Backup Files of Current Configuration option is enabled in the IM Historian Backup/Restore Utility window.
3. Click **Next**. A window for setting up the backup operation is displayed.
4. Specify the location where the backup files is to be created in the New Directory Path for the Backup field. This path must already exist and the directory must be empty. If necessary, click **Browse** to create a new directory. See [Figure 40](#).

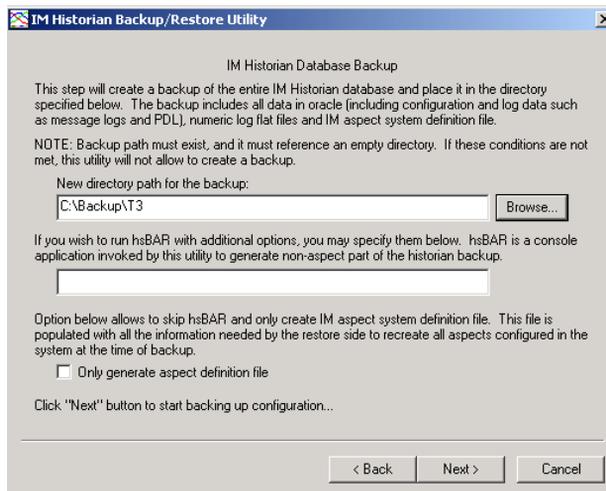


Figure 40. Setting Up the Backup Operation

5. Verify the Only Generate Aspect Definition File option is disabled.
6. Click **Next**. The HsBAR Output Window is displayed.
7. Enable the Automatically Close Upon Completion option.

8. After the HsBAR Output Window closes, monitor the progress in the Progress Status area of the IM Historian Backup/Restore Utility window and click **Finish** when the backup is complete.



If a message stating that there are inconsistencies between the log configurations in the Aspect System and the log configurations in Oracle is displayed:

- 1) Run `hsDBMaint -clean` function. (*Refer the Information Management Configuration instruction for more information.*)
- 2) Re-run the backup utility.

Saving Other Information Management Related Files

There are several other files related to Information Management that need saved as part of total system backup.



More detailed instructions for this procedure can be found in the section on backing up individual Information Manager applications in the appropriate *Information Management* instruction.

- **History Archive Data:** For each archive device, go to the location specified by the Device Filename and copy the folders under that directory to a safe location. Do this even if automatic backup is configured. If automatic backups are for local disks, also transfer them to a safe media at this time. Archive state information must be saved. The Archive folder from the following path must be saved to a safe location:

```
C:\ProgramData\ABB\IM\
```

- **Reports:** Save any report template files created in Microsoft Excel, DataDirect, and/or Crystal Reports. Also save report output files created as a result of running these reports via the Scheduling Services.
- **Desktop Trends:** Back up trend display, ticker display, and tag explorer files.
- **Display Services:** Back up the directories for custom users, as well as display and user element definitions.
- **DataDirect:** Back up custom text files for object, object type, and attribute menus used on the DataDirect windows.

All files should be copied to a remote storage medium after the saving is completed.

Use PAS to start all Information Management processes and the Inform IT History service provider for this node.



The procedure can be performed by using the pasgui command in the Run dialog box (**Start > Run**).

- a. Use the Windows Taskbar to select:
Start > Programs > Administrative Tools > PAS > Process Administration
- b. Click **Start All** in the PAS dialog box. This will start the Inform IT History Service Provider.

Non-Information Management Server nodes.

Any nodes that are installed and are configured to use Desktop Trends, Data Direct, Application Scheduler (reporting) should backup any application specific files after backup process is completed on the node. The backup files include:

- **Reports:** Save any report template files created in Microsoft Excel, DataDirect, and/or Crystal Reports. Also save report output files created as a result of running these reports via the Scheduling Services.
- **Desktop Trends:** Back up trend display, ticker display, and tag explorer files.
- **DataDirect:** Back up custom text files for object, object type, and attribute menus used on the DataDirect windows.

Process Engineering Tool Integration

Use the following procedure to back up Process Engineering Tool Integration information:

Assuming the default directory was selected during Process Engineering Tool Integration installation, the project data is located in the following directory:
...\Program Files\ABB Industrial IT\Engineer IT\Engineering Studio\Process Engineering Tool Integration\Xml

Save the entire Xml data directory to a safe media like a network share or removable disk. The directory contains the default mapping files (*.dmf) modified on the project, accelerator files (*.acc) and configuration files (*.pcf and *.fcf).

Structured Data Log (SDL)

A database backup creates a copy of the full database.



This copy can be used to recreate the database with the Restore statement as it was at the time the Backup statement was completed.

For a full description of the Backup and Restore statements, refer to **SQL Server Books Online > SQL Server Architecture > Administration Architecture > Backup/Restore Architecture** and to **Transact-SQL Reference**.

When the SDL database grows in size beyond a certain limit, it may be advantageous or even necessary, to remove old data to keep the size of the database down and the performance up.



Refer to the *System 800xA Post Installation (3BUA000156*)* instruction for more information.

The SDL database may be backed up by using the SQL Query Analyzer tool installed with the SQL Server 2000.

The following Transact-SQL statements should be executed:

- Select the “master” database.
USE master
- Create a logical backup device for the full SDL backup.
**EXEC sp_addumpdevice 'disk', 'SDL_BU',
DISK = '<path of backup folder>\SDL_BU.dat'**
- Back up the full SDL database.
BACKUP DATABASE SDL TO SDL_BU

The file SDL_BU.dat should be kept in a secure place.



The logical backup device SDL_BU needs to be created only once. It is used during both Backup and Restore.

800xA for IEC 61850

Make backups for the IEC 61850 CET OPC Server projects. Refer to **Section 6** of *System 800xA IEC 61850 Configuration (9ARD171387*)* to export CET OPC Server projects.



Handling of IET/CCT projects and PCM 600 projects is not described here as they are external tools contributing to the IEC 61850 workflow. They do not reside on 800xA System nodes.

Basic History Service Data

To backup the Basic History Service Data, use the following steps:

1. Go to the Maintenance Structure and select the Backup Definition Root object.
2. Create a new Basic History Backup object. See example in [Figure 41](#) below.

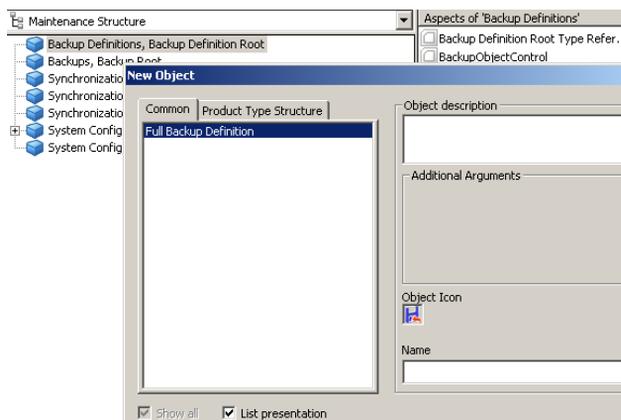


Figure 41. Basic History Backup Object

3. Select the created object and its Backup Definition aspect. It has three tabs: Scope, Storage and Summary and Start Backup tab. See [Figure 42](#).

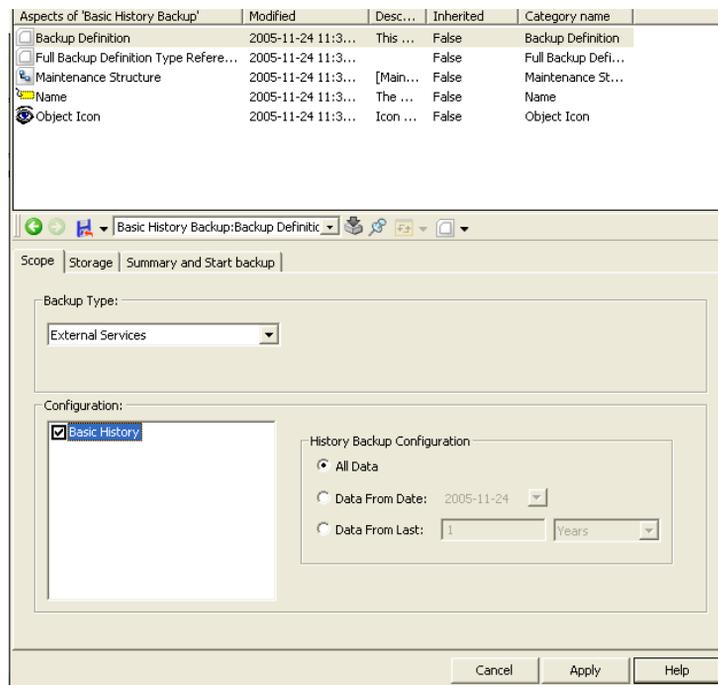


Figure 42. The Scope tab

4. Select **External Services** in the **Backup Type** drop-down menu. See [Figure 42](#).
5. Check the **Basic History** check box in the Configuration area.
6. Click **Apply**.

The **Storage** tab (see below) includes information about the backup.

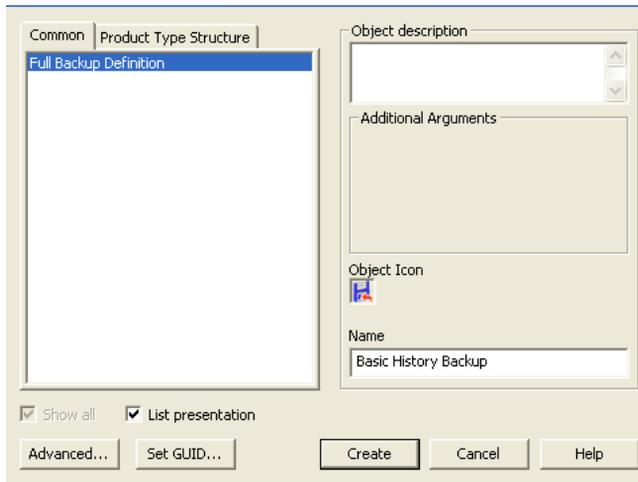


Figure 43. The Storage tab

7. Go to the **Summary and Start Backup** tab. Click the **Start Backup** button. See [Figure 44](#) below.

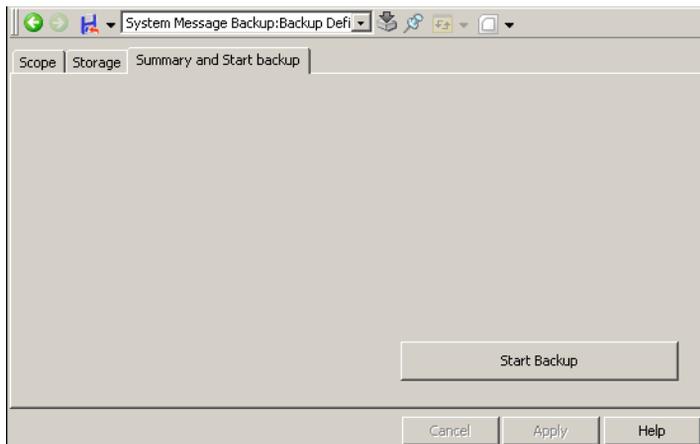


Figure 44. The Summary and Start Backup tab

The backup will now be started. A dialog will appear, confirm the backup with **OK**. You can see the backup progress in another dialog. See [Figure 45](#).

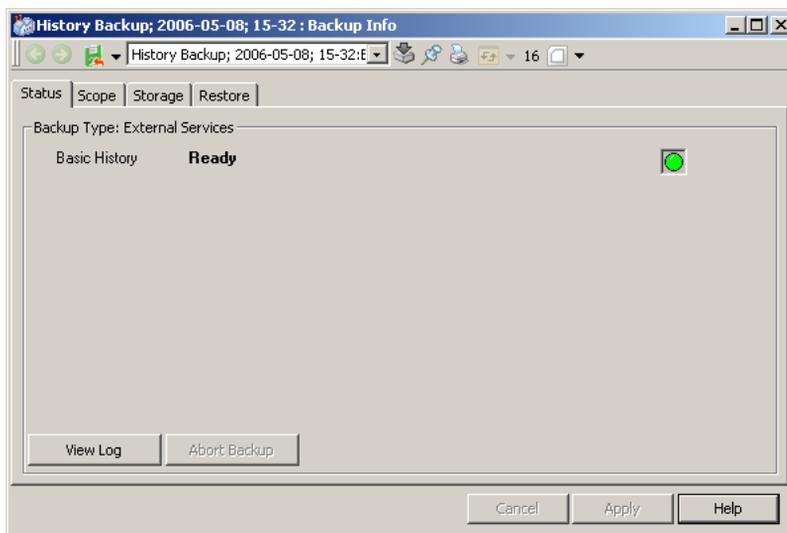


Figure 45. Backup in progress

800xA System Backup

The backup/restore utility supports manual and scheduled backups of 800xA system information. For scheduled backups, the ABB Inform IT Scheduler must be installed.

Requirements

All system extensions that are part of the system must be installed and added on the node where the backup will be taken (usually the Primary Aspect Server node). Changes must not be made (especially to the Aspect directory) during the online backup process.

When backing up a system with environments both the Production environment and the Engineering environment will be included in the backup. Only the current version of each aspect will be included in the backup, which means that all version history will be removed.

Procedure

The following steps outline the 800xA system backup procedure. Refer to [How to make a Full Backup](#) on page 124 for more detailed information.

1. Create a Full Backup Definition object in the Maintenance Structure, and configure the Scope and the Storage tabs.



Note that it is only possible to perform a backup from the Production environment.

2. Check disk space and path in the Storage tab of the Backup Definition aspect. A large configuration could require a minimum of five gigabytes of free space.
3. Start the backup process.
4. In case of any warning or error messages (refer to [How to make a Full Backup](#) on page 124), take the appropriate measure and create a new backup.



Do not manually import or edit any information in backup files.

800xA System Restore

The backup/restore utility supports the restoring of 800xA system information, including multiple environments.

Requirements

The following restrictions apply when a backup is used to restore a system:

- All 800xA software must be installed and be of the same level (version, service pack, rollup, etc.) as when the backup was taken.
- The Domain server must contain the same configuration as when the backup was taken.

Procedure

The following steps outline the 800xA system restore procedure. Refer to [How to make a Restore](#) on page 128 for more detailed information.

1. Minimize the system to a single node Aspect Server using the following procedure:
 - a. Disconnect and shut down all clients.

-
- b. Perform the following operations on each server node except the node on which the backup is taken (One of the Aspect Servers). Perform the operations on the Application Servers followed by Connectivity Servers. Then perform the operations on the Aspect Servers. Complete the operations on each node before proceeding with the next.
 - If the node is an IM server, start the pasgui from the **Run** prompt and stop all the IM services. Then start the services.msc from the **Run** prompt and change the ABB Process Administration service to Manual and stop the service.
 - In Configuration Wizard, stop the server using the Stop Server operation. Wait for the server to stop.
 - After the node is stopped, use the Aspect server to remove the node from the system. In the configuration wizard, remove the server from using the remove server operation. (System Administration/Nodes/Remove Server). Wait for the operation to complete before proceeding.
 - Restart the node that was removed from the system.
 - c. Perform the following operations on the existing Aspect Server:
 - In Configuration Wizard, stop the server using the Stop Server operation. Wait for the server to stop.
 - In Configuration Wizard, delete the system using the Delete System operation. (System Administration/System/Delete System). Wait for the operation to complete before proceeding.
 - Restart the node.
 2. Start the restore procedure on the same node the backup was taken.
 3. Check for messages in the log file. Refer to [How to make a Full Backup](#) on page 124 to resolve any received warning or error messages.
 4. One node at a time, start up all nodes again and connect them to the 800xA system in the following order:
 - Aspect Server nodes.
 - Connectivity Server nodes.
 - Application Server nodes.
 - Client nodes.

Use the following guidelines while connecting nodes:

- Set the current system as the default system when connecting nodes to the system.
 - In some cases, problems may be encountered when connecting nodes to the system. Verify that the system software user settings are correct using the Configuration Wizard. Restarting the node again may also solve the problem.
 - Wait until all services in the newly connected node are up and running before connecting the next node. Select the Node Administration Structure\connected_node_name\System Status Viewer aspect to monitor the status of services. If some services will not start up, restarting the node may help.
 - Restart each node after it has been connected to the system.
 - If the node is an IM server, start the services.msc from the **Run** prompt. Change the ABB Process Administration service to Automatic and then start the service.
5. Verify the affinity settings to ensure best system performance. If required, correct the settings. Refer to the *System 800xA Post Installation (3BUA000156*)* for more information about how to configure affinity.

Recover Function-Specific Information

Information specific to certain functional areas that was saved during an 800xA system backup can be recovered using the information in the following subsections.

Device Management & Fieldbus



Configure the OPC server on the primary Aspect server after the primary Aspect server node is functional.

In the case that the system node has been formatted, third party software for Device Type must be re-installed.



The Device Library Wizard procedure described here can be skipped, if the system node has not been formatted.

The following steps for Fieldbus Device Types need to be carried out on every system node in the following sequence, except thin client nodes:

- Aspect Servers (including redundant Aspect Servers).
- Connectivity Servers (including redundant Connectivity Servers).
- Application Servers.
- Clients.

1. Start the Device Library Wizard:

Start > ABB Industrial IT 800xA > Device Mgmt > Device Library Wizard

or

select the Device Library Wizard icon on the desktop.



If the Device Library Wizard - Client has not been connected to the Device Library Wizard - Server, navigate first to:

Device Library Wizard Administration > Connect Client

and follow the wizard installation.

2. Navigate to:

Device Type Administration > System Restore Wizard

and choose the third option in the Wizard ([Figure 46](#)).

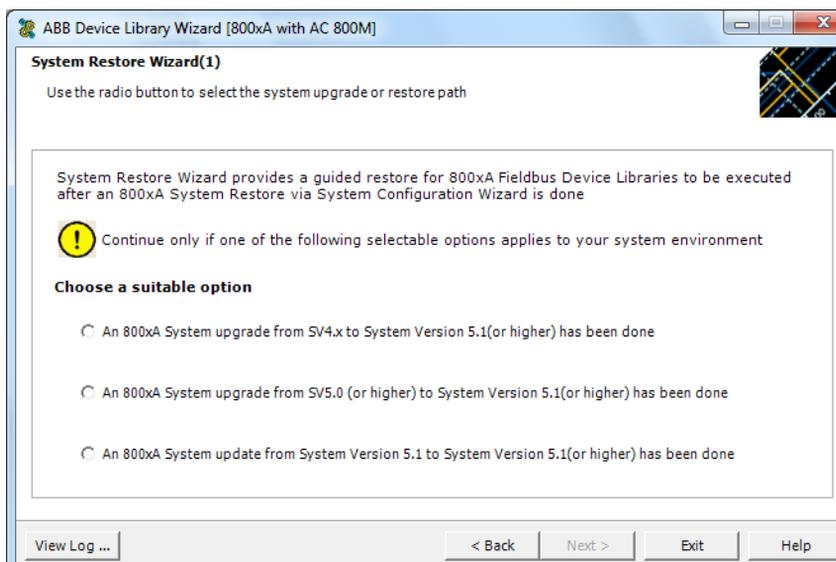


Figure 46. System Restore Wizard Option

3. Click **Next**.
4. Choose whether or not the system node has been formatted and click **Next**.



If the system node has not been formatted, no more steps are required and the Device Library Wizard will automatically navigate to its main window. Exit the Device Library Wizard and continue with the other system nodes (if applicable).

5. Depending on which Fieldbus protocol is used in the previous system version environment, one of the delivered Device Library system DVDs shall be inserted in the DVD drive (Device Library HART – DVD).
6. Click the **Browse** button and navigate to the drive where the DVD has been inserted.
7. Click **Next**.

8. The Device Library Wizard is scanning the 800xA System for already used Fieldbus device types and compares it with the contents of the inserted DVD. Device Types available in the 800xA system and the DVD are shown in the Extract tab of the Device Library Wizard (Figure 47).

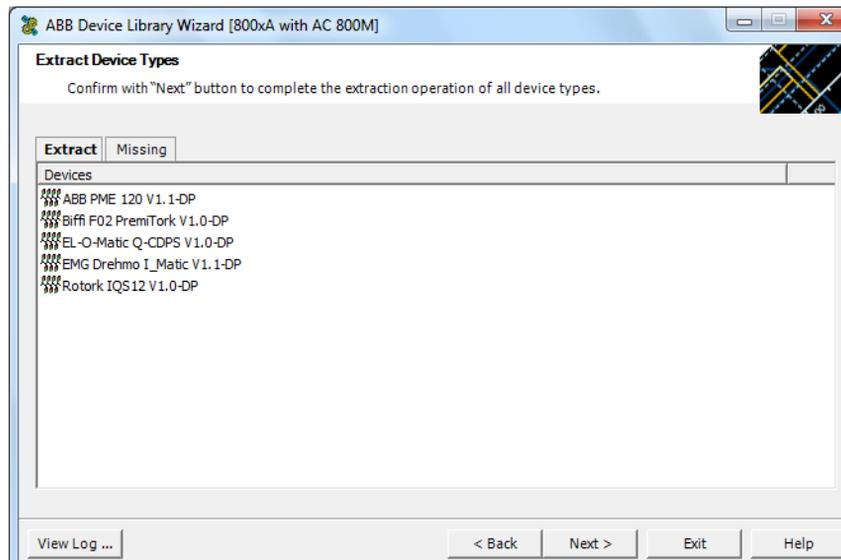


Figure 47. Extract Device Type Files

- Click **Next** to start the extraction process.



Device Types available in the 800xA System but not on the inserted DVD are displayed in the **Missing** tab. In this case, the **Next** button in the Device Library Wizard is disabled. Navigate to the Browse window by using the **Back** button and insert a new Device Library DVD.

Repeat this procedure until all device types are extracted to the system node and the **Missing** tab does not list any device types.

If the Device Library DVDs do not contain all Device Types used in the previous system version, the missing Device Types must be download via ABB SolutionsBank (<http://solutionsbank.abb.com>).

It is possible to continue the Wizard only if all device types have been successfully extracted.

- After successful extraction, the device types need to be reinstalled on the system node. Click **Next** (Figure 48).

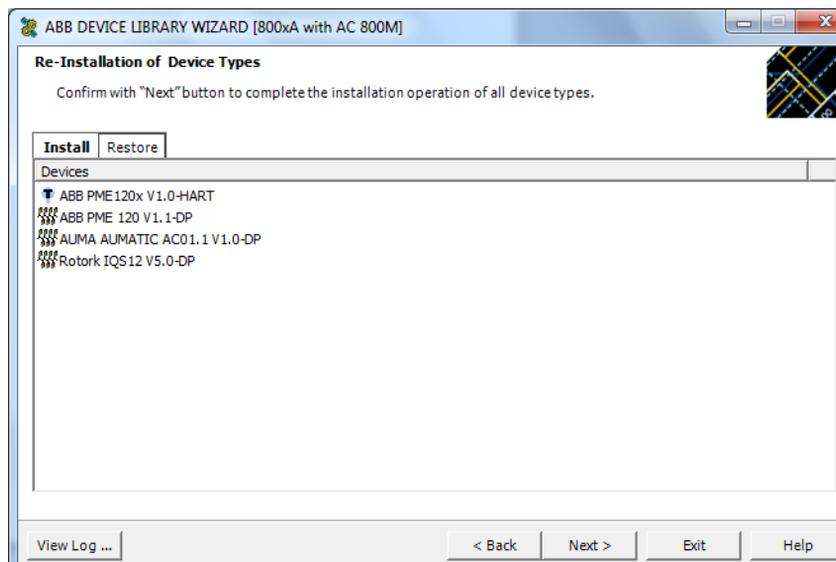


Figure 48. Install Device Types

- Follow the wizard to complete the installation. The wizard will automatically navigate to the main window after the process has been finished.

12. Exit the wizard and perform these steps on the other system nodes if applicable.

Asset Optimization

Use the following procedure to restore Asset Optimization information:

1. Asset Monitoring:



Asset Monitoring directories **MUST** be restored on every Asset Optimization Server node defined in the system.

- a. If Runtime Asset Monitors are being used in the system, restore the Runtime Asset Monitor data directory (DeviceRunTimeMSLogicStore). This directory must be restored to the following directory:

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\Optimize  
IT\Asset Optimization\AssetMonitorEnvironment\Bin
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AssetMonitorEnvironment\Bin
```



The saved data contains the Runtime Asset Monitor data present at the time of the save. Use the Runtime Asset Monitor faceplate to reset the asset monitors by adding the lost time to their accumulated run time or with some known values based on other records. Ignore any alarms occurring during the backup.

- b. If XY Profile Deviation Asset Monitors are being used in the system, restore the XY Profile Deviation Asset Monitor data directory (XY_Reference_Profiles). This directory must be restored to the following directory:

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\Optimize  
IT\Asset Optimization\AssetMonitorEnvironment\Bin
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AssetMonitorEnvironment\Bin
```

- c. If Counter Check Asset Monitors are being used in the system, restore the Counter Check Asset Monitors data directory named {66E71F7B-90D6-

4E62-9881-38388B24CBDF} from safe media. This directory exists for each AO Server in the system. These directories are located in:

```
<install drive>:\OperateITData\AoEng\<<AO Server ID>\AmCat\
```

Where each <AO Server ID> directory represents one AO Server instance from which the directory {66E71F7B-90D6-4E62-9881-38388B24CBDF} was originally saved from. The <AO Server ID> directory name is formatted as two consecutive GUIDs, for example, {F9C150F5-2929-4A12-BC28-E00ED6DB1585}{B925E77F-2A82-41C6-A981-FAB4386D5701}

2. Maximo Integration:



If using Maximo Integration, the Maximo Integration information (Maximo equipment ID and maximo credential aspects) **MUST** be restored to all Asset Optimization Server nodes. Reference the Service Structure for the Asset Optimization Server.

It is required that ECS software is installed prior to continuing with Maximo integration.

- a. Configure ECS software. Refer to the ECS configuration in *System 800xA Asset Optimization 5.1 Configuration (3BUA000118*)* for more information.
- b. If the MxDef files were customized, restore the customized MxDef files from safe media to this directory (assuming the default directory was selected during Asset Optimization installation):

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\
Optimize IT\Asset Optimization\AOECSConnector
\MaximoDef\CustomDef
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSConnector\MaximoDef\CustomDef
```

- c. If Maximo model is customized, restore the AOMaximoModel.xml to the following location:

For 64-bit:

```
... \Program Files(x86)\ABB Industrial IT\  
Optimize IT\Asset Optimization\AOECSConnector  
\ECSDefinitions
```

For 32-bit:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AOECSConnector\ECSDefinitions
```

Refer to *System 800xA Asset Optimization 5.1 Configuration (3BUA000118*)* for more information on MxDef files.



Ensure that ABB Maximo Connectivity system extension is loaded.



The pending fault reports residing in the system can be restored to the following directory structure. Restore the entire OptaoACDs folder.

```
<<install drive>>:\OperateITData\OptaoACDs
```

3. SAP/PM Integration:



If using SAP/PM Integration, the SAP/PM Integration information (SAP equipment ID and SAP credential aspects) **MUST** be restored to all Asset Optimization Server nodes. Reference the Service Structure for the Asset Optimization Server.

It is required that ECS software is installed prior to continuing with SAP integration.

- a. Configure ECS software. Refer to the ECS configuration in *System 800xA Asset Optimization 5.1 Configuration (3BUA000118*)* for more information.
- b. If the SAPDef files were customized, restore the customized SAPDef files from safe media to this directory (assuming the default directory was selected during Asset Optimization installation)

For 64-bit:

```
... \Program Files(x86)\ABB Industrial IT\Optimize  
IT\Asset  
Optimization\AOECSConnector\SAPPMDef\CustomDef
```

For 32-bit:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSConnector\SAPPMDef\CustomDef
```

Refer to *System 800xA Asset Optimization 5.1 Configuration (3BUA000118*)* for more information on SAPDef files.

- c. If SAPModel is customized, restore the AOSAPModel.xml to the following location:

For 64-bit:

```
... \Program Files(x86)\ABB Industrial IT\
Optimize IT\Asset Optimization\AOECSConnector
\ECSDefinitions
```

For 32-bit:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSConnector\ECSDefinitions
```



Ensure that ABB SAP Connectivity system extension is loaded.



