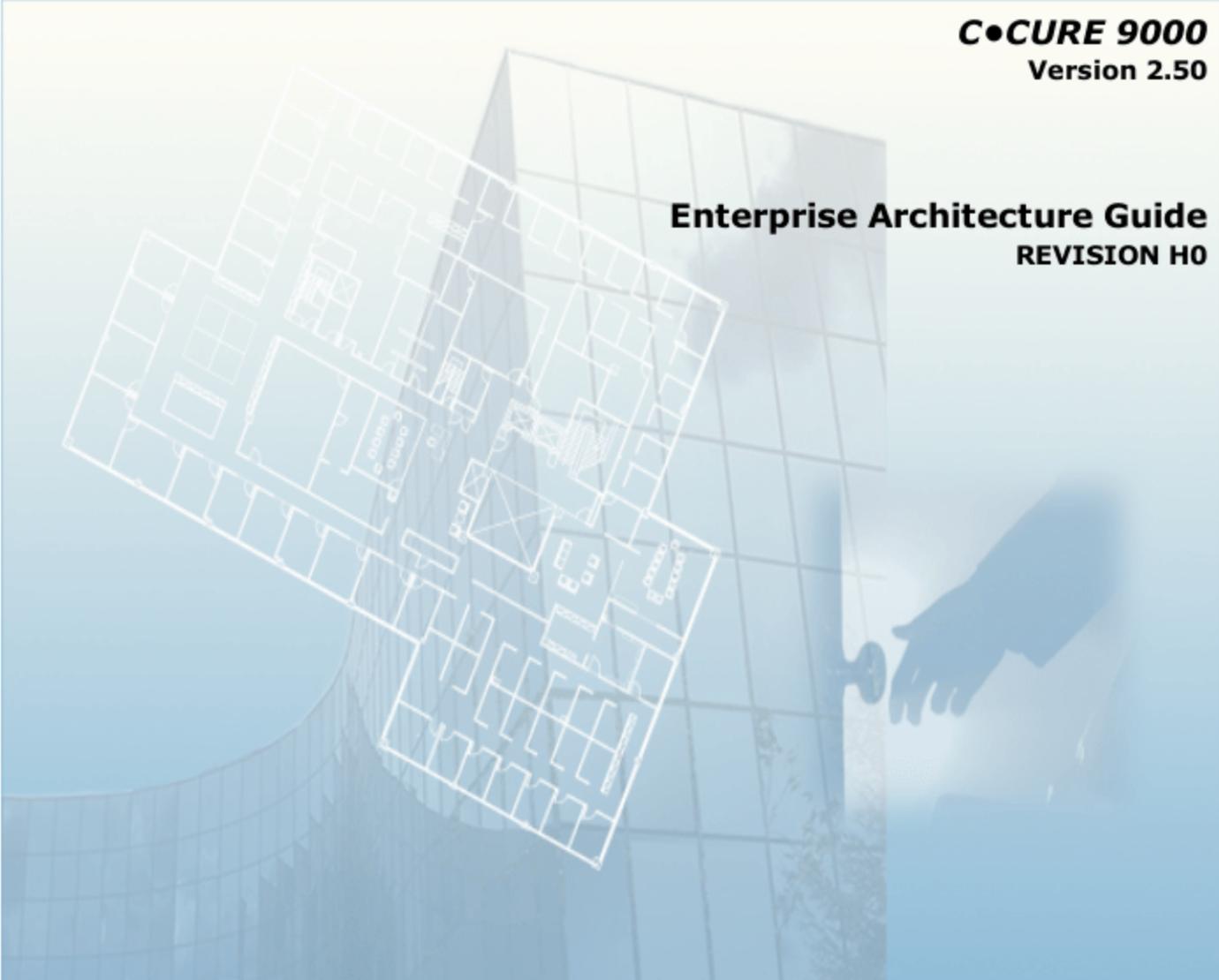


SOFTWARE HOUSE

From Tyco Security Products

C●CURE 9000
Version 2.50

Enterprise Architecture Guide
REVISION H0

A hand is shown holding a large architectural blueprint in front of a modern glass building. The blueprint is tilted and features various technical drawings and labels. The background is a blurred view of the building's facade, which reflects the sky and surrounding environment. The overall color palette is light blue and white, giving it a professional and technical appearance.

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Preface

The *C•CURE 9000 Enterprise Architecture Guide* is for new and experienced security system users who want to learn to use this product for the *C•CURE 9000 Security Management System*.

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How to Use this Manual

This manual contains chapters that provide the following information about C•CURE Application Server.

Chapter 1: Application Server Overview

This chapter introduces the Enterprise Architecture option, explaining its concept, structure, features, and capabilities.

Chapter 2: Application Server Architecture

This chapter outlines the Enterprise Architecture configurations and the concept of synchronization.

Chapter 3: Configuring an Enterprise Architecture

This chapter explains how to configure the Enterprise Architecture.

Chapter 4: Application Server Editor

This chapter describes the Application Server editor.

Chapter 5: Partitions in Enterprise Architecture

This chapter describes the use of Partitions in a Enterprise Architecture.

Chapter 6: Personnel in Enterprise Architecture

This chapter explains how Personnel is managed in Enterprise Architecture.

Chapter 7: Hardware in Enterprise Architecture

This chapter explains how access control hardware is configured and managed in an Enterprise environment.

Chapter 8: Video in Enterprise Architecture

This chapter explains how video security hardware is configured and managed in an Enterprise environment.

Chapter 9: System Variables in Enterprise Architecture

This chapter outlines the use of system variables in an Enterprise Architecture.

Chapter 10: Journal/Audit In Enterprise Architecture

This chapter explains the Journal and Audit capabilities in the Enterprise Architecture.

Chapter 11: Central Reporting in Enterprise Architecture

This chapter describes the central reporting capability of the Enterprise Architecture.

Chapter 12: Central Management in Enterprise Architecture

This chapter explains how to perform central monitoring in an Enterprise Architecture.

Chapter 13: Enterprise Architecture Backup and Restore

This chapter describes the backup and restore capabilities of Enterprise Architecture.

Chapter 14: Import and Export in an Enterprise

This chapter describes the Import and Export capabilities of Enterprise Architecture.

Appendix A: Enterprise Architecture FAQ

This appendix provides questions and answers about the Enterprise Architecture.

Finding More Information

You can access C•CURE 9000 manuals and online Help for more information about C•CURE 9000.

Manuals

C•CURE 9000 software manuals are available in Adobe PDF format on the C•CURE 9000 DVD.

You can access the manuals if you copy the appropriate PDF files from the C•CURE 9000 Installation DVD English\Manuals folder.

The available C•CURE 9000 and Software House manuals are listed in the *C•CURE 9000 Installation and Upgrade Guide*, and appear as hyperlinks in the online.pdf file on the C•CURE 9000 DVD English\Manuals folder.

These manuals are also available from the Software House Member Center website

([\[REDACTED\]](#)).

Online Help

You can access C•CURE 9000 Help by pressing F1 or clicking Help from the menu bar in the Administration/Monitoring Station applications.

Conventions

This manual uses the following text formats and symbols.

Convention	Meaning
Bold	This font indicates screen elements, and also indicates when you should take a direct action in a procedure. Bold font describes one of the following items: <ul style="list-style-type: none"> • A command or character to type, or • A button or option on the screen to press, or • A key on the keyboard to press • A screen element or name
blue color text	Indicates a hyperlink to a URL, or a cross-reference to a figure, table, or section in this guide.
<i>Regular italic font</i>	Indicates a new term.
<text>	Indicates a variable.

The following items are used to indicate important information.

NOTE

Indicates a note. Notes call attention to any item of information that may be of special importance.

TIP

Indicates an alternate method of performing a task.



Indicates a caution. A caution contains information essential to avoid damage to the system. A caution can pertain to hardware or software.



Indicates a warning. A warning contains information that advises users that failure to avoid a specific action could result in physical harm to the user or to the hardware.



Indicates a danger. A danger contains information that users must know to avoid death or serious injury.

Software House Customer Support Center

Telephone Technical Support

During the period of the Agreement, the following guidelines apply:

- Software House accepts service calls **only** from employees of the Systems Integrator of Record for the installation associated with the support inquiry.

Before Calling

Ensure that you:

- Are the Dealer of record for this account.
- Are certified by Software House for this product.
- Have a valid license and current Software Support Agreement (SSA) for the system.
- Have your system serial number available.
- Have your certification number available.

Hours	Normal Support Hours	Monday through Friday, 8:00 [REDACTED] to 8:00 [REDACTED], EST. Except holidays.
	Emergency Support Hours	24 hours/day, seven days a week, 365 days/year. Requires Enhanced SSA "7 x 24" Standby Telephone Support (emergency) provided to Certified Technicians. For all other customers, billable on time and materials basis. Minimum charges apply – See MSRP.
Phone	For telephone support contact numbers for all regions, see [REDACTED]	

Application Server Overview

This chapter introduces the Enterprise Architecture option and explains how C•CURE 9000 servers operate in an enterprise environment.

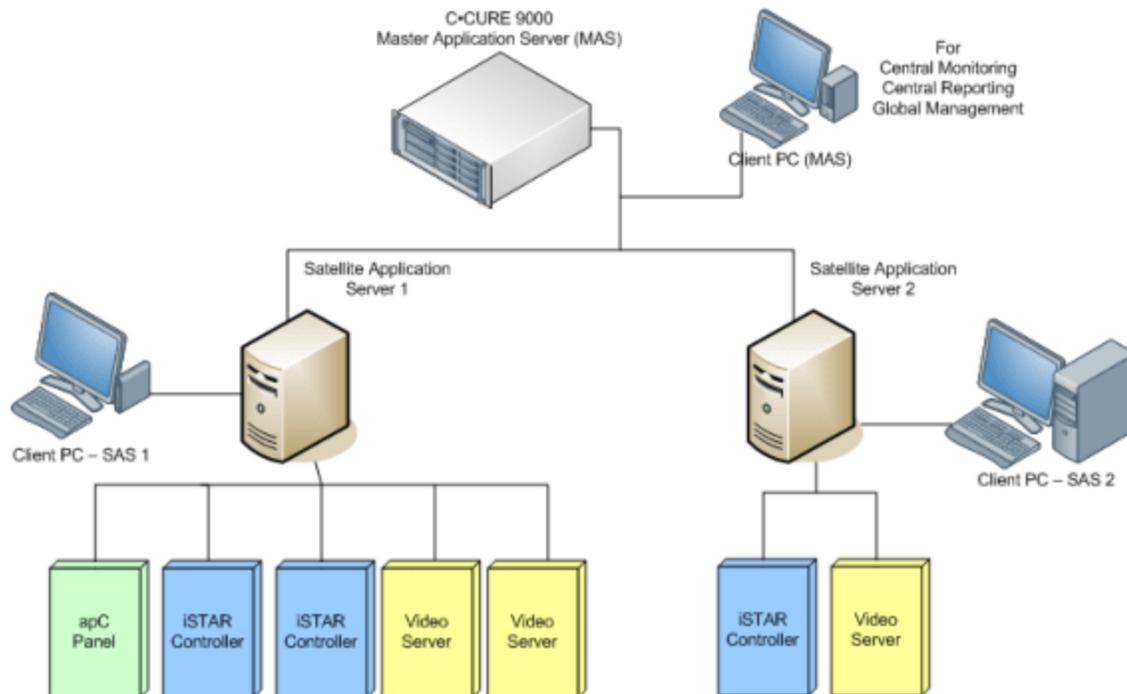
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Introduction

The C•CURE 9000 Enterprise Architecture is a licensable option that allows you to configure multiple C•CURE 9000 servers to communicate with a Master Application Server. The Master Application Server (MAS) provides a platform for global management of the Personnel, Video, and access security objects on two or more Satellite Application Servers (SAS) in an enterprise.

Figure 1: Basic Configuration: One MAS and Two SAS Systems



The Enterprise Architecture works by synchronizing each SAS system's database with the MAS database. The Master (MAS) contains the global data that is used across every server, such as global Personnel records, global clearances, and global Operators. The global data is synchronized to each SAS so that it can be used to implement enterprise-wide security. The MAS itself does not have any directly connected controllers or video servers, but it can be used to remotely monitor and manage controllers and video servers attached to SAS's in the enterprise. See [Typical Configuration](#) on [Page 44](#) for more information.

The MAS provides the capability for Central Monitoring of the entire enterprise, using the C•CURE 9000 Monitoring Station application. From a central Monitoring Station connected to the MAS, you can view Events, Activities, and status on every SAS in the enterprise. Alternatively, you can connect to a particular SAS to monitor that system and its connected hardware. See [Central Monitoring Station](#) on [Page 166](#) for more information.

In addition, the MAS provides a Central Reporting capability, because its database includes information about all objects that are replicated from the satellite servers. See [Central Reporting](#) on [Page 156](#) for more information.

Each Satellite (SAS) server contains database records for the video and access security hardware connected to it, as well as local personnel, clearances, privileges, and other data. Each SAS synchronizes with the Master so that SAS local data is replicated to the MAS for central management and monitoring.

All data is synchronized immediately when saved (or queued if a server is offline), except for Journal and Audit data, which is synchronized on a configurable schedule. Network latency and load on the MAS and SAS databases can effect synchronization performance.

Operator Privileges are used to provide system users with exactly the information they need, and deny access to information they do not need or should not be able to view.

These capabilities let you deploy multiple C•CURE 9000 servers in an enterprise environment, solving scalability and wide area network issues and providing a platform for central monitoring, global management, and central reporting.

NOTE

Starting with a baseline of version 2.40 Service Pack 2, the MAS and each SAS in an Enterprise can be running different versions of C•CURE 9000, as long as the MAS installed version is equal to or later than the SAS version on each server. If the MAS uses version 2.50, then each SAS must use either version 2.40 Service Pack 2 or version 2.50.

Understanding The Enterprise Environment

The Enterprise Architecture provides an administrator with the ability to view and manage all aspects of access control and video security from one application - the Administration Workstation attached to the MAS. From this vantage point, you can:

- View and edit all Personnel, Credentials, and Clearances.
- Configure and manage all access control hardware.
- Configure and manage all video security hardware.
- Create Queries and Reports that can summarize data from every server in the Enterprise, or from a limited subset of data based on a Query you construct. (Status values are not synchronized from SAS to MAS, so reports on the MAS cannot provide the latest status values.)

[Using the Administration Client from the MAS on Page 26](#) explains how a client application attached to the MAS provides the ability to choose whether to view and manage the entire enterprise or to view and manage a specific SAS system from a central location.

[Using the Administration Client from a SAS on Page 31](#) explains how a client application attached to a SAS differs in scope but provides the ability to configure Global and local objects from the SAS.

The Enterprise Architecture also provides the ability to perform Central Monitoring from a Monitoring Station client application attached to the MAS. See [Central Monitoring Station on Page 166](#).

You can create and run Centralized Reports from a client application attached to the MAS. See [Central Reporting on Page 156](#)

Multi-version Support

For an established Enterprise consisting of a MAS and one or more SAS systems, upgrading to a new version of C•CURE 9000 is a large and potentially formidable task. Previously, the MAS needed to be upgraded first, and then each SAS would be upgraded one-by-one, without any ability to connect to the MAS previous to their upgrade. For a large Enterprise this could mean that some SAS systems would be out of contact with the MAS for a considerable time.

To overcome this problem, C•CURE 9000 is providing Multi-version support - the ability for SAS systems not yet upgraded to the version the MAS is running to connect to the MAS, synchronize records, identify conflicts, and attach clients to the MAS to configure and monitor the Enterprise.

From the MAS perspective, a Global Operator has the ability to attach to both upgraded and non-upgraded SAS systems, with some limitations due to the version differences.

The Multi-version process begins with an Enterprise where the MAS and every SAS is currently at the same version, and the MAS is upgraded. Therefore, only two versions of C•CURE 9000 can be involved:

- The new version to which the MAS has been upgraded
- The previous version at which all SAS systems were operating.

If an Enterprise currently has a MAS at one version and SAS systems with differing versions, it is necessary to update all SAS systems to be at the same version as the MAS to establish a common baseline, prior to beginning to upgrade the MAS to take advantage of Multi-version support.

The intention still is to proceed with upgrading every SAS to match the new MAS version. The difference is that until that point, all the SAS systems can participate in the Enterprise, within version-specific limitations.

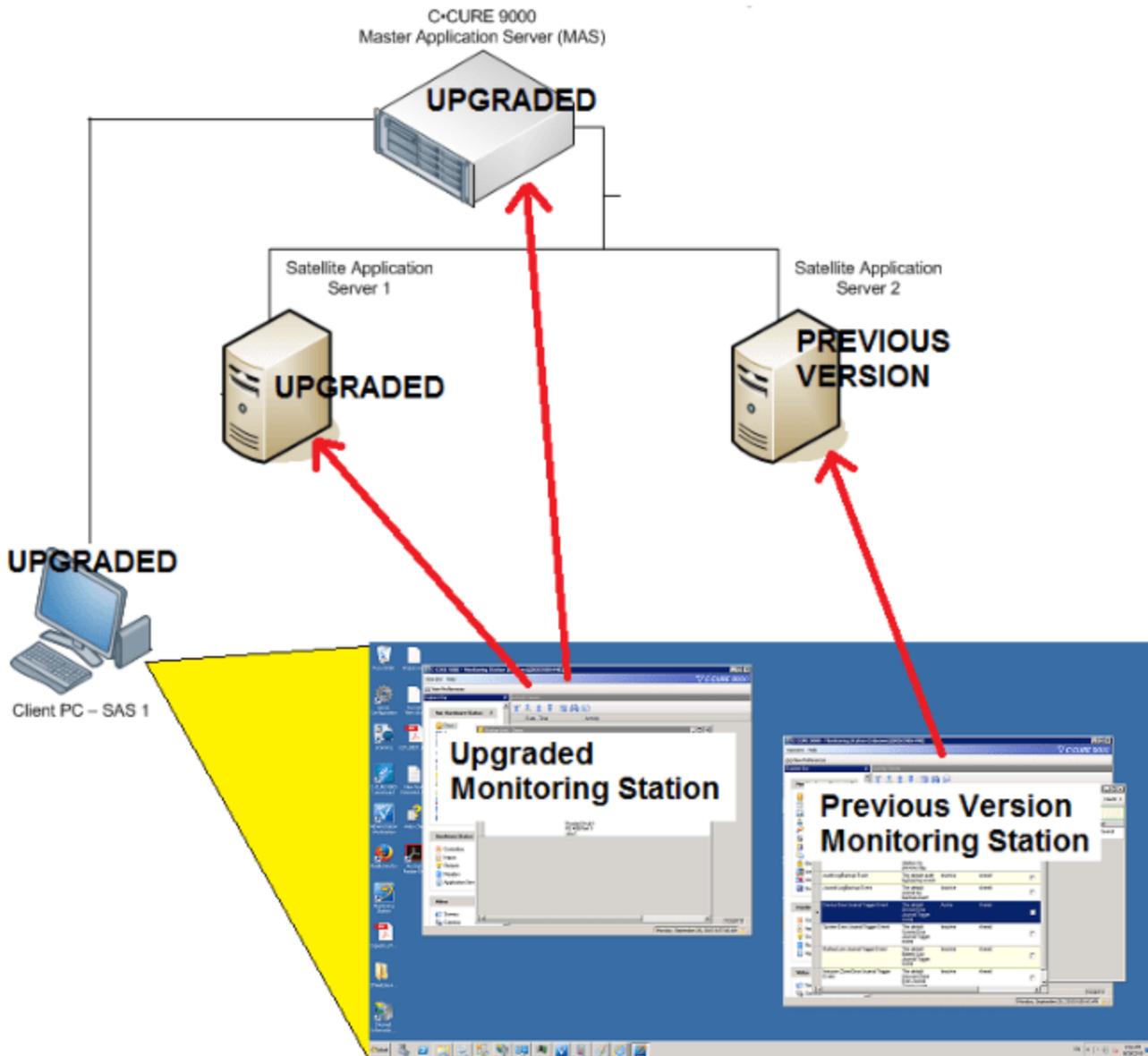
To enable upgraded clients to communicate with previous version SAS systems, during the upgrade a copy is made of the C•CURE 9000 client applications from the previous version so that these applications can be launched when needed if the upgraded client detects it is running in a Multi-version Enterprise.

Example:

If a Global Operator on the MAS opens the Monitoring Station, and that Operator is currently interactive with SAS systems that have been upgraded and some SAS systems that have not been upgraded, separate Monitoring Station windows open:

- The current upgraded version of the Monitoring Stations is opened for upgraded SAS systems that are interactive.
- The previous version of the Monitoring Station is opened for SAS systems that have not been upgraded and are interactive.

Figure 2: Multi-version Client Example



See the C•CURE 9000 Release Notes for the upgrade version to determine the previous versions that are supported for Multi-version in a given release.

The following table summarizes the capabilities provided by Multi-version support.