The pending fault reports residing in the system can be restored to the following directory structure. Restore the entire OptaoACDs folder.

```
<<install drive>>:\OperateITData\OptaoACDs
```

4. After a restore of a 800xA 5.1 system, the Asset Optimization Server (Monitor Server/Engine) may appear to be running. The **AO Server** tab of the AssetOptimization Server aspect will show a status of `good: AM Engine Running`.
 - a. Clicking the **Asset Monitors** tab and selecting **AMs assigned to this AO Server** will show that the values in the Status column are Not loaded, enabled.

Click **Load all AMs** to reload all the enabled asset monitors assigned to this AO Server.



The DMS Calibration Integration approach is changed 800xA 5.1. Reconfigure the DMS Calibration Integration based on an engineered solution. Contact ABB technical support for more information.

PC, Network and Software Monitoring

Use the following procedure to restore PC, Network and Software Monitoring information:



This procedure is only necessary if there are user defined Script, Resource, and Assembly files in the 800xA System.

1. If user defined Script, Resource, and Assembly files were backed up, copy the saved files from the safe media to the following directories (assuming the default directory was selected during installation):

For 64-bit:

```
...\Program Files(x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Scripts\User
```

```
...\Program Files(x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Assemblies\User
```

```
...\Program Files(x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Resources\User directory
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Scripts\User
```

```
...\Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Assemblies\User
```

```
...\Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Resources\User directory
```

SMS and E-mail Messaging

Restore all GSM Device hardware information. Configure the GSM device per the information recorded on the SMS and E-mail Messaging GSM Hardware Setup Worksheet during backup.



It may be necessary to stop and start the Messenger Server Service in the Service Structure after the SMS and E-mail Messaging restore operation.

PLC Connect

If either the IEC60870 or Basic Project Objects features were installed:

1. Use standard Windows procedures to access Add/Remove Programs in Windows Control Panel.
2. Select **ABB PLC Connect**.
3. Select **Change/Modify**.
4. The InstallShield Wizard for PLC Connect appears. Refer to *System 800xA Manual Installation (3BSE034678*)* and *System 800xA Post Installation (3BUA000156*)* and continue install the desired features.
5. If the IEC60870 feature is installed refer to *System 800xA 5.1 PLC Connect Configuration (3BSE035041*)* and reload the saved IEC configuration.

To restore the PreTreat2.dll and PreTreat3.dll files:

1. If the PLC Connect Communication Server Pre Treatment function is being used in the application, copy PreTreat2.dll and PreTreat3.dll from the backup location to the same folder as they were backed up from on the PLC Connect Connectivity Server. If the default folder is used, that location is \ABB Industrial IT\Operate IT\PLC Connect\Bin.
2. Register the PreTreat2.dll and PreTreat3.dll files (refer to *System 800xA 5.1 PLC Connect Configuration (3BSE035041*)* for more information).
3. Restart the PLC Connect Connectivity Server for the changes to take effect.
4. Restore the VB projects for PreTreat2.dll and PreTreat3.dll.

To restore the PreEvent.dll file:

1. If the PLC Connect Event Server Pre Treatment function is being used in the application, copy PreEvent.dll from the backup location to the same folder as it was backed up from on the PLC Connect Connectivity Server. If the default folder is used, that location ...\\ABB Industrial IT\\Operate IT\\PLC Connect\\Bin.
2. Register the PreEvent.dll file (refer to *System 800xA 5.1 PLC Connect Configuration (3BSE035041*)* for more information).
3. Restart the PLC Connect Connectivity Server for the changes to take effect.
4. Restore the VB application project for PreEvent.dll.

To redeploy the PLC Connect configuration:

1. Use the Structure Selector to open the Control Structure in the Plant Explorer Workplace.
2. Use the Object Browser to navigate to the first Generic Control Network object.
3. Select Deploy in the Aspect List area.
4. Click **Deploy** in the Aspect Preview area.

The deploy begins and the progress is displayed in the Aspect Preview area. The deploy is completed when Deploy ended is displayed.

5. Repeat the procedure for any additional Generic Control Network objects.

800xA for Advant Master and Safeguard

1. Copy back the saved files
...\\ProgramData\\ABB\\AC400Connect\\AdvantBase\\Data
\\RTA\\Init\\ folder to the applicable connectivity server in which they belong:
 - DATHR1.CD
 - DATHR2.CD
 - DATHR3.CD



Before restoring these files, ensure that the node being restored is running the same character conversion language used by the node from which the files were backed up.

2. Restore the MB300 node, network address and REVERSED_SYNCH_MODE and PU410 redundant cable supervision settings for the RTA board in the RTA Board Control aspect, using the settings you wrote down before backup.



A restore is required after replacement of the DATHRx.CD files. Ensure that the RTA board is restarted before being connected to the MB300 network.

3. For each Connectivity Server, compare the saved files, **AdvDsMasterAdapter.csv** and **AdvMbAeOPCServer.csv** with the installed version of the files in *<installation path>\bin*. If any customization was done to the old files, update the installed version of the files with the corresponding changes.

800xA for AC 800M

Use the following procedure to restore 800xA for AC 800M information:

1. The OPC Server Service Account should be set in the OPC Server Setup Wizard.
2. Control Builder stores its settings (systemsetup.sys) on disk. Replace the existing file with the file saved on the safe media. The systemsetup.sys file is located in the Control Builder working folder.
3. The OPC Server stores configuration files (*.cfg) and settings (systemsetup.sys) on disc. Replace these existing files with the files saved on the safe media. The systemsetup.sys file is located in the OPC Server working folder. The configuration files are stored in the Files folder in the same location.
4. Restore OPC configurations by selecting **File > Load Configuration** in the OPC Server Panel.

Restore of Control Builder projects is done by using the ordinary 800xA System backup/restore utility. This function also includes cold retain files stored by the OPC Server.

800xA for Harmony

Use the following procedure to restore 800xA for Harmony information:

1. Log in to the 800xA Installing User account (or a local Administrator account) on the Configuration Server or Configuration Server with Connectivity Server node.
2. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for OCS Systems > Harmony > Configuration > Restore Configuration
3. Click **Connect** in the Harmony Connect Configuration Backup/Restore window.
4. Enter the name of the Harmony Configuration Server database backup file in the Backup File field.
5. Click **Restore**.
6. If a prompt appears indicating that the system version does not match the backup version, click **Yes**.
7. If the message `Services must be stopped, REBOOT system now then restart this application!` is displayed, restart the node and repeat [Step 2](#) through [Step 6](#).
8. The Backup/Restore program compares the old configuration in the backup file to the current configuration of the newly installed system. If the hosts of the Primary and Redundant Connectivity Servers do not match, a dialog will appear ([Figure 49](#)) allowing the user to map the old Connectivity Server node names to the new Connectivity Server node names.
 - a. Select the Create Missing Servers in Installed Configuration (Disaster Recovery) check box if one or more of the Connectivity Server Nodes does not appear on the Installed Configuration side of [Figure 49](#).

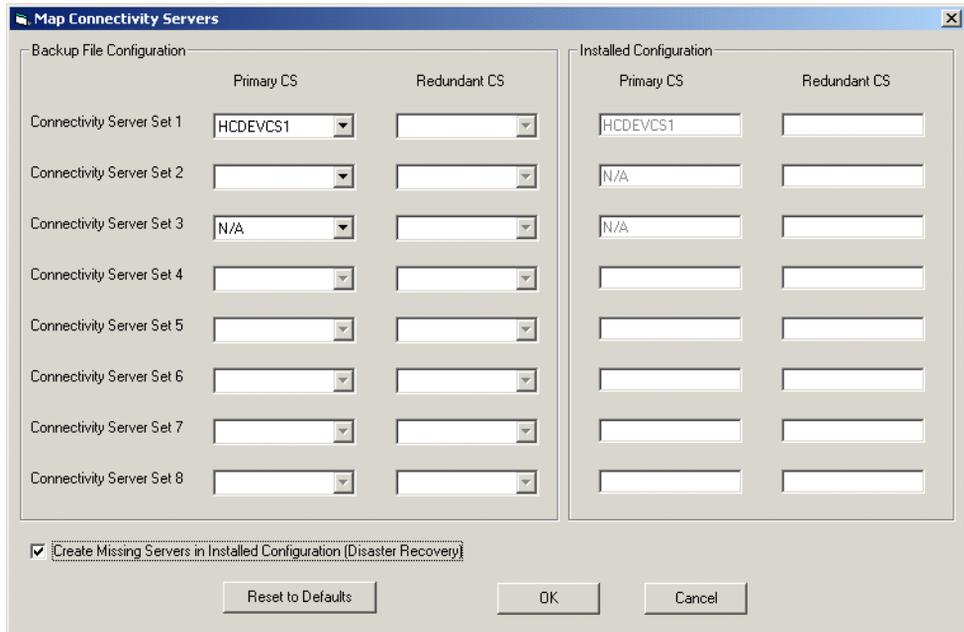


Figure 49. Map Connectivity Servers

9. Click **Exit** when the restore operation is complete.



Duplicate server objects may be created in the Harmony Configuration Server node after performing a Harmony Restore Configuration on a running system. Restart the Harmony Connectivity Server nodes to ensure the correct server objects are utilized.

800xA for AC 870P/Melody

Use the following procedure to restore existing 800xA for AC 870P/Melody ConfigServer information:

1. Log in to the 800xA Installer account or an 800xA administrator account on the ConfigServer node.

2. Use the 800xA for AC 870P/Melody Config backup / restore utility to restore the Melody Configuration information from a saved backup.
 - a. Select **All Programs > ABB Industrial IT 800xA > 800xA for AC 870P Melody > Configuration > Restore Configuration**.
 - b. Click **Connect** in the 800xA for AC 870P/Melody Configuration Backup/Restore window.



The Connect button manually initiates the connection to the configuration database using the current Windows account security. This account must have Administrative access to the system and Configuration Server database.

Refer to the MSSQL file folders for the .bak files generated upon successful backup.

The last successful backup name is preloaded into the screens Backup/Restore Backup File name field.

- c. Enter the name of the 800xA for AC 870P/Melody Config Server database backup file in the Backup File field.
- d. Click **Restore**.
- e. If prompted that the system version does not match the backup version, click **OK**.



If the message `Services must be stopped, REBOOT system now then restart this application!` is displayed, restart the node and repeat Step a through Step e.

- f. Click **Exit** when the restore operation is complete.



After restoring a ConfigServer restart all Config Server and Connectivity Server sequentially and wait to start the next Connectivity Server until the former Connectivity Server has finished SQL replication.

This sequence avoids a high Config Server load and replication time-outs due to parallel replication after a parallel restart of several Connectivity Server.

Batch

This section is only required when using Batch with 800xA for AC 870P/Melody. Perform the following restore procedure:

1. Import the Functional Structure and Procedure Structure using the Import/Export tool.
2. Use the Melody Restore Configuration utility to restore the ConfigServer configuration.



Reading from a network drive is not supported. Copy the file to the local disk first.

3. Restore the Melody Composer project.

800xA for MOD 300

AdvaBuild is the engineering tool used to restore 800xA for MOD 300 control system information. The *AdvaBuild Administrator User Guide (3BUR001977*)* instruction provides information needed to manage the AdvaBuild projects.

Basic History Service Data

To restore Basic History Data, use the following steps:

1. Go to the Maintenance Structure and select the Basic History Backup object under the Backups, Backup Root object.
2. Select the Backup Info aspect, see [Figure 50](#).

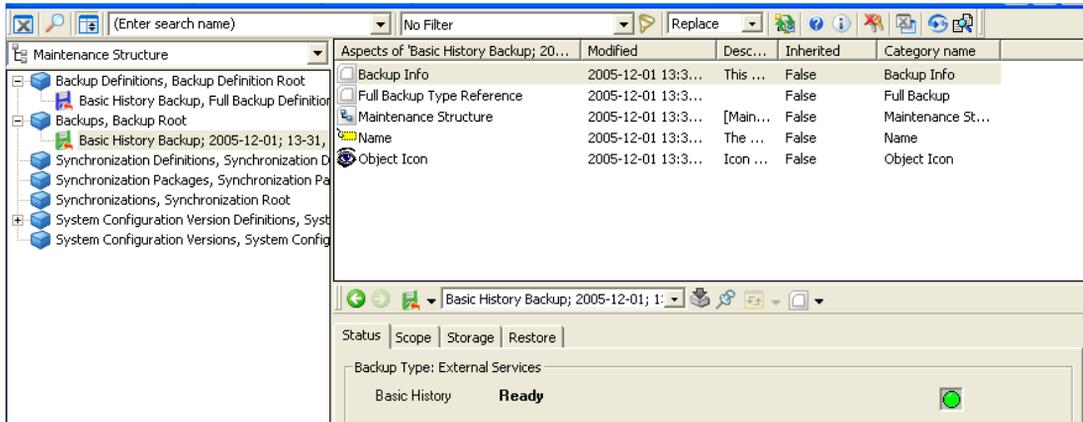


Figure 50. Backup Info aspect

3. Select the **Restore** tab. See Figure 51 below.

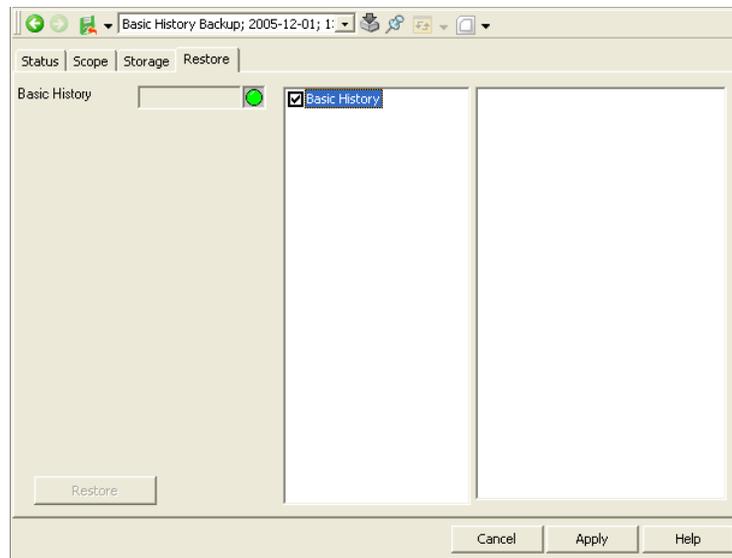


Figure 51. The Restore tab

4. Click **Apply**.

5. The **Restore** button to the left in the dialog will be enabled. Click the button and then **OK** to start the restore.

Information Management

Use the History backup and restore utility to restore the Information Management History database and synchronize the Aspect Directory contents with the current Information Management History database configuration.

During the restore, the existing database configuration is replaced by the configuration being restored. The restore will return all the data in the history logs to the time the backup was created. Mount points and additional table spaces are created based on the database being restored.

Oracle data is imported, and the file-based property logs are copied back into the system. Unless a different mount point is specified, the History database will be restored to its original location (its location prior to being backed up).

The History database can be restored from any drive on the workstation, including any mapped network drives. Running the Restore Utility

To restore a backed up History database:

1. Verify PAS is stopped. If the PAS is not stopped, Stop all PAS processes (Refer to the *System 800xA Information Management 5.1 Configuration (3BUF001092*)* instruction for more information).
2. Ensure that no third-party applications access the Oracle database during the restore operation.
3. Stop the Inform IT History Service Provider:
 - a. Select the Inform IT History Service Provider object in the Service Structure in the Plant Explorer.
 - b. Select the Service Provider Definition aspect.
 - c. Select the Configuration tab.
 - d. Disable the Enabled option.
 - e. Click **Apply**.

4. Select **Start > All Programs > ABB Industrial IT 800xA > Information Management > History > Backup and Restore**.
5. Verify that the Restore Configuration from the Backup File option, is enabled in the IM Historian Backup/Restore Utility window.
6. Click **Next**. A window for setting up the restore operation is displayed.
7. Specify the location of the backup files in the Path of IM Historian Backup field.
8. Click **Next**. The HsBAR Output Window is displayed.
9. Enable the Automatically Close Upon Completion option.
10. After the HsBAR Output Window closes, monitor the progress in the Progress Status area of the IM Historian Backup/Restore Utility window.



The restore of the system requires an instance that matches the size of the database being restored. When creating the instance, be sure to select **Small**, **Medium** or **Large** based on the size of the message log in the backup being restored. Select **Large**, if the size is not known. The restore operation may fail with the Oracle Error Message 1652 - Unable to extend tmp segment in tablespace temp, if the wrong size is selected. Repeat the restore with the correct instance settings if error occurs.

11. Click **Next** when the button becomes available. The synchronizer part of the restore process starts now.
12. Click **Finish** when a message stating that the execution is complete, is displayed.

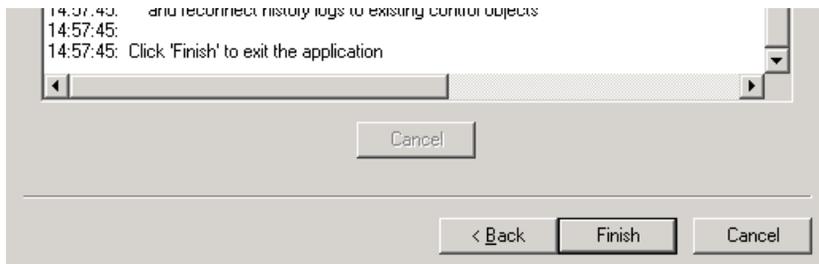


Figure 52. Execution is Complete Message

If the Progress status dialog box has warning messages with possible solutions as indicated in Figure 51, read the possible solutions carefully, then click Finish and proceed with the solution that best fits the problem. Refer to the Information Management Release Notes for further guidelines.

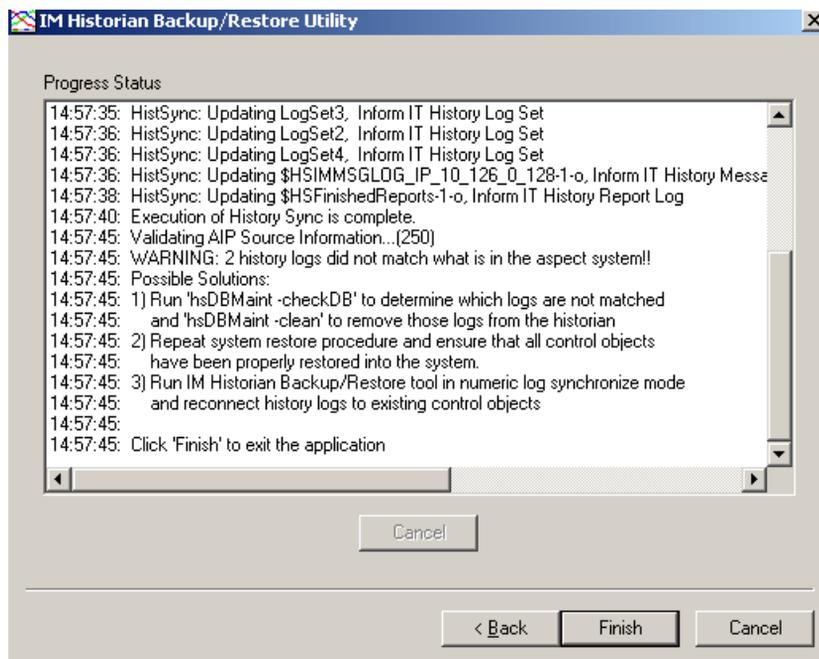


Figure 53. Progress Status Dialog Box

Restoring Other Information Management Related Files

There are several other files related to Information Management that need to be restored as part of total system restore.



More detailed instructions for this procedure can be found in the section of restoring individual Information Manager applications, in the appropriate *Information Management* instruction.

- **History Archive Data:** For each archive device, copy the appropriate folders from the safe media to the location specified by the Device Filename. Copy the archive status information to:

C:\ProgramData\ABB\IM\Archive

- **Reports:** Restore any report template files created in Microsoft Excel, DataDirect, and/or Crystal Reports. Also restore report output files created as a result of running these reports via the Scheduling Services.
- **Desktop Trends:** Restore trend display, ticker display, and tag explorer files.
- **Display Services:** Restore the directories for custom users, as well as display and user element definitions.
- **DataDirect:** Restore custom text files for object, object type, and attribute menus used on the DataDirect windows.

For more information refer [Information Management Server](#) on page 181.



At the end of this restore process, PAS has to be started again. Verify the ABB process administration process is set to automatic and the start the process.

Process Engineering Tool Integration

Use the following procedure to restore Process Engineering Tool Integration information:

Restore the backed up data directory (saved prior to backup of the system) to the installed directory of Process Engineering Tool Integration.

Assuming the default directory was selected for Process Engineering Tool Integration installation, restore the entire Xml directory contents to:
...\\Program Files\\ABB Industrial IT\\Engineer IT\\Engineering Studio\\Process Engineering Tool Integration\\Xml

Structured Data Log (SDL)

For a full description of the Backup and Restore statements, refer to **SQL Server Books Online > SQL Server Architecture > Administration Architecture > Backup/Restore Architecture** and to **Transact-SQL Reference**.

The SDL database is restored using the SQL Query Analyzer tool installed with the SQL Server 2000.

The following Transact-SQL statements should be executed:

- Select the “master” database.
USE master

- If the logical backup devices are not present create them as shown in the section [Structured Data Log \(SDL\)](#) on page 95 and make sure that the backup files are at the location pointed to by these logical devices.
- Restore the SDL database.
RESTORE DATABASE SDL FROM SDL_BU
- Restore the TnT database.
RESTORE DATABASE TnT FROM TnT_BU

800xA for IEC 61850

Restore the backups of the IEC 61850 CET OPC Server projects. Refer to **Section 6** of *System 800xA IEC 61850 Configuration (9ARD171387*)*.



Handling of IET/CCT projects and PCM 600 projects is not described here as they are external tools contributing to the IEC 61850 workflow. They do not reside on 800xA System nodes.

How to make a Full Backup

Follow the recommendations below to make a Full Backup.

1. Create a Full Backup Definition object with definitions of scope and storage settings.
2. Configure the Backup Definition aspect.
3. In the aspect, select the **Summary and Start Backup** tab and click the **Start Backup** button to start the backup.
4. A new Full Backup object is created when the Full Backup is running. It will be created in the Maintenance Structure under the Backups object. It will be called <Backup Definition Name>; <Date>; <Time>. For an example of the path, see

Figure 54 on page 125.



<Backup Definition Name> is the name of the Backup Definition object the backup was created from. <Date> is the date when the backup was started. <Time> is the time when the backup was started.

A backup consists of a BackupInfo.xml file, and a set of files containing actual backup data. The backup object has a Backup Info aspect, with **Scope**, **Storage**, and **Status** tabs.



Warning messages occur if there are any undeployed graphic or faceplate elements. They are seen in the Backup Info Aspect and recorded in the Backup log file. These warnings do not need to be acknowledged.

Backup Object

The **Storage** tab shows the node on which the backup was made. It also displays the backup path and the size of the backup.

If the backup is copied to a media, for example a CD or DVD, the media code can be entered in this dialog as well. See [Figure 54](#) below.

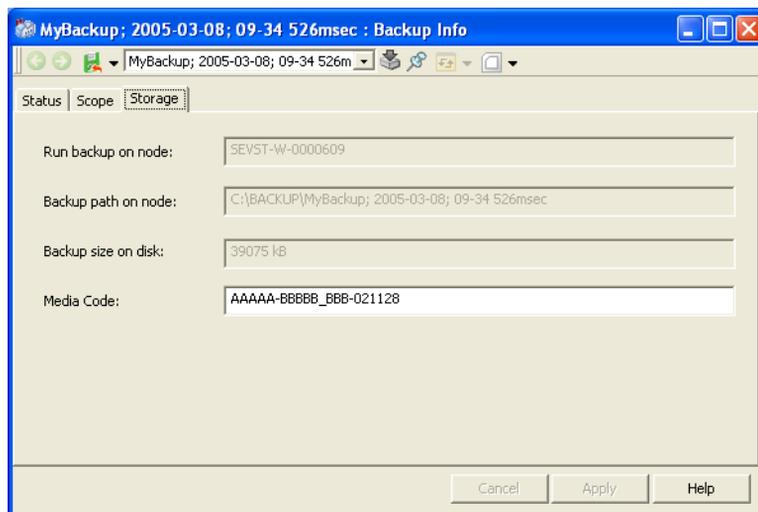


Figure 54. The Storage Tab of the Backup Info Aspect

The **Status** tab displays the progress and status of an ongoing backup as well as the status of a finished backup. The log file can be displayed on a finished backup.



Aspects and objects are restored from the Configuration Wizard, and not from this tab.

Backup Service

The Backup Service runs on each aspect directory server node in a service group. The Backup Service is not redundant, but the different backup service providers enable backups to be run on different nodes.

Backup Service Provider Definition Aspect

It is possible to make specific configurations of the Backup Service Provider object. Select the object in the Service Structure. Go to the Service Provider Definition aspect and select the **Special Configuration** tab. See the figure below.

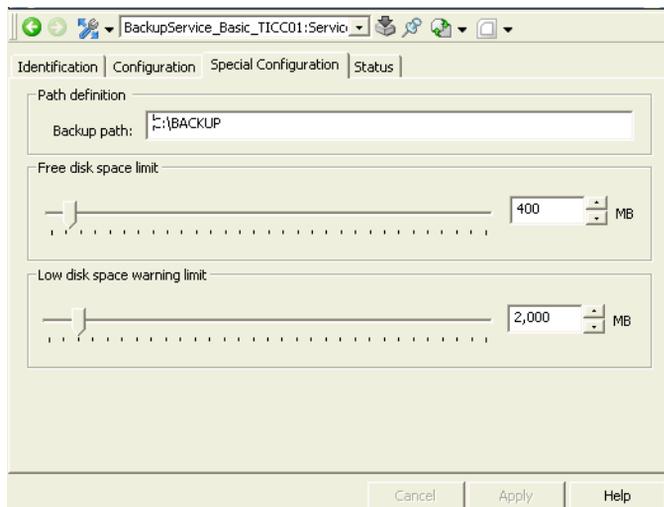


Figure 55. Special Configuration Tab

In the **Path definition** area a root directory (Backup Path) for all backups can be set. It is made by the Backup Service provider. The default value for the path is set in the **Storage Path** area under the **Configuration** tab of the Service Definition aspect.



The disc that the backup runs on should be on the local workstation.

It is also possible to specify a **Free disk space limit**. The backup service guarantees that this amount of disk space is free after any backup is made.

If the limit is passed during a backup, the backup operation will fail and an error, as a system message and an audit trail, will be issued.

A **low disk space warning limit** can also be specified in this tab. If there is less disk space available than the limit, a warning is issued as a system message and an audit trail is issued.

The **Identification**, **Configuration** and **Status** tabs are standard tabs available for all service providers.

Scheduling a Backup



Scheduled 800xA System backups cannot be aborted from the Application Scheduler.

Full Backup Definition objects can be scheduled. Select the Scheduling Structure and configure what to schedule in an action aspect. Scheduling is a System Extension which has to be installed.