Table 1: Multi-version Support Capabilities Summary

Category	Effects
Multi-version Server Synchronization	<p>Synchronization occurs between the upgraded MAS and all previous version SAS systems, but data differences resulting from the upgrade are not synchronized.</p> <p>When a SAS is upgraded, the MAS and SAS re-synchronize to take care of any data not previously synchronized.</p> <p>See Multi-version Server Synchronization on Page 21.</p> <p>See Table 2 on Page 22 for details on the supported connections and limitations.</p>
Multi-version Client Support	<p>Client applications that are upgraded can attach to upgraded MAS and SAS, but have limitations in communicating with previous version SAS systems.</p> <p>Client applications that are not upgraded are limited to connecting to previous version SAS systems, with limitations.</p> <p>See Multi-version Client Support on Page 21.</p>
Multi-version Integration Impact	<p>A previous version Integration that is not enterprise-aware will continue to operate with a previous version SAS, but not with an upgraded MAS or SAS.</p> <p>An upgraded Integration will only work correctly with an upgraded SAS, because the Integration's installer will not retain the previous version of the integration to launch when communicating with a previous version SAS.</p> <p>See Multi-version Impact on Integrations on Page 25.</p>

Multi-version Server Synchronization

Multi-version Support changes the way that data is synchronized between the MAS and each SAS in two respects:

- Synchronization is allowed to occur if the SAS version of C•CURE 9000 is different from the MAS version. However data differences resulting from the MAS upgrade are not synchronized (these differences are flagged in the database, however, so that they can be synchronized at a later time).
- When the SAS is upgraded to match the MAS version, the MAS and SAS re-synchronize to take care of any data not previously included in the Multi-version synchronization.

The status of Multi-version synchronization for an Enterprise is summarized on the [Application Server Dynamic View](#) on [Page 68](#), so that you can readily determine the Multi-version synchronization status between a SAS and the MAS, or between the MAS and all SAS systems.

Multi-version Client Support

The way a client application behaves in the Multi-version Enterprise depends upon the server(s) to which the client application connects.

When you launch a client application in a Multi-version environment, a message box is displayed to tell you how the client is affected by operating in that Multi-version environment.

Example:

You launch an upgraded Monitoring Station client that connects to the MAS. The following message appears to let you know you are operating in a Multi-version Enterprise:

You are running this client while your Enterprise is in the process of upgrading. The client functionality is limited to performing tasks on objects owned by servers that match your version of the client. As a result, the 'Default Server' and

'Read Data from' server lists only contain servers that are compatible with your client. Where applicable, Right-click menus are disabled for objects owned by incompatible servers.

When running the Monitoring Station (MS), the upgraded MS automatically starts the previous version of the MS so that you can monitor newly both upgraded servers and ones that haven't been upgraded yet. Each version of the MS is limited to loading Application Layouts that reference compatible servers.

If your Monitoring Station client was configured to be interactive with both upgraded and previous version SAS systems, your upgraded Monitoring Station client displays information from the upgraded SAS systems, and launches a previous version of the Monitoring Station to display information from any interactive previous version SAS systems.

Table 2 on Page 22 below applies to remote clients - a client application on one system connecting to a C•CURE 9000 server on a different system.

A local client residing on a server is assumed to be connecting to its local server using the same version between client and server.

Table 2: Client Support in a Multi-Version Environment

Client	Connect to:	Supported?	Details
Previous version Monitoring Station Client	Previous version SAS (with Upgraded MAS in the Enterprise)	Supported with restrictions	<p>Connected to a previous version SAS, the user cannot edit Global objects, with the exception of adding and removing Personnel Clearances.</p> <p>If the user attempts to double-click on a Global object the following status message is displayed as a bubble from the Administration client icon in the Notification area (lower right corner) of the display:</p> <p><i>You are running in a Multi-Version environment and the object that you have selected is incompatible with this version of the client.</i></p>
Previous version Admin Client	Previous version SAS (with Upgraded MAS in the Enterprise)	Supported with restrictions	<p>Connected to a previous version SAS, the user cannot edit Global objects, with the exception of adding and removing Personnel Clearances.</p> <p>The previous version Admin client limits the user to selecting partitions owned by the SAS server in the 'New Object' drop down list.</p> <p>This restriction results in the 'right-click' context menu being disabled for all Global objects except Personnel objects and then by further restricting the supported commands to Assign Clearances and Remove Clearances .</p> <p>If the user attempts to double-click on a Global object the following status message is displayed as a bubble from the Administration client icon in the Notification area (lower right corner) of the display:</p> <p><i>You are running in a Multi-Version environment and the object that you have selected is incompatible with this version of the client.</i></p>

Table 2: Client Support in a Multi-Version Environment (continued)

Client	Connect to:	Supported?	Details
Previous version Monitoring Station	Upgraded MAS (with Multi-version SAS systems in the Enterprise)	Supported with restrictions	<p>The Monitoring Station only loads Application Layouts belonging to servers that match its version.</p> <p>If a Monitoring Station has Application Layouts that can be interactive with both upgraded and previous version servers, the layouts are only interactive with compatible (previous version) servers.</p> <p>The Monitoring Station does not allow the user to select an incompatible (upgraded) server in the Read Data from drop-down list. The drop-down list will only show compatible servers.</p> <p>The Monitoring Station only shows Events and Activities associated with objects that belong to servers that haven't been upgraded.</p> <p>If the user selects a Global object in a Dynamic View, the following message is displayed as a bubble from the Administration client icon in the Notification area (lower right corner) of the display:</p> <p><i>You are running in a Multi-Version environment and the object that you have selected is incompatible with this version of the client.</i></p> <p>If the Monitoring Station determines if there are no compatible Application Layouts available or no compatible interactive servers, the following message is displayed:</p> <p><i>You are running this client while your Enterprise is in the process of upgrading and the Monitoring Station that you have launched is limited to connecting with upgraded servers. As a result, this client is attempting to load a Monitoring Station that is compatible with the remaining servers that haven't been upgraded.</i></p> <p><i>Unfortunately, this operator isn't global and/or there aren't any compatible application layouts assigned to this operator. A compatible layout is one that belongs to a server that hasn't been upgraded and has been assigned to the operator or has been set to 'Interactive'. To rectify, please login using a global operator and assign compatible layouts to the operator or make the compatible servers interactive with this operator.</i></p> <p><i>The client will now terminate.</i></p>
Previous version Admin Client	Upgraded MAS (with Multi-version SAS systems in the Enterprise)	Not Supported	<p>The Administration client cannot connect to the upgraded MAS. A message is displayed:</p> <p><i>The server that you are connecting to has been upgraded and is not available until you upgrade this client to a compatible version.</i></p>
Previous Version Monitoring Station	Upgraded SAS	Not Supported	<p>Message Displayed:</p> <p><i>The server that you are connecting to has been upgraded and is not available until you upgrade this client to a compatible version.</i></p>
Previous Version Admin Client	Upgraded SAS	Not Supported	<p>Message Displayed:</p> <p><i>The server that you are connecting to has been upgraded and is not available until you upgrade this client to a compatible version.</i></p>

Table 2: Client Support in a Multi-Version Environment (continued)

Client	Connect to:	Supported?	Details
Upgraded Monitoring Station	Upgraded MAS (with Multi-version SAS systems in the Enterprise)	Supported.	<p>Launches a current version Monitoring Station to interact with upgraded MAS/SAS systems. Launches a previous version Monitoring Station to interact with previous version SAS systems in a Multi-version Enterprise.</p> <p>The upgraded Monitoring Station does not allow the user to Right-click on objects that are owned by previous version servers.</p> <p>The upgraded Monitoring Station does not allow the user to select a server in the Read Data from drop-down that doesn't match the version of the client. Incompatible (not-upgraded) servers are not listed.</p> <p>The upgraded Monitoring Station only shows Events and Activities associated with objects that belong to servers that have been upgraded.</p>
Upgraded Admin Client	Upgraded MAS (with Multi-version SAS systems in the Enterprise)	Supported with Restrictions	<p>The upgraded Administration client limits the user to selecting compatible servers in the Read Data from drop-down list. Incompatible (not-upgraded) servers are not listed.</p> <p>The upgraded Administration client limits the user to selecting compatible servers in the Default Server drop down list. Incompatible servers are not listed.</p> <p>The upgraded Administration client limits the objects that the user can Right-click on to those objects residing in Partitions that are owned by compatible servers. This restriction results in the right-click context menu being disabled for incompatible objects.</p> <p>If the user attempts to double-click on an incompatible object, the following status message is displayed as a bubble from the Administration client icon in the Notification area (lower right corner) of the display:</p> <p><i>You are running in a Multi-Version environment and the object that you have selected is incompatible with this version of the client.</i></p>
Upgraded Monitoring Station	Previous version MAS or SAS	Not Supported.	<p>Displays the message:</p> <p><i>The server that you have selected has not been upgraded and is not available.</i></p> <p>The program then terminates.</p>
Upgraded Admin Client	Previous version MAS or SAS	Not Supported	<p>Displays the message:</p> <p><i>The server that you have selected has not been upgraded and is not available.</i></p> <p>The program then terminates.</p>
Upgraded Admin client	Upgraded SAS	Supported	No Limitations.
Upgraded Monitoring Station	Upgraded SAS	Supported	No Limitations.

Table 2: Client Support in a Multi-Version Environment (continued)

Client	Connect to:	Supported?	Details
Upgraded Web Client	Upgraded MAS or SAS (with Multi-version SAS systems in the Enterprise)	Limited Support	<p>When the Web Client connects to the MAS, the user won't be able to edit Personnel objects that belong to a SAS that hasn't been upgraded. Consequently, the Edit, Add, Delete and Assign Clearance buttons for these objects are all disabled when the user selects these objects.</p> <p>When the Web Client connects to a SAS, the user has unrestricted access to Personnel objects belonging to partitions owned by the, SAS but is restricted to assigning Clearances to Global objects. Thus, the Edit, Add and Delete buttons are disabled when the user selects a Global Object.</p> <p>The following message is displayed:</p> <p><i>You are running this client while your Enterprise is in the process of upgrading. This client functionality is limited to performing tasks on objects owned by compatible servers. As a result, you will be restricted to editing objects that are compatible with the current version of this Web Client.</i></p>
Previous version Web Client	Upgraded MAS or SAS	Not Supported	<p>The the following message is displayed, and the user is logged out after 10 seconds:</p> <p><i>You are running this client while your Enterprise is in the process of upgrading. Unfortunately, this version of the Web Client is not compatible with the version of the server to which you have connected. The client will automatically be logged out.</i></p>

Multi-version Impact on Integrations

Most if not all Integrations are not enabled to take advantage of Multi-version support. If you install an updated version of an Integration on an updated SAS, it will work correctly with that SAS.

If you upgrade or patch an integration on a SAS client while you have a Multi-Version environment, the update or patch will only affect the newly installed client and no longer affect the old client, since the integration's installer won't be Multi-Version aware. This will result in the integration working in the new client but not working with the old client.

Using the Administration Client from the MAS

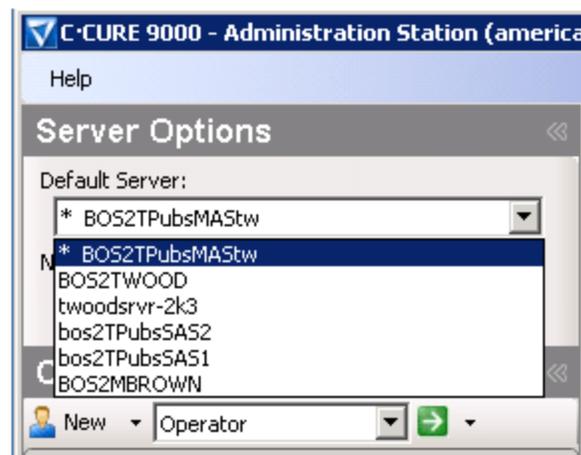
When you are using the Administration and Monitoring application on the MAS, you have a **Server Options** pane that allows you to choose your vantage point for viewing and managing objects in the enterprise by selecting your **Default Server** and your **New Object Partition**.

Selecting a Default Server

The **Default Server** you select is the server that the Administration or Monitoring application uses as a source for any dynamic views you open.

The **Default Server** drop-down list shows each of the servers in the Enterprise by system name. The MAS server name is indicated by an asterisk (*).

Figure 3: Default Server Selection on the MAS



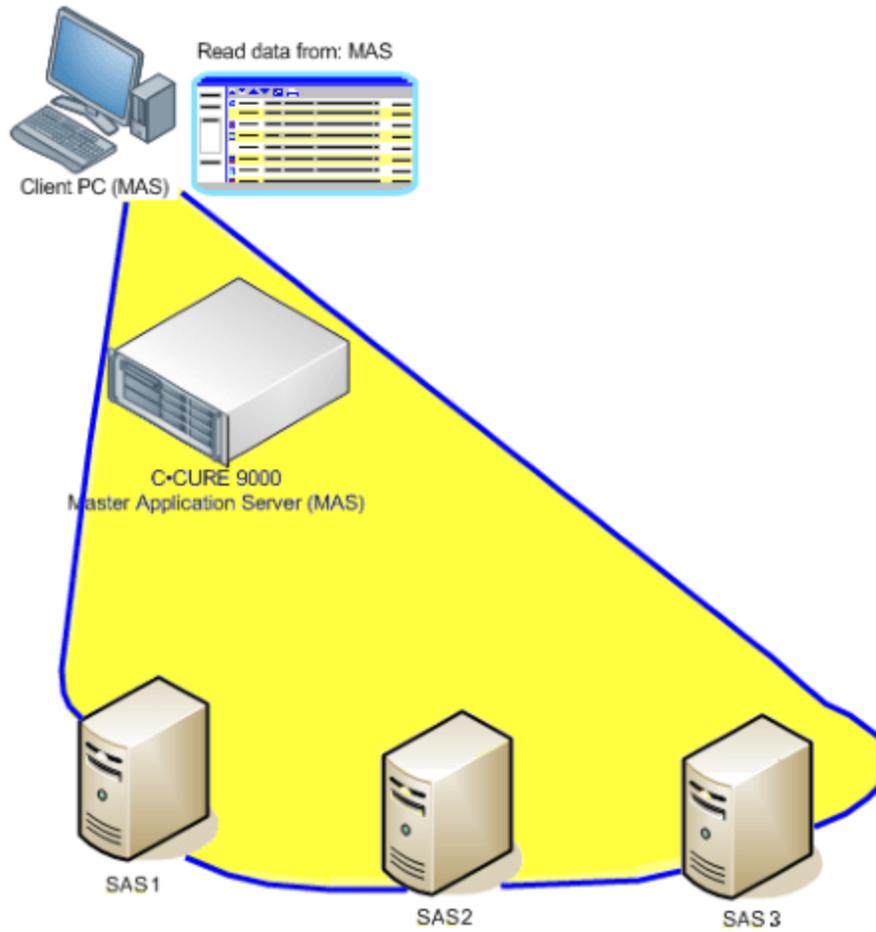
This drop-down box allows you to select the server from which to view objects.

- If you select the MAS as your vantage point, you can view objects in the Global Partition, the MAS Partitions, and each SAS Partition.
- If you select a SAS server in the list as your vantage point, you can view objects in the Global Partition and the Partitions on the SAS you chose. You cannot view Partitions on other SAS servers.

Example:

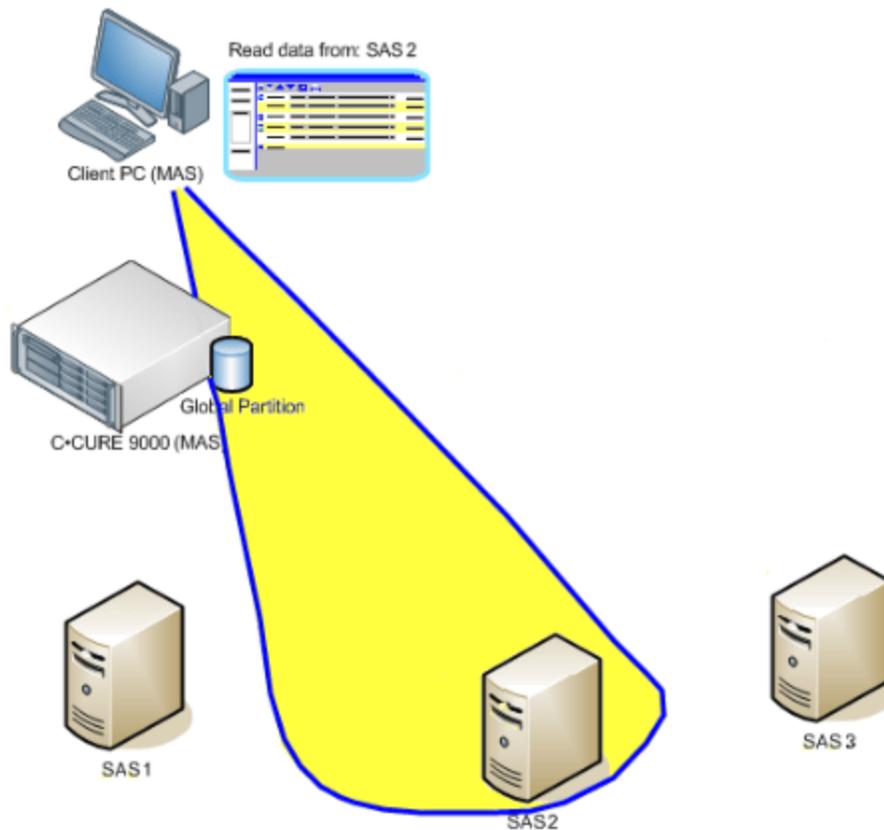
If you are a Global Administrator running the Administration application from the MAS, your **Default Server** is initially the MAS, and if you open a dynamic view of Personnel, you can see all Personnel in the Global Partition, all Personnel on the MAS, and all Personnel on every SAS.

Figure 4: Global Administrator Default Server = MAS - All Data from MAS and Each SAS is Displayed



If you change your Default Server to a particular SAS in the enterprise and re-open the dynamic view of Personnel (click ), your viewpoint will change to read data from that SAS, and you can see only the Global Personnel and the Personnel in Partitions that exist on that SAS.

Figure 5: Global Administrator Default Server = SAS2 - Only Data from SAS and Global Partition is Displayed

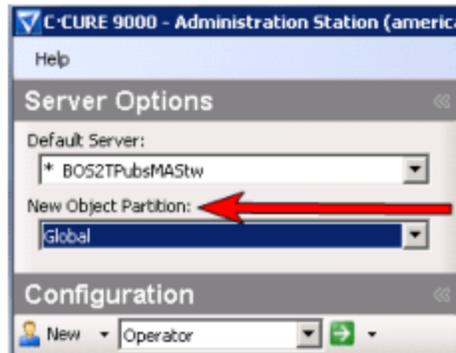


Selecting a New Object Partition

When you are connected to a MAS as your primary server, you can choose a Partition to be your **New Object Partition**. This becomes the Partition that objects are created in when you click **New** in the Configuration pane, the Personnel pane, etc. The Partitions that appear in the drop-down list depend upon the server currently chosen as your Default Server.

If you choose the MAS in the Default Server drop-down list, folders visible in the Hardware and Video trees, and Queries displayed in the Advanced Search pane are not filtered (all available objects replicated to the MAS are displayed). But the only Partitions available for **New Object Partition** selection are the Global Partition and any Partitions that reside on the MAS.

Figure 6: New Object Partition Selection



If you choose a SAS in the Default Server drop-down list, you can choose from a list showing all local Partitions on the SAS, and the Global Partition, if allowed by Privileges.

Reading Data from a Selected Server

When you are connected to the MAS, an additional drop-down list called **Read Data from** is available in the Content Area so that you can choose which MAS/SAS server you want to view data from for a particular Dynamic View. Thus you can display Dynamic Views from different servers in the same Content Pane on the MAS.

Figure 7: Reading Data from the MAS Operator List



Options and Tools

For an Administration client connected to a MAS, the selections in the Options and Tools pane run in the context of that SAS primary connection. When the Options and Tools pane is selected, the **Server Options** drop-down list is hidden. However, the tools which display a Dynamic View are able to read data from a different server once launched by making a selection in the **Read Data from** drop-down list.

Setting the Application Server Interactive

If your primary connection is the MAS, the Application Server Dynamic View has a selection on the context menu named **Set Interactive** for SAS systems in the view. If you set a SAS in the view to **Interactive**, that server sends messages to the MAS Monitoring Station or Administration Client. [Setting Application Servers Interactive](#) on [Page 164](#) for more information.

Navigation Pane

The Type Selection Combo Box, such as in the Configuration Pane, is used to select a class of objects. When the selected server in the menu bar is a SAS, the Data View shows objects which are owned by the SAS, in addition to the Global objects if there are any.

The functions of the **New** button and **New Template** button are affected by the selection of the Default Server and Partition. There are two cases which depend on whether a local or Global partition is selected.

1. If a local partition is selected, the object is created using data available from the Default Server which owns the selected partition.
2. If the Global partition is selected, the new object is also created and edited using data from the Default Server. But because the Global partition is visible on all servers, a Global object may be created with any Default Server selected.

For example, if the Default Server is SAS-A, the New Object Partition is Global and the user creates a new Privilege. In this case the Exception objects which can be added to the P privilege are objects owned by SAS-A and Global objects. If the Operator selects the Personnel pane and creates a new Global Personnel object, the Clearances available for selection are the Clearances owned by SAS-A and Global Clearances.

Global objects reside in the MAS Global partition, but you can edit most of these objects from a SAS. Global Only objects can only reside on the MAS in the Global Partition. Currently there is only one such object: CHUID Format. See [Editing C•CURE ID Objects in Enterprise Architecture on Page 124](#) for more information.

NOTE

There are some predefined Global system variables and personnel types which can be edited from a SAS as well as the MAS.

Templates for Object Creation

The list of templates available for object creation from the **New** button depends on the selected Default Server and the New Object Partition. If you select the local Partition then the templates are those which belong to the Default Server and the Global templates. You can only create Local-only object using templates owned by the local server.

You can only create Global objects from Global templates. If the Global partition is selected as the 'New Object Partition' then only Global templates are selectable. The rules for using templates for optionally-global objects are detailed in [Optionally Global Objects on Page 107](#).

Hardware Tree and Video Trees

The **Default Server** selection determines the set of Folders displayed in the Hardware and Video trees. When a SAS is the Default Server, only the Folders and objects from the SAS are displayed. When the Default Server is the MAS, all Folders from all servers are visible in the trees.

The Hardware and Video Trees will continue to function as in previous versions when the Default Server is a SAS. In order to create an object in the tree, the 'New Object Partition' selected will have to match the Partition of the Folder or parent object. When objects are created or edited in the Hardware and Video panes, the data in the editors for those objects will be from the server which owns the object. The Trees will be refreshed to reflect new objects created on the Default Server, and object deletions.

When the Default Server is the MAS, and you create or delete an object from a SAS, it is not displayed until the Tree is refreshed manually, or if the SAS is set to be interactive (see [Setting Application Servers Interactive](#) on [Page 164](#)).

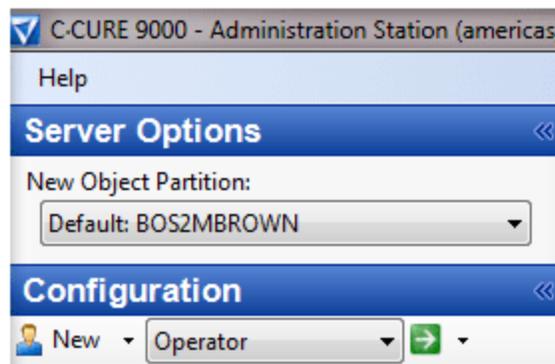
Advanced Query Tab

Like other places in the context pane, the Default Server selection will determine the list of queries which are displayed in the advanced query tab. When a SAS is the default server, only the queries from that SAS are displayed. When the default server is the MAS, all queries from all servers are displayed.

Using the Administration Client from a SAS

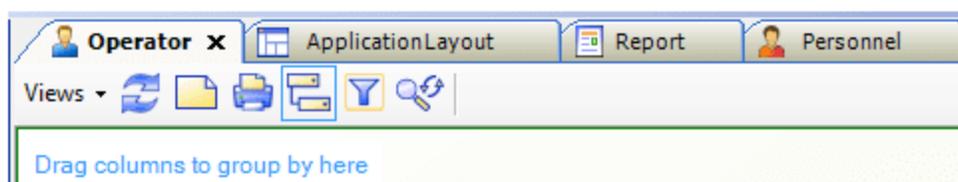
When you are using the Administration Application on a SAS, your Server Options pane only allows you to select the Partition in which you can create objects. You cannot choose a Default Server –the SAS to which you are connected is your only Default Server. The selections in this drop-down list are limited to the partitions on the SAS you are connected to, and the Global Partition if you have the appropriate Privileges.

Figure 8: New Object Partition on the SAS



In the Content area, the **Read Data From:** drop-down list is not available; you can only read data from the perspective of the SAS to which your Admin Application is attached.

Figure 9: Reading Data from the SAS



The **Default Server** selection affects the following:

- Limits the set of partitions selectable in the **New Object Partition** combo box.
- Determines what data is displayed in the Display Pane when the Operator clicks the Search Button .
- Filters the set of Queries displayed in the Advanced search pane to those known by the Default Server. This set is dynamically refreshed.
- Filters the set of Folders visible in the Hardware and Video trees.

If a SAS is selected as the **Default Server**, then the **New Object Partition** combo box shows the partitions owned by the selected server and the Global partition.

Enterprise Architecture Capabilities Summary

The Enterprise Architecture option provides the following capabilities.

Global Administration of Personnel Objects

Global Personnel – You can create Personnel in the Global Partition that can be used at every SAS in the Enterprise. A cardholder whose record is in the Global Partition can be configured for access at any SAS by assigning a local or Global Clearance to the person. Personnel administration is simplified because cardholders who need access to multiple locations do not need to have separate Personnel records maintained at each server.

Global Clearances – Allow you to specify doors and elevators from any SAS for assignment to Personnel, simplifying management of security access to buildings where Personnel require access to facilities across the enterprise.

Global CHUIDs – Allow you to use CHUIDs for Personnel across the enterprise.

Global Card Formats – Provide Card Formats that can be used on multiple servers.

Personnel Types – Allow you to assign Personnel Types to Personnel on any server in the enterprise.

Personnel Groups – You can create Personnel Groups that contain Global Personnel.

Global Badge Layouts - You can create Badge Layouts that can be assigned to both Global and local Personnel on multiple servers.

Global Administration of Security Objects

Some objects besides Personnel can be created and administered Globally in Enterprise Architecture.

Global Holidays – You can create Global Holidays that can be used on multiple servers.

Global Operators – An Operator created in the Global Partition can access both MAS and SAS systems.

Global Privileges – A Privilege object that is created in the Global Partition can be assigned to Operators created at any SAS. Needed to control access to Global objects.

Centralized Reporting

You can create queries and reports on the MAS that can view information across the enterprise. Queries and reports on the MAS can include Global objects and also those local objects that are resident on SAS systems.

Instead of running a different report at each server in the enterprise to manage security objects or system activities, you can create a single report at the MAS and collect data from every SAS. (Status values are not synchronized to the MAS, so status reports are not centralized.)

See [Central Reporting](#) on [Page 156](#).

Central Monitoring of Events and Activities across an Enterprise

A Monitoring Station connected to the MAS can provide a Central Monitoring capability for every server in the Enterprise Architecture. you can:

- View Activities and Events from each SAS in the enterprise.
- Display Swipe and Show activity from multiple SAS servers.
- View objects in the Explorer Bar from the MAS or from a selected SAS.
- Perform manual actions on objects that are visible in the Monitoring Stations; for example, you can choose **Unlock Door** from a Door's context menu, and the action is directed to the correct SAS for the object.

See [Central Monitoring Station](#) on [Page 166](#).

Central Management of Access Card Enrollment

By setting up a Smart Card or Proximity enrollment device on an Administration client connected to the MAS, you can perform access card enrollment from a central location for Global Personnel or Personnel on a connected SAS using the `Enroll\Program Smart Card` button on the Personnel Badging tab.

Central Badging and Photo Imaging

You can configure C•CURE ID on the MAS and perform Central Badging and Portrait Image capture for Global and local Personnel. You can edit Personnel from the MAS and configure Badge Layouts, Portraits, signatures, and fingerprints. You can also preview and print badges from the Personnel Badging tab or from a Dynamic View of Personnel.

Global and Local Operator Privileges

Privileges in the Enterprise Architecture environment can be tailored so that Operators on your enterprise systems can have access to all the data they need, and can be denied access to data that they should not access. In essence, Privileges in the Enterprise Architecture have been consistently extended to apply to the MAS and every SAS in the enterprise.

An Operator at the MAS can have SYSTEM ALL privileges to the entire enterprise, or can be limited via Privilege to Global or local MAS objects only. An Operator at a SAS can have access to their SAS server's local Partitions and to Global Partition on the MAS, or could be limited to access only a single local Partition.

Single Card Access Across an Entire Enterprise

Global personnel can be configured to have access to any Door or Elevator in the Enterprise (subject to card formats supported by individual readers).

Increased Scalability of Security Hardware and Video

Because you can spread the management of security controllers and video servers over multiple SAS systems in an enterprise, each SAS may be positioned close to its relevant field hardware – limiting traffic to the MAS and optimizing performance.

End to End Encryption Available (via SQL Database Encryption Options)

Microsoft SQL Server 2008 R2 offers advanced database encryption options that can be enabled via SQL to provide additional security for all your data. For more information see Database Encryption in SQL Server 2008 Enterprise Edition on [REDACTED]

Support for 40 Satellite Servers

For this version of C•CURE 9000, the Enterprise Architecture supports up to 40 SAS servers connected to a single MAS.

Automated Synchronization of Enterprise Security Databases

Enterprise Architecture uses the Microsoft Synchronization Framework to keep the databases at the MAS and at each SAS synchronized. New Global objects created at the MAS are propagated to each SAS, and local objects created at each SAS are propagated to the MAS.

Central Management of Video and Hardware Resources

While no access security hardware or video cameras and servers are directly connected to the MAS, an Operator at the MAS can view and edit the configurations of these devices centrally from the MAS, and create Schedule and Holidays that can be used to control how these resources are used. An Administration or Monitoring application connected to the MAS can perform manual actions on Hardware and Video devices connected to SAS servers in the enterprise.

Multi-version Support

Because the process of upgrading an entire Enterprise can take significant time, The C•CURE 9000 Enterprise Architecture has been designed to support multiple versions of C•CURE 9000 to co-exist in an Enterprise.

When upgrading an Enterprise, The MAS must be upgraded first, but each SAS can still connect to the MAS before it is upgraded to the current version, provided certain criteria are met.

Complete instructions for upgrading the MAS and each SAS to a new version are provided in the *C•CURE 9000 Installation and Upgrade Guide*.

Remote Editing of Global and Server-specific Data

A Global Operator on the MAS can edit objects that reside on the MAS and on any SAS in the system. If the MAS Operator edits a hardware object on a SAS, the object is loaded from the SAS into the appropriate editor on the MAS for editing, and when the Operator saves the object, the object is saved to the SAS where it resides, and is then synchronized to the MAS. If the connection to the SAS fails during the edit, when the MAS Operator tries to save the object, an error is returned and the edit fails.

However, if the SAS where the object resides is not available when the edit begins, the object appears as read-only in the object editor on the MAS.

Similarly, if a SAS Operator edits a Global Partition object, the object data is loaded into the appropriate editor on the SAS for editing, and when the Operator saves the object, the object is saved to the MAS Global PARTITION where it resides and then synchronized to each SAS.

If the MAS is not available when the edit begins, the object appears as read-only in the object editor on the SAS. If the connection to the MAS fails during the edit, when the SAS Operator tries to save the object, an error is returned and the edit fails.

NOTE

Application Server systems in multiple domains must have domain trusts established in order to authenticate user requests across servers in the different domains.

There are some exceptions and complications to these general rules. More information is provided in [Editing Objects that Reside on a Different Server](#) on [Page 45](#).

Restrictions on Events in an Enterprise Architecture

from caliber (USE-26314)

The Enterprise Architecture does not support the activation of Events or other objects across Application Servers. On the Triggers tab of any object (or the Action tab for Events), you can only include trigger objects that reside on the same Application Server as the object to which you are adding the Trigger.

The only two object types that exist on the MAS that can trigger object state changes are Events and Data Imports. Their Triggers and Actions are restricted to objects residing on the MAS.

Example

If you edit an Event that resides on the MAS, in the Event Action tab, any action you create must only target objects that also reside on the MAS.

Licensing

M1, M2, M3, M4, M5 License Versions

The Enterprise Architecture is a licensable option that needs to be purchased for each application server in the enterprise. Each server has its own software license; client workstations do not need a license, but the server licenses determine how many clients can connect to each server and to the enterprise as a whole. The MAS has dedicated MAS model number licenses. Each SAS has its own license, using the model numbers available for C•CURE 9000 servers. Each SAS license can be for a different model - all SAS systems in an Enterprise do not need to be the same model.

Each application server will have its own local license regardless if it is a MAS or SAS. The metered values will be counted if they are local to the server only. That is, all object change, deletion, and creation will be evaluated for inputs, outputs, readers, and cardholders on the local server and the value limits will be enforced. All objects in the Global Partition will be ignored by the SAS.

MAS licenses do not include inputs, readers, and outputs because access control hardware cannot be connected to the MAS.

Master Application Server (MAS) will count:

- Number of Global Cardholders
- Number of Clients - that can connect to the MAS
- Number of Badging Stations - that can connect to the MAS
- New license option for Application Server environment

Table 3: MAS Licenses (Default/Maximum)

MAS (Master Application Server)	M1	M2	M3	M4	M5
Global Cardholders	1,000	10,000	25,000	100,000	250,000
Combined Clients	5/100	5/100	5/100	10/100	10/100
Badging Clients	1/100	1/100	1/100	2/100	2/100

The values are defaults and maximums.

MAS Temp License: Yes

MAS Eval License or MAS Eval DVD: No

Example:

You have a MAS M2 license that allows 10,000 Global cardholders and 5 simultaneous clients. You have a SAS with a Series P license that allows 45,000 cardholders and 10 simultaneous clients. An Operator at the SAS Administration station could potentially access 55,000 personnel, with 10,000 in global and 45,000 on the SAS. You could potentially have 5 clients attached to the MAS and 10 different clients attached to the SAS.

Satellite Application Servers (SAS)

Each Satellite server can utilize a different C•CURE 9000 Model, Series L through Series S;

SiteServer Series A,B,C.

- Global Cardholder Objects are not counted against the SAS license.
- New license option for Application Server environment.

The license limits for number of objects allowed is counted on the local server's license. Objects in the Global Partition not counted against any SAS license. On the MAS, the cardholders in the Global Partition are counted against the MAS licensed value. Simultaneous clients are measured separately for each MAS/SAS against its licensed capabilities.

NOTE

Because the ISC controllers are not supported in an Enterprise Architecture environment, the ISC server component cannot be licensed if the Application Server license option is enabled, so this service will not be able to start on a MAS or SAS.

Validation

The type of installation performed on a given C•CURE 9000 server determines what type of licenses can be validated.

On a server installed as a MAS:

- Validates a MAS license: Model M1 - M5

NOTE

These models will always have the "AppServer" option checked.

- Does not validate with any other models -> A, B, C, L through S.

On a system installed as a Satellite server.

- Validates licenses: Model A, B, C, L through S.
- Validates regardless if the "AppServer" option is on or off.
 - Off scenario, is for the case when the customer no longer wants their server to be in an AppServer environment. If the AppServer option is now off, we should warn the user that the system will no longer "Replicate" with a Master server because the appserver license option is off. Prompt them if they want to continue or cancel.
 - If the AppServer option is on, it should continue as a normal SAS.
- Does not validate with MAS Models: M1-M5.

On a system installed as a Standalone Server:

- Validates licenses: Model A, B, C, L through S. If "AppServer" Option is checked, the license should fail to validate and prompt the user with the cause.

NOTE

Assuming when upgrade, it will prompt the user if they want to upgrade to an AppServer environment?

- Does not validate with MAS Models: M1-M5.

If the license limits are exceeded or the system detects tampering with the database values in the license:

- The Crossfire Framework Service shuts down and will not restart
- A message is sent to the System Application Event Log and the C•CURE 9000 Journal

The type of installation performed on a given C•CURE 9000 server determines what type of licenses can be validated.

- If you install a server as a MAS, only the MAS license types can be validated.
- If you install a server as a SAS, only the license types that are valid for a SAS can be validated. The MAS license types will not validate.
- If you install a server as a standalone C•CURE 9000, the MAS license types, and any license with the Application Server option enabled, will not validate.

If the license limits are exceeded or the system detects tampering with the database values in the license:

- The Crossfire Framework Service shuts down and will not restart
- A message is sent to the System Application Event Log and the C•CURE 9000 Journal
- On a MAS, new Personnel cannot be added and changes to Personnel cannot be saved.

Rules

All MAS models are configured with the following Options:

- Application Server
- Software House Connected Web Service
- Software House Import Watcher
- Software House NextGen Client MonitoringStation
- Software House NextGen Client AdministrationStation
- CCure9000License
- NGResEditor
- WebStar
- CCUREIDPrintQueueManager
- WinShell

All other Models can be configured with any and all options.

The only caveat that the option of Application Server and ISC driver are mutually exclusive.

License Matrix

Matrix of all licenses are in [Table 4](#) on [Page 39](#).

Table 4: Model Matrix (Default/Maximum)

Model	Online Inputs	Online Outputs	Online Readers	Configured Carholders	Simultaneous Clients ¹	Concurrent Badging Clients
DEV	8	8	2	20	3	1
L	1,000	1,000	16	7,000	10/30	1/30
M	1,000	1,000	32	12,000	10/30	1/30
N	1,000	1,000	64	40,000	10/30	1/30
P	5,000/10,000	5,000/10,000	128	45,000	20/256	2/256
Q	5,000/10,000	5,000/10,000	256	250,000	30/256	2/256
R	5,000/10,000	5,000/10,000	512	250,000	40/256	3/256
R+	7,500/10,000	5,000	1,000	500,000	80/256	5/256
S	10,000	10,000	2,500	500,000	100/256	10/256
M1	0	0	0	1,000	5	1
M2	0	0	0	1,000	5	1
M3	0	0	0	25,000	5	1
M4	0	0	0	100,000	10	2
M5	0	0	0	250,000	10	2

¹A client is equivalent to a single Monitoring Station application, Administration application, or a Web Client.

Application Server Architecture

This chapter provides information about the Application Server Architecture.

In this chapter

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Editing Objects that Reside on a Different Server	45
Server Synchronization	47
Synchronization Results	49

Architecture Overview

The Enterprise Architecture resides on multiple C•CURE 9000 servers, configured in a hub and spokes arrangement, with a Master Application Server as the central hub, and Satellite Application Servers as the spokes.

The C•CURE 9000 Enterprise Architecture provides the capability of managing a multi-site location, including:

Enterprise Reports and Queries - configuration, Journal, and Audit data from all Satellite Application Servers can be collected in queries and reports. See [Central Reporting](#) on [Page 156](#) for more information.

Enterprise Monitoring - the Monitoring Station application can perform real-time monitoring of access, activities, events, and status across the entire enterprise. See [Central Monitoring Station](#) on [Page 166](#) for more information.

Enterprise Personnel Management - Personnel can be defined as local to a single server or global to the entire enterprise. That way, duplication of personnel records is avoided, while still providing the ability to grant appropriate access to Personnel who need to access multiple facilities. See [Configuring Personnel in Enterprise Architecture](#) on [Page 115](#) for more information.

Enterprise-wide scalability - because the access and video hardware can be distributed over multiple servers, the enterprise system can be configured to manage a greater number of devices across a wider geographic area. For more information, see:

- [Configuring Hardware in Enterprise Architecture](#) on [Page 132](#)
- [Configuring Video in Enterprise Architecture](#) on [Page 136](#)

The C•CURE 9000 Enterprise Architecture uses the Microsoft Sync Framework to connect multiple C•CURE 9000 Servers. The Microsoft Sync Framework is a comprehensive synchronization platform enabling collaboration and offline for applications, services and devices with support for any data type, any data store, any transfer protocol, and network topology. See [Server Synchronization](#) on [Page 47](#) for more information.

The Microsoft Sync Framework allows the C•CURE 9000 Master Application Server (MAS) to aggregate configuration information from multiple Satellite Application Servers (SAS) into a SQL Server 2008 database for central monitoring and reporting.

The MAS can also synchronize global data from the central database to each of the satellite servers, so that global personnel who need access to facilities across the enterprise can be centrally administered.

Each of the C•CURE 9000 Satellite Application Servers has an independent SQL Server database that contains data for local personnel, access control hardware, and video servers and cameras, as well as global data such as personnel, clearances, and badges.

If the Master Application Server is offline, each of the Satellite Application Servers can operate independently, managing their local resources as well as maintaining the ability to administer access control for global personnel. When the Master application server is back online, all data from SAS systems is updated and synchronized with the MAS. Each SAS maintains a log of changes so it can update the MAS when connectivity is restored (the MAS also maintains a change log). However, if the memory limit of the log is reached, that SAS or MAS stops logging, and when connectivity is restored the SAS or MAS that stopped logging cannot automatically update the other systems, and synchronization with the MAS does not resume. If this occurs, the SAS (or MAS) must be restarted; this causes a full re-synchronization, and from that point on, the SAS and MAS synchronize normally.