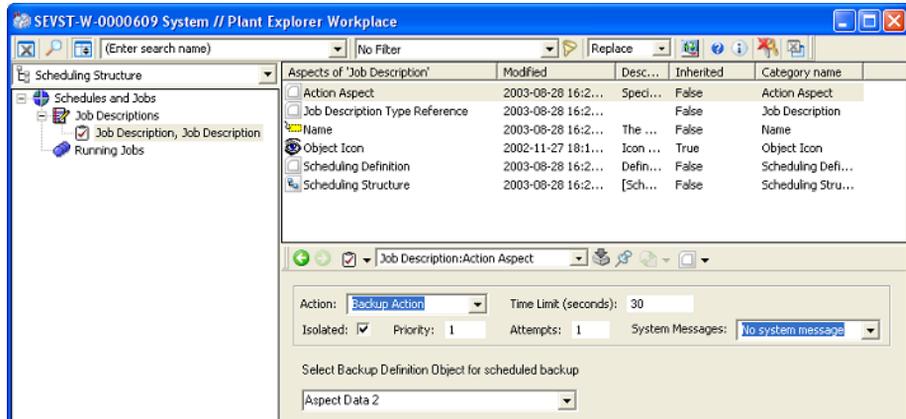


Figure 56. The Action Aspect

In the example above, a Backup Definition object called **Aspect Data 2** is selected to be scheduled.

For more information about scheduling, see the *System 800xA 5.1 Administration and Security (3BSE037410*)* instruction.

How to make a Restore

It is important to follow the instructions and recommendations below before starting a restore procedure. The restore will recreate an equivalent system, after a node failure. It is also a recommended way to transfer data between one version of the system to another during an upgrade.

Preparing the Restoring Process

A restore of a 800xA System is performed from the Configuration Wizard. The same or a later version of the 800xA system and all System Extensions that was

installed when the backup was done, need to be installed when the system is being restored. Make sure the right processes are running and that no system exists.



The processes are AfwTrayIcon.exe, AfwSMClient.exe and AbbClientLicenseProvider.exe

Restoring a Backup Containing Aspect Data

1. Open the Configuration Wizard.
2. Select **Restore System** and click **Next** in the Configuration Wizard. See the figure below.

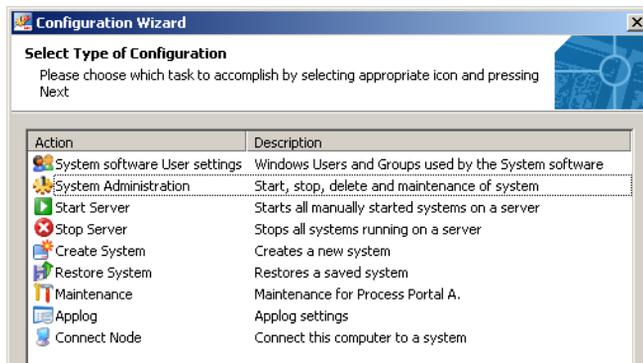


Figure 57. The Configuration Wizard - Restore System

The restore functionality is used to restore backups containing Aspect Data. It is available from the Configuration Wizard, see [Figure 57](#). The Configuration Wizard is the only way to restore Aspect Data.

Backups with only Service Data, on the other hand, can be restored from the Backup Info aspect when the system is running.

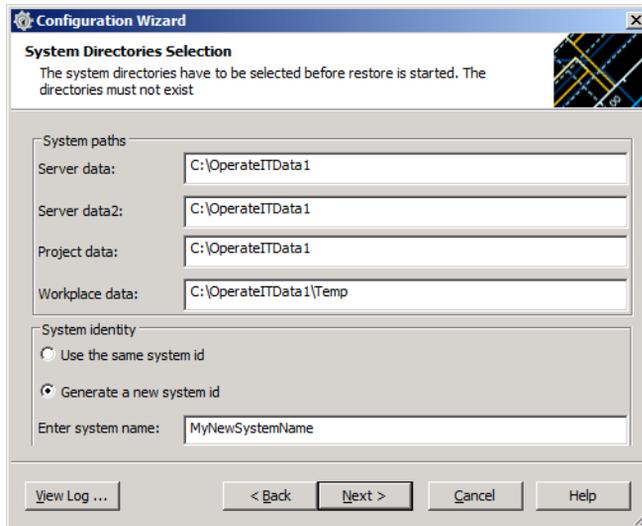


Figure 58. The Restore Selection in the Configuration Wizard

You need to specify the path to a location of the backup. Specify the root directory and the application will search for backups below the root. Available backups will be shown in a list.

Finding the Backup Files

1. Click the **Select Path** button (Figure 58) to enter the path for available backups.
2. Click **OK** to close the dialog and the tree will display available backups. If the same backup is found more than once you will get a warning and the first one found will be used.

To get more detailed information about the selected backup in the tree, click the **View Info** button and an Information dialog will be displayed.

Selecting a Backup to Restore

Select one backup to be restored in the tree view to and click **Next**. From the selected backup, the aspect directory is restored. During the restore it is possible to generate a new system id and System Name for the restored system. This is not needed if no changes will be made. Click **Next**, see the figure below.

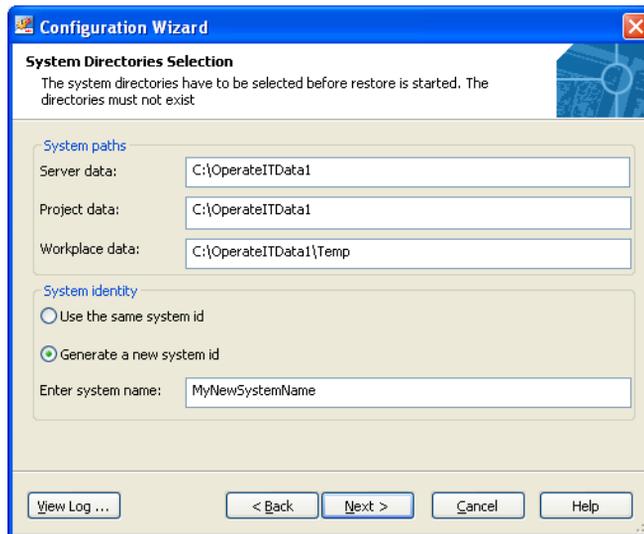


Figure 59. Configuration Wizard - Restore to New System



If a backup will be restored to the same network as the original system is running on, it is necessary to generate a new system id and name during restore. Two systems with the same id and name can not exist in the same network.

If the restore runs in a different system than the backup was made in, a primary node in the backup system must be remapped to the node your are running the restore on.

You remap a node by right-clicking the node in the restored system, and changing the node name. See the figure below.



Figure 60. Node Configuration - Other Node

3. Click **Next**.



Figure 61. Apply Settings

4. Click **Finish** to complete the restore.

The Restore is not completed until the Aspect Directory is restored. The system is running when restore is finished.

Upgrade Older Versions

Backups of older versions of the 800xA System will show up in the backup list in the Restore Selection dialog, (Figure 58), in the same way as backups from a system of the same version.

It is possible to restore backups from an earlier version to a later version of the system. After the restore an upgrade procedure will be performed to convert data. See also the *System 800xA Upgrade (3BSE036342*)* instruction.



Before the restore is started you will get a report of what your restore will include. It also includes information about restoring from an older version i.e. doing an upgrade.

System Configuration Version

The System Configuration Version is created in the same way as a full backup. The only difference is that the object type name is System Configuration Object Type. The System Configuration Version is not configurable.

1. Select the System Configuration Version Definition object in the Maintenance Structure.

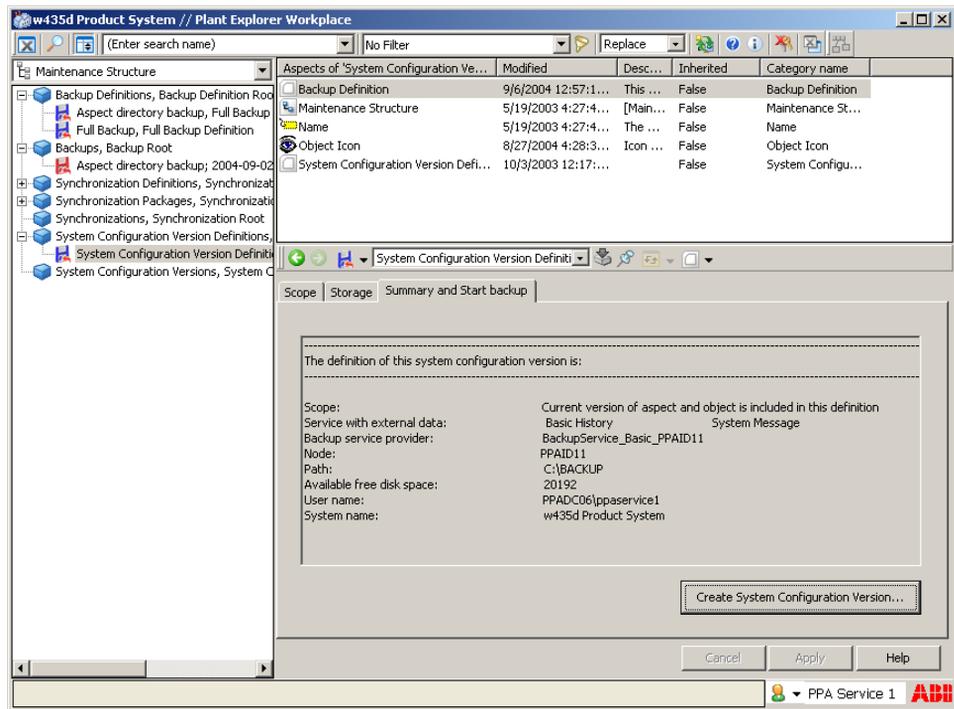


Figure 62. System Configuration Version Definition

2. Select the Backup Definition aspect and set a version identity in the **Summary and Start Backup** tab by clicking the **Create System Configuration Version..** button. See the figure above.
3. The tab includes information about Scope, Services, Node and Path etc.
4. Click the **Create System Configuration Version** button. A dialog is displayed where you enter the version. Click **OK**.
5. There is now a complete version of the system with an ID.

The restore process for a System Configuration Version works in an ordinary way, see [Restoring a Backup Containing Aspect Data](#) on page 129.

Warning and Error Messages

The warning and error messages that can be generated by the 800xA backup/restore utility are described in the following topics. Suggested solutions are also provided.

Failed to serialize aspect

Example

Tue Jul 01 08:41:03 2003 [Error]: Failed to serialize aspect 'Operator Messages Link Display' on object 'Web System Workplace'

Reason

It is not possible for the Backup function to save the aspect data.

Solution

Check in the system for the behavior of this aspect.

ASO object class xxxx did not implement IAfwAspectSystemObject. Failed to create ASO. Forgot to register dll?

Example

Tue Jun 10 19:02:17 2003 [Error]: ASO object class {7B7A13B3-8BB4-42A3-8289-987C579797C2} did not implement IAfwAspectSystemObject Failed to create ASO. Forgot to register dll?

Reason

This often occurs when a system extension is used, but not installed on the node from where the backup is taken. It can also happen if an update of a system extension has been installed, but not added to the system.

Solution

Install and add all system extensions on the node from where the backup is taken. Make sure that the correct version of the system extension is installed.

UnplacedObjects.afw

Example

[Warning] c:\PPABackup\MyBackup\UnplacedObjects.afw created

Reason

During backup process, the backup tool goes through all structures, if there is an object that doesn't exist in any structure, it will be placed in UnplacedObjects.afw and write a warning in the backup log, therefore, UnplacedObjects.afw is used for all objects which miss structure.

Solution

Check if there is any important object in UnplacedObjects.afw. If there is an important object in UnplacedObjects.afw, your backup is considered to be not complete. In such case, investigate what kind of object it is, and try to repair the system. One solution could be to add the object into the structure it should belong to. Take another backup.

The system cannot find the path specified

Example

Error detected for aspect 'Empty A3P' of object 'Document Manager Templates/Document Manager File Templates/Drawings'

Tue Jun 08 00:43:30 2004 The system cannot find the path specified.

EbServiceHandler: Object Id = {9AFACBA5-6B6A-462A-9EDF-78765740CD52},
Aspect Id = {89F8A8C4-10F7-4874-B77D-A8E6445D5C93}

EbServiceHandler: Failed to load document into stream!

Reason

When the backup was taken, the FSD cache was set too low. All data has NOT been backed up. There should be warnings in the System Event list about overflow in the Fsd cache.

Solution

Increase the Fsd Cache size (for all nodes).

System Extension 'xxxx' with id 'Guid' is not installed on this node

Example

System extension 'Engineering Base' with id {B775BEA4-7859-4649-AE16-901790822886} is not installed on this node.

Reason

There is a system extension, which is not available in the node where the backup is taken, or which is not properly removed. The latter can be the case if AC800 Connect has been upgraded and the old version is still registered in Industrial IT 800xA.

Solution

Use a backup node where all system extensions are installed.

Graphic aspect = xxx cannot be imported

Example

Mon Mar 29 19:52:32 2004 [Error]: Object = WI Mezzanine Deck, graphic aspect = Page Prev cannot be imported. Source directory = d:\OperateITData\Temp\ActiveGraphics\{800BA917-3D7F-44B6-B647-90C4B06A98FA}.restore.2.

Reason

Could be different reasons.

Solution

Check the source directory specified in the error message. The log file in this directory should give some hints of what caused the problem.

Too many aspects of category

Example

Sat Jun 05 17:04:33 2004: Too many aspects of category 'Name' on object '{82416BDF-5464-4422-A443-35E08E1065BE}'

Sat Jun 05 17:04:34 2004: Import/Export Error: Object {82416BDF-5464-4422-A443-35E08E1065BE} ({82416BDF-5464-4422-A443-35E08E1065BE}) - E_AFW_AD_TOO_MANY_ASPECTS (0x8abb081b) To many aspect of a specific type.

Sat Jun 05 17:04:34 2004: Failed to restore file C:\BWSC\BWSC Full Backup; 2004-06-03; 03-00\Control Structure28.afw. The importer returned hr = 0x8abb081b

Reason

The system was inconsistent at backup time (there were more than one aspect of category 'Name' on an object). The backup does not react on this, but restore will fail. The restore part will be fixed in a later release (it will be possible to import such an object, but a warning will be granted).

Solution

Open the file (in this case Control Structure28.afw) with the old import/export utility (<Install path>\bin\AfwImportExport_obsolete.exe), search for the aspect category and manually remove one of the two aspect categories.

Aspect category is missing

Example

Sat Jun 05 16:41:27 2004: Aspect '{506D9D24-E22A-4EDB-AFB0-0753B6DB6990}' on object 'SoftPoint Object Types' cannot be restored because the aspect category is missing

Sat Jun 05 16:41:27 2004: ObjectId: {9574CC3B-0E5E-4B14-A83E-F483CCDE6E44}

Sat Jun 05 16:41:27 2004: AspectId: {506D9D24-E22A-4EDB-AFB0-0753B6DB6990}

Reason

One or more aspect category has been removed, while there are aspects of that category still in the system. This inconsistency was present in the system when the backup was taken.

Solution

If the aspect category has been removed then these aspects may not be of interest any more. Check if the aspects are needed. If not, ignore this message.

Unknown transaction error

Example 1

Mon Apr 19 13:39:40 2004: Unknown transaction error

Reason

If this is the only error message, there is probably a problem with some windows resources.

Solution

Check your windows resources.

Example 2

Mon Jun 28 08:37:08 2004: Loading C:\BACKUP\Full Backup; 2004-06-23; 10-39\Aspect System Structure0.afw ...

Mon Jun 28 08:37:09 2004: Aspect 'Batch Management Operation' on object 'Batch Management Documents' failed to unserialize itself.

Mon Jun 28 08:37:09 2004: ObjectId: {814786F8-E6CC-44B0-9A2A-1787FADDFE6F}

Mon Jun 28 08:37:09 2004: AspectId: {2CE41978-DE94-44AC-9D38-B216FBA93C3A}

Reason

It is not possible for the Restore function to restore the aspect data with no solution.

Section 7 Single Node Replacement

Introduction

This section describes the general procedure that must be performed in order to recover from a node failure in a complete 800xA 5.1 800xA System (including all functional area information).



800xA for DCI is not included with the initial release of 800xA 5.1 and thus 800xA for DCI connectivity server replacement instructions are not documented in this user manual. Connectivity server replacement instructions will be provided with the 800xA for DCI 5.1 release documentation.

Recovery Paths

The three possible recovery paths discussed in this section are:

- [Reinstall Like New](#) on page 141.
- [Reinstall and Restore](#) on page 142
- [Recover Node](#) on page 143

The path chosen depends on the amount of information available for the node and hardware being replaced.

Reinstall Like New

This is the recommended path when no acceptable disk image or backup of system function information is available.

Software will need to be installed on the replacement node like it is being installed for the first time.

The general installation procedure is:

1. Clean (format) the repaired or replacement node.
2. Install the appropriate Windows operating system.

3. Install the removable media containing the system planner file for this node.
4. Install the System Installation Program.
5. Start the System Installation Program.
6. Following the instructions to load the:
 - a. Remaining Windows software.
 - b. Required third party software.
 - c. Required 800xA software.

Refer to the *System 800xA Automated Installation (3BSE034679*)*, the *System 800xA Manual Installation (3BSE034678*)* or the *System 800xA Post Installation (3BUA000156*)* instruction for more detailed information.

Reinstall and Restore

This is the recommended path when:

- No acceptable disk image exists but an acceptable backup of the system function information resident to the failed node is available. Use the Backup and Restore functions and/or the Import and Export functions to recover the required function (IM, Batch etc.) information
- *or* -
- An acceptable disk image is available but the whole node needs to be replaced and the replacement is not identical (hard disk drives are too small) to the failed node. Use the disk imaging software to recover the required information from the disk image.

Software will need to be installed on the repaired or replaced node like it is being installed for the first time (Refer to [Reinstall Like New](#) on page 141).

Refer to the *System 800xA Automated Installation (3BSE034679*)*, the *System 800xA Manual Installation (3BSE034678*)* or the *System 800xA Post Installation (3BUA000156*)* instruction, for more detailed information.

For detailed information about Backup, Restore, Import, and Export function see [Section 6, Backup and Restore](#) and [Section 5, Import/Export](#).

Refer to the documentation provided with the disk imaging software for detailed information about recovering data from a disk image.

Recover Node

This is the recommended path when:

- An acceptable disk image is available.
- *and* -
- An identical node (hard disk drives may be larger) is used to replace the failed node or only the hard disk drive needs to be replaced.

Use the following information and procedures to recover the node.

Disk Image

A node specific disk image should be taken after the 800xA system software has been installed and the post installation setup procedures have been performed. The creation of this image is discussed in the 800xA System Installation instruction. Restoration of this disk image will recover all the information and software components that were installed when the image was taken. These components are the operating system, third party software, 800xA software, some function specific information, etc.

Make a disk image of each node after the operating system and all third party software is installed. For some applications, especially Information Management, it is important to make a disk image of each disk that holds configuration and/or application data. For example, the history database may be distributed on two or more disks.

Make another, separate disk image of the node after all 800xA System software has been installed and post installation setup procedures have been performed.

A FAT partition may be required if using certain disk imaging utilities; however, most disk imaging software now supports FAT or NTFS.

Combined Node Types

The following combinations of node type, connectivity software, and application software are allowed in 800xA systems.

- Aspect Server and Connectivity Server software.

- Batch, Information Management, and Asset Optimization software.
- Single node engineering system.

When replacing these nodes, restore the base node type first and then restore connectivity and application specific information.

Aspect Server

The Aspect Server is the central part of an 800xA system. Most 800xA systems are engineered to contain redundant Aspect Servers because recovering fully from losing the only Aspect Server in a single Aspect Server system is very complicated. Optimally, the Aspect Server should not contain other Connectivity Server or Application Server software with the exception of Central Licensing System, Engineering Studio software and SMS and E-mail Messaging.

Use the following procedures to restore a failed redundant Aspect Server in 800xA 5.1.

To restore a redundant Aspect Server:

1. Repair or replace the failed node.



The following steps should be considered while replacing an Aspect Server node in a system:

- 1) Delete the Event Storage provider that will be replaced.
- 2) Add a new Event Storage provider.
2. Remove the failed node from the Domain:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select `DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name`.

- h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node (listed as last segment of IP address).
 - l. Select **Delete** on the pop-up menu.
3. Physically disconnect the failed node from the network.
 4. Restore a previously saved disk image.
 5. Remove the node from the domain on the node itself.
 6. Connect the node to the network and to the Windows domain.



- Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.
7. Open the Configuration Wizard on the node being restored and select Connect Node.
 8. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
 9. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
 10. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
 11. When restoring a CLS Client node, it may be necessary to reselect the CLS Server node using the License Status Viewer window.
 12. When restoring the CLS Server software it may be required to reload the 800xA licenses:
 - a. Select **Start > All Programs > ABB Industrial IT 800xA > System > Licensing > License Entry**.
 - b. Select the file containing the licenses from the 'Load/Replace Licenses' under the File menu.

Connectivity Servers

The following types of Connectivity Servers are described in this replacement procedure.

- 800xA for AC 800M.
- FOUNDATION Fieldbus.
- PROFIBUS and HART.
- 800xA for Advant Master.
- 800xA for Harmony.
- 800xA for AC 870P/Melody.
- 800xA for MOD 300.
- 800xA for SafeGuard.

800xA for AC 800M

800xA for AC 800M nodes can contain the following software:

- 800xA for AC 800M (on all AC 800M nodes).
- OPC Server for AC 800M.
- Control Builder M.

800xA for AC 800M

To restore individual 800xA 5.1 AC 800M Connectivity Server nodes:

1. Remove the failed node from the domain.
2. Disconnect the failed node from the network.
3. Restore the saved disk image to the replacement node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

4. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.

- c. Select Computers.
 - d. Right click the name of the failed x.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
5. Connect the replacement node to the network.
 6. Configure the name of the replacement node to be the same as the failed node.
 7. Add the replacement node to the domain.
 8. Confirm that the name and IP address are correct for the replacement node.
 9. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
 10. Open the Configuration Wizard on the node being restored and select Connect Node.
 11. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
 12. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
 13. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
 14. Reset any objects, programs, etc. that were left in an undesirable state to a state that will allow normal operation. For example, if the failure occurred while a

backup was in process, the backup dialog should be closed. Refer to the appropriate functional area documentation for more information.

15. Reboot the failed node to ensure that all processes startup properly. Refer to the appropriate functional area documentation for more information.

OPC Server For AC 800M

If OPC Server for 800M software was installed on the repaired/replaced node:

1. Start the OPC Server Setup Wizard on the repaired/replaced node.
2. Configure the appropriate OPC Server for AC 800M settings (Service Account) to the same values used on the repaired/replaced node.
3. Copy the backed up OPC Server configuration files (*.cfg file extension) to the working directory (C:\ABB Industrial IT Data\Control IT Data\OPC Server for AC 800M\ Files for example).
4. Copy the backed up system setup file (systemsetup.sys) to the working directory (C:\ABB Industrial IT Data\Control IT Data\OPC Server for AC 800M for example).

Control Builder M

If Control Builder M software was installed on the failed node:

1. Start the Control Builder M Setup Wizard on the repaired/replaced node.
2. Configure the appropriate Control Builder M settings (Language) to the same values used on the repaired/replaced node.
3. Copy the backed up system setup file (systemsetup.sys) to the working directory. The working directory is usually C:\ABB Industrial IT Data\Engineer IT Data\Control Builder M Professional.

FOUNDATION Fieldbus

Use the following procedures to restore FOUNDATION Fieldbus nodes.

Nonredundant Aspect Server Containing Local HSE Subnet Configuration. To restore an individual nonredundant Aspect Server node:

1. Remove the failed node from the domain.

2. Remove the failed node from the network.
3. Repair or replace the failed node.
4. Restore the saved disk to the replacement node.



In case of a completely new installed system node, which replaces the existing node, the used Device Types must be re-installed via Device Library Wizard. Refer to [Device Management & Fieldbus](#) on page 102 for details, how to re-install Device Types on a system node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

5. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
6. Configure the node to have the same DNS name and IP address as the failed node.

7. Connect the node to the network and to the Windows domain.



Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.

8. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
9. Open the Configuration Wizard on the node being restored and select Connect Node.
10. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
11. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
12. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
13. Reset any objects, programs that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.
14. Stop all processes that were left incomplete by the failed server. Refer to the appropriate functional area documentation for more information.
15. Restore application-specific information from the most recent node backup.

Nonredundant Aspect Server (HSE Subnet Configuration on different node).

Simply restoring a recent 800xA system backup can possibly overwrite actual HSE Subnet configuration changes.

To determine whether the 800xA system backup contains the latest configuration changes and restore a nonredundant Aspect Server:

1. Open a Plant Explorer workplace on another node containing the HSE Subnet configuration.
2. Select the Control Structure.
3. Select the HSE Subnet\FFUpload aspect.
4. Select the HSE Upload tab.
5. Check the time found in the Version Information\HSE Subnet field.

6. Determine if any changes have been made from the time the backup was made.
7. If the 800xA system backup does contain the latest configuration changes, proceed to the next step. If the 800xA system backup does not contain the latest configuration changes, copy all files (*.pro, *.bak, *.log files and the libraries.hwm file) from HSE Subnet configuration folder to a temporary folder and then proceed to the next step.
8. Remove the failed node from the domain.
9. Remove the failed node from the network.
10. Repair or replace the failed node.
11. Restore the saved disk to the replacement node.



In case of a completely new installed system node, which replaces the existing node, the used Device Types must be re-installed via Device Library Wizard. Refer to [Device Management & Fieldbus](#) on page 102 for details, how to re-install Device Types on a system node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

12. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.

- i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
13. Configure the node to have the same DNS name and IP address as the failed node.
 14. Connect the node to the network and to the Windows domain.



Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.

15. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
16. Open the Configuration Wizard on the node being restored and select Connect Node.
17. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
18. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
19. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
20. Reset any objects, programs that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.
21. Stop all processes that were left incomplete by the failed server. Refer to the appropriate functional area documentation for more information.
22. Restore the most recent 800xA system backup.
23. If the 800xA system backup did not contain the latest configuration changes, copy all files (*.pro, *.bak, *.log files and the libraries.hwm file) from temporary folder to the HSE Subnet configuration folder. Overwrite the existing files.

Redundant Aspect Server (or Any Node) Containing Local HSE Subnet

Configuration. The general restore procedure restores only 800xA System data of the node (e.g. for a redundant aspect server). The HSE Subnet configuration data must be restored manually.

1. Remove the failed node from the domain.
2. Remove the failed node from the network.
3. Repair or replace the failed node.
4. Restore the saved disk to the replacement node.



In case of a completely new installed system node, which replaces the existing node, the used Device Types must be re-installed via Device Library Wizard. Refer to [Device Management & Fieldbus](#) on page 102 for details, how to re-install Device Types on a system node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

5. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.

1. Select **Delete** on the pop-up menu.
6. Configure the node to have the same DNS name and IP address as the failed node.
7. Connect the node to the network and to the Windows domain.
-  Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.
8. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
9. Open the Configuration Wizard on the node being restored and select Connect Node.
10. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
11. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
12. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
13. Reset any objects, programs that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.
14. Stop all processes that were left incomplete by the failed server. Refer to the appropriate functional area documentation for more information.
15. Restore HSE Subnet configuration manually from a recent 800xA system backup:
 - a. Create and share the folder for the HSE Subnet configuration of Fieldbus Builder FF according to the instructions in the 800xA - System, Post Installation Setup instruction.
 - b. Select directory of the most recent 800xA system backup. The node and path of the backup is shown on the Maintenance Structure\Backup object\Storage tab in the Plant Explorer Workplace.
 - c. Verify that the directory contains a folder with the name 1B0397BA-124C-4A0A-B3FE-AEE68E8EDF96. The number is the GUID of the FBBFF system extension and is identical for all system versions.

- d. Copy all *.pro files from that folder to the HSE Subnet configuration folder.
- e. Remove the ReadOnly attribute from all the *.pro files copied to the HSE configuration folder.

Redundant Aspect Server (HSE Subnet Configuration on different node).

Refer to [FOUNDATION Fieldbus](#) on page 148.