Objects in the Enterprise Architecture

Enterprise Architecture objects in C•CURE 9000 are divided into three primary categories:

- Global Only Objects - are objects that can only reside in the Global Partition. See [Global Only Objects](#) on [Page 105](#).
- Optionally Global Objects - are objects that can reside either in the Global Partition or in a local Partition on the MAS or on a SAS. See [Optionally Global Objects](#) on [Page 107](#).
- Non-global Objects - are object that can only reside in a local Partition; these objects cannot be created in the Global Partition. See [Non-Global Objects](#) on [Page 109](#).

The following additional categories of objects are handled differently:

- [Group Objects](#) on [Page 106](#).
- [System-defined Not Synchronized Objects](#) on [Page 110](#).
- [Editable Not Synchronized Objects](#) on [Page 110](#).

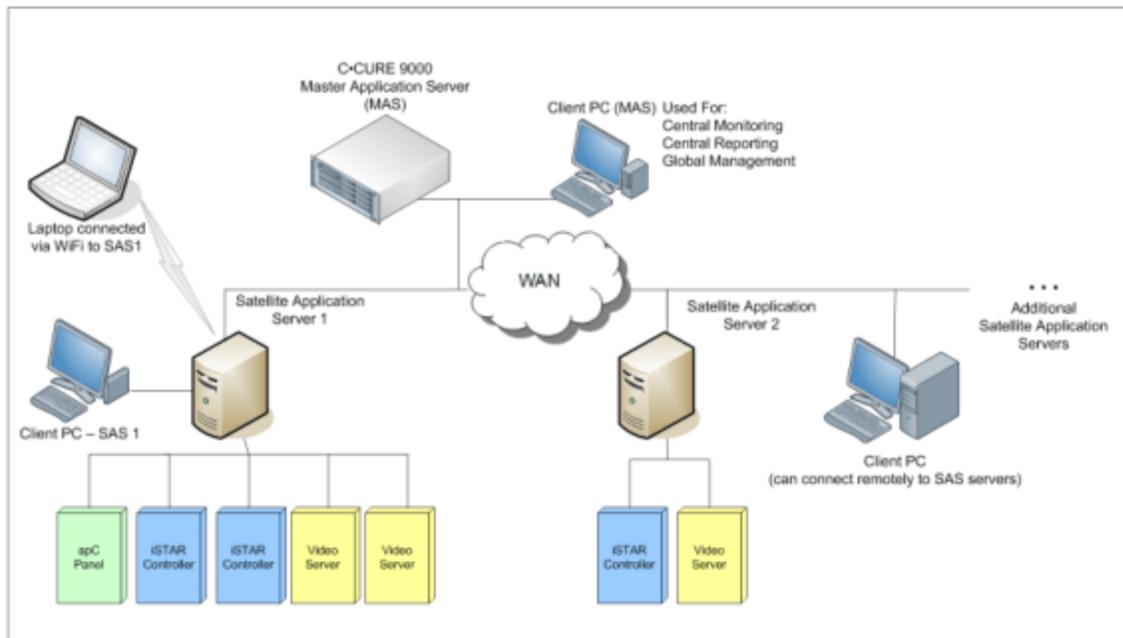
Typical Configuration

The Enterprise Architecture uses a central server, called a Master Application Server (MAS), to serve as the focal point of a multiple server configuration. Each of the Satellite Application Servers (SAS) connect to the MAS over a local or wide-area network. The Enterprise Architecture supports one MAS and up to 40 SAS servers in a configuration.

The MAS server provides central administration, monitoring, and reporting for all aspects of the C•CURE 9000 Enterprise Architecture. Global Operators at the MAS can view, edit, monitor, and report on all of the objects in the enterprise.

Each SAS server provides direct management of security hardware and video components, as well as Global and local Personnel, Schedules, Areas, Intrusion Zones, and Events. The data from each SAS server is synchronized to the MAS so that the master server has access to enterprise wide data. Global data from the MAS is synchronized to each SAS so that the SAS servers have access to that data.

Figure 10: Typical Enterprise Architecture Configuration



In this configuration, one SAS server controls several Video and Access Control Hardware components, while a second SAS shown has a single Video Server and iSTAR controller to manage a smaller site. As shown, additional SAS servers can be attached to the MAS to manage additional local or remote sites. Client connectivity can be local or remote, or via a C•CURE 9000 Web Client. Both servers and clients can communicate on a local area network or a wide area network.

Editing Objects that Reside on a Different Server

In an Enterprise Architecture, there is only one situation where you can edit an object that resides on a different server: You are an Operator on a SAS who is editing an object that resides in the Global Partition at the MAS.

See [Objects and Partitioning on Page 104](#) for more information about the types of objects in an enterprise, and the rules for editing these objects:

In this case, the object you are editing is visible to you, and editable, but it is actually resident in a Partition on a different server.

- [Global Only Objects on Page 105](#) – objects that exist only in the **Global** Partition on the **MAS**.
- [Optionally Global Objects on Page 107](#) – objects that can reside in the Global Partition on the **MAS**, but can also be created on a **SAS**.
- [Non-Global Objects on Page 109](#) – objects that can only reside on a single **SAS** or **MAS** and are not able to exist in the **Global** Partition.

Editing a Global Object from the SAS

If you are creating or editing a record that resides in the Global Partition from a client on a SAS, the changes you make to properties in the record are actually saved on the MAS.

However, if the connection to the MAS fails during editing, you will be allowed to open the object's editor, but when you attempt to save the object, the save action fails if the MAS is still unavailable.

If the connection to the MAS is unavailable offline when the edit starts, the object will initially be read-only, and the title bar of the Admin client will indicate that the MAS is offline.

The one exception is the Personnel editor; the Clearances tab will be available for editing a Global Personnel object from a SAS. If you are editing Clearances (only), your edit is saved at the local SAS even if the MAS is unavailable. As soon as the MAS is available, the changes are synchronized to the MAS.

However, if any changes other than Clearance edits are made to the Global Personnel record when the MAS is unavailable, the save action fails.

NOTE

When you are on a SAS and editing a Global object, the object's data is retrieved from the SAS database, and may not be the most up to date version if the same Global object has been very recently edited. For example, if you save a Global object on a SAS and then immediately open it, you may not see the changes you just made.

Editing a SAS Local Object from the MAS

Local objects can be directly edited only at the SAS responsible for the Partition in which they reside. However, a Global administrator at the MAS can create or edit a SAS local object remotely if the connection to the SAS is available.

If the connection to the SAS fails during editing, the Operator on the MAS receives an error message indicating that their attempt to save changes failed.

If the connection to the SAS is unavailable when the edit starts, the object initially is read-only, and the title bar of the Administration client indicates that the SAS is unavailable.

If you are on the MAS, you can add an object to a partition owned by a SAS; in that case, the add will be proxied to the SAS. Similarly, if you are on a SAS, you can add an object to the global partition, in that case, the add will be proxied to the MAS.

Server Synchronization

Server synchronization is the process by which the servers in an Enterprise Architecture exchange data and keep each of the server databases current. This process also provides a means for the individual SAS systems to operate when they are unable to communicate with the MAS.

In the Enterprise Architecture, all servers have Partitions to contain data "owned" by that server. Each server (MAS and SAS) has a Default Partition, and can have additional user-created Partitions.

The data residing in a SAS system's local Partitions is natively resident in the local system's database so that local editing functions and control can be maintained if the connection to the MAS is not available.

On a MAS default or local Partitions, the data resides on the MAS and is not replicated to the other systems in the Enterprise Architecture.

Generally, data manipulation for Partition data is restricted to the Application Server that owns the Partition.

However, for many types of objects, an Operator can make use of or edit the object even if the Operator is not on the local SAS or MAS. As long as the target SAS or MAS can be communicated with, the object can be edited remotely and updates are synchronized in real time with the owning server.

If the owning server (SAS or MAS) is unavailable, the remote edit operation fails and an error message is displayed to the Operator.

See [Editing Objects that Reside on a Different Server](#) on [Page 45](#) for more information.

"Global" data that is shared among the SAS and MAS servers resides in the Global Partition on the MAS. This data is synchronized to all SAS systems.

The exception to the remote editing limitation is that, as long as you are editing on a SAS, you can add or remove Clearance assignments from Personnel even if the person being edited is owned by the MAS and the owning server is unavailable.

Example:

If you are editing a Global Personnel record at a SAS, and the MAS (where the Global Personnel record resides) is unavailable, you can still assign local or Global Clearances to the person. Your change is saved locally on the SAS and when the MAS becomes available, the change is synchronized.

NOTE Only Clearance assignments can be changed while the connection to the MAS is unavailable. No other field in the Personnel record can be changed, or the edit will fail.

As a result, Local administrators can maintain their SAS system's data separately from the Enterprise data and regardless of whether the connection to the MAS is present. When the MAS is unavailable, the SAS system looks and acts as if it is a standalone server.

Synchronization Process

With the exception of Journal and Audit Logs, data changes made at any SAS are synchronized to the MAS in real time. For information, see [Journal and Audit Synchronization](#) on [Page 48](#).

Local data changes made at the MAS to data in the Global Partition are broadcast to each SAS. Upon receipt of the message, the SAS executes synchronization of the specific object type (and any related objects) to bring that data down locally from the MAS.

At startup, each SAS synchronizes its data with the MAS. The SAS receives Global Partition data from the MAS and sends local Partition data to the MAS. The SAS system must complete the start-up synchronization before it can be completely available to Operators. This process can take a long time (possibly more than an hour) if a large amount of data needs to be synchronized.

When a SAS starts up it needs to communicate with the MAS to initialize synchronization. If it is unable to do so (typically because the MAS is down or unreachable), then it starts and runs properly but will not be synchronized with the entire Enterprise system. The SAS indicates that it needs to be restarted once it detects that the MAS is available. Until that restart happens, changes to Global data will not be recognized by the SAS and its connected hardware, and changes to local data will not be recognized by the MAS.

If you are restarting your entire enterprise, you should plan it so that the MAS is online when any SAS is restarted. If you are planning a restart of a specific SAS, you should attempt to assure the MAS is available during that restart. If this is not possible, then you will need to restart the SAS again when the MAS is online.

If an entire enterprise system is being restarted, it is wise to start one SAS at a time, not progressing to subsequent SAS's until each in turn has started its driver services successfully. This is easiest to determine by watching the Server Configuration utility's Extension Services line, which displays "(Loading)" until the application server has started its drivers.

At runtime, the SAS synchronizes any local Partition changes with the MAS. At startup of the MAS, the SAS either sends changes from memory, or if the MAS has been down for a long time and enough changes have occurred, the SAS goes into the synchronization state called **RESTART REQUIRED**, and requires a restart before any synchronization can occur.

All fields are synchronized in the objects being synchronized, with the following exception: fields that contain "real-time" status information (which is updated by the SAS or the driver as the status changes) are not synchronized to the MAS.

For this reason, each Dynamic View on the MAS displays the message **Status values are not available on the MAS**. Users can see status values (and all other values) in Dynamic View for SAS systems that are set to Interactive (see [Setting Application Servers Interactive](#) on [Page 164](#)).

Journal and Audit Synchronization

Journal/Audit data from each SAS is synchronized on a scheduled basis. You can set the Schedule for Journal and Audit synchronization for a specific SAS in the Application Server editor for that SAS. See [Application Server Synchronization Tab](#) on [Page 92](#).

You can also configure an event to be triggered when the synchronization of the Audit or Journal database from the SAS to the MAS fails. For detailed steps, see the [Application Server Triggers Tab](#) on [Page 94](#).

Application Server Objects

The Application Server objects that define the Application Servers themselves (MAS and SAS) are located in the MAS database, and can be viewed in two ways:

- [Application Server Editor](#) on [Page 87](#)
- [Application Server Dynamic View](#) on [Page 68](#)

Synchronization Results

C•CURE 9000 Enterprise Architecture synchronizes changes in objects on the MAS and each SAS so that Operators have accurate and up to date information about objects in the enterprise. Global objects that reside on the MAS are synchronized to each SAS so that they are available for local use, and local objects on each SAS are synchronized to the MAS so that MAS Operators have updated information about objects on each SAS for Central Monitoring and Central Reporting.

Whenever changes are made to an object, C•CURE 9000 attempts to synchronize the object (as appropriate) to the MAS and each SAS. During the process of synchronizing records between the MAS and associated SAS systems, certain data conditions can cause synchronization failure for an object (from SAS to MAS or from MAS Global Partition to each SAS). These synchronization conflicts can be caused by database errors or conflicting edits by Operators.

Example:

An Operator on SAS1 tries to add a Global Clearance to a Personnel record while disconnected from the MAS, but that Clearance on the MAS has been deleted.

When a conflict occurs during synchronization, a record is written to a synchronization conflicts table in the database. This table is used to generate a list of conflicts that can be displayed as a Dynamic View. That Dynamic View, called Synchronization Conflicts, is available from the Application Server Dynamic View. The Synchronization Conflicts view allows you to view, search, and filter on the conflicts, and resolve or delete the conflicting records.

For more information about using this Dynamic View to find and resolve conflicts that have occurred, see [Application Server Synchronization Conflicts View](#) on Page 74.

Synchronization Conflict Examples and Resolutions

Sometimes you need to take manual steps to resolve synchronization conflicts that occurred as a result of conflicting Operator actions.

Example 1:

As Global Operator, you decide to move a Personnel record to the Global Partition to make that person available at more than one SAS. However, when the MAS attempts to synchronize that record to each SAS, there is another Personnel record already existing at one SAS that has the same CHUID as the Global Personnel record, and this causes a Synchronization Conflict.

To resolve this conflict, you would need to change the CHUID of the Global Personnel record, and save the change to cause synchronization to succeed.

Example 2:

An Operator on a SAS deletes a local Personnel Type, and at the same time a Global Operator edits a Personnel record on the MAS and adds that Personnel Type to the person. If synchronization is delayed because the MAS is temporarily offline to that SAS, two conflicts occur:

Conflict error message generated from the SAS: Personnel Type cannot be deleted because it is referenced by a Personnel record.

Conflict error message generated from the MAS: Personnel cannot replicate due to missing Personnel Type.

To resolve this conflict, a Global Operator on the MAS should first delete the reference to the Personnel Type in the Personnel record, and then delete the Personnel Type from the list of Personnel Types visible on the MAS

(because the deletion of the Personnel Type at the SAS did not synchronize, the deleted Personnel Type will still be visible at the MAS).

Configuring an Enterprise Architecture

This chapter provides information about configuring servers and client applications in an Enterprise Architecture.

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Setting Up an Enterprise Architecture

The following general steps explain how to set up an Enterprise Architecture environment.

1. Prepare the system you will use for a MAS. Refer to the *C•CURE 9000 Installation and Upgrade Guide* to:
 - Ensure the system meets specifications for processor, memory and disk space.
 - Ensure that a supported operating system is installed.
 - Ensure that a supported version of Microsoft SQL Server is installed.
 - Ensure that the MAS installer's Windows account is configured as a system administrator and a SQL sysadmin.
 - Ensure that you have a C•CURE 9000 License for a MAS.
2. Install C•CURE 9000 as a MAS on the intended system.
3. Make sure that the MAS is running successfully and the Administration client and Monitoring Station client can be accessed.
4. Prepare each system you will use for a SAS. Refer to the *C•CURE 9000 Installation and Upgrade Guide* to:
 - Ensure the system meets specifications for processor, memory and disk space.
 - Ensure that a supported operating system is installed.
 - Ensure that the SAS installer's windows account is configured as a system administrator on the SAS system and a SQL sysadmin on the MAS.
 - Ensure that the SAS installer's Windows account is configured as a SYSTEM ALL Global Operator on the MAS.
 - Ensure that you have a C•CURE 9000 License for each SAS.
 - If you are upgrading more than one standalone C•CURE 9000 server to a SAS, you need to use the SaToSasMigration Utility (included with C•CURE 9000 version 2.30 and later) for each standalone system after the first.
5. Install C•CURE 9000 as a SAS on each intended system.
6. Install and configure the security and video hardware on each SAS.
7. Create Global Personnel and Clearances on the MAS.
8. Create local Personnel and Clearances (as needed) on each SAS.
9. Verify that all security hardware, video hardware, and Personnel are correctly synchronized between the MAS and each SAS.
10. Proceed to configure additional objects such as Schedules, Holidays, Badge Layouts, Areas, etc.
11. Make sure to do frequent backups, especially to MAS and SAS after each SAS is added.

Privileges in Enterprise Architecture

The Privilege object is a standard optionally-global object, thus it follows all the rules specified in [Rules for Modifying Optionally-Global Objects](#) on Page 107.

Privileges can only reference objects in the same Partition in which the privilege exists. This existing property of Privileges prevents global Privileges from containing references to local objects in Partitions other than Global.

The Privilege Exceptions tab allows you to create Privilege exceptions, but only objects in the same Partition as the Privilege can be selected as exceptions.

The following changes to Privileges are in effect in an Enterprise Architecture:

- [System All Global Privilege](#) on Page 53
- [System All Privilege for SAS](#) on Page 53
- [System All Privilege for MAS](#) on Page 54
- [Access to Global Common Objects](#) on Page 54
- [Access to Common Objects](#) on Page 54

System All Global Privilege

The **System All - Global** Privilege exists in the Global Partition, and gives an Operator created in the Global Partition access to all objects in an Application Server environment.

An Operator created in the Global Partition and assigned the SYSTEM ALL [Global] Privilege is effectively a Global System Administrator. This Operator has:

- Full access to all Global and Local objects on the MAS and SAS servers.
- When logged on to a SAS, has full access to all objects replicated to that SAS.
- When logged on to the MAS, has full access to all objects in the entire enterprise.

Only a Global Operator who has **System All** Privilege can grant that Privilege to another Operator.

An Operator who resides in the Global Partition and is not assigned the SYSTEM ALL [Global] Privilege has more limited Privileges, as assigned by the Privileges they have.

System All Privilege for SAS

An Operator created in a SAS default Partition with **System All Global** Privilege (only) has the following abilities and restrictions:

- Full access to all Local objects on the SAS.
- Read access to Global objects that are accessible to the SAS where the Operator resides.
- This Operator is restricted from performing context menu actions on Global objects (such as manual actions and exporting selections), unless assigned additional Privileges.
- Has no access to any objects that reside on other SAS servers (therefore not replicated to their SAS).
- If this Operator logs on to the MAS, they have exactly the same access to objects (and restrictions) to objects on the MAS as on their SAS.

The SAS owns the SAS default Partition, but does **not** own the Global Partition or any other partitions that are located externally to the SAS. Therefore, this SAS Operator is able to create and manipulate objects on only this SAS (and in the Global Partition) and cannot view objects on any other SAS in the enterprise.

An Operator who resides in a SAS Partition and is not assigned the SYSTEM ALL [Global] Privilege has more limited Privileges, as assigned by the Privileges they have.

System All Privilege for MAS

An Operator created in the MAS default Partition with **System All Global** Privilege (only) has the following abilities and restrictions:

- Full access to all Local objects on the MAS (objects in Partitions other than Global).
- Read access to Global objects that have been added to the MAS where the Operator resides.
- This Operator is restricted from performing context menu actions on Global objects (such as manual actions and exporting selections), unless assigned additional Privileges.
- Has no access to any objects that reside on any SAS servers.
- This Operator can only log on to the MAS.

Access to Global Common Objects

A new Privilege, **Access to global common objects**, is available if the Enterprise Architecture option is licensed. This Privilege is similar to the **Access to common objects** Privilege, but it pertains to the Global Partition. This Privilege is needed because a Privilege can only grant access to objects in the partition in which it resides.

When you create a new Operator, you can assign the **Access to common objects** Privilege and also the **Access to global common objects** Privilege.

When you add the Enterprise Architecture option to a server, the Database Update process that occurs assigns **Access to global common objects** to all existing Operators. The Privilege is read-only. If you try to edit this Privilege, **Save and Close** is unavailable.

Access to global common objects and **Access to common objects** differ in several ways:

- **Access to global common objects** does not have a corresponding template created along with it. Because the new **Create Copy** button is enabled for Privileges, a template is not necessary.
- **Access to common objects** has all references to global objects removed from it.
- **Access to global common objects** resides in the Global Partition, while an **Access to common objects** Privilege is in the default Partition for each SAS and the MAS.
- **Access to global common objects** contains references allowing read-only access to the following global objects: Application Server, Audit Log, Card Format, CHUID Format, Journal, Partition, Personnel Type, Personnel Views, Privilege, Report Form, Schedule, System Variables, and User-defined Fields.

Access to Common Objects

The Privilege known as **Access to Common Objects** has changed so that it is available for each SAS system's default Partition. [Table 5 on Page 55](#) lists the classes and their respective Privileges. All classes are **No Access** unless

otherwise specified.

Table 5: Classes of Objects and Privileges

Classes of Objects	Permissions
Application Layout	Read, View, Popup view, View in current tab
Application Server	Read, View, Popup view
Audit Log	Read
Card Format	Read
CHUID Format	Read
Dynamic Views	Read, View, Popup view, View in current tab
Images	No Access, Exception object for Default Image - Read
Journal	Read
Partition	Read
Personnel Type	Read
Personnel Views	Read
Privilege	Read
Query	Read, View, Popup view, View in current tab
Report Form	Read, View, Popup view, View in current tab
Schedule	Read
System Variables	Read
Floors	Read
ISC Comm Ports	Read
CCTV Protocols	Read
Time Zones	Read
User-defined Fields	Read
All other Objects	Read

Client Access Privileges

It is important to configure client access Privileges to ensure that your Operators are able to access data they need, and at the same time limit the viewable data.

Example:

You are the Global administrator for an enterprise that has a MAS and two SAS systems. You are responsible for the overall administration. At each site, there is a local administrator responsible for managing local personnel and hardware and a guard using the Monitoring Station to control access, manage alarms, and perform manual actions. At the MAS there is an assistant administrator responsible for global personnel, central monitoring, and central reporting.

NOTE

In general, Operators who are not granted System All Privileges need to be assigned Privileges sufficient to let them work in an enterprise environment. Typically this means that they need Access to common objects for their Partition, and Access to global common objects.

Also, each Operator needs to have at least Read access to the Operator object in order to log in to C•CURE 9000. This can be provided by either:

- Granting **Full Privilege to Partition** for the Partition in which the Operator resides.
- Creating a separate Privilege that provides Read access to the Operator class (if you do not want to grant Full Privileges to the Operator).

Table 6 on Page 56 shows examples of the way you could set up the Operators in an Enterprise.

Table 6: Operator Privilege Examples

Operator	Creation Partition	Privilege
Global Administrator	Global	Responsible for the entire system and can move freely from the MAS or to any SAS. This operator's record is located in the Global Partition and would have the following Privileges: SYSTEM ALL This operator has the ability to create/update/delete all objects in the Enterprise system.
MAS Local Administrator	MAShome	Responsible for the local operations on the MAS servers. This operator record is located in the MAS Default Partition and would have the following Privileges: Access to global common objects [Global] Access to common objects [Default: MAShome] Full privilege for partition: Default [Default: MAShome] This operator has create/update/delete all objects in their MAS respective Partitions and is able to see objects in the Global Partition and Partitions on their system.
Central Monitoring Guard	Global	Access to global common objects [Global] Read access to common objects [Default: SAS1home] Read access to common objects [Default: SAS2home] A Privilege that provides Read access to the Operator class.

Operator	Creation Partition	Privilege
SAS 1 Administrator	SAS1home	<p>Responsible for the local operations on the SAS1 server. This Operator record is located in the SAS system's Default Partition and would have the following Privileges:</p> <p>System All [SAS1]</p> <p>This Operator has create/update/delete all objects in their SAS system's respective Partitions and are able to see objects in the Global Partition and Partitions on their system.</p>
SAS 1 Guard	SAS1home	<p>Access to global common objects [Global]</p> <p>Access to common objects [Default: SAS1home]</p> <p>A Privilege that provides Read access to the Operator class.</p>
SAS 2 Administrator	SAS2home	<p>Responsible for the local operations on the SAS2 server. This Operator record is located in the SAS system's Default Partition and would have the following Privileges:</p> <p>System All [SAS2]</p> <p>This Operator has create/update/delete all objects in their SAS system's respective Partitions and are able to see objects in the Global Partition and Partitions on their system.</p>
SAS 2 Guard	SAS2home	<p>Access to global common objects [Global]</p> <p>Access to common objects [Default: SAS2home]</p> <p>A Privilege that provides Read access to the Operator class.</p>

Operators In Enterprise Architecture

Operator configuration for Application Servers is similar to a standalone partitioned server. All C•CURE 9000 objects are created and reside in a single Partition and cannot span multiple Partitions. The Privileges given to an Operator and the server to which an Operator is connected to determine what objects can view, create, and delete.

Enterprise Architecture provides new Privileges that are based upon the Partition in which the Operator record is being created.

NOTE If you create a limited Privilege for a Global Operator (rather than assigning the System All Privilege) that Global Operator must be assigned at least Read access to the Operator object or he/she will not be able to log on to C•CURE 9000.

Privilege Schedules for Operators

A Schedule that resides on a SAS is a non-global Schedule, and it is never active on the MAS itself, so an Operator assigned a SAS Schedule is treated by the MAS as if the Schedule is inactive.

Example:

An Operator assigned a Privilege with a SAS Schedule (rather than the Global ALWAYS Schedule) will not be allowed to log on to the MAS, and if logged on to a SAS, will not be able to save a change to a Global object.

If you need an Operator with Privilege restrictions who also needs access to Global objects and to the MAS, assign him/her an additional Privilege that references a Schedule residing on the MAS. In this way, the Schedule will be active when the Operator logs on.

Operator Application Server Tab

You can configure the Application Servers with which an Operator can be **Set interactive** from the **Application Servers** tab.

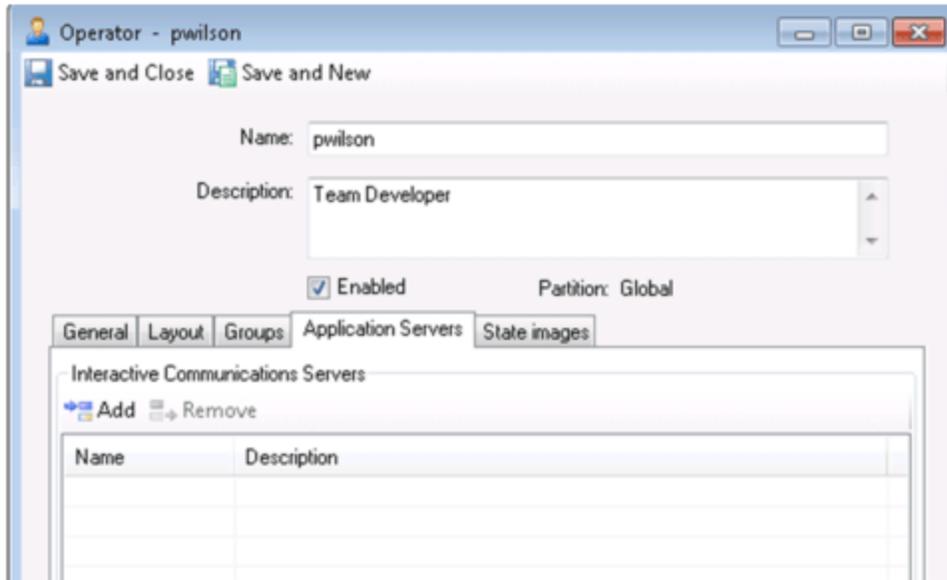
Only a Global Operator at the MAS can **Set interactive** with Satellite (SAS) systems. The **Application Servers** tab is only available if the Operator you are editing resides in the Global partition.

The **Application Servers** tab provides you with the ability to select the Application Servers which are set to Interactive mode for a given Operator. (See the definition of Set Interactive in [Application Server Context Menu](#) on [Page 99](#) for more information.)

When the server is in interactive mode, the Operator receives Event Notifications, Object Creation/Update and Delete Notifications and other activity-related messages.

When this Operator logs into the MAS, by default the servers specified in the list of servers assigned in the **Application Servers** tab are in interactive mode.

Figure 11: Application Servers Tab



Special Domain Considerations for the Operator

The Operator object is a standard, optionally-global object and follows all the rules specified in [Optionally Global Objects](#) on [Page 107](#). However, there are some special considerations:

1. The combination of **Domain name** and **Username** must be unique for all operators across the entire enterprise. If the same user needs to log into different domains at different application servers, you cannot use a global operator. Instead you will have to create two different local operators.
2. If you want to allow an Operator to log into two different SAS machines with the same domain and username, you must create a global operator for them. Otherwise, they will not be able to create both separate local operators and have them replicate successfully.

NOTE

If an operator references a global privilege, the global privilege is able to reference only global objects. The global privilege cannot reference local objects. Therefore, if a global operator exists and if they have any privilege other than SYSTEM ALL, the operator has to be assigned local Privileges separately for each SAS to which the Operator will log in.

Operator Configuration

As a SAS or MAS Administrator, you can create Operators for the SAS or the MAS in the same way you would for a standalone partitioned server. Operators are created in a specific Partition and do not span multiple Partitions.

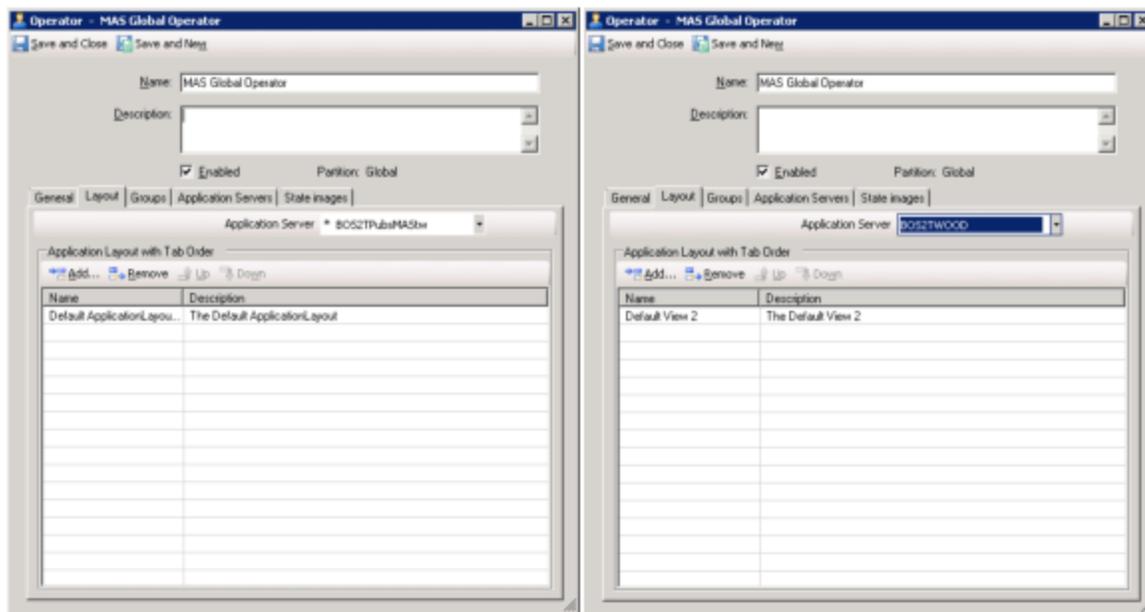
See [Privileges in Enterprise Architecture on Page 53](#) for more information about the Privileges that are available in Enterprise Architecture to create Operators with full or limited access to Global objects.

Accessing the Operator Editor

The Operator Editor in C•CURE 9000 lets you create and modify Operator Objects so that they are able to access the Administration Workstation and Monitoring Station and perform functions according to Operator Privileges.

You can access the **Operator Editor** from the Administration Station of the SAS or the MAS. Select **Configuration** from the Navigation Pane, and **Operator** from the Configuration drop-down menu.

The Operator editor Layout tab has an additional field if you are editing an Operator from the MAS. The Application Server drop-down list lets you select the MAS or SAS from which you assign Application Layouts to the Operator. For each server in the Enterprise, you can separately choose the Application Layouts to which you want to give the Operator access. The example below shows a MAS Operator assigned Application Layouts from more than one server. The Application Layout on the left is on the MAS, while the Application Layout on the right is on a SAS.



Application Layout on the MAS

Application Layout on a SAS

Whenever you create a new Operator in an Enterprise, the Operator is assigned the "Access to common objects" Privilege and also the "Access to common global objects" privilege.

The Database Update process assigns "Access to common global objects" to all existing Operators. This privilege (or a higher level Privilege such as Full Privilege for partition: Global or SYSTEM ALL) is required for an Operator to log in and use C•CURE 9000 in an Enterprise Architecture.

The "Access to common global objects" privilege is read-only.

To Configure a Global Operator

1. From the MAS Server, select Global as the **New Object Partition**.
2. In the Navigation Pane of the Administration Workstation, click the **Configuration** pane.
3. Click the **Configuration** drop-down list and select **Operator**.
4. Click **New** to create a new Operator.
5. Enter a name and textual description for this Operator in the **Name** and **Description** fields.
6. By default, an Operator created in the Global Partition is assigned the SYSTEM ALL [Global] Privilege.
7. Click the Layout tab to assign one or more Application Layouts for the Operator to use when running the Monitoring Station.

On the Layout tab, you can use the Application Server drop-down list to assign Application Layouts from different servers to the Operator. Select an Application Server in the drop-down list, to choose to assign Application Layouts from that server.

8. Click **Add** to add Application Layouts from that server to the Operator. You can choose layouts from multiple servers, and all of them will be saved when you **Save and Close**.
9. Click the Application Servers tab and click **Add** to assign the Application Servers in the enterprise that you want to be in Interactive mode for this Operator.
10. Click **Save and Close** to save the new Operator record.

To Configure a Local Operator

1. From the MAS or SAS Default Server, select the Partition in which you want to create the Operator as the **New Object Partition**.
2. In the Navigation Pane of the Administration Workstation, click the **Configuration** pane.
3. Click the **Configuration** drop-down list and select **Operator**.
4. Click **New** to create a new Operator.
5. Enter a name and textual description for this Operator in the **Name** and **Description** fields.
6. By default, an Operator created in a local Partition is assigned three Privileges.
 - Access to global common objects [Global]
 - Full privilege for Partition Default [<Partition Name>]
 - Access to common objects [Default: <Partition Name>]
7. Add any additional Privileges you need to assign to the Operator.
8. Click the Layout tab and then click **Add** to assign one or more Application Layouts for the Operator to use when running the Monitoring Station.
9. Click the Application Servers tab and click **Add** to assign the Application Servers in the enterprise that you want to be in Interactive mode for this Operator.
10. Click **Save and Close** to save the new Operator record.

Client Configuration

You can connect to a specific C•CURE 9000 server as a primary connection using either a local or remote client application (Administration application or Monitoring Station). When you run a C•CURE 9000 client application, you connect to the server (MAS or SAS) specified in the application's configuration file.

The objects you can see in a client application depend upon your primary connection, and the server from which you are reading data.

Primary Connection to the MAS

If the client application is configured to connect to the MAS, and you are a valid Operator in the MAS database, you are logged in with the MAS as your primary connection.

Upon connection to the MAS, the client application sets the connection to all SAS systems configured for you in the Operator editor to **Interactive**, and all other SAS systems in the enterprise to **Non-interactive**. See [Operators In Enterprise Architecture](#) on [Page 58](#) for more information.

From the MAS, you can access the Application Server Dynamic View to view and change the Client Connection type for each SAS. See [Application Server Dynamic View](#) on [Page 68](#) for more information, and for definitions of the Client Connection States available.

Reading Data from the MAS

If you select the MAS system in the **Read Data from** drop-down list, the Dynamic View displays data from the Global Partition, any local MAS Partitions, and all local SAS Partitions on each SAS system.

The information available in the Dynamic View differs depending upon which SAS systems are set to **Interactive** and which are set to **Non-interactive**.

Interactive:

- The Dynamic View does not initially display information in status-type fields for SAS systems set to **Interactive**. For example, a value for the **Active on Server** field for a Schedule may not be visible.
- The Dynamic View receives object updates from SAS systems to which it is **Interactive**. Thus, if the **Active on Server** field value changes, that change will be displayed in the Dynamic View.
- If you manually refresh the Dynamic View, the information for an **Interactive** SAS system's status-type fields is cleared, but a subsequent update to the field's value will display the change.

Non-interactive:

- The Dynamic View does not initially display information in status-type fields for SAS systems set to **Non-interactive**. For example, a value for the **Active on Server** field for a Schedule may not be visible.
- The Dynamic View does not receive object updates from SAS systems to which it is **Non-interactive**. Thus, if the **Active on Server** field value changes, that change is not displayed in the Dynamic View.
- If you manually refresh the Dynamic View, the information for a **Non-interactive** SAS system's status-type fields is cleared, but a subsequent update to the field's value is not displayed.

Reading Data from a SAS

If you are displaying a Dynamic View from the MAS with a SAS server selected in the **Read Data from** drop-down list, the Dynamic View behaves as if the primary connection is the selected SAS. That is, the Dynamic View displays only the Global and local Partition objects that would be visible if you were viewing the data from a client connected to that SAS.

Primary Connection to a SAS

If the client application is configured to connect to a particular SAS, and you are a valid Operator in the SAS database, you are logged in with the SAS as your primary connection.

Depending upon Privilege settings, an Operator at a SAS client can view, create, and modify objects in the Global Partition and local Partitions on that SAS, but can never see objects in partitions on other SAS systems in the enterprise (even if the Operator has Privileges to see objects on other SAS systems).

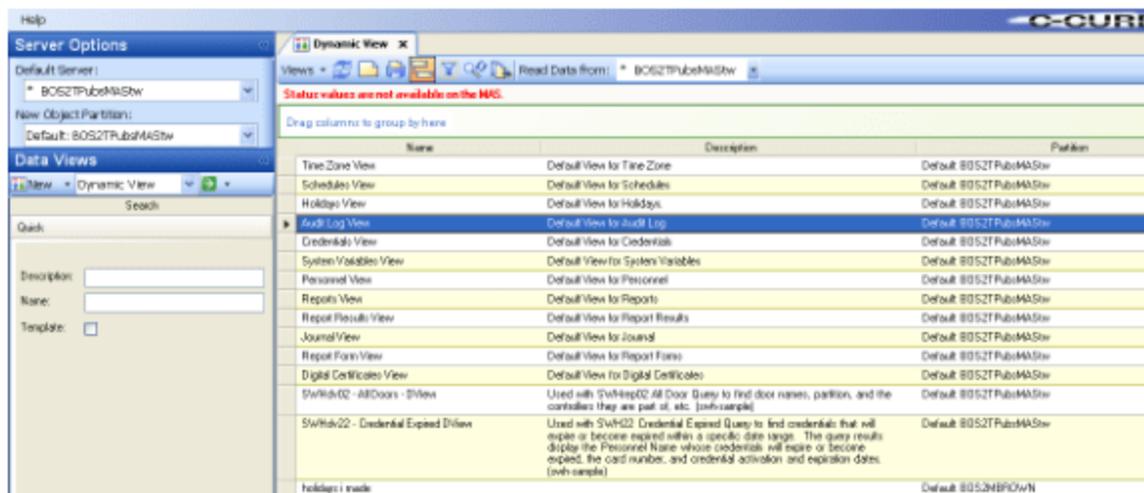
Dynamic Views in Enterprise Architecture

In the Enterprise Architecture, a Dynamic View allows a Global Operator at the MAS to view and manage objects from different servers. When viewing a Dynamic View while logged in to the MAS, you can select the server in the Enterprise Architecture from which to view enterprise data. You view data as if that server were your primary connection, so you can view objects from that server's local Partitions, as well as Global data, if you have sufficient Privilege.

- The **Read Data from** field in the Dynamic View toolbar shows from which server the displayed objects are being read.
- You can select a different server from the drop-down list to view data as if your primary connection was to that server.

Figure 12 on Page 64 displays a Dynamic View from the MAS.

Figure 12: Dynamic View from the MAS



The **Read Data from** drop-down list is not available when you are logged in to a SAS, because you can only view that SAS and the Global Partition.

For partitioned objects, the right-most column of Dynamic Views on the MAS display the Partition in which an object resides.

Dynamic View Restrictions

When an Operator launches a Dynamic View on the MAS, some restrictions apply.

- The Dynamic View **Read Data from** setting and the Interactive/Non-interactive settings affect how the Dynamic View displays status-type properties and updates from object creation, deletion, and modification. See [Client Configuration on Page 62](#) for more details on updates to Dynamic Views.
- When the Dynamic View **Read Data from** is set to the MAS, the Toolbar in the Dynamic View displays the message "Status values are not available on the MAS."
- If the selected server is unavailable or becomes unavailable, the combo box with the server name will have a label appear after it saying "Disconnected."
- If you want to retrieve only records from a specific SAS, either:

- Log in with a Privilege which gives you a view only of the SAS's Partitions
- Select the SAS in the **Read data from** drop-down list
- Create a query which explicitly selects records with only the Partitions belonging to that SAS
- If a query created at the SAS is run with the 'Read Data from' server as the MAS, it finds all records which match the query criteria and which the Operator is allowed to see, whether the records are on the SAS where the Dynamic View is located or on another server.
- If a query created at one SAS is run with a second SAS selected in the Read Data from drop-down list, the data displayed is from the second SAS.
- If a query created at the MAS is run with the 'Read Data from' server as the MAS, it shows all action records from all events and other objects defined on any SAS anywhere, not just records defined on the MAS.

Removing the Partition Column from a Dynamic View

If you do not want the Partition Column visible in a Dynamic View for an Object Type, you can create a Dynamic View and mark the Partition Column as hidden, then choose **Make default view**, and save the Dynamic View. See the *C•CURE 9000 Data Views Guide* chapter on Dynamic Views for more information.

To hide the Partition Column while you are viewing a Dynamic View, you can right-click on the column headings and clear the Partition column to hide that column. However, this change is in effect only while the view is open. If you close the view and open it again, the column reappears.