FOUNDATION Fieldbus Connectivity Server (OPC Server FF), Redundant FOUNDATION Fieldbus Connectivity Server (OPC Server FF), FOUNDATION Fieldbus Connectivity Server as part of any combined server (CS + AS, CS + AS + AO). To restore a FOUNDATION Fieldbus Connectivity Server:

1. Remove the failed node from the domain.
2. Remove the failed node from the network.
3. Repair or replace the failed node.
4. Restore the saved disk to the replacement node.



In case of a completely new installed system node, which replaces the existing node, the used Device Types must be re-installed via Device Library Wizard. Refer to [Device Management & Fieldbus](#) on page 102 for details, how to re-install Device Types on a system node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

5. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.

- d. Right click the name of the failed node.
- e. Select **Delete** on the pop-up menu.
- f. Select **Start > Programs > Administrative Tools > DNS**.
- g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
- h. Right click the failed node.
- i. Select **Delete** on the pop-up menu.
- j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
- k. Right click the failed node which is listed as last segment of IP address.
- l. Select **Delete** on the pop-up menu.

6. Configure the node to have the same DNS name and IP address as the failed node.
7. Connect the node to the network and to the Windows domain.



Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.

8. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
9. Open the Configuration Wizard on the node being restored and select Connect Node.
10. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
11. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
12. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
13. Reset any objects, programs that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.

14. Stop all processes that were left incomplete by the failed server. Refer to the appropriate functional area documentation for more information.
15. Restore manually any system setting changes done after last node backup (e.g. DCOM settings).
16. Restore user changed registry settings of OPC FF if applicable (as documented in the 800xA - Device Management FOUNDATION Fieldbus, Configuration instruction).
17. Download project data into the OPC Server FF node with Fieldbus Builder FF:
 - a. Open the HSE Subnet project that was affected by the repair/replacement action.
 - b. Go into commissioning mode.
 - c. Select the OPC Server FF node.
 - d. Execute command Object\Download.

Client nodes (Fieldbus Builder FF engineering nodes). To restore a client node:

1. Remove the failed node from the domain.
2. Remove the failed node from the network.
3. Repair or replace the failed node.
4. Restore the saved disk to the replacement node.



In case of a completely new installed system node, which replaces the existing node, the used Device Types must be re-installed via Device Library Wizard. Refer to [Device Management & Fieldbus](#) on page 102 for details, how to re-install Device Types on a system node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

5. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.

- b. Select the active domain.
- c. Select Computers.
- d. Right click the name of the failed node.
- e. Select **Delete** on the pop-up menu.
- f. Select **Start > Programs > Administrative Tools > DNS**.
- g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
- h. Right click the failed node.
- i. Select **Delete** on the pop-up menu.
- j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
- k. Right click the failed node which is listed as last segment of IP address.
- l. Select **Delete** on the pop-up menu.

6. Configure the node to have the same DNS name and IP address as the failed node.
7. Connect the node to the network and to the Windows domain.



Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.

8. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
9. Open the Configuration Wizard on the node being restored and select Connect Node.
10. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
11. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
12. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.

13. Reset any objects, programs that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.
14. Stop all processes that were left incomplete by the failed server. Refer to the appropriate functional area documentation for more information.
15. Manually restore any additional user specific FF configuration data exported from Fieldbus Builder FF by copying these export files back to the desired location.

Configuration data from Fieldbus Builder FF may be:

- Partial exports of FBB FF configuration (Linking Device nodes, H1 Link nodes, Function Block Application Diagrams etc.).
- Parameter values of block instances, HSE Subnet objects, HSEHostCI860 objects.

HART and PROFIBUS

Use the following procedures to restore HART and PROFIBUS nodes.

Nonredundant Aspect Server Containing PROFIBUS/HART Connectivity Server. To restore an individual nonredundant Aspect Server node:

1. Remove the failed node from the domain.
2. Remove the failed node from the network.
3. Repair or replace the failed node.
4. Restore the saved disk to the replacement node.



In case of a completely new installed system node, which replaces the existing node, the used Device Types must be re-installed via Device Library Wizard. Refer to [Device Management & Fieldbus](#) on page 102 for details, how to re-install Device Types on a system node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

5. Remove the failed node from the Domain Server files:

- a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
6. Configure the node to have the same DNS name and IP address as the failed node.
 7. Connect the node to the network and to the Windows domain.



Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.

8. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
9. Open the Configuration Wizard on the node being restored and select Connect Node.
10. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
11. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
12. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.

13. Reset any objects, programs that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.
14. Stop all processes that were left incomplete by the failed server. Refer to the appropriate functional area documentation for more information.
15. Perform the following action as detailed in the Device Management PROFIBUS & HART Configuration instruction:
 - Install all required PROFIBUS and HART Device Types be used in on the system node. Refer to the *System 800xA Configuration (3BDS011222*)* manual for details.

Redundant Aspect Server Containing PROFIBUS/HART Connectivity Server.

To restore an individual redundant Aspect Server node:

1. Remove the failed node from the domain.
2. Remove the failed node from the network.
3. Repair or replace the failed node.
4. Restore the saved disk to the replacement node.



In case of a completely new installed system node, which replaces the existing node, the used Device Types must be re-installed via Device Library Wizard. Refer to [Device Management & Fieldbus](#) on page 102 for details, how to re-install Device Types on a system node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

5. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.

- e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
6. Configure the node to have the same DNS name and IP address as the failed node.
 7. Connect the node to the network and to the Windows domain.



- Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.
8. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
 9. Open the Configuration Wizard on the node being restored and select Connect Node.
 10. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
 11. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
 12. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
 13. Reset any objects, programs that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.

14. Stop all processes that were left incomplete by the failed server. Refer to the appropriate functional area documentation for more information.
15. Perform the following action as detailed in the Device Management PROFIBUS & HART Configuration instruction:
 - Install all required PROFIBUS and HART Device Types be used in on the system node. Refer to the *System 800xA Configuration (3BDS011222*)* manual for details.

Redundant PROFIBUS/HART Connectivity Server. To restore a redundant PROFIBUS/HART Connectivity Server:

1. Remove the failed node from the domain.
2. Remove the failed node from the network.
3. Repair or replace the failed node.
4. Restore the saved disk to the replacement node.



In case of a completely new installed system node, which replaces the existing node, the used Device Types must be re-installed via Device Library Wizard. Refer to [Device Management & Fieldbus](#) on page 102 for details, how to re-install Device Types on a system node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

5. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.

- g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
6. Configure the node to have the same DNS name and IP address as the failed node.
 7. Connect the node to the network and to the Windows domain.



Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.

8. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
9. Open the Configuration Wizard on the node being restored and select Connect Node.
10. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
11. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
12. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
13. Reset any objects, programs that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.
14. Stop all processes that were left incomplete by the failed server. Refer to the appropriate functional area documentation for more information.
15. Perform the following action as detailed in the Device Management PROFIBUS & HART Configuration instruction:

- Install all required PROFIBUS and HART Device Types be used in on the system node. Refer to the *System 800xA Configuration (3BDS011222*)* manual for details.

Client Nodes (Device Management PROFIBUS & HART Engineering Nodes).

To restore a client node:

1. Remove the failed node from the domain.
2. Remove the failed node from the network.
3. Repair or replace the failed node.
4. Restore the saved disk to the replacement node.



In case of a completely new installed system node, which replaces the existing node, the used Device Types must be re-installed via Device Library Wizard. Refer to [Device Management & Fieldbus](#) on page 102 for details, how to re-install Device Types on a system node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

5. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.

- i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
6. Configure the node to have the same DNS name and IP address as the failed node.
 7. Connect the node to the network and to the Windows domain.



- Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.
8. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
 9. Open the Configuration Wizard on the node being restored and select Connect Node.
 10. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
 11. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
 12. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
 13. Reset any objects, programs that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.
 14. Stop all processes that were left incomplete by the failed server. Refer to the appropriate functional area documentation for more information.
 15. Perform the following action as detailed in the Device Management PROFIBUS & HART Configuration instruction:
 - Install all required PROFIBUS and HART Device Types be used in on the system node. Refer to the *System 800xA Configuration (3BDS011222*)* manual for details.

800xA for Advant Master and Safeguard

To restore individual 800xA 5.1 800xA for Advant Master and Safeguard Connectivity Server nodes:



If the user wants to restore a image taken after last SW change on the Connectivity Server then:

1. Disconnect the CS from MB300 network.
2. Move the RTA board from the failed node to the replacement node.
3. Restore the image on the replaced HW.
4. Start up the CS and Verify connection with the Service Connection Viewer (use the appropriate tray icon).
5. Restart the node and connect the CS to MB300 network.

If Recover Node then:

1. Disconnect the failed node from both MB300 and IP networks.
2. Move the PU515A RTA board or a PU410 RTA unit from the failed node to the replacement node. Note that the RTA configuration, dialogs, and status indications do not differ or depend on the type of RTA hardware used, once the installation is completed.
3. Restore the saved disk image to the replacement node.



If no error message occurs then go directly to point 10.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain again.

4. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.

- g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
5. Connect the replacement node to the 800xA network but not the MB300 network.
6. Configure the name of the replacement node to be the same as the failed node.
7. Add the replacement node to the domain.
8. Confirm that the name and IP address are correct for the replacement node.
9. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
10. Install MS hotfixes, 800xA servicepacks and rollups installed after recover image were taken.
11. Open the Configuration Wizard on the node being restored and select Connect Node.
12. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
13. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
14. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
15. Reset any objects, programs, etc. that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.

16. Stop all processes that were left incomplete by the failed node. Refer to the appropriate functional area documentation for more information.
17. Copy the three backed up RTA Board configuration files (DATHR*.CD) to the `..\ProgramData\ABB\AC400Connect\AdvantBase\Data\RTA\Init\` folder.



Before restoring these files, make sure the node being restored is running the same character conversion language used by the node from which the files were backed up.



In the Windows Explorer, select **Tools > Folder** to view and access the ProgramData folder. The **Folder Options** dialog appears. Select the **View** tab in the **Folder Options** dialog. Click **Show hidden files and folders** option.

18. Restore MB300 network configuration settings by setting network, node, PU410 redundant cable supervision, and clock master settings to those recorded during backup.
19. For each Connectivity Server, compare the saved files, **AdvDsMasterAdapter.csv** and **AdvMbAeOPCServer.csv** with the installed version of the files in `<installation path>\bin`. If any customization was done to the old files, update the installed version of the files with the corresponding changes.
20. Restart the RTA Board in the RTA Board Control configuration dialog.
21. Connect the replacement node to the MB300 network.

800xA for Harmony

Use the following procedures to restore an 800xA for Harmony Configuration Server, 800xA for Harmony Client, Primary or Secondary 800xA for Harmony Connectivity Server nodes in 800xA 5.1 systems.

To restore an individual node:

1. Remove the failed node from the network.
2. Repair or replace the failed node.
3. Restore a previously saved disk image.
4. Remove the failed node from the Domain Server files:

- a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
5. Configure the node to have the same DNS name and IP address as the failed node.

6. Connect the node to the network and to the Windows domain.



Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.

7. Open the Configuration Wizard on the node being restored and select Connect Node.
8. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
9. Verify connection with Service Connection Viewer (use the appropriate tray icon).
10. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.



Do not use a SQL Server generated backup done through a SQL Maintenance Plan or manually through the SQL Enterprise Manager for the restore operation. The 800xA for Harmony backup/restore utility does not support this format. Ensure that your Maintenance Procedures include a 800xA for Harmony backup utility generated backup each and every time you do a backup of your Aspect System. These two backups must be synchronized at the time of a restore operation.



When restoring an 800xA for Harmony Configuration Server, the Harmony configuration must be current (in sync) with the Aspect Server configuration running. If the disk image being utilized to restore is current, step 11 can be skipped. If the Harmony configuration is not in sync, the potential exists that duplicate Harmony objects will be created in the Aspect Server.

11. If the node being restored is a Harmony Configuration Server node or a combined Primary Harmony Connectivity/Configuration Server node:
 - a. Log into 800xA Install account or local administrator account.
 - b. Select **Start > Programs > ABB Industrial IT 800xA > 800xA for OCS Systems > Harmony > Configuration > Restore Configuration**.
 - c. Click **Connect**.
 - d. Choose the backup file to restore.
 - e. Click **Restore**.

800xA for AC 870P/Melody

Use the following procedures to restore a 800xA 5.1 Melody Operator Workplace, Connectivity Server, and Configuration Server node:

To restore an individual node:

1. Remove the failed node from the network.
2. Repair or replace the failed node.

3. Restore a previously saved disk image.



If the node being restored is the Melody Configuration Server node, stop the Server Aspect Controller in the Service Structure to avoid automatic synchronization of the obsolete Configuration Server database of the restored disk image.

4. Remove the failed node from the Domain Server files:
 - a. Select **Start > All Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
 5. Configure the node to have the same DNS name and IP address as the failed node.
 6. Connect the node to the network and to the Windows domain.
-  Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.
7. Open the Configuration Wizard on the node being restored and select Connect Node.

8. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.



The amount of time it takes to connect to the 800xA system depends on the type of node (Melody Connectivity Server or Melody Operator Workplace) being restored.

9. Verify connection with Service Connection Viewer (use the appropriate tray icon).
10. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
11. If the node being restored is the Melody Configuration Server node:
 - a. Log into the 800xAInstaller account or an 800xA administrator account.
 - b. Select **Start > All Programs > ABB Industrial IT 800xA > 800xA for AC 870P Melody > Configuration > Restore Configuration**.
 - c. Click **Connect**.
 - d. Choose the backup file to restore.
 - e. Click **Restore** and follow the instructions of the Backup and Restore tool.
 - f. After successful restoration of the Melody Configuration Server, reboot all Melody Connectivity Servers one at a time.
 - g. Restart the Server Aspect Controller in the Service Structure.

800xA for MOD 300

Use the following procedures to restore a MOD 300 Connectivity Server node. The MOD 300 function is only available for 800xA 5.1 systems.

The MOD 300 Connectivity Server does not have any configuration or process data that must be restored.

If the MOD 300 Connectivity Server must be replaced:

1. Remove the failed node from the network.
2. Repair or replace the failed node.
3. Move the RTA board from the failed node to the replacement node.



The RTA board may or may not function. Ensure that it is functional before moving it to the replacement node. Replace the RTA board if it is not functional.

4. Restore a previously saved disk image.
5. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
6. Configure the node to have the same DNS name and IP address as the failed node.
7. Connect the node to the network and to the Windows domain.



Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.

8. Open the Configuration Wizard on the node being restored and select Connect Node.
9. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
10. Verify connection with the Service Connection Viewer (use the appropriate tray icon).

11. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
12. Confirm settings for time synchronization, communications settings for DCN address and omf shared memory, redundant Connectivity Server name, and Hyper Terminal installation are correct according to the 800xA System Post Installation Setup instruction.



Refer to the *800xA for MOD 300 5.1 Configuration (3BUR002417*)* instruction, Appendix F, for more information on customized data settings.

Application Servers and Software

The following types of Application Servers and software are detailed in this replacement procedure.

- Central Licensing System.
- Engineering Studio.
- PC, Network, and Software Monitoring.
- Batch Management.
- Information Management.
- Asset Optimization.
- SMS and E-mail Messaging
- Diagnostic Collection Tool.

Common Application Software

All 800xA System nodes (except the domain server) contain Central Licensing System (CLS) client and Engineering Studio.

Diagnostic Collection Tool

Diagnostic Collection Tool software must be installed on all nodes including Domain Controllers. Just restore these nodes based in the node type and the DCT software will automatically be restored.

Central Licensing System

The Primary Aspect Server is the license server and all other nodes contain CLS client software. Just restore these other nodes based on the type of node it is and the CLS client software will automatically be restored. When restoring a CLS Client node, it may be necessary to reselect the CLS Server node using the License Status Viewer window.

Engineering Studio

Engineering Studio software is loaded during the system installation process. There are no designated Engineering Studio nodes. Therefore, just restore the node based on the type of node it is and the Engineering Studio software will automatically be restored. Refer to the appropriate instruction for more detailed information.

PC, Network and Software Monitoring

There are two ways that PNSM can be used and this determines where it is installed.

There is the full version of PNSM that is licensed and PNSM Basic Computer Monitoring that is unlicensed but has limited functionality. Both of these used the same PNSM installation. There is a separate server and client and a client only installation.

The PNSM Basic Computer Monitoring Server installation can be installed on any 800xA node including Aspect Servers.

The full version of PNSM can installed on any Connectivity Server subject to loading restrictions. Frequently is it installed on its own Connectivity Server or on a Connectivity Server together with Asset Optimization.

Irrespective of the use of PNSM and where the PNSM Server is installed use the following procedures to restore a failed node that contained PC, Network and Software Monitoring (PNSM) client or server node in 800xA 5.1 systems.

To restore a PNSM node:

1. Remove the failed node from the network.
2. Repair or replace the failed node.
3. Restore a previously saved disk image.
4. Remove the failed node from the Domain Server files:

- a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
5. Configure the node to have the same DNS name and IP address as the failed node.
 6. Connect the node to the network and to the Windows domain.
-  Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.
7. Open the Configuration Wizard on the node being restored and select Connect Node.
 8. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
 9. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
 10. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.

11. When restoring a PNSM Connectivity Server node:
 - a. Restore any user defined assemblies, scripts, and resource files.
 - b. Restore and reload any Management Information Base files (MIBs) that were not part of the standard MIBs loaded with the software.
 - c. Restart the node.

Batch Management

Use the following procedures to restore a failed Batch Management client or server node.

Clients and Redundant Servers (800xA 5.1)

To restore an individual Batch client or redundant server node:

1. Remove the failed node (or node containing failed operating system hard disk drive or corrupted operating system) from the domain.
2. Disconnect the failed node from the network.
3. Restore the saved disk image to the replacement node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

4. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.

- g. Select DNS\primary_domain_controller_name\Foward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
5. Connect the replacement node to the network.
6. Configure the name of the replacement node to be the same as the failed node.
7. Add the replacement node to the domain.
8. Confirm that the name and IP address are correct for the replacement node.
9. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
10. Open the Configuration Wizard on the node being restored and select Connect Node.
11. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
12. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
13. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
14. Restart the secondary Batch Server.
15. Restart the primary Batch Server.

All necessary information will be deployed to the new node and all services configured for the failed node are started on the replacement node.

Nonredundant Servers

Nonredundant servers (and single node system) can be restored however, some information will be lost. How much data is lost depends on when the node was last backed up. In some cases, failure of a nonredundant server node will leave parts of the system in an incomplete state. Some manual actions may be required to clean up the system before it will function correctly.



Any running batch control recipes will be lost when the node fails. Be sure to restore the batch (SQL Server) database along with the rest of the batch information.

To restore an individual Batch nonredundant server node:

1. Remove the failed node from the domain.
2. Disconnect the failed node from the network.
3. Restore the saved disk image to the replacement node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

4. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.

- j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
5. Connect the replacement node to the network.
 6. Configure the name of the replacement node to be the same as the failed node.
 7. Add the replacement node to the domain.
 8. Confirm that the name and IP address are correct for the replacement node.
 9. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
 10. Open the Configuration Wizard on the node being restored and select Connect Node.
 11. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
 12. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
 13. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
 14. Reset any objects, programs, etc. that were left in an undesirable state to a state that will allow normal operation. Refer to the appropriate functional area documentation for more information.
 15. Stop all processes that were left incomplete by the failed server. Refer to the appropriate functional area documentation for more information.
 16. Restore application-specific information from the most recent node backup.
- The server is now ready for normal operation.

Information Management Server

Use the following procedures to restore a failed Information Management server node.

To restore individual 800xA 5.1 Information Management nodes:

1. Remove the failed node from the domain.
2. Disconnect the failed node from the network.
3. Restore the saved disk image to the replacement node.



If an error message is received while trying to login after the node is restored, remove the node from the domain and then add it to the domain.



Verify the reverse and forward lookup zone for the DNS are running.

4. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
5. Connect the replacement node to the network.

6. Configure the name of the replacement node to be the same as the failed node.
7. Open the services control panel and change the "ABB Process Administration Service" to Manual.
8. Add the node to the domain. This will require a reboot.
9. Confirm that the name and IP address are correct for the replacement node.
10. Verify that the System Software User Settings action (within the Configuration Wizard) is correctly applied to the node.
11. Run the pasPwdAdmin tool to reset the IM User Settings for the domain service account.



It is assumed at this step, a History Restore will be performed on the node.

12. Reboot.
13. Use the history Oracle Instance wizard to drop the oracle configuration.
14. Open the Configuration Wizard on the node being restored and select Connect Node.
15. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.
16. Verify connection with the Service Connection Viewer (use the appropriate tray icon).
17. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
18. Reboot the node.
19. Reset any objects, programs, etc. that were left in an undesirable state to a state that will allow normal operation. Stop the Inform IT history Service for this IM. In particular, review the SoftPoints, Scheduler, Calculations located in the Node Structure to determine if all objects and properties are operating as expected and set to the proper state. Refer to the appropriate functional area documentation for more information.
20. Select **Start > All Programs > ABB Industrial IT 800xA > Information Management > Configuration Assistant**.

21. Click **Run Selected Configuration Tool**.
22. There are two valid recover paths for single node replacement. In the first path, a valid IM backup (as described in [Information Management](#) on page 90) exists for the IM node.

Based on the restore path available, create an oracle instance.

- a. If a valid IM backup will be restored, use the configuration wizard to create a database for restore of a History configuration. Select Small, Medium or Large for the database size. If the system had a large IMMSGLOG, select **Large**. Refer to the information used during initial installation to replicate database sizes, locations, memory space allocations, etc.
 - b. If no valid IM backup exists, create the database for the configuration created or for the configuration which has to be created. After the database is created, go to [Step 24](#).
23. Refer the restore section of [Information Management](#) on page 120.
 24. Enable PAS (enable the service, start PAS). Follow the IM post configuration steps if not completed.

Start the program:

Start > Programs > ABB Industrial IT 800xA > Information Mgmt > Configuration Assistant.

25. Review and verify the steps in the Configuration Assistant.
26. Select the incomplete steps in the Configuration Assistant.
27. Click **Run Selected Configuration Tool** to complete the steps.
28. Close the dialog.
29. Verify whether the system is running.
 - a. If the system was completely restored from a backup, numeric and message collection and archive should continue from the previous point.
 - b. If restore without backup, for the first time the system runs all the logs which should be recreated if enough disk space and oracle space was allocated. The time it takes to recreate everything will depend on the size of the configuration. When the logs are created, run **hsDBMaint –stagger**

(refer IM manuals). Once stagger is complete, run **PASGUI -> Restart ALL** and then activate all the logs.

As a final step, review all the node functionality to make sure the configuration.

Asset Optimization

Use the following procedures to restore a failed Asset Optimization client or server node in 800xA 5.1 systems.

Backup Service Providers Configuration

Before the Asset Optimization node is removed from the 800xA System, be sure to export the service groups and the service providers configured to run on the node. If an Asset Optimization node is removed from an 800xA system, all the service providers assigned to such node will be automatically removed from the Service Structure.

Asset Optimization Services are:

- AssetMonitoring Service
- AOAssetTree Service

To export the Service Providers running in a node:

1. Open Plant Explorer workplace.
2. Navigate to the Service Structure.
3. Identify all the service providers running in the node to be removed.
4. Drag and drop the identified service providers objects in the Import/Export tool.
5. Save the resulting AFW file with the other files in your backup media.

Restore Procedure

To restore an Asset Optimization node:

1. Remove the failed node from the network.
2. Repair or replace the failed node.
3. Restore a previously saved disk image.

4. Remove the failed node from the Domain Server files:
 - a. Select **Start > Programs > Administrative Tools > Active Directory Users and Computers** on the primary (or only) Domain Server node.
 - b. Select the active domain.
 - c. Select Computers.
 - d. Right click the name of the failed node.
 - e. Select **Delete** on the pop-up menu.
 - f. Select **Start > Programs > Administrative Tools > DNS**.
 - g. Select DNS\primary_domain_controller_name\Forward Lookup Zones\domain_name.
 - h. Right click the failed node.
 - i. Select **Delete** on the pop-up menu.
 - j. Select DNS\primary_domain_controller_name\Reverse Lookup Zones\1st_three_segments_of_IP_address_in_reverse_order.
 - k. Right click the failed node which is listed as last segment of IP address.
 - l. Select **Delete** on the pop-up menu.
5. Configure the node to have the same DNS name and IP address as the failed node.
6. Connect the node to the network and to the Windows domain.



Verify the reverse and forward lookup zone for the DNS are correct. Also verify that the DNS name and IP address of the node are still correct.

7. Open the Configuration Wizard on the node being restored and select Connect Node.
8. Select the appropriate Aspect Server. This will connect the restored node to the 800xA system.



The amount of time it takes to connect to the 800xA system depends on the type of node (Aspect Server, Connectivity Server or client) being restored.

9. Verify connection with Service Connection Viewer (use the appropriate tray icon).
10. Check CPU load using the Task Manager utility. When the processor load settles, the connection is finished.
11. Import service provider configuration information from the AFW file using the Import/Export tool (select **Import All** from the **Action** menu).
12. Restore Asset Optimization backup information. Refer to the Backup and Restore information in the 800xA System Administration and Security instruction for details.

SMS and E-mail Messaging

SMS and E-mail Messaging software is found on the primary Aspect Server.

Before the primary Aspect Server node is removed from the 800xA System, be sure to export the Messenger service group and service provider configured to run on the node.

Upon restoring the primary Aspect Server, import the saved Messenger service group and service provider.

Section 8 Information Management

Introduction

This section provides guidelines, reference, and troubleshooting information related to configuring and maintaining Information Management software.



Some procedures in this section require editing the Windows Registry on the Information Management server. It is recommended that you make a backup of the node before making any changes to the registry.

Common Issues

Common issues describes a list of items that to check to help solve problems. [Table 3](#) provides common issues that may occur and a where to go column with possible resolutions.

Table 3. Common Issues

Area	Issue	Where To Go
Operating System & Third-party Software	For general Oracle problems, check the DNS Server.	See Oracle Fails to Start on page 237.
800xA System	Make sure all required software and extensions are loaded to support implemented system functionality, particularly connectivity and controllers. Not having the required software on all nodes of your system may lead to such problems as not being able to access certain objects.	See Checking What Other Software is Installed on page 195.

Table 3. Common Issues (Continued)

Area	Issue	Where To Go
History	Cannot access history data.	See What To Look For When Logs Do Not Collect Data on page 228.
	Check the PAS Service Account. If this account is not configured correctly, it may cause many problems, including failure to start history.	See PAS Service Account on page 201.
	Insufficient Oracle tablespaces may cause the following problems: <ul style="list-style-type: none"> • can't create OPC message log. • can't restore database. • can't consolidate OPC or PDL messages or PDL data. 	See Insufficient Oracle Tablespace on page 231 and Insufficient Temp Tablespace and Rollback Segments on page 233.
	History fails to start.	See Cannot Start History on page 230.
	Cannot create history database (System Version 4.0 or higher).	See Cannot Create Oracle Database Instance on page 230.
	When working with history, make sure the user (currently logged in as) belongs to the HistoryAdmin and ORA_DBA groups. Make sure ORACLE_SID is included as part of the local user's environment settings.	See Cannot Access History Database via SQL on page 233.
	Cannot access Information Manager history aspects like the log status page or the tabs in the template.	See Cannot View Report from IM report logs on page 231.
Open Data Access	ODA on client nodes cannot access ODA tables on server.	Check whether or not the ODA client is installed, and check that the configuration references the server's IP address.