Holidays in Enterprise Architecture

The holiday object is a standard, optionally-Global object following all the rules specified in the [Optionally Global Objects](#) on [Page 107](#).

There are two special considerations:

- You can activate Global Holidays on a local SAS even if the MAS is offline because the active state for a Holiday is calculated at each local SAS server.
- There is a limit of 256 holidays that can be downloaded to an apC. This apC limit is enforced by the Holiday Groups you add to the apC.

There is a system-wide limit of 24 holiday groups per SAS. In other words, if you are creating a global holiday group on the MAS, each SAS is checked so that the maximum number of holiday groups is not exceeded. However, the total number of local and global holidays on the MAS can exceed 24 groups.

Application Server Editor

This chapter explains how to use the Application Server editor to manage Application Servers in your Enterprise.

In this chapter

Application Server Dynamic View	68
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Application Server Dynamic View

The Application Server Dynamic View displays the Application Servers in the enterprise.

Figure 13 on Page 68 displays the list of application servers available from the MAS.

Figure 13: Dynamic View - Application Server

The screenshot shows a window titled "Dynamic View - Softwarehouse.CrossFire.Common.Objects.ApplicationServer". The window has a menu bar with icons for Views, a toolbar, and a "Read Data from:" dropdown menu set to "bos2Q2802V08e41". A "Count: 2" indicator is visible in the top right. A red warning message states "Status values may not be available on the MAS." Below this is a section for grouping columns. The main table has the following data:

Name	Description	Status	Client Connection State	Synchronization Status
bos2Q2802V08e41	bos2Q2802V08e41	Online	Primary	Ready to Synchronize
bos2Q2802V08e42	Default description for class: ApplicationServer. bos2Q2802V08e42	Online	Disconnected	Ready to Synchronize

An Application Server Dynamic View launched from the **Search** button reflects data from the Default Server. The Dynamic View menu bar has a drop-down list of servers from which you can select a server. Once a Dynamic View is launched, you can select a different server for that view from which to start reading data. When a different server is selected within the Dynamic View, the list is immediately refreshed to start reading from the selected server. Changes on objects are sent to the Dynamic View once it is opened, and the view reflects up-to-date values.

If you use the **Read Data from** drop-down list to select the MAS, the Dynamic View displays the MAS and each SAS in the Enterprise in the list of Application Servers. The Status and Synchronization Status columns reflect the status of each Application Server as known to the MAS.

If you use the **Read Data from** drop-down list to select a SAS, the Dynamic View displays only the SAS you selected, and the MAS, in the list of Application Servers. The Status and Synchronization Status columns reflect the status as known to the SAS.

Table 7 on Page 68 describes the columns available from the Application Server Dynamic View display.

Table 7: Application Server Dynamic View Columns

Column	Description
Name	The system name of each Application Server.

Table 7: Application Server Dynamic View Columns (continued)

Column	Description
Description	The textual description of each Application Server. The system fills in a default description when the Application Server is created.
Status	The status of each Application Server. Each server is either Online (communicating with the server selected in Read Data From) or Offline (not communicating with the server select in Read Data From).
Client Connection State	<p>The Client Connection State is the current state of the connection between this Admin or Monitoring application (client) and each Application Server. The possible values are:</p> <ul style="list-style-type: none"> • Primary: This is the application server to which client-to-server requests are made. • Interactive: This client is currently receiving dynamic server-to-client activity and state changes from this server, in addition to the primary server. • Non-interactive: This client is not currently receiving activity and state changes from this server. <p>You can disconnect a client application that is currently Interactive from an Application Server by right-clicking and choosing Disconnect from the context menu. Disconnecting prevents the current client from receiving activity and state changes from that Application Server.</p> <p>You can connect a client application that is currently Non-interactive from an Application Server by right-clicking and choosing Interactive from the context menu. Connecting allows the current client to receive activity and state changes from that Application Server.</p> <p>The default behavior for clients is to be Interactive with all online non-isolated application servers in the same region as the client's primary application server. All offline/isolated/other-region application servers are Disconnected.</p>
Synchronization Status	<p>The values shown in the Synchronization Status column, and their meanings, are dependent upon whether you are considering the status of the local server or a remote server. The status values are explained in Table 8 on Page 69.</p> <p>Example:</p> <p>If you set the Read Data From drop-down list to read data from the MAS, the MAS is the local server, and each SAS in the list is a remote server.</p>

Table 8: Synchronization Status Values

Status	Description
Synchronization Status of Local Server	
Ready to Synchronize	The local MAS/SAS and all of its partner Application Servers are ready to perform synchronization.
Ready to Synchronize - One or more partner servers has a problem	The local MAS/SAS is ready to perform synchronization, but one or more partner Application Servers are not. You can determine which server(s) are not ready by viewing the Synchronization Status of the remote servers. Any remote server that is not "Ready to Synchronize" has some problem with the local server.
The MAS and SAS are running incompatible versions	The local SAS has a different version of C•CURE 9000 than the MAS. This status does not appear for a local MAS because the MAS version is presumed to be correct.
Restart SAS to reinitialize synchronization	The local SAS needs to have its services restarted so that synchronization can proceed. Restart the CrossFire Framework Service and the CrossFire Server Component Framework Service .

Table 8: Synchronization Status Values (continued)

Status	Description
A configuration problem prevented synchronization (See Event Server)	The local MAS/SAS is not properly configured for synchronization. This could also indicate a license problem. See the Windows Event Viewer Application Log (Start>Administrative Tools>Event Viewer , then select Windows Logs>Application) to view any application errors that have recently occurred. This may indicate the problem.
Synchronization Status of Remote Server	
Unknown	The remote partner Application Server is not connected.
Ready to Synchronize	The remote Application Server is ready to synchronize.
Ready to Synchronize - There are Conflicts	Indicates that there are unresolved conflicts that may need to be resolved. Synchronization will continue. Conflicts are listed on the Application Server Synchronization Conflicts View on Page 74. See Using the Synchronization Conflicts View on Page 77.
Ready to Synchronize - Some partners have different software versions	This status is displayed at the MAS only. It indicates that one or more SASs have a different but compatible version of C•CURE 9000
Ready to Synchronize - MAS has a different software version	This status is displayed at a SAS only. It indicates that the MAS has a different but compatible version of C•CURE 9000.
Synchronizing - The MAS database has been restored	This status is displayed on the MAS only. It indicates that the system has detected that the MAS database has been restored since the last synchronization, and that synchronization is proceeding.
Synchronizing - The SAS database has been restored	This status is displayed on a SAS only. It indicates that the system has detected that the SAS database has been restored since the last synchronization, and that synchronization is proceeding.
The MAS and SAS are running incompatible versions	The remote SAS has a version of C•CURE 9000 that is incompatible with the MAS. Synchronization is disabled because of this incompatibility. To resolve this condition, the incompatible system(s) should be upgraded to a compatible version.
Restart SAS to reinitialize synchronization	The remote SAS needs to have its services restarted so that synchronization can proceed. Restart the CrossFire Framework Service and the CrossFire Server Component Framework Service .
A configuration problem prevented synchronization (See Event Server)	The remote Application Server encountered a configuration error and cannot initialize for synchronization. See the Windows Event Viewer Application Log on the remote server (Start>Administrative Tools>Event Viewer , then select Windows Logs>Application) to view any application errors that have recently occurred. This may indicate the problem.

Viewing a List of Application Servers

When you select **Application Server** from the **Options & Tools** pane, a dynamic view opens that displays a list of all Application Servers that are configured in the C•CURE 9000 database. See [Application Server Dynamic View](#) on Page 68 for explanations of the columns in this list.

You can double-click on any Application Server in the list to edit it, or you can right-click on an Application Server in the list to display a context menu that gives you options such as **Edit**, **Add to Group**, and **Find in Journal**. See [Application Server Context Menu on Page 99](#) for more information on the context menu.

You can view a list of Application Servers from the Administration Client or the Monitoring Station.

- [To View a List of Application Servers from the Administration Client Application on Page 71](#)
- [To View a List of Application Servers from the Monitoring Station on Page 71](#)

You can change the interactive status of an Application Server from the Administration Client or the Monitoring Station. See [Table 29 on Page 100](#) for more information on Interactive mode.

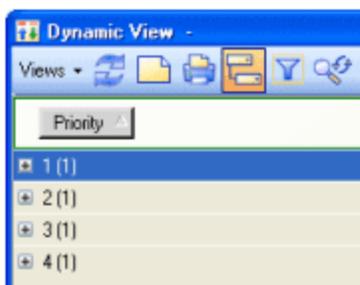
- [To View a List of Application Servers from the Monitoring Station on Page 71](#)
- [To Change Interactive Mode for an Application Server from the Monitoring Station on Page 72](#)

To View a List of Application Servers from the Administration Client Application

1. In the Administration Client, on the **Options & Tools** pane, select **Application Server**.
2. A dynamic view opens that displays a list of all Application Servers that are configured in the C•CURE 9000 database.
3. You can use the buttons on the Dynamic View toolbar to filter, group, print, or query on the list.
4. To change the columns that are displayed in the view, right-click on the Column headings and select the columns you want to display.
5. You group the view by any column heading by clicking on a Column heading and dragging the heading to the **Drag columns to group by here** area. The view is re-configured to group items by the column heading.

Example

If you drag the **Priority** column heading to the **Drag columns to group by here** area, the view is re-displayed with **Priority** as the group heading, and the Application Servers grouped by priority. Click the  to expand the list of Application Servers in that Priority.



To View a List of Application Servers from the Monitoring Station

You can view a list of Application Servers from the Monitoring Station if your Application Layout includes the Explorer Bar.

1. In the Monitoring Station, on the Options & Tools pane, select **Application Server** from the Hardware Status Explorer Bar.
2. A dynamic view called **Status List - Application Server** opens that displays a list of all Application Servers that are configured in the C•CURE 9000 database.
3. You can use the buttons on the Dynamic View toolbar to filter, group, print, or query on the list.
4. To change the columns that are displayed in the view, right-click on the Column headings and select the columns you want to display.
5. You group the view by any column heading by clicking on a Column heading and dragging the heading to the **Drag columns to group by here** area. The view is re-configured to group items by the column heading.

To Change Interactive Mode for an Application Server from the Admin Client

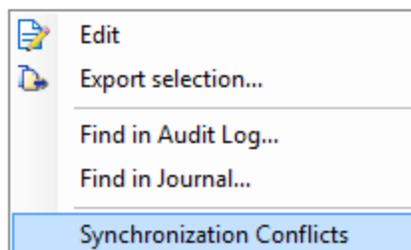
1. From the Dynamic View list of Application Servers on the MAS, select an Application Server and right-click.
2. To set the Application Server to non-Interactive (if the Client Connection State for this Application Server is **Interactive**), choose **Set Non-interactive** from the context menu.
3. To set the Application Server to Interactive mode (if the Client Connection State for this Application Server is **Non-interactive**), choose **Set Interactive** from the context menu.

To Change Interactive Mode for an Application Server from the Monitoring Station

1. From **Status List - Application Server**, select an Application Server and right-click.
2. To set the Application Server to non-Interactive (if the Client Connection State for this Application Server is **Interactive**), choose **Set Non-interactive** from the context menu.
3. To set the Application Server to Interactive mode (if the Client Connection State for this Application Server is **Non-interactive**), choose **Set Interactive** from the context menu.

Application Server Context Menu

If you are viewing the Application Server Dynamic View on a SAS, and you right-click on a SAS system, the context menu is displayed as follows:



If you are viewing the Application Server Dynamic View on a SAS, and you right-click on the MAS system, the **Synchronization Conflicts** selection will not be visible.

If you are viewing the Application Server Dynamic View from the MAS, the context menu displays as follows if a SAS is selected (the Set Interactive or Set Non-interactive menu selection does not appear if you right-click on the MAS row of the Application Server Dynamic View).



The context menu that opens when you right-click on a Application Server in the Dynamic View of Application Servers includes the following selections.

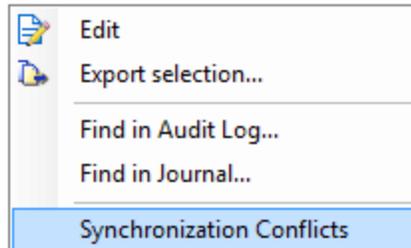
Table 9: Application Server Dynamic View Context Menu

Selection	Description
Edit	Click this menu selection to edit the Application Server record. The Application Server Editor opens.
Export Selection	Allows you to export the selected Application Server records to an XML or CSV file.
Find in Audit Log	Opens a Query Parameters dialog box in which you can enter prompts and/or modify the query criteria to search for entries in the Audit Log that reference the selected record. When found, the results display in a separate Dynamic View.
Find in Journal	Opens a Query Parameters dialog box in which you can enter prompts and/or modify the query criteria to search for entries in the Journal that reference the selected record. When found, the results display in a separate .
Set Interactive	<p>This selection is available only if you are a Global Operator viewing the Application Server Dynamic View from the MAS. The Set Interactive or Set Non-interactive menu selection does not appear if you right-click on the MAS row of the Application Server Dynamic View.</p> <p>Click this menu option to set the selected SAS to Interactive mode.</p> <p>An interactive SAS sends update messages to the Monitoring Station and updates to MAS Dynamic Views, the Hardware tree, and the Video tree.</p> <ul style="list-style-type: none"> Dynamic views which are Reading Data from the MAS receive all object notification messages from interactive SAS servers. That means that new and deleted object changes are displayed, and changes to object states are displayed temporarily (MAS Dynamic Views do not dynamically display status updates - if you refresh one of these dynamic views, all status data disappears). In contrast, for SAS servers which are non-interactive, no status data and no object additions or deletions are displayed. Manual refresh causes the object changes to be displayed. Hardware and Video trees which are displayed while the Default Server is the MAS also receive object notifications from interactive SAS servers. That means that new and deleted object changes are displayed. In contrast, for SAS servers that are non-interactive, no object additions, changes, or deletions are displayed on the tree until it is manually refreshed.
Synchronization Conflicts	<p>This selection is available only if you are viewing the Application Server Dynamic View from the SAS.</p> <p>Click this menu selection to open the Application Server Synchronization Conflicts Dynamic View. See Application Server Synchronization Conflicts View on Page 74.</p>

Application Server Synchronization Conflicts View

The Application Server Synchronization Conflicts View is accessed from the **Synchronization Conflicts** menu selection on the Application Server Dynamic View context menu for a specific SAS. (See [Figure 14](#) on [Page 74](#)).

Figure 14: Application Server Synchronization Conflicts Context Menu



This view displays any existing conflicts that were logged between the MAS and this particular SAS, and can be useful for resolving conflicts that hamper server synchronization.

The following sections provide more information about the this view.

- [Synchronization Conflict View from the MAS on Page 74](#)
- [Synchronization Conflicts View from a SAS on Page 75](#)
- [Synchronization Conflicts View Definitions on Page 76](#)
- [Using the Synchronization Conflicts View on Page 77](#)

The system avoids creating duplicate Synchronization Conflict records if the same conflict re-occurs. Since conflicts are identified by Object ID, Object Type, and Conflict Type, it is possible (although rare) for the same record to appear in the conflicts twice if it has multiple conflict types.

1. When a conflict is detected, the system, using the three identifiers mentioned above, checks to see if a matching record already exists.
2. If such a record does exist, the system updates it with the latest Object Name and Error Description.

Consequently, at any point in time, the record shows when the conflict first occurred, the data necessary to identify and find the record, and its most recent name and error text.

For an overview of Synchronization Conflicts, with a few sample conflicts, see [Synchronization Results](#) on [Page 49](#).

NOTE

To see the most current list of conflicts in this view, you need to refresh the Conflict View by clicking



Synchronization Conflict View from the MAS

If you open this view as an Operator on the MAS, the toolbar includes the Read Data from drop-down list that allows you to choose to view Synchronization Conflicts from the viewpoint of any SAS system. See [Figure 15](#) on [Page 75](#).

Figure 15: Synchronization Conflicts View from the MAS

Conflict date/time	Object ID	Object Type	Object Name	Direction	Conflict Description	Conflict Type
10/12/2010 9:59:50 AM	2097152004	Operator	americas_idephour e	from Mas	Both MAS and SAS are trying to update the same row. Only one can succeed.	Local row update conflicts with remote row update.
10/12/2010 9:59:50 AM	2097152007	Operator	americas_nbrown	from Mas	Both MAS and SAS are trying to update the same row. Only one can succeed.	Local row update conflicts with remote row update.
10/4/2010 3:17:08 PM	2097152006	Application Server	BOS2MBROWN	from Mas	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	Duplicate Primary Key on Local and Remote row insert.
10/4/2010 3:17:11 PM	8388608	Clearance Item	Not Available	from Mas	Clearance item for clearance 8388608 cannot replicate due to prior replication error in parent clearance record	A general error has occurred.
10/4/2010 3:22:11 PM	2097152001	Clearance Item	Not Available	from Mas	Clearance item for clearance 'global clearance 1' cannot replicate due to missing door	A general error has occurred.
10/4/2010 3:22:15 PM	1000	System Variables	PersonnelChangeSequence	from Mas	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	Duplicate Primary Key on Local and Remote row insert.
10/4/2010 3:22:16 PM	2097152004	Operator	americas_idephour e	from Mas	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	Duplicate Primary Key on Local and Remote row insert.
10/4/2010 3:22:16 PM	2097152005	Operator	americas_shqa	from Mas	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	Duplicate Primary Key on Local and Remote row insert.
10/4/2010 3:22:16 PM	2097152007	Operator	americas_nbrown	from Mas	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	Duplicate Primary Key on Local and Remote row insert.

Synchronization Conflicts View from a SAS

If you open this view as an Operator on a SAS, the toolbar does not provide the **Read Data from** drop-down box because you can only view the conflicts that affect this specific SAS. See [Figure 16 on Page 76](#).

Figure 16: Synchronization Conflicts View from a SAS

Conflict date/time	Object ID	Object Type	Object Name	Direction	Conflict Description	Conflict Type
10/12/2010 9:59:50 AM	2097152004	Operator	americas_jdephou e	from Mas	Both MAS and SAS are trying to update the same row. Only one can succeed.	Local row update conflicts with remote row update.
10/12/2010 9:59:50 AM	2097152007	Operator	americas_mrbrown	from Mas	Both MAS and SAS are trying to update the same row. Only one can succeed.	Local row update conflicts with remote row update.
10/4/2010 3:17:08 PM	2097152006	Application Server	BOS2MBROWNI	from Mas	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	Duplicate Primary Key on Local and Remote row insert.
10/4/2010 3:17:11 PM	8388608	Clearance Item	Not Available	from Mas	Clearance item for clearance 8388608 cannot replicate due to prior replication error in parent clearance record.	A general error has occurred.
10/4/2010 3:22:11 PM	2097152001	Clearance Item	Not Available	from Mas	Clearance item for clearance 'global clearance 1' cannot replicate due to missing door.	A general error has occurred.
10/4/2010 3:22:15 PM	1000	System Variables	PersonnelChangeS equence	from Mas	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	Duplicate Primary Key on Local and Remote row insert.
10/4/2010 3:22:16 PM	2097152004	Operator	americas_jdephou e	from Mas	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	Duplicate Primary Key on Local and Remote row insert.
10/4/2010 3:22:16 PM	2097152005	Operator	americas_ahqs	from Mas	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	Duplicate Primary Key on Local and Remote row insert.
10/4/2010 3:22:16 PM	2097152007	Operator	americas_mrbrown	from Mas	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	Duplicate Primary Key on Local and Remote row insert.

Synchronization Conflicts View Definitions

The view contains the columns described in [Table 10](#) on [Page 76](#).

[Table 11](#) on [Page 77](#) provides more explanations of possible messages in the **Conflict Description** and **Conflict Type** columns.

Table 10: Synchronization Conflict View Columns

Column	Description
Conflict date/time	Lists the date and time the conflict first occurred for this record.
Object ID	Lists the Object ID of the object involved in the conflict.
Object Type	Lists the type of object involved in the conflict.
Object Name	Lists the name of the object involved in the conflict. If the object does not have a Name field, this column displays Not Available .
Direction	Lists the direction of the synchronization attempted. If the Direction is from MAS , it indicated that a Global object on the MAS failed to synchronize to one or more SAS systems. If the Direction is to MAS , it indicates that a local object from a SAS failed to synchronize with the MAS.
Conflict Description	Provides a description of the synchronization conflict that occurred.
Conflict Type	Lists the Conflict Type.