Table 3. Common Issues (Continued)

Area	Issue	Where To Go
Desktop Tools	Cannot log in to DataDirect (server not found error message).	Use the ADSS Config tool in the Windows Control Panel to check whether or not COM data provider is started, also check ABB Data Service Supervision in the Windows Services utility.
	Cannot retrieve messages or PDL data.	Use the ADSS Config tool in the Windows Control Panel to check the ADO data provider.
	Some icons not available in DataDirect.	Check the View tab in the Options dialog.
Reports	<p>When Excel (DataDirect) reports don't run:</p> <ul style="list-style-type: none"> • Make sure the DataDirect add-ins are added for the 800xA Service Account • Check the DataServerLogin parameter <p>When reports take too long to complete, or seem to hang, check the maximum time and timeout settings on the report action.</p>	<p>See:</p> <ul style="list-style-type: none"> • DataDirect Add-in Not Installed for 800xA Service Account on page 243 • Reading DataDirect (Excel) Reports from a FileViewer Aspect on page 243 • Fixing Large Reports (Long Execution Time) on page 242
Install/ Upgrade	Following upgrade or re-installation of Information Management software, the Windows Installer is launched when you attempt to use an application. The installer attempts to repair an Information Management software installation and does not allow any other applications to run.	See the <i>System 800xA Manual Installation (3BSE034678*)</i> , <i>System 800xA Post Installation (3BUA000156*)</i> , and the <i>System 800xA Upgrade (3BSE036342*)</i> instructions.

Getting Information for Support

This section describes the type of information that will help ABB technical support personnel diagnose and solve problems related to Information Management software, and provides guidelines on how to gather this information.

Table 4. Information for Diagnosing Problems

What information to gather	How to gather
Version of software including patches	Version Information on page 193
Circumstances under which the problem occurs Whether it is spurious or consistent The components and/or applications that are affected	Various sources, including: <ul style="list-style-type: none"> • Windows Event Viewer on page 193 • Events Related 800xA Services on page 193 • System Status on page 194 • Performance Counters on page 208 • SQL Queries on page 220 • Debug Files and Trace Monitors for Display and DataDirect on page 223
Log files	Diagnostic Log Files on page 204
Windows and 800xA services, including PAS Service Account	<ul style="list-style-type: none"> • Services and Processes Related to Information Management on page 196 • PAS Service Account on page 201
Oracle tablespace	<ul style="list-style-type: none"> • Insufficient Oracle Tablespace on page 231 • Insufficient Temp Tablespace and Rollback Segments on page 233
Screen shots if possible	Windows Print Screen or equivalent utility
Installed software and system extensions.	Checking What Other Software is Installed on page 195

Version Information

Get the version information for your Information Management installation from the Version Information tool by selecting the following:

Start > Programs > ABBIndustrial IT 800xA > Information Management > Version Info

Windows Event Viewer

Check the application log of the Windows event viewer for messages related to Information Management services or 800xA users. [Figure 63](#). You may have to save the log to a file and send it to the supportline. Check Microsoft documentation for the procedure to save to a file.

Type	Date	Time	Source	Category	Event	User	Co
Error	12/31/2004	3:40:56 PM	ABB Data Service Supervision	None	2	800xAService	EN
Information	12/31/2004	3:40:56 PM	ADS	None	100	N/A	EN
Error	12/31/2004	3:40:56 PM	ADS	None	100	N/A	EN
Error	12/31/2004	3:40:56 PM	ADS	None	100	N/A	EN
Error	12/31/2004	3:40:56 PM	ADS	None	100	N/A	EN
Information	12/31/2004	3:25:46 PM	ADS	None	100	N/A	EN
Error	12/31/2004	3:25:46 PM	ABB Data Service Supervision	None	2	800xAService	EN
Information	12/31/2004	3:25:46 PM	ABB Data Service Supervision	None	0	800xAService	EN
Error	12/31/2004	3:25:46 PM	ABB Data Service Supervision	None	2	800xAService	EN
Information	12/31/2004	3:25:46 PM	ADS	None	100	N/A	EN
Error	12/31/2004	3:25:46 PM	ADS	None	100	N/A	EN
Error	12/31/2004	3:25:46 PM	ADS	None	100	N/A	EN
Error	12/31/2004	3:25:46 PM	ADS	None	100	N/A	EN

Figure 63. Example, Windows Event Viewer Application Log

Events Related 800xA Services

Events related to 800xA services are collected by an alarm/event list aspect on the Services object in the Service structure, [Figure 64](#). You may create a more refined list by adding an aspect to a specific service, for example Industrial IT Archive Service, or to a specific Service Group or Service Provider object. Set the Configuration Name to **Services: Service Event List Configuration** and set the filter for **Object and descendents**.

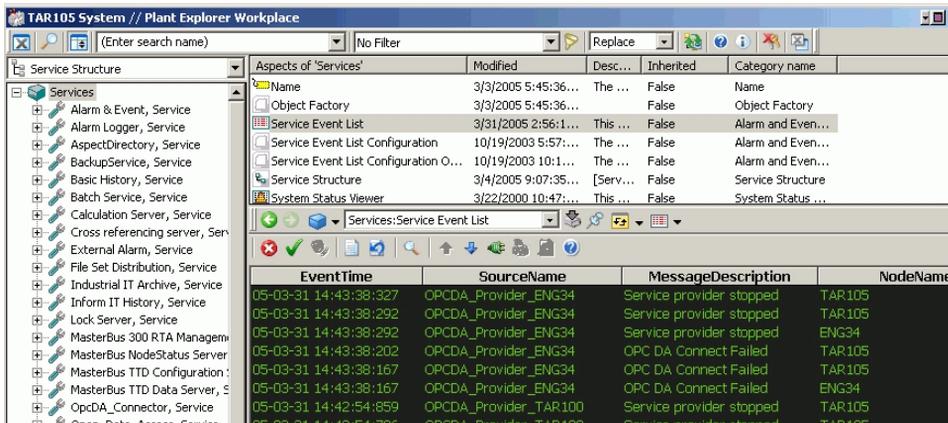


Figure 64. Alarm/Events List Aspect for 800xA Services

System Status

Check the System Status Viewers in the Plant Explorer on the Node Administration and Service structures, [Figure 6](#). Add Alarm and Event Aspects at the Node and Service Group level for system messages ([Events Related 800xA Services](#) on page 193).

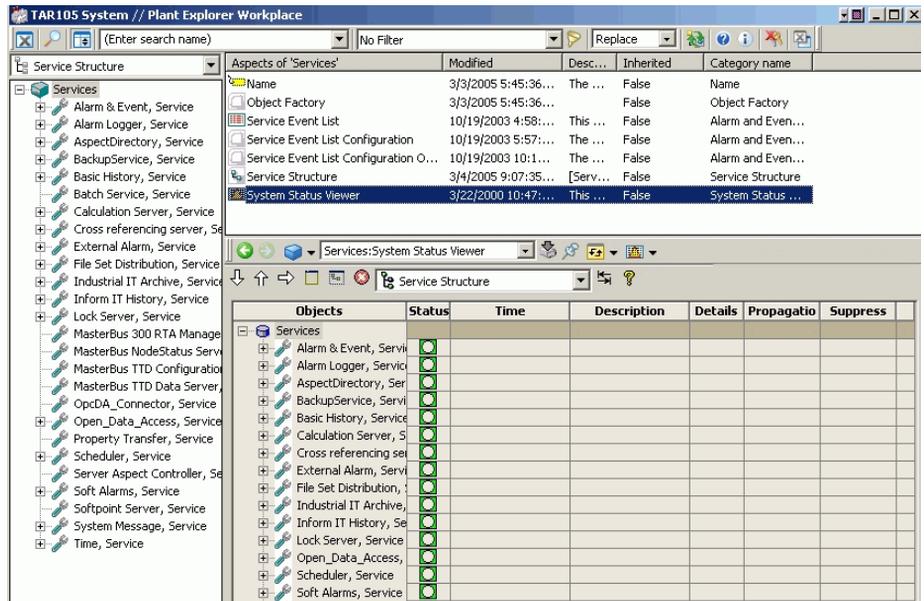
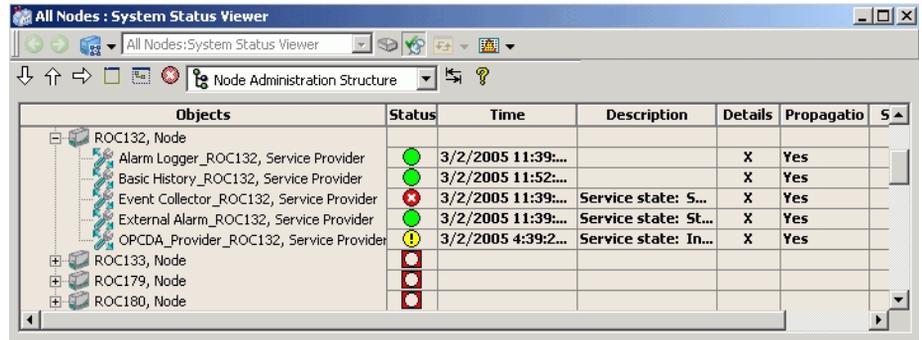


Figure 65. Status Viewer Example

Checking What Other Software is Installed

The information icon on the Plant Explorer tool bar displays a window that lists the 800xA software products installed on the system. Not having the required software on all nodes of your system may lead to such problems as not being able to access

certain objects. For example, if the AC800 Connect product is not installed on the Information Management server, you will not have access to AC800 objects on that node. If **Engineering Studio** is installed in the system, the engineering studio client must be installed on the Information Management server.

Services and Processes Related to Information Management

This section describes Windows and 800xA system services related to Information Management as follows:

- [Windows Services](#) on page 196 - accessible in Windows Services utility
- [800xA Service Groups and Service Providers](#) on page 198 - accessible via Plant Explorer Service structure
- [Processes](#) on page 200 - accessible via Windows Task Manager

Windows Services

Access to the Windows services is via the Services utility under Administrative Tools in the Windows Control Panel. Check whether the service is running, and verify the start-up mode and log-in are set correctly, [Table 5](#).

Table 5. Windows Services

Service	Description	Start-up Mode and Log-in
ABB Process Administration	Starts all non-AFW processes including Display Data Server, OMF, and parts of history. Processes under control of ABB Process Administration Service (PAS) may be started and stopped individually or as a group by the PAS dialog.	AUTOMATIC - starts with Windows start-up Runs as 800xa Service account
ABB Data Supervision	Supports data access for the Information Management Desktop Tools: Desktop Trends, Display Services, and DataDirect.	MANUAL - is started by PAS Runs as 800xAService
History Services	Starts Information Management History.	MANUAL - is started by PAS Runs as 800xAService

Table 5. Windows Services

Service	Description	Start-up Mode and Log-in
IIS Admin	Required for viewing reports stored in Information Management report logs.	AUTOMATIC - starts with Windows start-up Runs as local system
OMF/OMO	Used by History internally and for numeric log consolidation.	MANUAL - is started by PAS Runs as 800xa Service
Oracle Services	<p>Oracle 11 services:</p> <p>For 64-bit:</p> <p>Oracle ADVA VSS Writer Service OracleJobSchedulerADVA OracleMTSRecoveryService OracleOraDB11g_ADVA64ClrAgent OracleOraDB11g_ADVA64TNSListener OracleOraDB11g_ADVACMAdmin OracleOraDB11g_ADVACMan OracleServiceADVA</p> <p>For 32-bit:</p> <p>Oracle ADVA VSS Writer Service OracleJobSchedulerADVA OracleMTSRecoveryService OracleOraDB11g_ADVAClrAgent OracleOraDB11g_ADVATNSListener OracleServiceADVA</p>	<p>NOTE: AUTOMATIC - start with Windows start-up</p> <p>Manual Disabled Automatic Manual Automatic Manual Manual Automatic</p> <p>Manual Disabled Automatic Manual Automatic Automatic Run as local system</p>

Table 5. Windows Services

Service	Description	Start-up Mode and Log-in
ODA Services	ABB_ODA Manual	Runs as 800xa Service account and is managed by PAS.
	ABB_ODA_AGENT Automatic	Runs as local system

800xA Service Groups and Service Providers

The following Information Management functions are managed by service providers in the 800xA system:

- Calculations
- Archive - Industrial IT Archive (under PAS supervision)
- History - Inform IT History, started by PAS if not running and stays running. Can be stopped or restarted by the user if necessary.
- Application Scheduler
- Softpoint Server

The Service Provider represents the service running on a specific node. Service Providers are located under their respective *service* categories in the Service

structure, Figure 66.

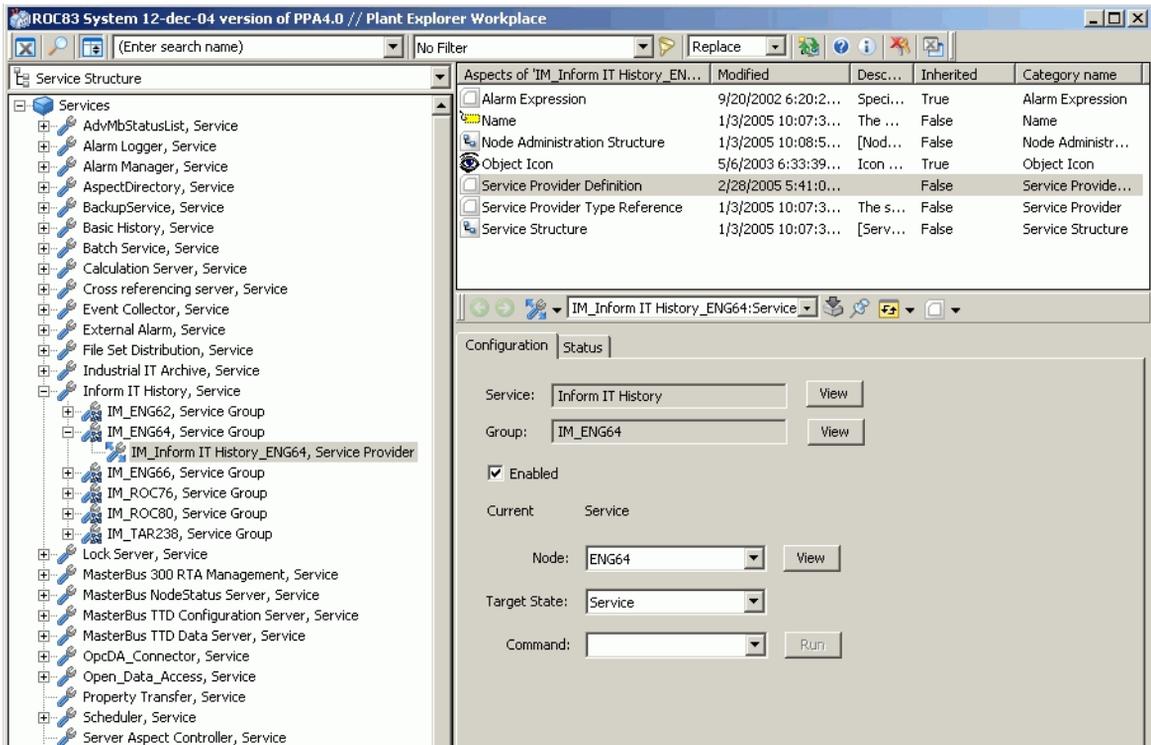


Figure 66. Service Structure

The archive service is under the control of PAS. Manually restarting the archive service will cause all the IM History to restart (PASGUI -> restart all). The History Service is started by PAS if it is not running and should always be enabled. The service can be stopped or started at any time without affecting history runtime.



Most Information Management components DO NOT support redundancy. For those components, no service group should have more than one service provider. Two exceptions are Softpoints as of 800xA 4.1 and Calculations as of 800xA 5.0.

Creating Softpoint Service Providers

The Softpoint Service Group/Service Provider must be manually created as part of the Softpoint Configuration. This is described in the section on softpoints in *System 800xA Post Installation (3BUA000156*)*.

Calculation and Scheduler Services on Non-Information Management Server Nodes

Calculations and Application Scheduler may also be installed and run on other types of server nodes in the 800xA system (not Information Management servers). In this case, the service group/service provider objects for those services must be created manually for each of those non-Information Management servers.

Processes

Processes related to Information Management are listed in [Table 6](#) and are accessible via the Windows Task Manager.

Table 6. Processes

Service	Related Processes	
Display Services	ADSdpADO ADSdpDCS ADSdpDDR ADSdpLOG	ADSdpOPC ADSdpOPDHDA ADSS (Startup program for the rest of the programs) ADSspCOM
Supporting Services	omfCleanup omfNameProc omfPM omfService omfTimer	omoNameBroker omoNodeBroker omoService omoStorageDomain omoTypeDirectory

Table 6. Processes (Continued)

Service	Related Processes
History	EHOPAEServer hsHistoryService hsAdmin hsHistSvcPASAdmin hsAchiveService hsHistoryIcon hsCollection hsProfileServer hsEventLogCollector hsRetrieval hsHDAServer hsServer hsLogman hsStorage hsMsgServer hsSuperIPC (Startup program) hsPDLStorage msgApiSrv PDLAPISRV
Calculation Service	CalculationService
Open Data Access	Odaserver Odaservice ABB_ODA_AGENT - oaagent.exe ABB_ODA - oasoa.exe, oastrtr.exe
Scheduler	AfwScheduler
PAS (overall startup)	PAS_Service

PAS Service Account

The PAS service account is configured via the Information Management Configuration wizard as a post installation step (or during Information Management software installation for 800xA 5.0 and higher). This establishes the user account under which most Information Management services run including History and Display Services. The PAS service account must be configured to match the ABB Service Manager (core services) account. You can check this quickly via the Windows Services Manager. Check the Log On As settings for the ABB ServiceManager, ABB Data Service Supervision, and History Service, [Figure 67](#). All three services should have the same log on setting.

Also, this user must be represented in the User structure under the Administrators User Group, [Figure 68](#).

If you need to change the PAS Service account, be sure to use the PAS Password Administration tool (**Start > Settings > Control Panel > Administrative Tools > PAS > Password Administration**). The tool under the History menu only sets the History account, it does not set the other services. The tool can also be started by typing "pasPwdAdmin.exe" in the Run dialog. After setting the password, the station should be rebooted for all the changes to take effect.

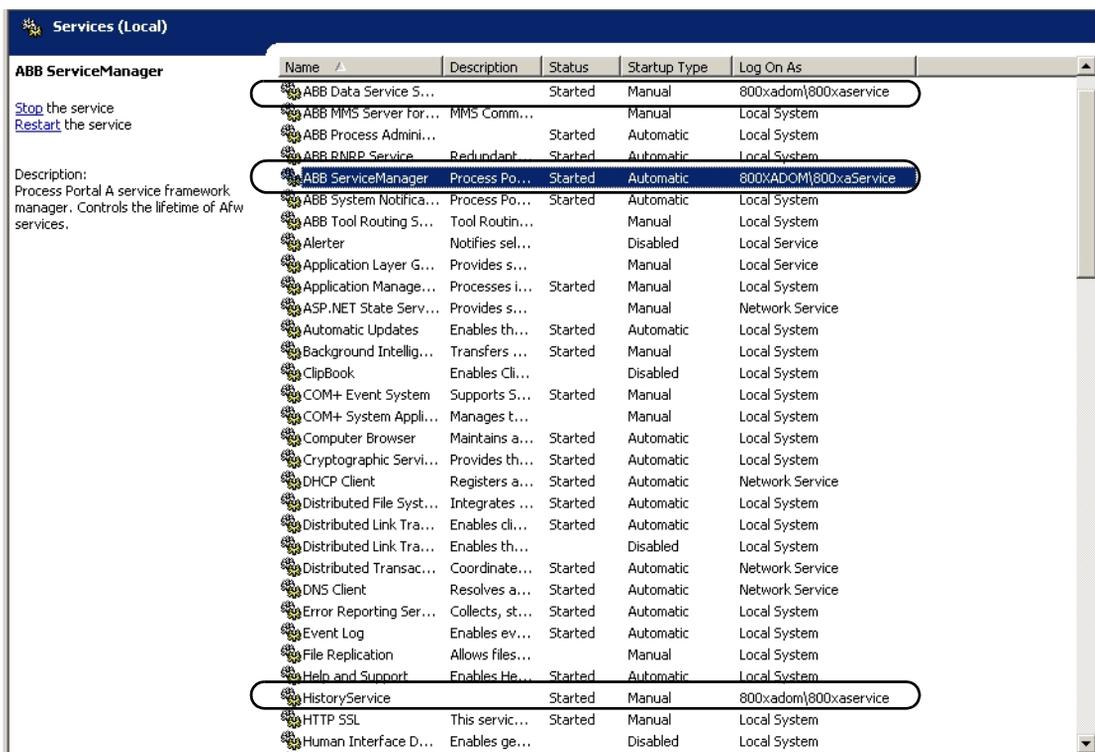


Figure 67. Verifying PAS Service Accounts

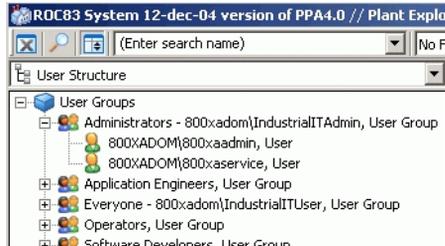


Figure 68. Checking the Service Account in the User Structure

Diagnostic Log Files

Some Information Management applications generate log files to facilitate troubleshooting, [Table 7](#).

Table 7. Log Files

Application	Location of Log Files
Information Management History	Enter %HS_LOG% in the Windows Explorer, Figure 69 . This points to C:\ProgramData\ABB\IM\History\log on the system drive (typically C:). An example log file is shown in Figure 70 .
Application Scheduler	Go to C:\ProgramData\ABB\IM\Scheduler\ on the system drive
Process Administration Service	Go to C:\ProgramData\ABB\PAS\Pas0.log
Open Data Access	<p>The ODA Server logging function records status information for each query against the Numericlog table.</p> <p>Logging is disabled by default. It is recommended that you leave logging disabled unless you are having problems and need to provide ABB support with a record of query activity. To enable logging, see the section on ODA in <i>System 800xA Information Management 5.1 Configuration (3BUF001092*)</i>.</p> <p>The log files will be located at: C:\ProgramData\ABB\IM\ODA</p>
Calculations	For 800xA 5.0, the Calculation server outputs diagnostic debugging messages to a series of files named CalcsDebug*.log, located in the C:\ProgramData\ABB\IM\Calculations directory.

Table 7. Log Files

Application	Location of Log Files
Installation	C:\programData\ABB\IM\Install and C:\programData\ABB\PAS
Oracle Diagnostic Logs	<p>alert_adva.log in C:\oracle\diag\rdbms\adva\adva\trace</p> <p>Find problems by searching for words like ERROR or ORA- (Be sure to include the hyphen after the A in ORA-. Otherwise, the search will stop at the word oracle which may occur thousands of times.)</p> <p>ORA-1652: unable to extend temp segment by 128 in tablespace TEMP</p> <p>ORA-000060: Deadlock detected. More info in file C:\ORACLE\admin\ADVA\udump\ORA04016.TRC.</p> <p>This log may be lengthy. If it is difficult to read with notepad, try wordpad or Microsoft Word. If this file gets too big (over years), stop PAS, stop Oracle, then delete the file.</p> <p>tnslister log (listener.log) location: C:\oracle\diag\tnslsnr\eng58\listener\trace</p>



- Upon a reboot the current log is saved as the log.old log and a new log is started.
- In some cases you may need to zip up the complete contents of the log folder and send it to a supportline center.

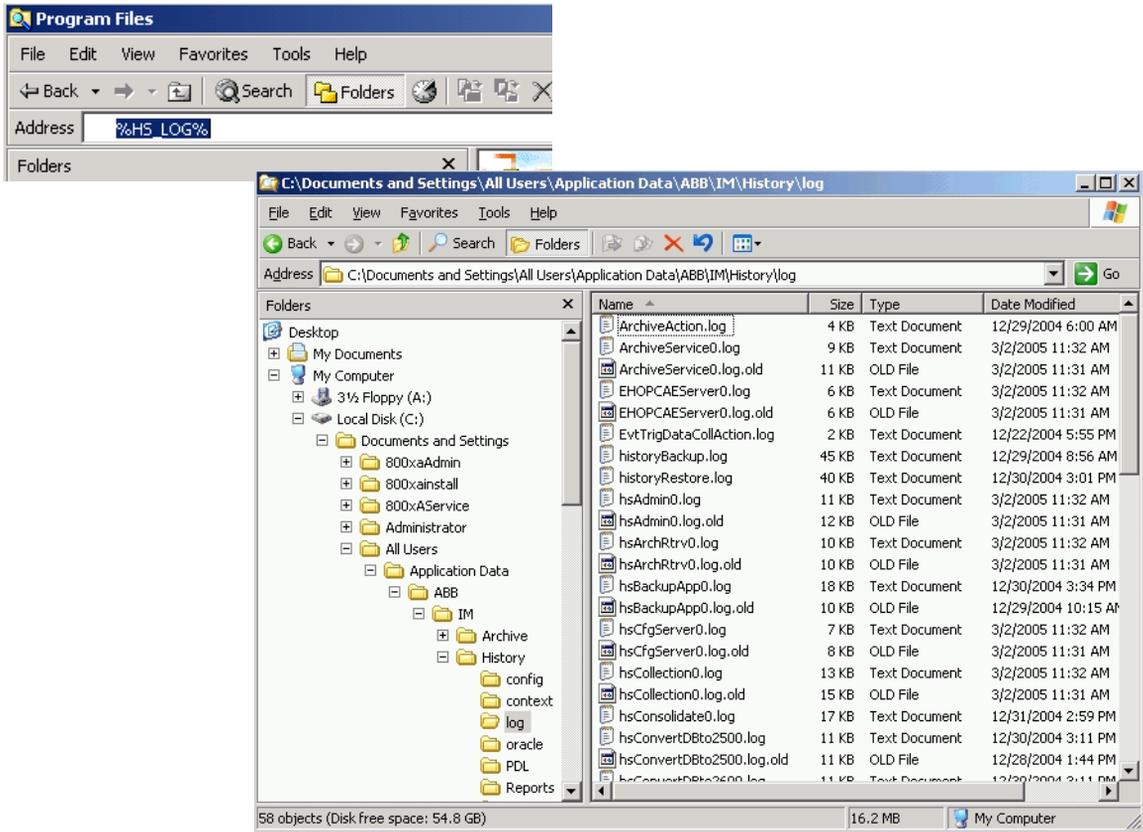


Figure 69. Accessing History Log Files

```

historyBackup.txt - Notepad
File Edit Format Help

hsBAR version hsBARC.c,v 20.1 2004/08/11 22:13:42
hsBAR invoked with the following command:
"hsBar -mb -h g:\hsBar\tar227"
HD backup--destination file is 'g:\hsBar\tar227'
Using 'D:\HsData\History\' for temp and oracle export directory
Connected to Oracle as <ops$ocshis>
WARNING: This backup is executing with History Running.
If PDL data is added, modified, or deleted during this backup, oracle may
not be able to enable constraints for the PDL tables. The restore log should
reviewed to verify the oracle import of all the constraints succeeded.
Database backed up by exp utility
command :exp USERID=/ file="D:\HsData\History\BARExport.dmp" OWNER=ops$ocshis BU

Export: Release 8.1.7.4.1 - Production on wed Mar 2 15:38:05 2005

(c) Copyright 2000 oracle Corporation. All rights reserved.

Connected to: Oracle8i Release 8.1.7.4.1 - Production
JServer Release 8.1.7.4.1 - Production
Export done in WE8ISO8859P1 character set and WE8ISO8859P1 NCHAR character set

About to export specified users ...
. exporting pre-schema procedural objects and actions
. exporting foreign function library names for user OPS$OCSHIS
. exporting object type definitions for user OPS$OCSHIS
About to export OPS$OCSHIS's objects ...
. exporting database links
. exporting sequence numbers
. exporting cluster definitions
. about to export OPS$OCSHIS's tables via Conventional Path ...
. . exporting table ARCHIVE_DB 797 rows exported
. . exporting table ARCHIVE_LOG 6375 rows exported
. . exporting table ATTR_ID_TO_NAME 217 rows exported
. . exporting table CLASS_ID_TO_NAME 34 rows exported
. . exporting table DIR_LIST 4 rows exported
. . exporting table ENG_UNIT_DESC 0 rows exported
. . exporting table FILE_LIST 103 rows exported
. . exporting table HIER_INFO 106 rows exported
. . exporting table HISTORY_ASSOCIATIONS 251 rows exported
. . exporting table HISTORY_ASSOCIATIONS_RST 0 rows exported
. . exporting table HISTORY_ASSOC_OCC_END 247 rows exported
. . exporting table HISTORY_ASSOC_OCC_END_RST 0 rows exported
. . exporting table HISTORY_ASSOC_OCC_START 251 rows exported
. . exporting table HISTORY_ASSOC_OCC_START_RST 0 rows exported
. . exporting table LOG_MAP_TABLE 105 rows exported
. . exporting table LOG_SOURCE 209 rows exported
. . exporting table MODIFIABLE_COLUMNS 62 rows exported
. . exporting table MODIFICATIONS_ATTRIBUTES 0 rows exported
. . exporting table MODIFICATIONS_ATTRIBUTES_RST 0 rows exported
. . exporting table MSG237
EXP-00002: error in writing to export file
EXP-00002: error in writing to export file
EXP-00000: Export terminated unsuccessfully
WARNING: This backup is executing with History Running.
If PDL data is added, modified, or deleted during this backup, oracle may
not be able to enable constraints for the PDL tables. The restore log should

```

Figure 70. Example Log File

Performance Counters

You can add counters to the standard Windows performance monitor to evaluate and debug the performance of Information Management history processes (System Version 4.0 or higher). These counters are active as long as the Windows performance monitor is open. For long term monitoring, you can record the counter statistics in a log file.

A quick summary of the available counters is provided in [Table 8](#).

Table 8. Information Management Performance Counters

Name	Description
IM API Counters	These counters let you monitor the number of messages in the queue, incoming messages per minute, and messages processed per minute for OPC message log and/or PDL message log. Use these counters when configuring your message logs to help you correctly size the message logging application, or to debug the message logging application when the performance is slow.
IM Archive Counters	These counters let you monitor the available disk space for archiving and/or the number of archive failures. Use these counters to debug the archive application when the performance is slow.
IM Collection Counters	These counters let you monitor the number of points per minute being collected for DA (real-time) and/or HDA (history) data.
IM Storage Counters	This counter lets you monitor the number of points per minute being stored in history.

Adding a Counter

To add a counter:

1. Launch the Performance Monitor from the Windows task bar (**Start>Settings>Control Panel>Administrative Tools>Performance**).
2. Right-click on the monitor, then choose **Add Counters...** from the context menu, [Figure 71](#).

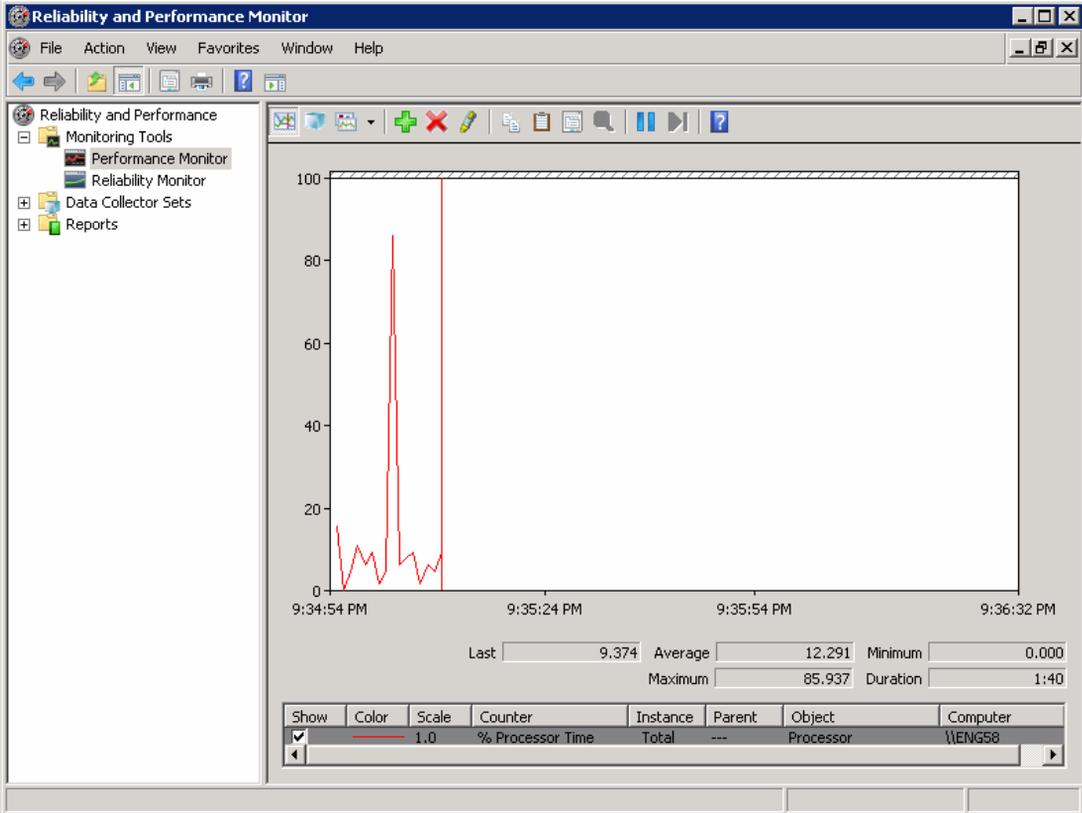


Figure 71. Adding a Counter

3. Choose whether to use counters on the local computer (**Use local computer counters** radio button), or use counters from a different computer. To use a different computer, select **Select counters from computer:**, then select the

computer from the associated pull-down menu, [Figure 72](#).

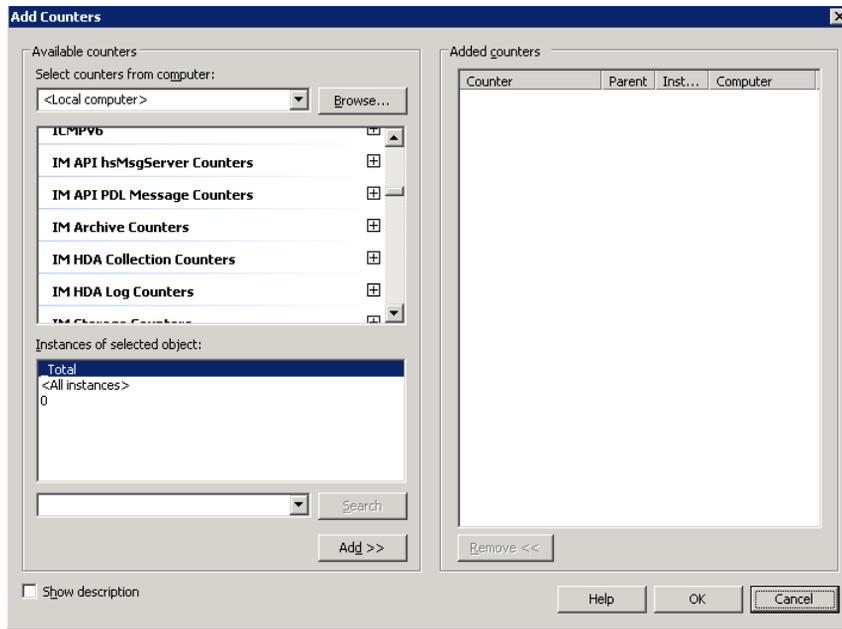


Figure 72. Selecting the IM Counter Category

4. Select the applicable counter category from the Performance Object menu, [Figure 72](#) (IM API Counters, IM Archive Counters, IM Collection Counters, or IM Storage Counters).

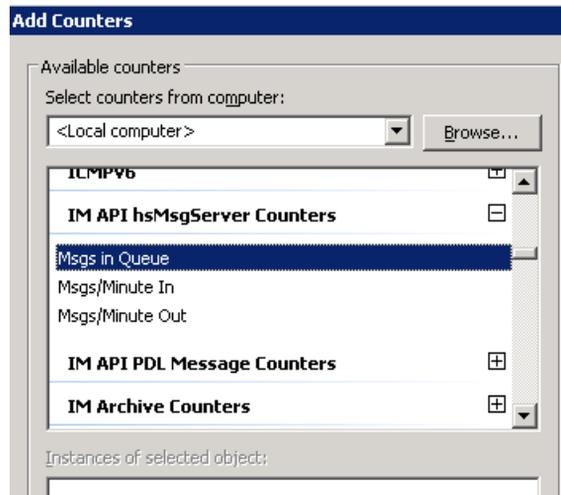


Figure 73. IM API Counters

5. Refer to the applicable section referenced below for details on selecting a specific counter from the selected category:
 - [IM API Counters](#) on page 211
 - [IM Archive Counters](#) on page 213
 - [IM Collection Counters](#) on page 214
 - M HDAcollection counters
 - IM Log Collection counters
 - [IM Storage Counters](#) on page 215
 - [Logging Counter Statistics](#) on page 216

IM API Counters

There are three counters in the IM API Counters category. You may choose to use all available counters by selecting **All counters**, or just certain counters by selecting **Select counters from list:**, and then selecting the counters, [Figure 74](#).

Each counter has two instances. You may choose to use all (both) instances or one specific instance. Refer to the instance descriptions in [Table 9](#).

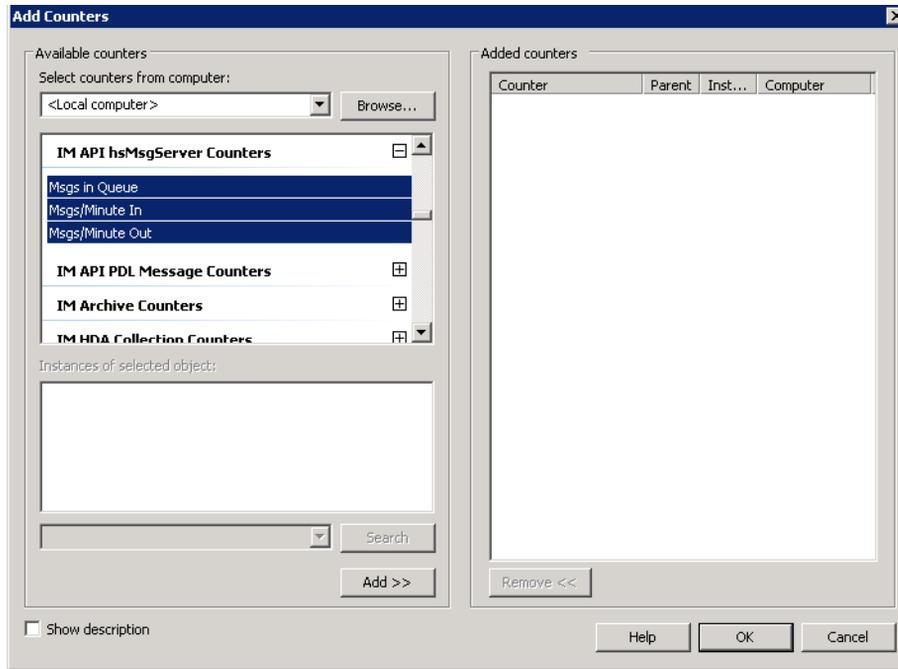


Figure 74. IM API Counters Dialog

Table 9. IM API Counters & Instances

Counters	Instances	Description
Msgs in Queue	—	Number of messages waiting to be stored
Msgs/Minute In	—	Number of messages coming into the queue
Msgs/Minute Out	—	Number of messages leaving the queue

Table 9. IM API Counters & Instances

Counters	Instances	Description
—	hsMsgServer	Messages stored in the IMMSGLOG
—	PDL msgs	Messages stored in the PDLMSGLOG

IM Archive Counters

There are two counters in the IM Archive Counters category. You may choose to use all available counters by selecting **All counters**, or just certain counters by selecting **Select counters from list:**, and then selecting the counters, [Figure 75](#).

There is one instance of each counter. Refer to the instance description in [Table 10](#).

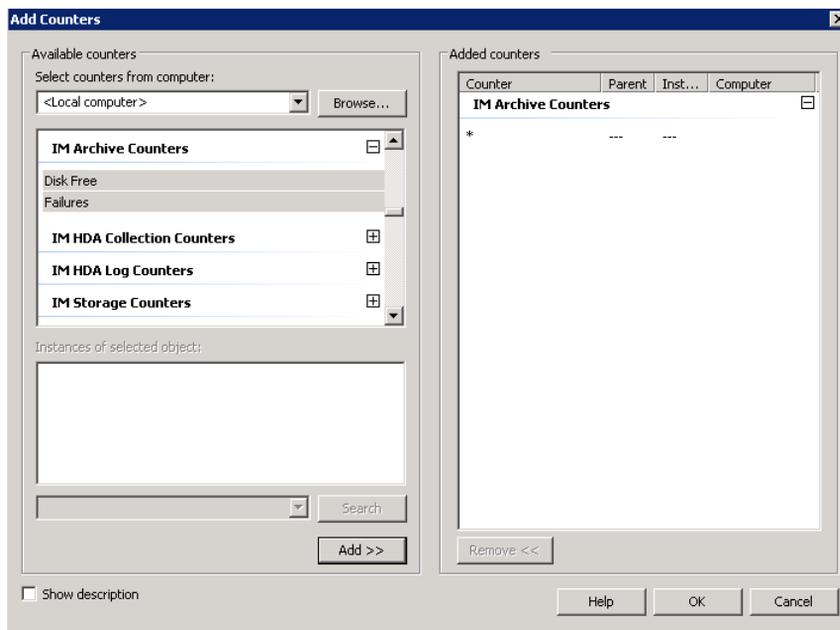


Figure 75. IM Archive Counters Dialog

Table 10. IM Archive Counters & Instance

Counters	Instances	Description
Disk Free	—	Amount of disk space available for storing archive entries
Failures	—	Number of failed archive attempts
—	IM Archive	Information Management Archive Service

IM Collection Counters

There is one counter in the IM Collection Counters category (Pts/Minute), [Figure 76](#)

The Pts/Minute counter has two instances. You may choose to use all (both) instances or one specific instance. Refer to the instance description in [Table 11](#).

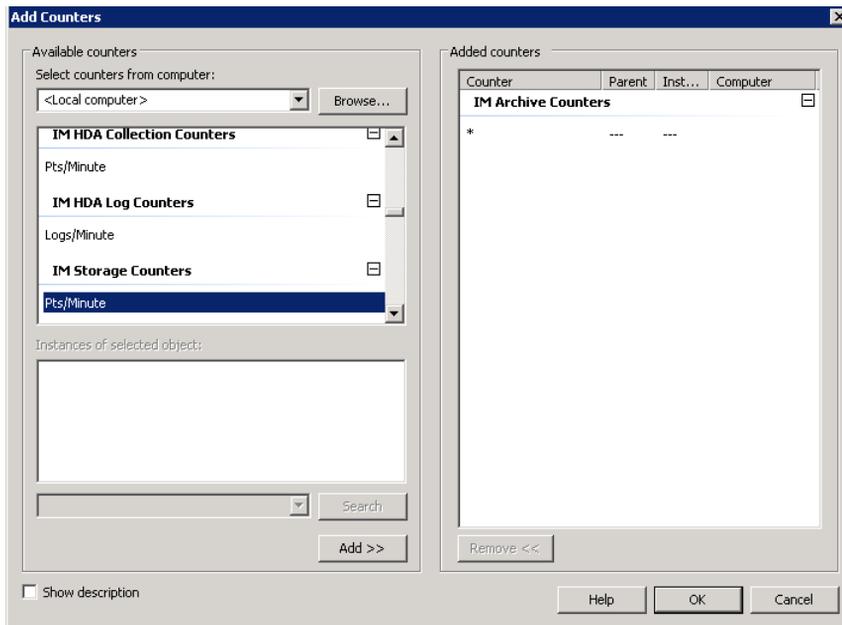


Figure 76. IM Collection Counters

Table 11. IM Collection Counter & Instances

Counters	Instances	Description
Pts/Minute	—	Number of points being collected per minute
—	IM log collection	Number of HDA requests
—	IM HDA Collection	Number of values collected

IM Storage Counters

There is one counter in the IM Storage Counters category (Pts/Minute), [Figure 77](#).

The Pts/Minute counter has one instance. Refer to the instance description in [Table 12](#).

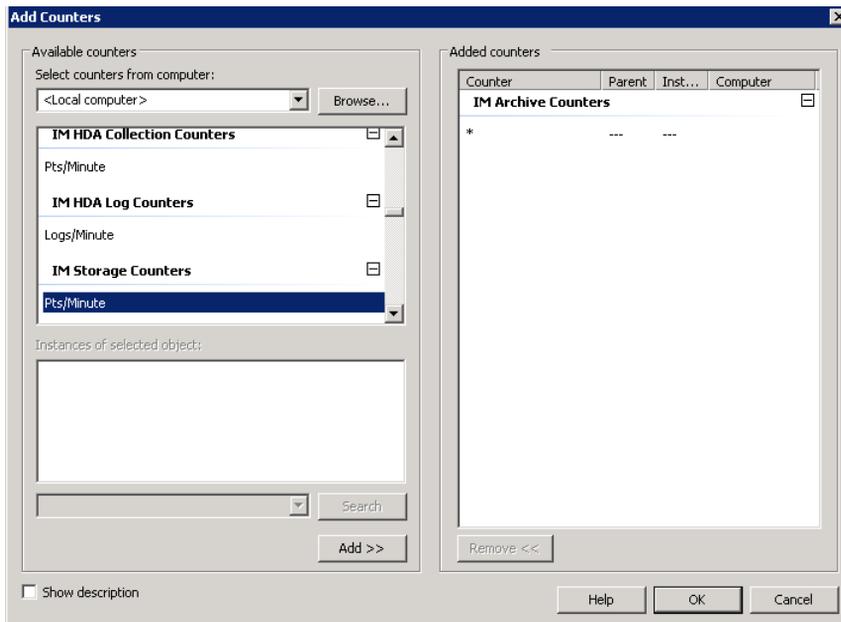


Figure 77. IM Storage Counters Dialog

Table 12. IM Storage Counter & Instance

Counters	Instances	Description
Pts/Minute	—	Number of points being stored per minute
—	IM Storage	IM Storage

Logging Counter Statistics

To record counter statistics for long term monitoring, you can set up one or more log files. For each log, you must add one or more counters whose statistics will be logged. This is similar to the procedure described in [Adding a Counter](#) on page 208. You must specify a user account with administrator privileges under which the log will run. As an option you may specify a file type, and set up a schedule for the log. By default, the log will sample the specified counter(s) every fifteen seconds and will store the data as a binary file. The binary file must be viewed using the performance monitor. As an option you may specify another file format, for example - text, and set up a schedule for the log.

The files are stored in C:\perflogs, [Figure 78](#).

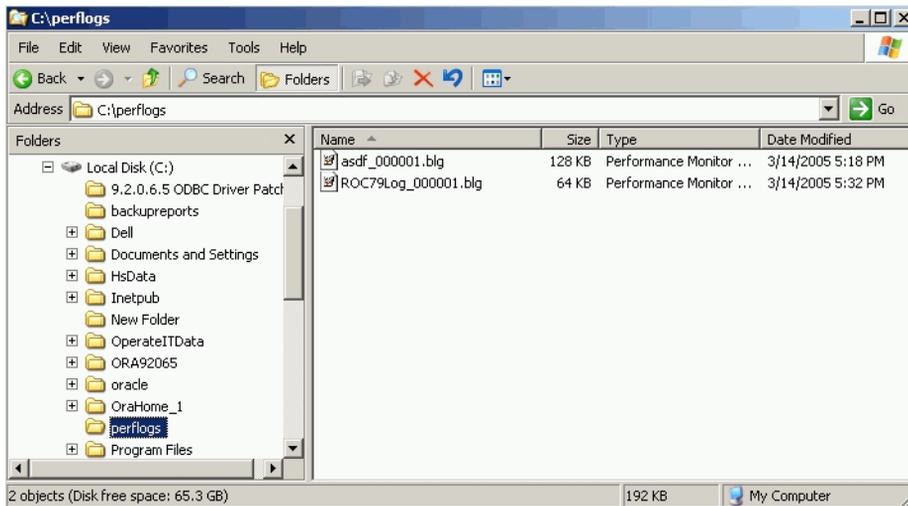


Figure 78. Location of Performance Logs

To set up a log:

1. Open the performance monitor.
2. Expand Performance Logs and Alerts.
3. Right click on **Counter Logs** and choose **New Log Settings** from the context menu, [Figure 79](#).

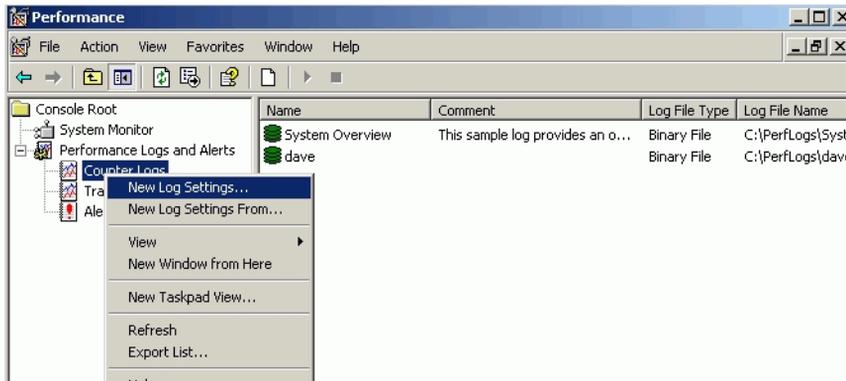


Figure 79. Creating a New Log

4. Enter a name for the log, [Figure 80](#).

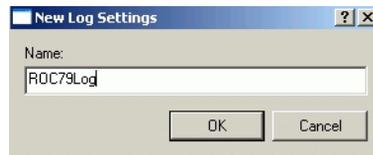


Figure 80. Entering a Name for the Log

5. Use the **Add Counters** button to start a dialog for adding counters to this log. The procedure is basically the same as described in [Adding a Counter](#) on page 208, [Figure 81](#).
6. Change the **Run As** specification to an administrator user account on this workstation. The log will not run as the <default> user.
7. As an option you may change the file format and schedule, [Figure 82](#).

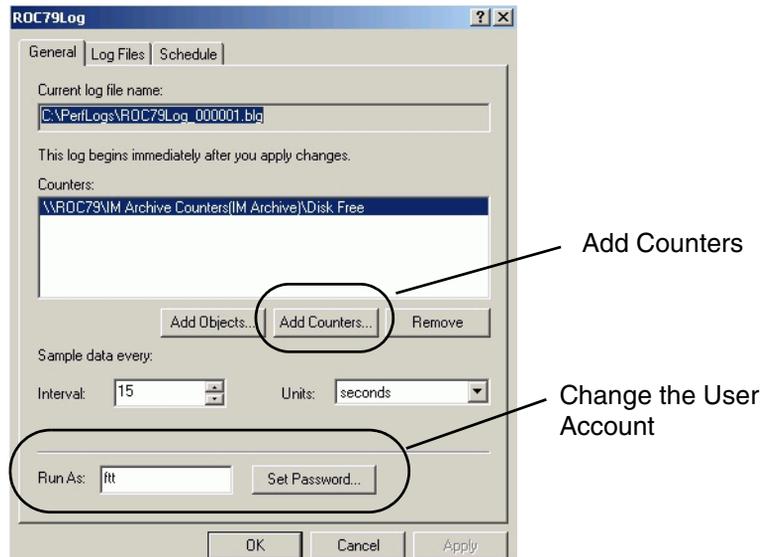


Figure 81. Adding Counters and Specifying the User Account

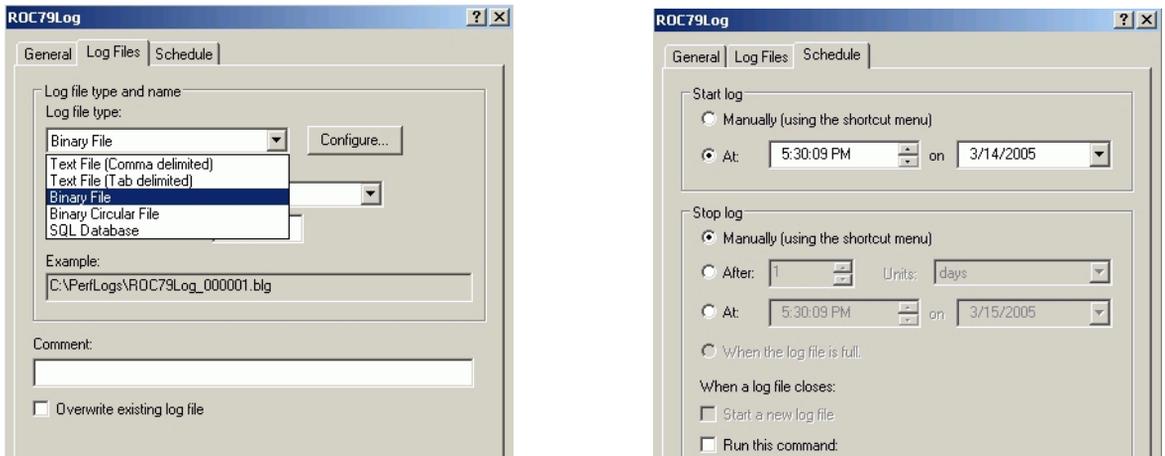


Figure 82. File Type and Scheduling Options

SQL Queries

The SQL queries described in this section may be used to troubleshoot history applications. Use the Windows command prompt and log in to SQLPLUS as the ops\$ocshis user. An example is shown in [Figure 83](#).



If you cannot log in to SQLPlus, make sure the Oracle_SID environment variable is set to adva. See [Cannot Access History Database via SQL](#) on page 233.

```

Administrator: C:\Windows\system32\cmd.exe
C:\Users\800xaInstall>
C:\Users\800xaInstall>sqlplus ops$ocshis
SQL*Plus: Release 11.1.0.7.0 - Production on Thu May 6 23:05:41 2010
Copyright (c) 1982, 2008, Oracle. All rights reserved.
Enter password:
Connected to:
Oracle Database 11g Release 11.1.0.7.0 - Production
SQL> select * from object_table where object_type = 2;
  OBJECT_ID
  OBJECT_NAME
-----
OBJECT_TYPE VERSION                STATUS NEXT_INDEX LAST_ARCHIVE
-----
NEXT_DELETE_TIME
          806
$HSIMMSGLOG_IP_10_126_0_58-1-o
          2 5.1-0                        1

SQL> exit
Disconnected from Oracle Database 11g Release 11.1.0.7.0 - Production
C:\Users\800xaInstall>

```

Figure 83. Example SQL Query

In this example, the first query is used to get the message IDs for all message logs on this node. The second query gives you the number of messages in the log whose ID is specified (in this case 171).

These and other queries are described in [Table 13](#).