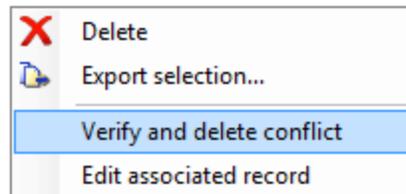
Table 11: Possible Messages in Synchronization Conflicts

Conflict Type	Conflict Description	Meaning
A general error has occurred.	The specific error text is shown. Example: Operator application layout pair for operator "MAHON" cannot replicate due to missing application layout	A database error occurred during synchronization. In the example, it is likely an Application Layout on the SAS was deleted at nearly the same time as a user edited a Global Operator record and added a reference to the Application Layout that was deleted.
Deleted local row with no metadata, conflict with Remote update.	This item will have to be deleted and recreated on the MAS	A row was updated on the remote server, but it was deleted in the past on the local server.
Row Deleted Locally and remotely	Both SAS and MAS have independently deleted the row (ignored internally).	A row was deleted on both the local and remote server.
Deleted Local row, conflict with Remote row update	This item will have to be deleted and recreated on the MAS	A row was deleted on the local server but updated on the remote server.
Duplicate Primary Key on Local and Remote row insert	Both MAS and SAS are trying to insert a row with the same primary key. Only one can succeed.	A row was created on the local and remote server (they have the same Primary Key).
Local row update conflicts with remote delete	This item will have to be deleted and re-created on the SAS.	A row was updated on the local server but deleted on the remote server.
Local row update conflicts with remote row update.	Both MAS and SAS are trying to update the same row. Only one can succeed.	A row was updated on the local and remote server.

Using the Synchronization Conflicts View

You can use the Synchronization Conflicts View to resolve conflicts in the list, so that objects with conflicts in the database can synchronize correctly. When you select one or more rows in the list and right-click, a context menu appears that lets you choose a conflict resolution action to take. See [Figure 17](#) on [Page 77](#).

Figure 17: Synchronization Conflicts View Context Menu



The context menu for Synchronization Conflicts provides a context menu with the selections in [Table 12](#) on [Page 78](#).

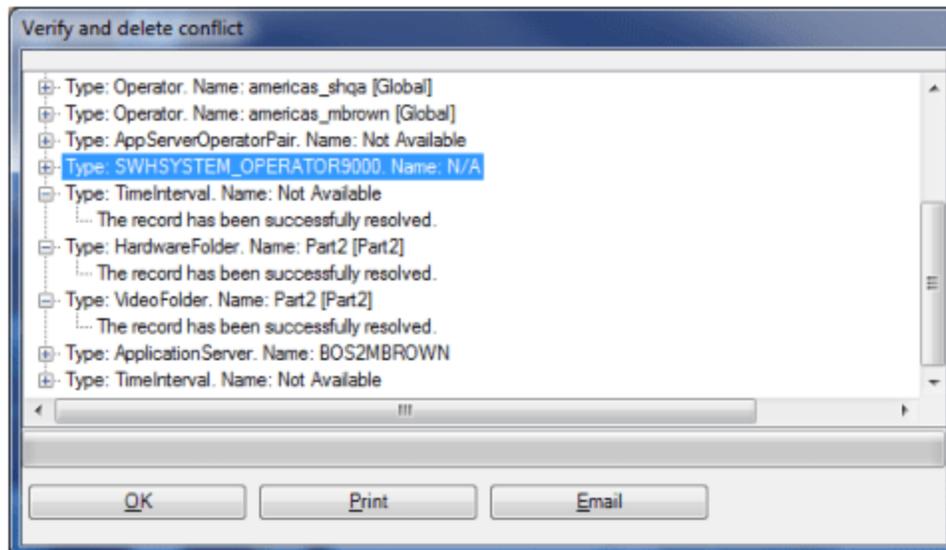
Table 12: Synchronization Conflicts Context Menu Selections

Selection	Description
Delete	Click this selection to delete the selected Synchronization Conflict records.
Export Selection	Click this selection to export one or more selected Synchronization Conflict records to an XML or CSV file. See the C•CURE 9000 Data Views Guide for more information about exporting selections.
Verify and delete conflict	Click this selection to attempt to resolve and delete one or more conflicts. See Verify and Delete Conflict on Page 78 for more information.
Edit associated record	Click this selection if you want to edit the record. This selection only appears if you select a single row and that row has an associated record and an editor for viewing that record. This function is useful for locating the record involved in the conflict, especially if the conflict description identified a field in the record that caused the conflict. You can open the editor for the record to see if you can determine the source of the conflict.

Verify and Delete Conflict

You can select one or more rows in the Synchronization Conflicts View and use the context menu selection **Verify and delete conflict** to attempt to resolve conflicts shown in the view. When you select this menu item, the dialog box shown in [Figure 18](#) on [Page 78](#) opens, listing the items you selected. You can click  next to an item to see an explanation of the conflict and how it was resolved, or why it could not be resolved.

In the example shown, several records were successfully resolved and their entries in the Synchronization Conflicts View were deleted. However, sometimes the Verify and delete conflict function cannot resolve the conflict, and a message to that effect is displayed. The record might have been deleted, or the record might not be accessible for some other reason.

Figure 18: Verify and Delete Conflict

Synchronization Conflicts Definitions

The following tables list the types of synchronization conflicts that can occur, and information about troubleshooting these errors.

[Table 13](#) on [Page 79](#) lists Badge Layout object Conflicts.

[Table 14](#) on [Page 80](#) lists Card Format Conflicts.

[Table 15](#) on [Page 80](#) lists Credential-related Conflicts.

[Table 16](#) on [Page 81](#) lists Clearance object Conflicts.

[Table 17](#) on [Page 82](#) lists Door, Floor, and Elevator object Conflicts.

[Table 18](#) on [Page 82](#) lists CHUID Format object Conflicts.

[Table 19](#) on [Page 83](#) lists Reader object Conflicts.

[Table 20](#) on [Page 83](#) lists Area object Conflicts.

[Table 21](#) on [Page 83](#) lists Schedule object Conflicts.

[Table 22](#) on [Page 83](#) lists Privilege object Conflicts.

[Table 23](#) on [Page 84](#) lists Personnel object Conflicts.

[Table 24](#) on [Page 84](#) lists Personnel-related object Conflicts.

[Table 25](#) on [Page 85](#) lists Operator-related object Conflicts

[Table 26](#) on [Page 85](#) lists Document object Conflicts

Badge Layout Object Conflicts

Table 13: Badge Layout Object Conflicts

Conflict	Example	Resolution
Badge Layout cannot replicate due to missing card format1.	Card format deleted on SAS at same time that a user edits global badge layout and adds reference to the card format in field 1.	Edit the Badge Layout and remove the Card Format in Field. Then delete the Card Format.
Badge Layout cannot replicate due to missing card format1. Example:	Card format deleted on SAS at same time that a user edits global badge layout and adds reference to the card format in field 2	Edit the Badge Layout and remove the Card Format in Field. Then delete the Card Format.
Badge Layout cannot replicate due to missing card format1.	Card format deleted on SAS at same time that a user edits global badge layout and adds reference to the card format in field 3.	Edit the Badge Layout and remove the Card Format in Field. Then delete the Card Format.
Badge Layout <name> cannot be deleted because it is referenced by a credential.	Global badge layout deleted on MAS at same time that a user edits a local personnel record and adds a reference to the badge layout in a credential.	Edit the Personnel record and remove the reference to the deleted Badge Layout.

Card Format Object Conflicts

Table 14: Card Format Object Conflicts

Conflict	Example	Resolution
Card Format		
Card format <name> cannot be deleted due to first reference in badge layout record.	Card Format deleted on SAS at same time that a user edits a global badge layout and adds a reference to the card format in field 1.	Edit the Badge Layout and remove the Card Format in Field 1. Then delete the Card Format.
Card format <name> cannot be deleted due to second reference in badge layout record.	Card Format deleted on SAS at same time that a user edits a global badge layout and adds a reference to the card format in field 2.	Edit the Badge Layout and remove the Card Format in Field 2. Then delete the Card Format.
Card format <name> cannot be deleted due to third reference in badge layout record.	Card Format deleted on SAS at same time that a user edits a global badge layout and adds a reference to the card format in field 3.	Edit the Badge Layout and remove the Card Format in Field 3. Then delete the Card Format.
Card Format <name> cannot be deleted because it is referenced by a reader format record.	Local card format deleted on SAS at same time that a user edits a global reader record and adds a reference to the card format.	Edit the Reader and remove the Card Format that was deleted.
Card Format cannot replicate due to missing CHUID Format.	CHUID Format deleted on MAS (A user at the MAS, while the MAs was offline to the SAS, disabled the CHUID format and then deleted it). At the same time, a user edited local a Card format and added a reference to the deleted CHUID Format.	Edit the Card Format and remove the CHUID Format that was deleted.
Card Format Field Table		
Card Format cannot replicate due to missing Card format.	Card format record cannot replicate due to missing CHUID format, and this prevents the Card Format Field record associated with the Card Format from replicating.	Edit the Card Format and remove the CHUID Format that was deleted.

Credential-related Objects

Table 15: Credential-related Objects Conflicts

Conflict	Example	Resolution
Credential with card # <number> cannot replicate due to missing badge layout.	Badge layout deleted on SAS at same time that a user edits global credential and adds reference to the badge layout.	Edit the Global Credential and remove the Badge Layout that was deleted.
Credential cannot replicate due to prior replication error in parent personnel record.	Personnel record cannot replicate due to missing Personnel Type, and this prevents the Credential record associated with the person from replicating either.	Edit the Personnel record and assign a valid Personnel Type.

Conflict	Example	Resolution
Credential with card # <number> cannot replicate due to missing CHUID format:	CHUID Format deleted on MAS (A user at the MAS, while the MAs was offline to the SAS, disabled the CHUID format and then deleted it). At the same time, a user edited a local Credential and added reference to the CHUID Format.	Edit the Credential and remove the CHUID Format that was deleted.
User-defined field cannot replicate because its associated credential with card number <number> cannot replicate.	Credential record cannot replicate due to duplicate CHUID, and this prevents the User-defined Field record associated with the credential from replicating either.	Edit the Personnel record that contains the duplicate CHUID and assign a valid CHUID.
Credential with card # <number> cannot replicate due to duplicate CHUID.	A credential is created on MAS in a global personnel with CHUID YY at same time that a credential is created on SAS in a local personnel with same CHUID YY.	Edit either the Personnel record on the MAS or the Personnel record on the SAS and assign a valid CHUID.

Clearance Conflicts

Table 16: Clearance Object Conflicts

Conflict	Example	Resolution
Clearance		
Clearance <name> cannot be deleted because it is referenced by a personnel record.	Global clearance deleted on MAS at same time that a user edits a local personnel record and adds a reference to the clearance.	Edit the Personnel record and remove the reference to the Clearance. Then delete the Clearance.
Clearance Item		
ClearanceItem for Clearance <name> cannot replicate due to missing door.	Door deleted on SAS at same time that a user edits global clearance and adds a reference to the door in the clearance item list.	Edit the Clearance and remove the reference to the deleted Door.
ClearanceItem for Clearance <name> cannot replicate due to missing door group.	Door group deleted on SAS at same time that a user edits global clearance and adds a reference to the door group in the clearance item list.	Edit the Clearance and remove the reference to the deleted Door Group.
ClearanceItem for Clearance <name> cannot replicate due to missing floor.	Floor deleted on SAS at same time that a user edits global clearance and adds a reference to the floor in the clearance item list.	Edit the Clearance and remove the reference to the deleted Floor.
ClearanceItem for Clearance <name> cannot replicate due to missing floor group.	Floor group deleted on SAS at same time that a user edits global clearance and adds a reference to the floor group in the clearance item list.	Edit the Clearance and remove the reference to the deleted Floor Group.
ClearanceItem for Clearance <name> cannot replicate due to missing elevator.	Elevator deleted on SAS at same time that a user edits global clearance and adds a reference to the elevator in the clearance item list.	Edit the Clearance and remove the reference to the deleted Elevator.
ClearanceItem for Clearance <name> cannot replicate due to missing elevator group.	Elevator group deleted on SAS at same time that a user edits global clearance and adds a reference to the elevator group in the clearance item list.	Edit the Clearance and remove the reference to the deleted Elevator Group.

Conflict	Example	Resolution
ClearanceItem for Clearance <name> cannot replicate due to missing schedule.	Schedule deleted on SAS at same time that a user edits global clearance and adds a reference to the schedule in the clearance item list.	Edit the Clearance and remove the reference to the deleted Schedule.

Door, Floor, and Elevator Object Conflicts

Table 17: Door, Floor, and Elevator Object Conflicts

Conflict	Example	Resolution
Door		
Door <name> cannot be deleted because it is referenced by a clearance.	Local door deleted on SAS at same time that a user edits a global clearance record and adds a reference to the door.	Edit the Clearance and remove the reference to the deleted Door. Then delete the Door.
Floor		
Floor <name> cannot be deleted because it is referenced by a clearance.	Local floor deleted on SAS at same time that a user edits a global clearance record and adds a reference to the floor.	Edit the Clearance and remove the reference to the deleted Floor. Then delete the Floor.
Elevator		
Elevator <name> cannot be deleted because it is referenced by a clearance.	Local elevator deleted on SAS at same time that a user edits a global clearance record and adds a reference to the elevator.	Edit the Clearance and remove the reference to the deleted Elevator. Then delete the Elevator.

CHUID Object Conflicts

Table 18: CHUID Object Conflicts

Conflict	Example	Resolution
CHUID Format <name> cannot be deleted because it is referenced by a credential.	CHUID Format deleted on MAS at same time that a user edits local person and adds the CHUID Format to a credential.	Edit the Credential and remove the reference to the deleted CHUID Format. Then delete the CHUID Format.
CHUID Format <name> cannot be deleted because it is referenced by a card format record.	Local Card Format deleted on SAS at same time that a user edits a CHUID record and adds a reference to the card format.	Edit the CHUID Format and remove the reference to the deleted Card Format. Then delete the CHUID Format.

Reader Format Object Conflicts

Table 19: Reader Format Conflicts

Conflict	Example	Resolution
Reader Format for Reader <name> cannot replicate due to missing card format.	Global Card format deleted on MAS at same time that a user edits local reader and adds reference to the reader format.	Edit the Reader and remove the reference to the deleted Card Format.

Area Personnel Group Link Conflicts

Table 20: Area Personnel Group Link Conflicts

Conflict	Example	Resolution
Area Personnel Group Link cannot replicate due to missing personnel group.	Global Personnel group deleted on MAS at same time that a user edits a local Area and adds reference to the Personnel Group.	Edit the Area object and remove the reference to the deleted Personnel Group.

Schedule Conflicts

Table 21: Schedule Conflicts

Conflict	Example	Resolution
Schedule <name> cannot be deleted because it is referenced by an operator privilege record:	Local schedule deleted on SAS at same time that a user edits a global operator and adds a reference to the schedule.	Edit the Operator record and remove the reference to the deleted Schedule. Then delete the Schedule.

Privilege

Table 22: Privilege Object Conflicts

Conflict	Example	Resolution
Privilege <name> cannot be deleted because it is referenced by an operator record:	Global privilege deleted on MAS at same time that a user edits a local operator record and adds a reference to the privilege.	Edit the Operator record and remove the reference to the deleted Privilege. Then delete the Privilege.

Personnel Objects

Table 23: Personnel Object Conflicts

Conflict	Example	Resolution
Personnel		
Personnel cannot replicate due to missing Personnel Type:	Personnel Type deleted on SAS at same time that a user edits global Personnel and adds reference to the Personnel Type.	Edit the Personnel record and remove the reference to the deleted Personnel Type.
Personnel cannot replicate due to missing Operator:	Operator deleted on SAS at same time that a user edits global Personnel and adds reference to the Operator.	Edit the Personnel record and remove the reference to the deleted Operator.
Personnel record <name> cannot be deleted because of a reference to a clearance:	Global Clearance deleted on MAS at same time that a user edits a local Personnel record and adds a reference to the Clearance.	Edit the Personnel record and remove the reference to the deleted Clearance. Then delete the Personnel record.
User-defined field cannot replicate because its associated personnel cannot replicate.	Personnel record cannot replicate due to missing Personnel Type, and this prevents the User-defined Field record associated with the person from replicating either.	Edit the Personnel record and remove the reference to the deleted Personnel Type.
Personnel: <personnel name>, cannot be replicated because Windows Principal is not unique.	Personnel record cannot replicate because the Windows Principal user name field has same value as another Personnel record already replicated. This value must be unique.	Edit the Personnel record and change the Windows Principal field to a unique value.

Personnel-related Objects

Table 24: Personnel-related Object Conflicts

Conflict	Example	Resolution
Image		
Image cannot replicate due to prior replication error in parent personnel record.	Personnel record cannot replicate due to missing Personnel Type, and this prevents the Image record associated with the person from replicating either.	Edit the Personnel record and remove the reference to the deleted Personnel Type.
Personnel Clearance Pair		
Clearance cannot be added to personnel <name> because the clearance YY is missing. error comes from MAS	Global Clearance at MAS is deleted at same time local Personnel record at SAS is added which references the Clearance.	Edit the Personnel record and remove the reference to the deleted Clearance.
Personnel <name> can not be deleted because it references a clearance YY.error comes from SAS	Global Clearance at MAS is deleted at same time local Personnel record at SAS is added which references the Clearance.	Edit the Personnel record and remove the reference to the deleted Clearance. Then delete the person.
Personnel Type		

Conflict	Example	Resolution
Personnel type cannot be deleted because it is referenced by a personnel record.	Global Personnel type deleted on MAS at same time that a user edits a local Personnel record and adds a reference to the Personnel Type in this Personnel record.	Edit the Personnel record and remove the reference to the deleted Personnel Type. Then delete the Personnel Type.

Operator-related Conflicts

Table 25: Operator-related Object Conflicts

Conflict	Example	Resolution
Operator		
Operator XX cannot be deleted because it is referenced by a personnel record.	Global operator deleted on MAS at same time that a user edits a local personnel record and adds a reference to the operator.	Edit the Personnel record and remove the reference to the Operator. Then delete the Operator.
Operator XX cannot replicate due to missing Application layout.	Application layout deleted on SAS at same time that a user edits global operator and adds reference to the Application layout.	Edit the Operator and remove the reference to the deleted Application Layout.
Operator XX cannot be replicated because combination of domain name and user name is not unique.	A global operator on MAS is modified to have domain name AA and user name BB at the same time as a local operator on SAS is modified to have domain name AA and user name BB.	Edit the SAS Operator to remove or change the conflicting domain and/or user name.
Operator Privilege Pair		
OperatorPrivilegePair for operator XX cannot replicate due to missing privilege	Global Privilege deleted on MAS at same time that a user edits a local Operator and adds a reference to the Privilege.	Edit the Operator to remove the reference to the Privilege.
OperatorPrivilegePair for Operator XX cannot replicate due to missing schedule	Local Schedule deleted on SAS at same time that a user edits a global Operator and adds a reference to the Schedule.	Edit the Operator to remove the reference to the Schedule.
Operator Application Layout Pair		
Operator Application Layout Pair for Operator XX cannot replicate due to missing application Layout:	Local ApplicationLayout deleted on SAS at same time that a user edits a global operator and adds a reference to the Application Layout.	Edit Operator to remove the reference to the Application Layout.

Document Objects

Table 26: Document Object Conflicts

Conflict	Example	Resolution
Document		

Conflict	Example	Resolution
Document <name> cannot be deleted because it is referenced by a personnel record.	Global Document deleted on MAS at same time that a user edits a local Personnel record and adds a reference to the Document in this Personnel record.	Edit the Personnel record and remove the reference to the deleted Document. Then delete the Document.

Application Server Editor

The Application Server Editor lets you configure the settings for an Application Server that is part of your C•CURE 9000 system.

The editor shows the IP Address, Location, Priority, Synchronization Queue Size, and Current Status of the Application Server. The Partition Responsibility table displays the partitions this application server is managing.

For more information about Application Servers, see the [Introduction](#) on [Page 16](#).

When you select **Application Server** from the **Options & Tools** pane, a dynamic view opens that displays a list of all Application Servers that are configured in the C•CURE 9000 database.

- [Viewing a List of Application Servers](#) on [Page 97](#) gives instructions for opening the Application Server Dynamic View.
- [Table 7](#) on [Page 68](#) provides explanations of the columns in the Application Server Dynamic View.
- [Application Server Context Menu](#) on [Page 99](#) provides information about the tasks you can perform using this menu.

The Application Server Editor contains the following tabs:

- [Application Server General Tab](#) on [Page 89](#)
- [Application Server Groups Tab](#) on [Page 91](#)
- [Application Server Synchronization Tab](#) on [Page 92](#)
- [Application Server Triggers Tab](#) on [Page 94](#)
- [Application Server State Images Tab](#) on [Page 97](#)

Application Server Tasks

- [Accessing The Application Server Editor](#) on [Page 87](#)
- [Viewing a List of Application Servers](#) on [Page 97](#)

Accessing The Application Server Editor

You can access the Application Server Editor from the C•CURE 9000 Options & Tools pane.

To Access the Application Server Editor

1. Click **Options & Tools > Application Server**. A Dynamic View showing all of the Application Servers on the system appears.
2. Double-click on the Application Server you wish to edit. The Application Server Editor opens.
3. Right-click on an Application Server in the list to open the context menu for that Application Server.