Table 13. SQL Queries

Query	Description
select count(*) from object_table where object_type = 1;	Get number of Information Management History log configurations that exist in Oracle. This may be useful if you suspect that log configurations that exist in the aspect system are not being created in Oracle.
select object_id, object_name from object_table where object_type = 2;	Get the ID for all message logs on the node. IDs are used in other queries to identify the message log.
select count(*) from msgnnnn nnnn = message log ID	Get the number of messages stored in the specified log. This is useful when you are unable to retrieve message from a data access application such as the DataDirect message Log dialog, and you want to determine whether the problem is with the message log or the data access application.
select to_char(sysdate,'DD-MON-YYYY HH:MI:SS') time, m.idx, c.* from msgcount&1 c, msg&1 m where m.idx = (select max(idx) from msg&1)	Get the message log size Parameter 1 = log id
select idx, to_char(localtime, 'dd-mon-yyyy hh24:mi:ss') '.' lpad(time_nano/10000,3,'0') localtime, message from msg&1 where utc > (select max(utc)-&2 from msg&1) order by utc, time_nano	Get last X messages stored Parameter 1 = log id, Parameter 2 = number of messages
select m.idx, rpad(a.str_value, 120) rpad(a.nbr_value, 15) rpad(to_char(a.date_value, 'MM/DD/YYYY HH24:MI:SS'), 30) Attribute_Value from msg&1 m, msgattrs&1 a where m.idx > (select max(idx)-&2 from msg&1) and m.idx = a.idx	Get vendor attributes for last x messages stored Parameter 1 = log id, Parameter 2 = # of messages

Table 13. SQL Queries (Continued)

Query	Description
<pre>select m.idx, to_char(m.localtime, 'mm-dd hh24:mi:ss') '.' lpad(m.time_nano/10000,3,'0') localtime, v.category_name, v.attr_name, rpad(a.str_value, 71) rpad(a.nbr_value, 15) rpad(to_char(a.date_value, 'MM/DD/YYYY HH24:MI:SS'), 30) Attribute_Value from msg&1 m, msgattrs&1 a, msgvendors v where m.idx > (select max(idx)-&2 from msg&1) and m.idx = a.idx and v.attr_id = a.attr_id order by a.attr_id</pre>	<p>Get last X messages and the associated vendor attributes with attribute names Parameter 1 = log id, Parameter 2 = # messages</p>
<pre>select * from msgvendors order by vendor_name,category_name,glb_category, category,seq_nbr</pre>	<p>Get category definitions of vendors attributes</p>
<pre>select localtime as Time, time_nano/10000 as msec, source as Source, SUBSTR(MSGATTRVAL('ObjDescription',idx),1,2 50) as Description, SUBSTR(MSGATTRVAL('Area',idx),1,250) as Area, condition, sub_cond, SUBSTR(MSGATTRVAL('State',idx),1,250) as State from IMMSGLOG_IP order by localtime</pre>	<p>Example query against the Information Management Message Log</p>
<pre>select name,variablevalue,occurrence,taskid from task_variables_occurrences where taskid in(select taskid from task connect by parentid = prior taskid start with taskid = (select taskid from task where name = 'P050006'))</pre>	<p>Gets batch variables directly from the lower level tables without having to use the views</p>

Debug Files and Trace Monitors for Display and DataDirect

Display Services and DataDirect provide several tools for troubleshooting data access applications:

- [DataDirect Debug File](#) on page 223
- [Display Services Trace Log and Communication Statistics](#) on page 223
- [Trace Monitor](#) on page 224

DataDirect Debug File

This function is available via the Setup tab on the DataDirect Options dialog. When this option is selected DataDirect writes status information to a text file that you can use for troubleshooting. The file name is debug.txt. This file is located in %ABB_ROOT%\InformIT\DataDirect\tmp. The default path for %ABB_ROOT% is: C:\Program Files\Abb Industrial IT\

Display Services Trace Log and Communication Statistics

The Trace log displays system error messages and user defined messages with time stamps, [Figure 84](#). Messages are sent to the trace log via the trace script. To open the trace window, choose **Help > Diagnostics > Trace Log** on the Display Client menu bar.

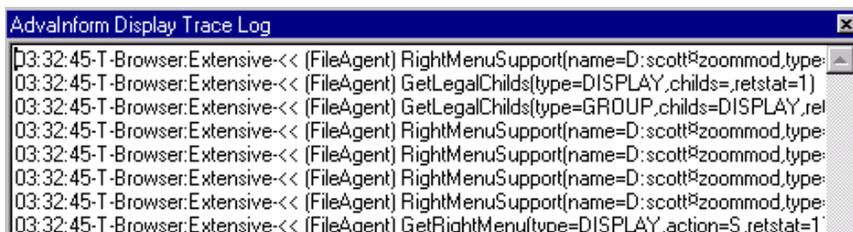


Figure 84. Example Trace Log

Help > Diagnostics > Communication Statistics opens the Communication Statistics dialog, [Figure 85](#).

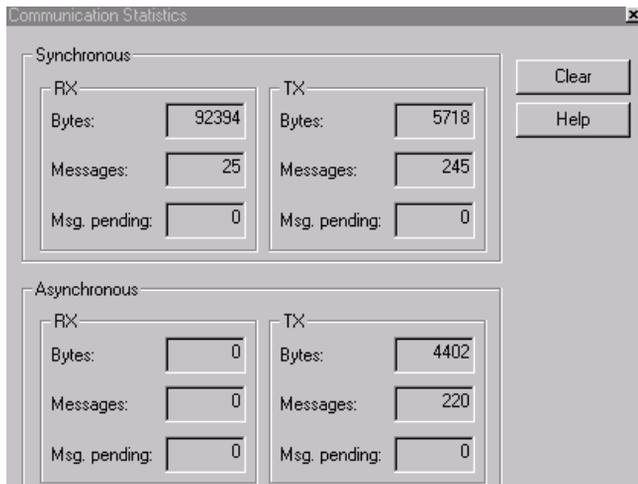


Figure 85. Communication Statistics

For further information refer to the applicable sections in *System 800xA Information Management 5.1 Display Services (3BUF001093*)*.

Trace Monitor

The Display Services Trace Monitor lets you track problems related to the data providers. To use the Trace Monitor:

1. From the Windows task bar choose: **Start > Programs > ABB Industrial IT 800xA > Information Mgmt > Display Services > Server > Trace Monitor**. This displays the Select Process dialog.
2. Use this dialog to open the Trace Monitor. As an option, you can also use this dialog to send the trace output to a log file (reference [Figure 86](#)):
 - a. Select **All Processes**.
 - b. Enter the path specification for the log file (optional and recommended).
 - c. Click **OK** when you are finished. This opens the Trace Monitor window, [Figure 87](#). The window will be empty until you set up the monitor.

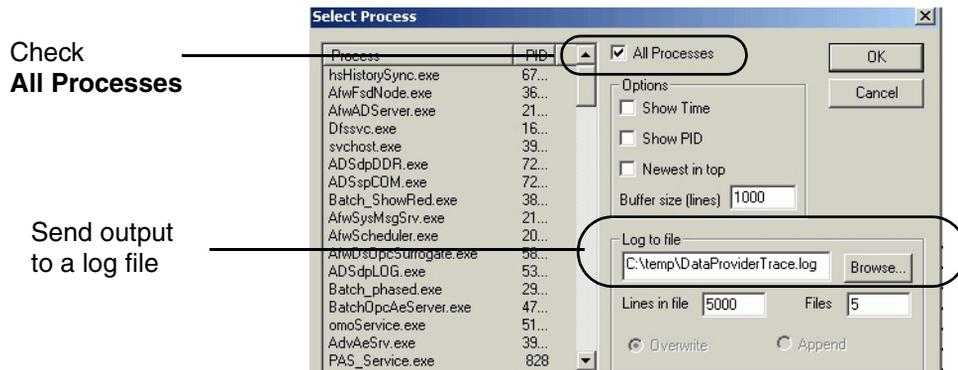


Figure 86. Select Process Dialog

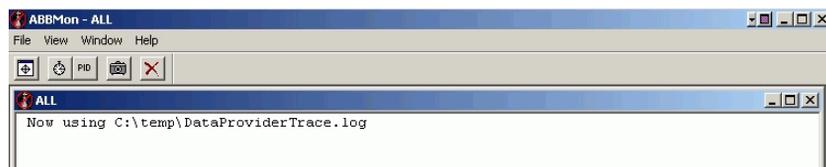


Figure 87. Trace Monitor Window

3. From the Windows task bar choose: **Start > Programs > ABB Industrial IT 800xA > Information Mgmt > Display Services > Server > Trace Settings**. This displays the Trace Settings dialog.
4. Use this dialog to set up the Trace Monitor (reference [Figure 88](#)):
 - a. Specify the server (typically **localhost**).
 - b. Use the **Task** drop-down menu to select **Use name below**.
 - c. Enter the name of the data provider for which this monitor is being set up. Enter the name exactly as it is indicated in the Display Server Status dialog (**Start > Programs > ABB Industrial IT 800xA > Information Mgmt > Display Services > Server Status**).

- d. Select all traces in the Flags list.

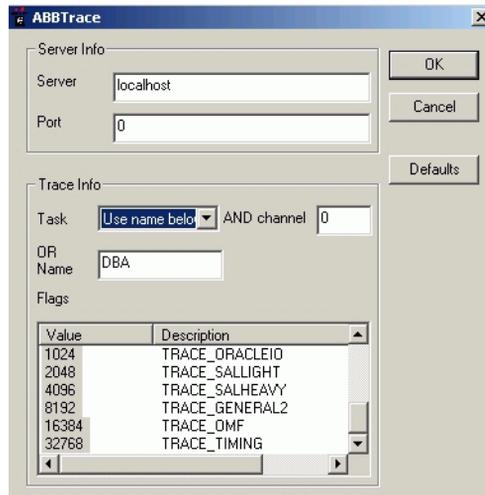


Figure 88. Trace Settings Dialog

- e. Click **OK**. This activates the Trace Monitor which will begin displaying trace information, [Figure 89](#). The setup dialog will remain open. Do not close it at this time. You'll need to use it to stop the monitor when you are finished.

```
DBA-I-Value: 400, Level: TRACE_ORACLEID
DBA-I-Value: 800, Level: TRACE_SALLIGHT
DBA-I-Value: 1000, Level: TRACE_SALHEAVY
DBA-I-Value: 2000, Level: TRACE_GENERAL2
DBA-I-Value: 4000, Level: TRACE_OMF
DBA-I-Value: 8000, Level: TRACE_TIMING
DBA-T-ReadFromQueue:1, id:348, stat:0, Client:5000c00, Func:1148518400
DBA-T-SIP message, Func: 0x7544, Length: 0
DBA-T-SIP message, Func: 0x7544, Length: 0
DBA-T-ReadFromQueue:1, id:348, stat:0, Client:b00, Func:1
DBA-T-ReadFromQueue:1, id:348, stat:0, Client:b00, Func:1
DBA-T-[148] Dynamic Select |select table_Name from ims_tables| MaxRows: 100
DBA-T-[148] Dynamic Select |select table_Name from ims_tables| MaxRows: 100
DBA-E-Select, Exception while processing:|select table_Name from ims_tables|
DBA-E-Error Number 80040e37000Description [Oracle][ODBC][Ora]ORA-00942: table or view does not exist
DBA-T-Dynamic Select, Result: 942
DBA-T-ReadFromQueue:1, id:348, stat:0, Client:b00, Func:1148518400
DBA-T-ReadFromQueue:1, id:348, stat:0, Client:b00, Func:1148518400
```

Figure 89. Example Trace Monitor Output

If you are sending the output to a log file, this same information will be available in the specified log file. You can take a snapshot of the Trace Monitor as a further option (**View > Snapshot**).



Turn the Trace Monitor off when you are finished. Select **<No trace>** in the Trace Settings dialog, [Figure 90](#), and click **OK**. Click **Cancel** to close the dialog.

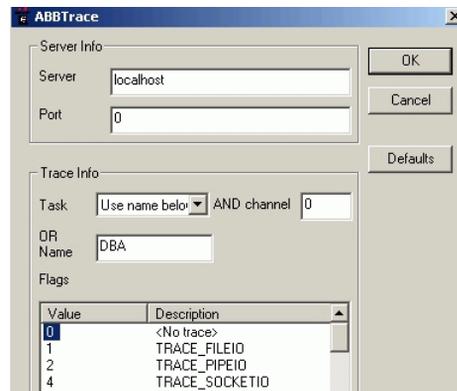


Figure 90. Turning the Monitor Off

History

This section provides guidelines for troubleshooting problems related to History.

Checking Upstream for History Problems

Problems with numeric and/or message data collection in Information Management history may actually be due to problems upstream in the 800xA system. Before you spend time and effort troubleshooting the Information Management history configuration check the following upstream applications:

- related basic history trend logs.
- OPC DA data source - subscribe to live data via the Control Connection aspect.
- status of the System Message Service in the Service structure.
- verify that messages are available via alarm/event lists.

What To Look For When Logs Do Not Collect Data

Data Not Available in Basic History Trend Logs

If you cannot read data from the basic history trend logs, make sure you have added history source aspects in the structures where those logs reside. Refer to the section on configuring property logs in *System 800xA Information Management 5.1 Configuration (3BUF001092*)*.

Data Available in Basic History Trend Logs But Not IM History Logs

- **Sample Blocking Rate** - It is common when you first activate a log to see the operator trend data, but no history (Information Management-based) data. This is due to the sample blocking rate configured on the Data Collection tab of the Log Template. The blocking rate controls the frequency at which data is collected by the history log from the source trend log. If you experience this lag, check the blocking rate to determine whether or not that is the cause.
- **Restart Basic History** - Sometimes it is necessary to restart Basic History on Information Management and Connectivity servers after logs have been added.
- **Stagger** - It is **strongly recommended that you use the hsDBMaint stagger function** to evenly distribute collection from the basic history logs. Failure to stagger the Information Management logs may result in excessive and unbalanced disk I/O load on both the Connectivity and Information Management servers, and may result in missing data in the Information Management logs.

To check whether or not the stagger function has been run, you can generate a statistical file for the collection process as described in [Performance Counters](#) on page 208. Search on the keyword *secondary* to find the SECONDARY LOG QUEUE STATS section, [Figure 91](#). If all logs having the same blocking rate are grouped together (for example, 12,000 logs with 1-hour blocking rate, and 3000 logs with 4-minute blocking rate), then stagger has not been run. Also look for *stale request* messages in the hsCollection log file, [Figure 92](#).

Run this function from the hsDBMaint main menu. History must be running when you run the stagger function. Refer to the section on history database maintenance in *System 800xA Information Management 5.1 Configuration (3BUF001092*)*.

```

-----PRIMLOGRES-----
SECONDARY LOG QUEUE STATS:
Next 2ndary Logs (including logID = 201) will be collected in 1:44 (MMMM:SS)
15000 = Number of 2ndary Log Queue Entries Currently In Use
15000 = Number of 'secondary' Logs Represented By These Entries
2 = Number of Time Slots In The Queue
950.00 = Average number of requests per minute
Current size of 2ndary Log Queue = 1920000 bytes
StoredResponded(0), WaitingForStorage(1), NotStoredYet(2)
The Current Time is Tue Mar 29 2005 21:54:16.000000
=====
#Entrs #Logs Ack Msd Fails B-Rate Next Collection Time
-----
3000 3000 0 0 0 0:04:00 Tue Mar 29 2005 21:56:00
12000 12000 0 0 0 1:00:00 Tue Mar 29 2005 22:00:00
-----

100 NOT RESPONDING TO PRIMLOGRES REQUESTS
-----
SECONDARY LOG QUEUE STATS:
Next 2ndary Logs (including logID = 5991) will be collected in 0:07 (MMMM:SS)
15000 = Number of 2ndary Log Queue Entries Currently In Use
15000 = Number of 'secondary' Logs Represented By These Entries
69 = Number of Time Slots In The Queue
950.00 = Average number of requests per minute
Current size of 2ndary Log Queue = 1920000 bytes
StoredResponded(0), WaitingForStorage(1), NotStoredYet(2)
The Current Time is wed Mar 30 2005 23:08:23.000000
=====
#Entrs #Logs Ack Msd Fails B-Rate Next Collection Time
-----
375 375 0 0 0 0:04:00 wed Mar 30 2005 23:08:30
375 375 0 0 0 0:04:00 wed Mar 30 2005 23:09:00
100 100 0 0 0 1:00:00 wed Mar 30 2005 23:09:00
375 375 0 0 0 0:04:00 wed Mar 30 2005 23:09:30
375 375 0 0 0 0:04:00 wed Mar 30 2005 23:10:00
-----

```

Figure 91. Checking Stats File for Stagger

```

hsCollection0.log - Notepad
File Edit Format Help
-----
---->ALIGNMENT QUEUE STATS<----
Next Aligned Log (logID = 1667) to be activated in 0:00 (MMMM:SS)
=====
LogsToActivate Activation/Alignment Time
-----
4444 Sat Mar 19 2005 19:02:00
2045 Sat Mar 19 2005 19:02:02
7393 Sat Mar 19 2005 19:02:08
-----
Number of Logs waiting to be Aligned = 13882
Number of Number of Entries waiting to Align = 3
Current size of Alignment queue = 444224 bytes
---->END OF ALIGNMENT QUEUE STATS<----
hscActLog.c @ 2507 19-19:02:00] STARTUP COMPLETE.
hscStartUp.c @ 370 19-19:02:00] Setting reTranslate response Handle, -1 to 5
hscSignals.c @ 740 19-19:03:29] Add event 8 0x100e6a8c, h = 0x000005f8 SIGALRM
hsc2ndLogQ.c @ 1418 19-19:05:08] Total 100 stale requests] NO_DATA For ID=26547(cfg=0x120e44d0)('PPA2.1 HDA')
hsc2ndLogQ.c @ 1418 19-19:06:08] Total 200 stale requests] NO_DATA For ID=22709(cfg=0x1205be50)('PPA2.1 HDA')
hsc2ndLogQ.c @ 1418 19-19:06:08] Total 300 stale requests] NO_DATA for ID=28649(cfg=0x12133a90)('PPA2.1 HDA')

```

Figure 92. Stale Requests Messages in hsCollection Log File

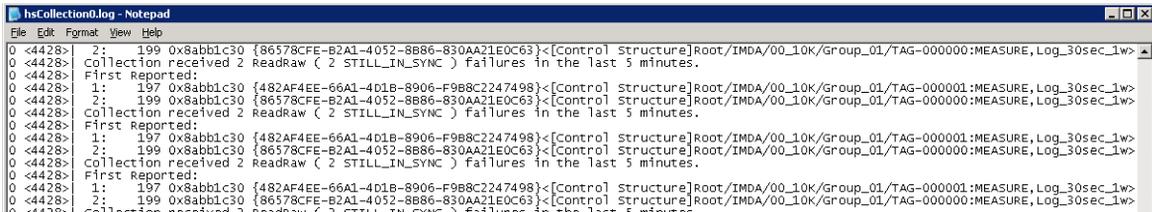


Figure 93. Enhanced Output shows the Full Path of the History Log with the Error

Logs Not Activating

When using the Bulk Configuration tool in Microsoft Excel to create a large number of property logs, the logs will not activate automatically. To start the logs use the Log List aspect on the Inform IT History Objects object in the Node Administration structure. Refer to the section on starting and stopping data collection in *System 800xA Information Management 5.1 Configuration (3BUF001092*)*.

Cannot Start History

- **PAS Service account not correctly specified.** See [PAS Service Account](#) on page 201.
- **Check the hsSuperIPC log file** for errors or failures. See [Diagnostic Log Files](#) on page 204.
- **Invalid user/password for History Service Account.**

Cannot Create Oracle Database Instance

- **Domain controller and Information Management server may be out synch.** Check the time setting on both nodes. If they are off by 10 minutes or more the wizard may fail to create the database. Also check Time Zone settings.
- **Failure to create the Oracle Listener service.** This is the last step of the oracle 11 install utility. The user can re-run the utility to configure the listener.
- **Current user not in HistoryAdmin group.** Verify that the user you are currently logged in with is a member of the HistoryAdmin group. If not, it is recommended that you log in as the user that installed the software. This user is

a member of the HistoryAdmin group. As an alternative, you may add the current user to HistoryAdmin. If you add a new user you must restart history via PAS.

Cannot View Report from IM report logs

- Verify the IIS is configured on the IM server.

Insufficient Oracle Tablespace

Oracle tablespaces will be sized correctly if you made the correct choices for small, medium, and large for each log type in Oracle Instance wizard. Also, putting Oracle and file-based data on dedicated data drives rather than the system drive allows tablespaces to autoextend up to the free space available on the drive where they reside. If you do not make the correct selections based on your storage requirements, you may run out of tablespace under the following conditions:

- **Creating a OPC Message log that is larger than can be supported by the allotted tablespace.** For example, if you selected **Small** OPC message log (up to 500K entries), then you attempt to create a 12-million entry message log, history will not allow this. In this case, you must adjust the INFORM_HS_RUNTIME and HS_INDEX tablespaces. See [Table 14](#).
- **If you attempt to configure more numeric logs than supported by the allotted tablespace.** Adjust the HS_CONFIG and HS_ICONFIG tablespaces. See [Table 15](#).
- **If your PDL application grows larger than is supported by the allotted tablespace.** Adjust the HS_PDL and HS_IPDL tablespaces. See [Table 16](#).

Table 14. OPC Message Logs (Includes PDLMSGLOG)

Tablespace	Small - 500K Entries	Medium - 3M Entries	Large - 12M Entries
INFORM_HS_RUNTIME	214Mb	1287Mb	5224Mb
HS_INDEXES	190Mb	1144Mb	4589Mb

Table 14. OPC Message Logs (Includes PDLMSGLOG)

Tablespace	Small - 500K Entries	Medium - 3M Entries	Large - 12M Entries
Temp	512Mb	1024Mb	2048Mb
Rollback (Undo)	256Mb	512Mb	1024Mb

Table 15. Numeric File-based Logs

Tablespace	Small - 10K Logs	Medium - 25K Logs	Large - 50K Logs
HS_CONFIG	40Mb	85Mb	171Mb
HS_ICONFIG	40Mb	94Mb	188Mb

Table 16. PDL Objects and PDL Data

Tablespace	Small - 10K Objects	Medium - 25K Objects	Large - 50K Objects
HS_PDL	60Mb	355Mb	710Mb
HS_IPDL	50Mb	149Mb	298Mb

- **Consolidation of OPC and PDL messages, and PDL data.** If the INFORM_HS_RUNTIME and HS_INDEX tablespaces run out of space, OPC and PDL message consolidation will fail. If the HS_PDL and HS_IPDL (index) tablespaces run out of space, PDL data consolidation will fail.

Extending Tablespace

The user interface for extending tablespace has changed as of 800xA 5.0. For details, refer to the section on History database maintenance in the applicable version of the Information Management History Configuration Guide.

Insufficient Temp Tablespace and Rollback Segments

The Oracle Temp tablespace and rollback segments are used during certain history operations, including restore, archive, message and PDL consolidation, deletion of PDL data, and reporting.



With Information Management version 4.0 and later (using Oracle 9) rollback segments have been replaced with UNDO tables.

Complex queries against PDL and PDL deletion operations may use a significant amount of this tablespace. If you get an indication of insufficient temp or rollback space in these situations, it is recommended that you adjust the query or delete the PDL data in smaller increments.

Restoring a history database also uses the Oracle Temp tablespace and rollback segments. If you run out of space during a restore operation, the restore will fail, and you will be required to increase the temp and rollback space before retrying the restore.

Use the Oracle Instance Maintenance wizard to extend the applicable tablespace. The recommended guideline is to double the current size.



You cannot decrease the temp or rollback size. Therefore, you should take care to increase the size by a reasonable amount that will provide the space you need. The only way to revert back to a smaller size is to make a backup of your database, drop and recreate the Oracle instance, and then restore the database.

Generally, you should extend a tablespace by modifying (increasing) the existing file. Use the Add function when you need to add tablespace on a different drive.

Cannot Access History Database via SQL

Check the user account and environment variables as described below and shown in [Figure 94](#):

- Make sure the user (currently logged in as) belongs to these local groups:
 - HistoryAdmin
 - ORA_DBA
- Make sure the ORACLE_SID is included as part of the local user's environment settings

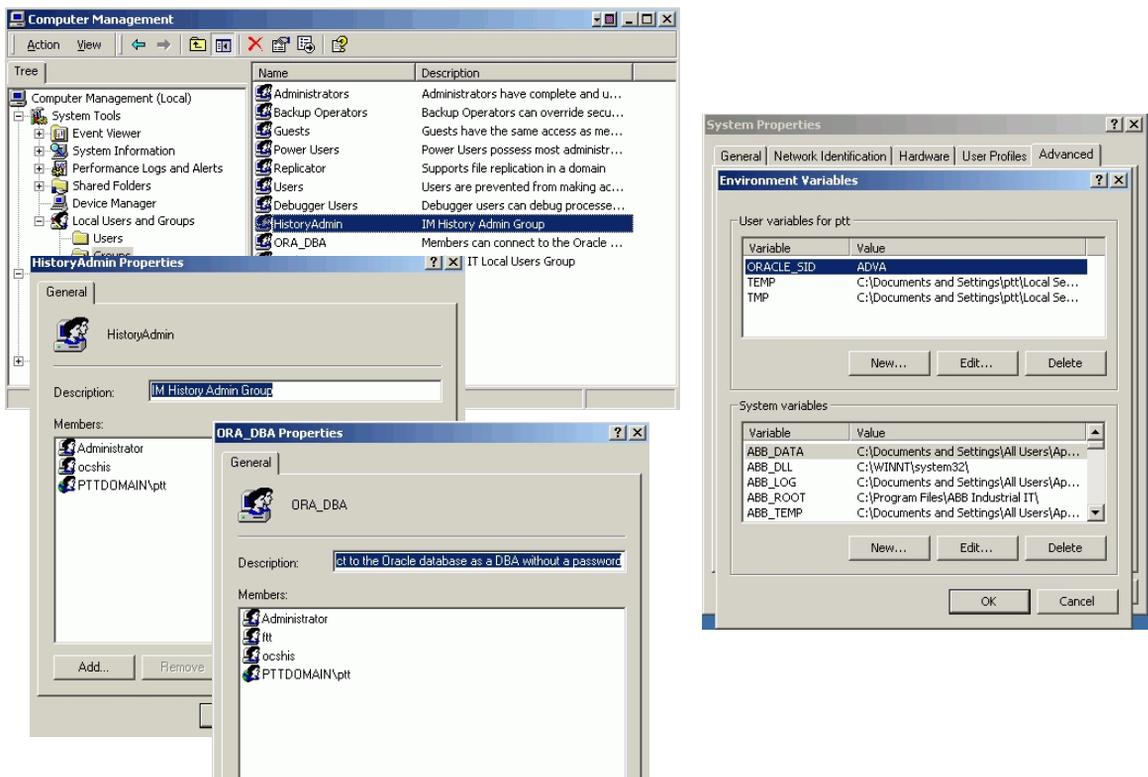


Figure 94. Checking User Groups and ORACLE_SID Environment Variable

Entry Tables and Error Reports for Numeric Logs

The hsDBMaint Entry Tables Report provides good information for troubleshooting numeric logs. This report will help you to determine whether the problem is with history or another application such as the core system, or data access application.

To generate this report, open a Windows command prompt and enter:

```
hsDBMaint -report > report.txt 2> error.txt
```

This creates two text files in the location from which you ran the report. For example, in [Figure 95](#), the reports are created in `C:\Documents and Settings\ptt`.

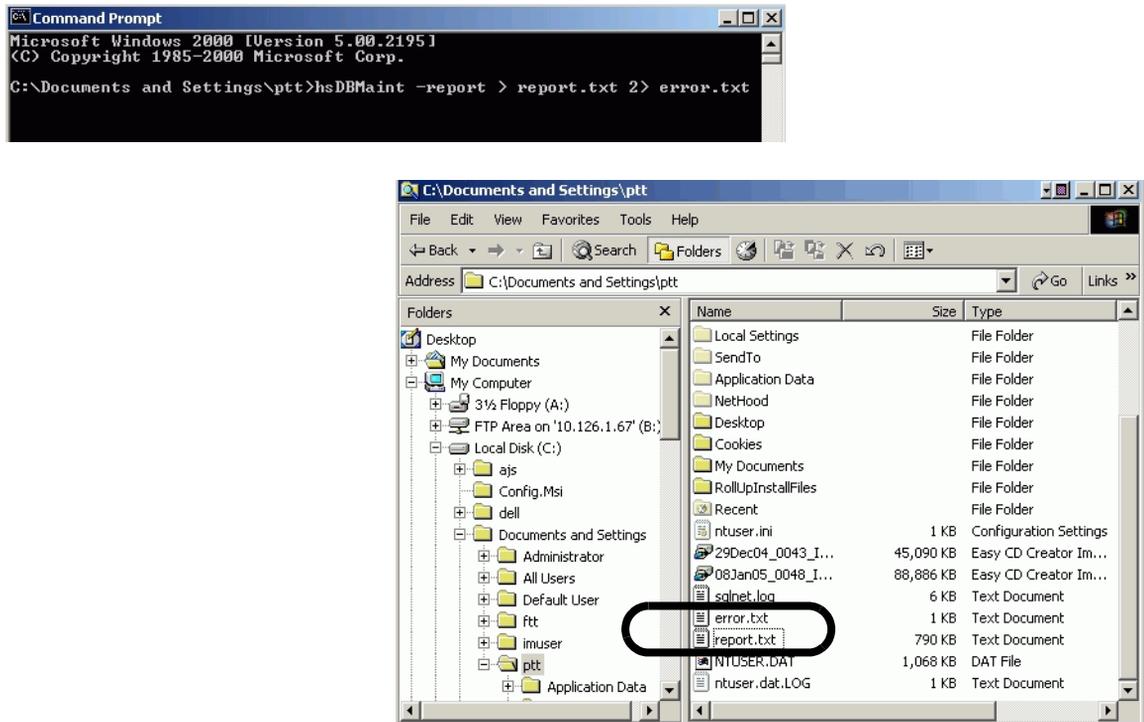


Figure 95. Location of Table Entry and Error Reports

The entry table provides statistics that help you to verify whether or not numeric logs are functioning properly. You can also look up the Log ID for a specific log name. [Figure 96](#). Log IDs are used in SQL queries against historical tables.

Rows marked with an asterisk (*) indicate logs with errors. A summary is provided at the end of the report. An example error report is shown in [Figure 97](#). This information is useful for level-4 (development) support.

Oracle Fails to Start

Problems with the DNS Server may in turn cause problems with Oracle. If you are having problems with Oracle, check whether or not the DNS server is functioning properly by testing the **nslookup** command. Run the command for the local node and an external web site (for example www.cnn.com).



External sites can only be tested if the DNS server has forwarding enabled to resolve non-ppa zones AND a route to the internet is available.

Also try using both IP address and workstation name. Some examples are illustrated in [Figure 98](#).

```
CA Command Prompt
C:\Documents and Settings\ftt>nslookup 10.126.3.107
Server: eng12.rochny.uspra.abb.com
Address: 10.126.0.12

Name: tar107.rochny.uspra.abb.com
Address: 10.126.3.107

C:\Documents and Settings\ftt>nslookup 127.0.0.1
Server: eng12.rochny.uspra.abb.com
Address: 10.126.0.12

Name: localhost
Address: 127.0.0.1

C:\Documents and Settings\ftt>nslookup www.cnn.com
Server: eng12.rochny.uspra.abb.com
Address: 10.126.0.12

Name: cnn.com
Addresses: 64.236.16.52, 64.236.16.84, 64.236.16.116, 64.236.24.4
           64.236.24.12, 64.236.24.20, 64.236.24.28, 64.236.16.20
Aliases: www.cnn.com

C:\Documents and Settings\ftt>nslookup tar107
Server: eng12.rochny.uspra.abb.com
Address: 10.126.0.12

Name: tar107.rochny.uspra.abb.com
Address: 10.126.3.107

C:\Documents and Settings\ftt>nslookup localhost
Server: eng12.rochny.uspra.abb.com
Address: 10.126.0.12

Name: localhost.rochny.uspra.abb.com
Address: 127.0.0.1
```

Figure 98. Checking the DNS Server

Event Monitoring

Data coming from 800xA can stop sometimes and new updates are no longer received. Error messages are generated by IM, but they are not alarms. IM has its own OPC/AE Server to log events into the 800xA Event Storage Service when needed. Messages will be logged to indicate potential problems with A/E and Numeric Log collection as well as status information from Archival. The messages are of category IM History. The user needs to review the messages that IM is creating to ensure that IM is operating correctly.

Perform the following to set up and review these messages:

1. Create two new Aspects on the Inform IT History object in the Service Structure:
 - Alarm and Event List.
 - Alarm and Event List Configuration.
2. From the Configuration View of the Alarm and Event List Configuration Aspect, select **Simple Event > IM History** (Figure 99).

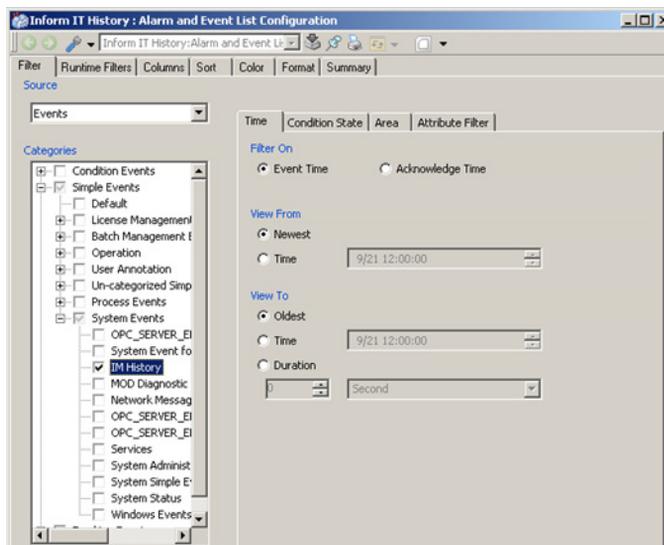


Figure 99. Alarm and Event Configuration

- From the Configuration View of the Alarm and Event List Aspect, select the **Object** radial button (Figure 100).

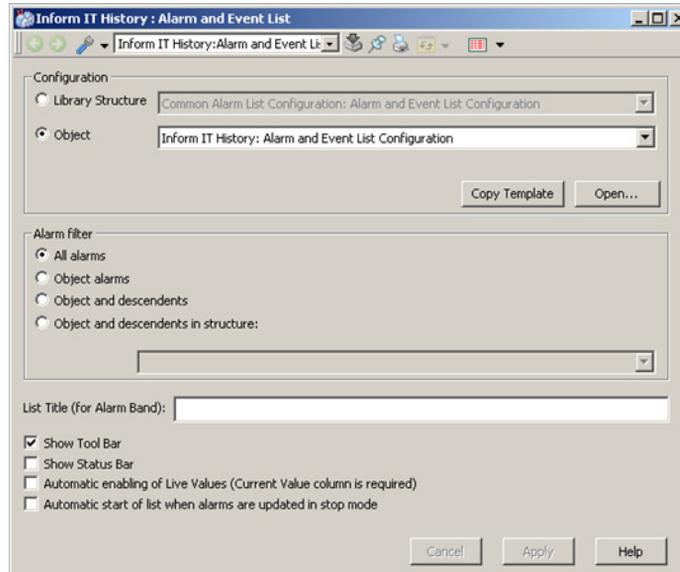
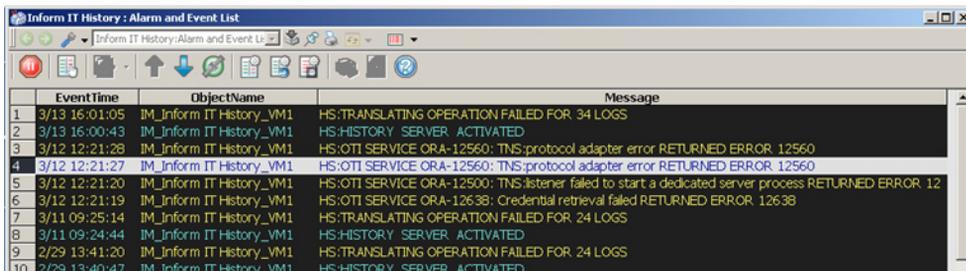


Figure 100. Object Configuration

- The Alarm and Event List Aspect will now show only messages of category IM History. Use the Configuration View of the Alarm and Event List Configuration Aspect to configure the columns to display as shown in the

following screen shot (Figure 101).



	EventTime	ObjectName	Message
1	3/13 16:01:05	IM_Inform IT History_VM1	HS:TRANSLATING OPERATION FAILED FOR 34 LOGS
2	3/13 16:00:43	IM_Inform IT History_VM1	HS:HISTORY_SERVER_ACTIVATED
3	3/12 12:21:28	IM_Inform IT History_VM1	HS:OTI SERVICE ORA-12560: TNS:protocol adapter error RETURNED ERROR 12560
4	3/12 12:21:27	IM_Inform IT History_VM1	HS:OTI SERVICE ORA-12560: TNS:protocol adapter error RETURNED ERROR 12560
5	3/12 12:21:20	IM_Inform IT History_VM1	HS:OTI SERVICE ORA-12500: TNS:listener failed to start a dedicated server process RETURNED ERROR 12
6	3/12 12:21:19	IM_Inform IT History_VM1	HS:OTI SERVICE ORA-12638: Credential retrieval failed RETURNED ERROR 12638
7	3/11 09:25:14	IM_Inform IT History_VM1	HS:TRANSLATING OPERATION FAILED FOR 24 LOGS
8	3/11 09:24:44	IM_Inform IT History_VM1	HS:HISTORY_SERVER_ACTIVATED
9	2/29 13:41:20	IM_Inform IT History_VM1	HS:TRANSLATING OPERATION FAILED FOR 24 LOGS
10	2/29 13:40:47	IM_Inform IT History_VM1	HS:HISTORY_SERVER_ACTIVATED

Figure 101. Object Configuration

Diagnostics

Informational diagnostics such as the change of state of an archive volume or an IM service do not require any action to be taken. Other diagnostics require some action to be taken as follows.

Diagnostics that need immediate action are as follows:

- Ones that contain an ORA-nnnnn error or text starting with **Failed to Extend**. An ORA-nnnnn event or an event starting with “Failed to Extend” indicates a problem with the IM’s Oracle instance. Check the IM History Oracle Instance Wizard and the alert_adva.log file for indication of a full table space or other issue.

Diagnostics that need attention at some point in the future are as follows:

- Collection received x ReadRaw failures in the last y minutes. ReadRaw errors that occur repetitively indicate that either you are collecting too much from the Connectivity Servers or you have not optimized the collection of IM Numeric data from the Direct Logs.

Data Access Applications

This section provides guidelines for troubleshooting data access applications. This includes DataDirect, Desktop Trends, Display Services, reports, and the Application Scheduler.

General Troubleshooting Tips

- If reports fail in unusual ways, check the Windows system heap as described in [Table 3](#) in [Common Issues](#).
- **Using Run Now from the Scheduling Definition aspect** - This creates a new Green Running Jobs object, which will disappear upon successful completion, or turn red on failure. The Running Jobs object has an aspect which will report the error encountered.
- **Using the Test Action on the Action Aspect** ([Figure 102](#)) - This runs the report via the interactive or workplace user, instead of the Scheduler. This will help you determine whether or not the scheduler is having problems. If you see dialogs asking for userid/password or data source, this indicates the report will not run when executed by the Scheduler. Also check the ODBC source Localhost to make sure it was not configured with a userid (should be blank).

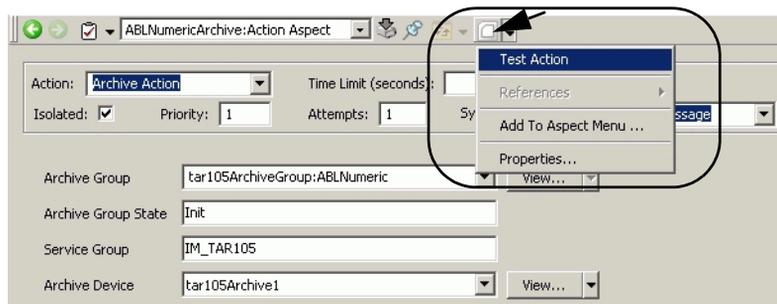


Figure 102. Test Action Function on the Action Aspect

- **Macro Security and Pop-up Dialogs** - Security issues often cause reports to hang due to resulting pop-up messages. Any error causing a dialog to pop up in Excel for a report template interactively will also do so for the 800xA service account running the task in the background. Macro Security settings can cause this. If Visual Basic macros are defined in a particular report, Excel Macro Security settings may need to be set lower for the 800xA Service Account. If you are on the local workstation, listen for beeps. Beeps are an indication that a dialog is popping up in the background.



Make sure that you are logged in with the 800xA Service Account when checking security issues, as this is the account used for generating the report.

- **Run Report Template manually in Excel** - Use **F9** with the Report Template opened in Excel. Then **Test functions separately**. To pinpoint which function(s) are failing, it helps to whittle the report down to individual function calls and testing individually to identify the problematic one.

Try to run an empty report. Uncheck all Excel add-ins including DataDirect This eliminates some situations where excel might pop up a dialog.

- **Test the function calls Interactively in Excel** - The Microsoft Excel Function wizard tries to execute functions each time a new parameter is entered. This may cause Excel to crash. When using the function wizard, it is recommended that you disable the functions from the option page.
- **General support for Crystal Reports** - Refer to the following web site:

<http://support.businessobjects.com/search/>

www.crystalkeen.com

www.crystalbook.com

www.mindconnection.com

www.tech-tips.com

<http://msdn.microsoft.com/library/default.asp?url=/library/en-us/crystlmn/html/crsamsamples.asp>

www.hammerman.com

www.kenhamady.com

www.chelseatech.co.nz

Fixing Large Reports (Long Execution Time)

If a report is taking much longer than it should to finish executing and no Time Limit was configured for the action, other jobs in the queue may not run as scheduled. To fix this, abort the job along with any Excel programs which may still be running. Set a maximum time for Report Action Aspects, so the system will terminate the report instance if a report hangs. This will give other working reports the chance to execute. Also, increase the action time limit for large reports.

Jobs waiting in the queue are shown in blue, and their state in the Job Log will be **Not run**. If software is not installed properly, the Scheduler service may need to be disabled and re-enabled and running jobs queue be manually deleted.

DataDirect Add-in Not Installed for 800xAService Account

The DataDirect Add-in must be installed for each user account that will use DataDirect. This includes the Application Scheduler which runs as the 800xAService account.

Add-ins are automatically added for the installing user. If software is installed as a user other than 800xAService, the DataDirect add-in must be added manually for the 800xAService account. This must be done on all nodes where DataDirect reports will be run by the application scheduler. Refer to the section on DataDirect (Excel Data Access) in *System 800xA Information Management 5.1 Data Access and Reports (3BUF001094*)*.

Reading DataDirect (Excel) Reports from a FileViewer Aspect

This may cause both Excel and Plant Explorer windows to freeze. To fix this, change the file opening set-up for Microsoft Excel Worksheets as follows:

1. In Windows Explorer, choose **Tools > Folder Options**.
2. Select the **File Types** tab.
3. Select the **XLS Microsoft Excel Worksheet** file type.
4. Click **Advanced**.
5. Uncheck the **browse in same window** check box.
6. Click **OK** in the Advanced dialog.
7. Click **OK** in the Folder Options dialog.

Scheduler Service Group

The Service Group selection field in the Application Scheduler lets you choose which server will execute a given job in the case where there are multiple nodes running the Scheduling services. Jobs that do not have a service group selected will display **<default>** in this field and will be executed by the primary service group. The primary service group is determined to be the first service group created, not necessarily the first one listed in the Service structure.

It is recommended that you use this field to specify where (on which server node) the scheduled job will run.

For systems having more than one Scheduler Service Group, make sure the default Scheduler Service Group is pointing at the node where Crystal Reports is loaded. If the default Service Group does not have Crystal reports, the report will fail to execute with the following error:

```
/FAILED: Unable to open report into Crystal: Object variable of With block not set.
```

The default Service Group for a Service is the first one listed in the Service structure under the Scheduler category (they are listed alphabetically). You can add a character for example - x,y,z, etc. can be added to the front of the names to get them in the desired order.

Launch Permissions

The scheduler has 2 automation interfaces:

- EXSingleAuto.clsExcelAutomation – Excel Automation
- CRSingleAuto.clsAutoSingleCR – Crystal Reports Automation

Installing a security fix may change the behavior of Excel or Crystal Reports.

If this occurs, use the following procedure to fix this problem:

1. Use the Windows Task Manager to terminate the **EXSingleAuto.exe** and **EXCEL.EXE** processes, [Figure 103](#). Multiple instances of the EXCEL.EXE process indicates there are multiple instances of the report in the scheduling queue. In this case you may want to disable the scheduling definition to prevent further report instances from queuing.
2. Locate the DataDirect.INI file under:

```
C:\Documents and Settings\800xAServiceAccount\Application Data  
\ABB Industrial IT\Inform IT\DataDirect\
```

where 800xAServiceAccount is the 800xA Service account as specified on the Software and User Settings tab of the 800xA System Configuration Wizard.

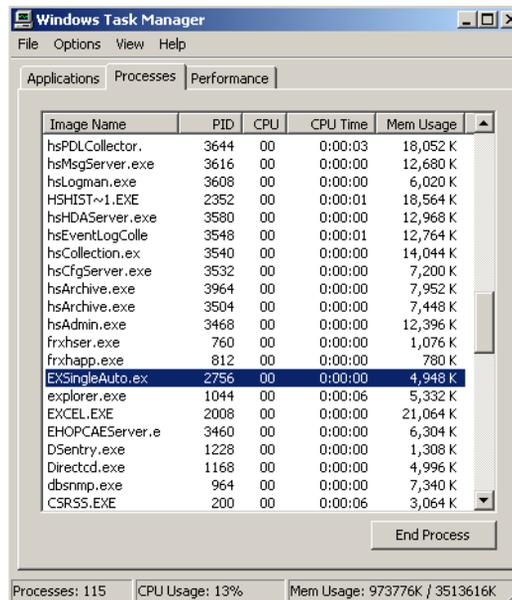


Figure 103. Terminating the EXSingleAuto and EXCEL Processes

3. Build an identical structure under both the All Users and Default User paths in the same directory as follows:

C:\Documents and Settings\All Users\Application Data\ABB Industrial IT\Inform IT\DataDirect\

and

C:\Documents and Settings\Default User\Application Data\ABB Industrial IT\Inform IT\DataDirect\

4. Copy the DataDirect.INI file into both of these new paths.

Installation and Software

This section includes information on where to install various software applications, software components, databases, and licensing information.

Oracle

Oracle must be installed using the 800xA Administration account. Also Oracle **MUST** be installed either from DVD, CD or Local disk. **DO NOT** use a network disk. If the software is provided on a network disk, you must copy it to a local temporary location in order to perform the installation.

Oracle 11 folder should be copied to a path without spaces to do the installation.

c:\oracle11 **OK**

c:\my software folder\oracle11 **Not OK.**

Where to Install Information Management Software

Install the **Information Management server** software on an application server dedicated to Information Management functionality. This application server will also require all client/connect software components for all other functions being installed in the system. For example, if your system uses AC 800M controllers, you will also be required to install AC 800M Connect, and if your system uses Batch Management functionality, you will require the Batch Management client. Refer to the section on installing application servers in *System 800xA Manual Installation (3BSE034678*)*.

Install the **Information Management Client Toolkit** on ALL OTHER 800xA system nodes (except the domain controller). This includes aspect servers, connectivity servers, Batch and Asset Optimization application servers, workplace clients, and engineering stations. Refer to the step-by-step instructions for each node type in *System 800xA Manual Installation (3BSE034678*)*.

The **Information Management Display and Client Services** are applications for data access. They are automatically installed on the Information Management server. You may also install these desktop applications on remote workstation clients. These remote workstation clients **DO NOT** require any other 800xA system software to be installed. Refer to the section on installing the Information Management Display and Client Services in *System 800xA Manual Installation (3BSE034678*)*.

Checking the Information Management Installation

Use Windows Add/Remove program (on Windows Control Panel) to verify that all Information Management components have been installed. These components are easy to recognize by the ABB Inform IT prefix, [Table 17](#).

Also check the **C:\ProgramData\ABB\IM\Install\WILogResults** log file after installation. Use the HTML pages to view the installation logs.

Table 17. Information Management Components

Server	Client Toolkit ¹	Desktop Tools ²
<ul style="list-style-type: none"> • ABB Inform IT - Application Scheduler • ABB Inform IT - Calculations • ABB Inform IT - DataDirect • ABB Inform IT - Desktop Trends • ABB Inform IT - Display Services • ABB Inform IT - History • ABB Inform IT - Open Data Access • ABB PAS - System Services • ABB Open Access for 800xA 	<ul style="list-style-type: none"> • ABB Inform IT - Application Scheduler • ABB Inform IT - Calculations • ABB Inform IT - History Client • ABB Inform IT - Open Data Access 	<ul style="list-style-type: none"> • ABB Inform IT - DataDirect • ABB Inform IT - Display Services (Client only) • ABB Inform IT - Desktop Trends • ABB Inform IT - Open Data Access Client

NOTES:

1. Client toolkit is installed on all nodes that are not Information Management servers. If the Client Toolkit is not installed, when you attempt to view aspects related to Information Management those views will not be available.
2. Desktop Tools are installed on remote workstation clients or client toolkit nodes.

Guidelines for Configuring the History Database Instance

Take care to allocate sufficient disk space when you configure the History database instance (post installation step). This will minimize the risk of having to re-allocate space later, after historical data collection/storage has begun.

Be sure to configure the Oracle History table space for Index and Runtime large enough to support your storage requirements. If these are not properly sized (when you create the Oracle database instance), messages will be lost when these tables reach their maximum size.

If your history application needs to support very large message logs, for example - OPC message log: 12 million entries and PDL message log: 6 million entries - it is

recommended that you increase the Oracle temp space accordingly. This is described in the section on extending tablespace for Oracle-based history files in *System 800xA Information Management 5.1 Configuration (3BUF001092*)*.

For guidelines on sizing the history database, refer to the section on creating the History database instance in *System 800xA Information Management 5.1 Configuration (3BUF001092*)*.

For all systems, except very small systems:

1. Designate two separate disk drives for Oracle-based data storage and file-based numeric logs. **DO NOT** use the drive where the Information Management software and Oracle program files are installed.
2. Start with the option for **OPC Message base installation**. Use the database instance wizard's dialogs to refine your system sizing requirements.

Once you have made your selections, the wizard may take up to 30 minutes to create the database instance, depending on the size of your application.

Adding a User for Oracle

For configuration/application building and runtime operations, it is recommended that you log in as a different user (not the installing user). See the procedure creating users and groups in *System 800xA Manual Installation (3BSE034678*)*.

To support Information Management applications such as historical database maintenance, and other administrative procedures one or more Industrial IT users must be added to the ora_dba and HistoryAdmin groups. For further information, refer to the section on managing users in *System 800xA Information Management 5.1 Configuration (3BUF001092*)*.

SQL*Plus

Refer to the guidelines for using SQL*Plus in *System 800xA Information Management 5.1 Data Access and Reports (3BUF001094*)*. Check ORACLE_SID. Set to **ADVA** if not already done.

Testing Oracle Connections

Oracle is accessed by different applications by different methods. Each method should be tested:

- SQLPLUS - log into history ADVA database:
user name = **history**, password = **history**
- ODBC - Test the ODBC connection using **Control Panel > Administrative Tools > ODBC Source**. If you need further guidelines, refer to the procedure for adding an ODBC data source in the post installation procedure for Information Management in *System 800xA Manual Installation (3BSE034678*)*.
- Check the ADO data provider for Oracle. Go to Control Panel > ADSS Service Configuration. Check that the ADO data provider has been started and is running.
- Verify ORACLE_SID is set to ADVA.

Service Names

Under normal circumstances, Oracle software is installed after the Information Management application server has been added to a domain. Oracle detects that the workstation belongs to a domain, adds a line with the domain name to the sqlnet.ora file, and appends the domain name to all service names defined in the tnsnames.ora file.

If for some reason Oracle is installed before the node is added to a domain, the domain name will not be entered into the sqlnet.ora file. The HSEH service name (created during Information Management software installation), and the LOCALHOST service name (created as a post installation step) will have the domain name appended. This will create a mismatch between these service names and sqlnet.ora file, and cause these service names to fail.

To rectify this condition, enter the domain name in the sqlnet.ora file and update any names in the tnsnames.ora file that do not have the domain name extension. This procedure is described in the section on post installation for Information Management in *System 800xA Post Installation (3BUA000156*)*.

License Keys

Table 18 describes the Information Management Licenses.

Table 18. Information Management Licenses

Application	License	Description
History	HIST_SRVR (History Server)	Controls the number of History Servers in the system. It also tracks the number of Oracle licenses sold.
History <i>(continued)</i>	HIST_LOGS, HIST_DUAL_LOGS, HIST_CONS_LOGS	Control the total number of History, Dual and Consolidation logs in the system (Information Management logs only, not basic history).
Display Services	MDI_DISP_BLDR	Controls the number of clients in the system that can use the Display builder.
	HIST_DISP	Controls the number of clients in the system that can use the History Displays.
Desktop Trends	HIST_TREND	Controls the number of clients in the system that can use the History Trend displays.
DataDirect Excel Data Access	EXCEL_DA	Controls the number of DataDirect clients in the system.
Open Data Access	HIST_ODBC_SRVR (History ODBC Server)	Counts the use of the Open data Access server. A configuration setting is used to select what nodes will run the ODBC server. When an ODBC server starts up it will check out one count of the license from the CLS.
	HIST_ODBC (History ODBC)	Controls the number of clients in the system that can use the Historian ODBC Server.
Calculations	CALC_SRVR	Controls the number of Calculation Servers in a system.

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Revision History

Introduction

This section provides information on the revision history of this User Manual.



The revision index of this User Manual is not related to the 800xA 5.1 System Revision.

Revision History

The following table lists the revision history of this User Manual.

Revision Index	Description	Date
-	First version published for 800xA 5.1	June 2010
A	Updated for 800xA 5.1 Rev A release	May 2011
B	Updated for 800xA 5.1 Rev B release	June 2012
C	Updated for 800xA 5.1 Feature Pack 4 release	February 2013
D	Updated for 800xA 5.1 Rev D release	December 2013
E	Updated for 800xA 5.1 Rev E and FP4 Rev E release	July 2015

Updates in Revision Index A

The following table shows the updates made in this User Manual for 800xA 5.1 Rev A.

Updated Section/Subsection	Description of Update
Section 5, Import/Export	Updated the Engineering Repository section.
Section 6, Backup and Restore	Updated the 800xA System Backup section.
Section 8, Information Management	Updated the images in the Performance Counters section for IM API Counters, IM Archive Counters, IM Collection Counters, and IM Storage Counters.

Updates in Revision Index B

The following table shows the updates made in this User Manual for 800xA 5.1 Rev B.

Updated Section/Subsection	Description of Update
Section 2. System Check	Updated the System Check List section.
Section 6. Backup and Restore	Changes done in the 800xA for Advant Master and Safeguard subsection in the Page 84 and 111.
Section 7. Single Node Replacement	Procedure changes done in the Information Management Server subsection
Front Cover	Maintenance name is now updated in Line 2.

Updates in Revision Index C

The following table shows the updates made in this User Manual for 800xA 5.1 Feature Pack 4.

Updated Section/Subsection	Description of Update
Section 6, Backup and Restore	Updated the changes in the Precautionary Issues > 800xA for IEC 61850 subsection. Updated the changes in the 800xA System Restore > 800xA for IEC 61850 subsection.
About this User Manual	Updated the changes in the section.
Section 5, Import/Export	Updated the Application Change Management subsection.

Updates in Revision Index D

The following table shows the updates made in this User Manual for 800xA 5.1 Rev D.

Updated Section/Subsection	Description of Update
Section 6, Backup and Restore	Updated the changes in the Precautionary Issues > Asset Optimization subsection. Updated the changes in the Recover Function-Specific Information> Asset Optimization subsection.

Updates in Revision Index E

The following table shows the updates made in this User Manual for 800xA 5.1 Rev E and FP4 Rev E.

Updated Section/Subsection	Description of Update
Section 8, Information Management	Changes updated in Services and Processes Related to Information Management > Windows Services
Section 6. Backup and Restore	Changes updated in the 800xA Advant Master and Safeguard both in Backup and Restore sections.
Section 7. Single Node Replacement	Changes are updated in the 800xA Advant Master and Safeguard subsection.

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