Using the Application Server Editor

The Application Server editor is available on the MAS and on each SAS to let you see the names and status of the Application Servers in the enterprise.

From the Application Server editor, you can:

- Use the General tab to view information about the Application Server, including the list of Partitions for which the server has responsibility. See the [Application Server General Tab](#) on [Page 89](#).
- View the Groups to which this Application Server belongs. See the [Application Server Groups Tab](#) on [Page 91](#).
- Set the Schedules for the Audit Log Synchronization and the Journal Synchronization (available only for a SAS). See the [Application Server Synchronization Tab](#) on [Page 92](#).
- Add Triggers to the Triggers tab that can activate an Event based on the current status of the Application Server or the Synchronization Status of the Application Server. See [Application Server Triggers Tab](#) on [Page 94](#).
- View and change the state images for this Application Server from the State Images tab. See the [Application Server State Images Tab](#) on [Page 97](#).

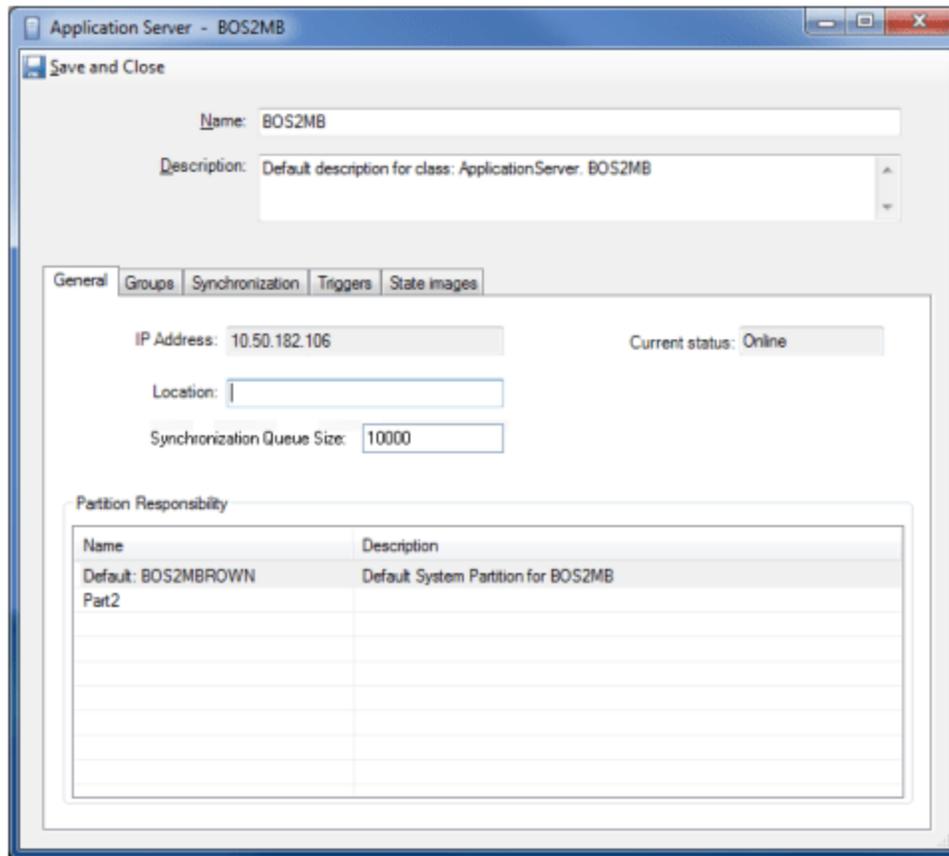
When you connected to the MAS and you open the Application Server for a SAS, the only changes that can be made are to the triggers tab. All other fields are read-only or disabled.

Application Server General Tab

The Application Server General tab allows you to configure your Application Servers by setting the Location for the server. You can also view which partitions the Application Server is responsible for managing, and the size of the Synchronization Queue.

The Application Server General tab is shown in [Figure 19 on Page 89](#).

Figure 19: Application Server General Tab



General Tab Definitions

Field	Description
Name	This field displays the name of the Application Server. This field defaults to the computer name of the Application Server. This field cannot be modified.
Description	Type a description of the Application Server in the Description field. Consider using the description to help identify the location and purpose of the Application Server.
IP Address	This read-only field displays the IP Address of this Application Server. This field is populated automatically.

Field	Description
Current Status	<p>This read-only field displays the current status of this Application Server. Possible status values are:</p> <ul style="list-style-type: none"> • Online • Offline
Location	<p>Type in a textual description of the location of this Application Server that will help you identify the location or purpose of the Application Server. This field is editable only by a client connected to the SAS or MAS being edited. Otherwise this field is read-only.</p>
Synchronization Queue Size	<p>Sets the maximum size of the Synchronization Queue on this Application Server. On the MAS, this setting controls the size of each synchronization queue the MAS creates. The MAS creates a separate queue for each SAS. The minimum value for this field is 500. The maximum value is 10,000,000. If you have a more than the minimum amount of memory, you can set this size higher than the default value. If you have no extra memory and/or a low transaction rate, set it lower.</p> <p>This field is editable only by a client connected to the SAS or MAS being edited. Otherwise this field is read-only.</p> <p>The default value for a SAS is 10,000.</p> <p>The default value for a MAS is 100,000.</p>
Partition Responsibility	<p>This table displays the Partitions that this Application Server is responsible for managing.</p>

Application Server Groups Tab

The Application Server Groups tab lists the Groups of which this Application Server is a member.

Groups are used for organizing C•CURE 9000 objects, and for applying Events and Actions to multiple objects of the same type. Groups are created by accessing the Groups Editor from the Configuration Pane.

You can configure groups of most C•CURE 9000 security objects, such as doors, personnel, controllers, and holidays.

A Group of Application Servers consists of one or more Application Servers that are configured in a C•CURE 9000 database. Each member of the group is an Application Server.

Adding an Application Server to a Group

You can add an Application Server to a Group using the following procedures.

To Add an Application Server To a Group

1. In the Navigation Pane of the Administration Workstation, click **Options & Tools** to open the Options & Tools pane.
2. Double-click **Application Server** in the list of Options. A Dynamic View opens showing all Application Server objects.
3. Select the Application Server in the list that you want to add to a group, then right-click and select **Add To Group** from the context menu.
4. In the Group dialog box that appears, click on the Group to which you want to add this Application Server.
5. The Application Server is added to the Group.

To Add an Application Server to a Group from the Groups Tab

NOTE

The Groups tab shows the Groups of which this Application Server is already a member. If this tab is blank, then the Application Server does not currently belong to a Group. You can use this procedure to add other Application Servers to one of those Groups.

1. From the [Application Server Editor](#) on [Page 87](#), click on the Groups tab.
2. Double-click an Application Server Group in the Group row. The Group editor General tab appears.
3. Click the **Add** button in the Group General tab to add an Application Server object to the Group. The Selection dialog box that opens displays a list of existing Application Servers that can be added to the Group.
4. Select the Application Server that you want to add to the Group and click **OK**. The Application Server that you selected is added to the Group.

Application Server Synchronization Tab

The Synchronization tab appears in the Application Server editor when you are editing a SAS Application Server record. The Synchronization tab allows you to enter a Schedule for Audit Log Synchronization and a Schedule for Journal Synchronization. If you are viewing the Application Server for the MAS, this tab is not available. Also, if you are editing a SAS Application Server record from the MAS, these fields are read-only.

To optimize synchronization performance, Software House recommends coordinating the Schedules for each SAS so that Audit Log Synchronization and Journal Synchronization are performed at different times.

Example:

SAS 1 is set to perform Audit Log Synchronization at 1:00 AM and Journal Synchronization at 2:00 AM.

SAS 2 is set to perform Audit Log Synchronization at 3:00 AM and Journal Synchronization at 4:00 AM.

Audit Log Synchronization

Audit Log synchronization is used to combine an Audit Log from a SAS system in the enterprise with the Audit Log at the MAS for central reporting and monitoring. Unlike database synchronization, Audit Log synchronization occurs on a scheduled basis so that overall performance of the MAS and SAS is not affected. When the Schedule you assign for Audit Log synchronization becomes active, the SAS sends its Audit Log changes to the MAS for synchronization.

Journal Synchronization

Journal synchronization is used to combine the Journal from a SAS system in the enterprise with the Journal at the MAS for central reporting and monitoring. Unlike database synchronization, Journal synchronization occurs on a scheduled basis so that overall performance of the MAS and SAS is not affected. When the Schedule you assign for Journal synchronization becomes active, the SAS sends its Journal changes to the MAS for synchronization.

Synchronization Tab Tasks

To Assign an Audit Log Synchronization Schedule

1. From the Options & Tools pane on your SAS, click **Application Server**. The Application Server Dynamic View opens.
2. Double-click on the SAS you wish to edit. The Application Server Editor opens.
3. Click on the Synchronization tab.
4. Click and select a Schedule for Audit Log Synchronization.
5. Click **Save and Close** to save your changes to the SAS Application Server.

To Assign a Journal Synchronization Schedule

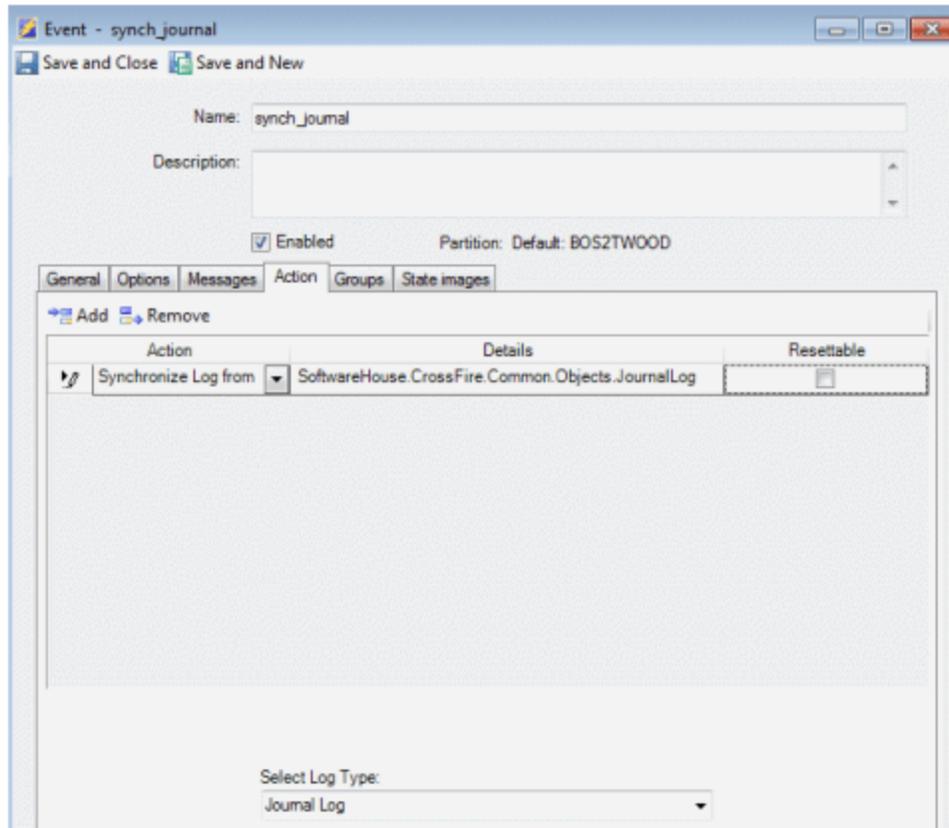
1. From the Options & Tools pane on your SAS, click **Application Server**. The Application Server Dynamic View opens.
2. Double-click on the SAS you wish to edit. The Application Server Editor opens.

3. Click on the Synchronization tab.
4. Click  and select a Schedule for Journal Synchronization.
5. Click **Save and Close** to save your changes to the SAS Application Server.

Journal/Audit Synchronization by Event

There is an event action to initiate a Journal/Audit synchronization, as shown in [Figure 20](#) on [Page 93](#).

Figure 20: Event Action Tab



Application Server Triggers Tab

You can create a trigger that activates an Event based upon the Synchronization Status of a MAS or SAS, the Status of a SAS, or the failed Status of the Audit/Journal Synchronization from the SAS to the MAS.

Triggers on Application servers can activate only events local to the Application Server to which the Client is connected while configuring the trigger. Application Server Triggers are saved locally, and are not synchronized between servers.

You can only create and/or edit a server's Application Server Triggers from a client with a Client Connection State of Primary to that server. (Edit the MAS Application Server triggers from a MAS Administration client.)

The event will stay active as long as the Application Server stays in that state (it is not a momentary event activation).

Example 1

You can create a trigger that sets off an Event if a SAS goes offline. You can define the Event to notify an administrator and display on the Monitoring Station so corrective action can be taken.

From the SAS Application Server Triggers tab:

1. Click **Add**.
2. Click inside the **Property** column, then click to select the Property **Synchronization Status** for the trigger.
3. Click in the **Value** column and select **SAS is offline or disconnected from the MAS**.
4. Click in the **Action** column and select **Activate Event**.
5. Click in the **Event** field that appears and select the Event you want to trigger.

Example 2

You can create a trigger that sets off an Event if the synchronization of the Audit/Journal database from a SAS to the MAS fails. You can define the Event to notify an administrator and display on the Monitoring Station so corrective action can be taken.

1. Click **Add**.
2. Click inside the **Property** column, then click to select the Property **Audit Synchronization Status** or **Journal Synchronization Status** for the trigger.
3. Click in the **Value** column and select **Failed**.
4. Click in the **Action** column and select **Activate Event**.
5. Click in the **Event** field that appears and select the Event you want to trigger.

SAS Status

The following **SAS Status** values are available as trigger values:

- Online
- Offline

Synchronization Status of MAS/SAS

Depending upon where you are editing an Application Server from, the Synchronization Status trigger values available can differ. The following Application Server **Synchronization Status** values are available as trigger values.

Table 27: Synchronization Status Values

Editing a SAS from that SAS (recommended)	SAS is offline or disconnected from the MAS Initializing SAS is queuing synchronization requests for the MAS Synchronizing normally Restart SAS to reinitialize Synchronization
Editing a SAS from the MAS	Initializing Synchronizing normally Restart SAS to reinitialize synchronization
Editing the MAS from the MAS (recommended)	MAS is offline or disconnected from every SAS MAS is disconnected from at least one SAS Initializing MAS is queuing synchronization requests for every SAS MAS is queuing synchronization requests for at least one SAS Synchronizing normally Restart SAS to reinitialize synchronization
Editing the MAS from a SAS	MAS is disconnected from at least one SAS Initializing MAS is queuing synchronization requests for at least one SAS Synchronizing normally Restart SAS to initialize synchronization

Status of Audit/Journal Synchronization

The following is available as the trigger value for the **Audit Synchronization Status** and **Journal Synchronization Status** from the SAS to the MAS:

- Failed

Creating an Application Server Trigger

You can use the **Triggers** tab to create a trigger for Status, Synchronization Status, or Audit/Journal Synchronization Status properties that activates the Event you select when the status changes to the value that you specify.

To Create an Application Server Trigger

1. From the Options & Tools pane, click **Application Server**.
2. Select the Application Server you want to edit to create a trigger and right-click.
3. Click **Edit** from the context menu that appears. The Application Server editor opens.

4. Click the **Triggers** tab.
5. Click **Add**.
6. Click inside the **Property** column, then click to select a Property for the trigger.
7. In the dialog box that appears, select a Property (choices are Status, Synchronization Status, Audit Synchronization Status, or Journal Synchronization Status).
8. Click in the **Value** column and select a value to trigger on from the drop-down list.
9. In the **Action** column, select **Activate Event** from the drop-down list.
10. A field that allows you to select the Event to activate displays. Click and select the Event you want to trigger.
11. If you want to add another property on which to trigger an Event, click **Add** and repeat the preceding steps.
12. Click **Save and Close** to save your changes.

Application Server State Images Tab

The State Images tab displays the default images used to indicate Application Server states on the Monitoring Station application.

This tab provides a means to substitute custom images for the default images, so that the custom images appear in the Monitoring Station application to represent the Application Servers.

To Change the Image for an Application Server State

1. Double-click the existing image. A Windows Open dialog box appears, allowing you to browse for the folder in which you have placed replacement images.
2. When you locate the replacement image, select it and click **Open** to add it to the image listing.
3. To restore the default image, right-click on the new image and select **Restore Default**.
4. After viewing this tab, click **Save and Close** to save the Application Server configuration.

State Images Tab Definitions

The following default State Images appear on the Application Server State Images tab.

Table 28: State Images Tab Default Images

Button	Definition
	Unknown
	Online
	Offline

Viewing a List of Application Servers

When you select **Application Server** from the **Options & Tools** pane, a dynamic view opens that displays a list of all Application Servers that are configured in the C•CURE 9000 database. See [Application Server Dynamic View](#) on [Page 68](#) for explanations of the columns in this list.

You can double-click on any Application Server in the list to edit it, or you can right-click on an Application Server in the list to display a context menu that gives you options such as **Edit**, **Add to Group**, and **Find in Journal**. See [Application Server Context Menu](#) on [Page 99](#) for more information on the context menu.

You can view a list of Application Servers from the Administration Client or the Monitoring Station.

- [To View a List of Application Servers from the Administration Client Application](#) on [Page 98](#)
- [To View a List of Application Servers from the Monitoring Station](#) on [Page 98](#)

You can change the interactive status of an Application Server from the Administration Client or the Monitoring Station. See [Table 29](#) on [Page 100](#) for more information on Interactive mode.

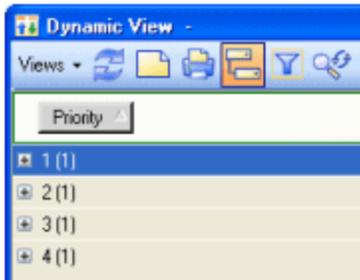
- [To View a List of Application Servers from the Monitoring Station](#) on [Page 98](#)
- [To Change Interactive Mode for an Application Server from the Monitoring Station](#) on [Page 99](#)

To View a List of Application Servers from the Administration Client Application

1. In the Administration Client, on the **Options & Tools** pane, select **Application Server**.
2. A dynamic view opens that displays a list of all Application Servers that are configured in the C•CURE 9000 database.
3. You can use the buttons on the Dynamic View toolbar to filter, group, print, or query on the list.
4. To change the columns that are displayed in the view, right-click on the Column headings and select the columns you want to display.
5. You group the view by any column heading by clicking on a Column heading and dragging the heading to the **Drag columns to group by here** area. The view is re-configured to group items by the column heading.

Example

If you drag the **Priority** column heading to the **Drag columns to group by here** area, the view is re-displayed with **Priority** as the group heading, and the Application Servers grouped by priority. Click the  to expand the list of Application Servers in that Priority.



To View a List of Application Servers from the Monitoring Station

You can view a list of Application Servers from the Monitoring Station if your Application Layout includes the Explorer Bar.

1. In the Monitoring Station, on the **Options & Tools** pane, select **Application Server** from the Hardware Status Explorer Bar.
2. A dynamic view called **Status List - Application Server** opens that displays a list of all Application Servers that are configured in the C•CURE 9000 database.
3. You can use the buttons on the Dynamic View toolbar to filter, group, print, or query on the list.
4. To change the columns that are displayed in the view, right-click on the Column headings and select the columns you want to display.

5. You group the view by any column heading by clicking on a Column heading and dragging the heading to the **Drag columns to group by here** area. The view is re-configured to group items by the column heading.

To Change Interactive Mode for an Application Server from the Admin Client

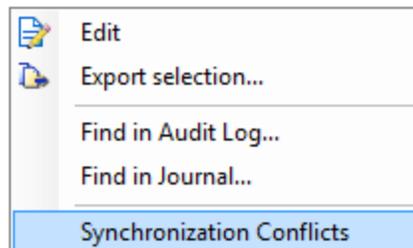
1. From the Dynamic View list of Application Servers on the MAS, select an Application Server and right-click.
2. To set the Application Server to non-Interactive (if the Client Connection State for this Application Server is **Interactive**), choose **Set Non-interactive** from the context menu.
3. To set the Application Server to Interactive mode (if the Client Connection State for this Application Server is **Non-interactive**), choose **Set Interactive** from the context menu.

To Change Interactive Mode for an Application Server from the Monitoring Station

1. From **Status List - Application Server**, select an Application Server and right-click.
2. To set the Application Server to non-Interactive (if the Client Connection State for this Application Server is **Interactive**), choose **Set Non-interactive** from the context menu.
3. To set the Application Server to Interactive mode (if the Client Connection State for this Application Server is **Non-interactive**), choose **Set Interactive** from the context menu.

Application Server Context Menu

If you are viewing the Application Server Dynamic View on a SAS, and you right-click on a SAS system, the context menu is displayed as follows:



If you are viewing the Application Server Dynamic View on a SAS, and you right-click on the MAS system, the **Synchronization Conflicts** selection will not be visible.

If you are viewing the Application Server Dynamic View from the MAS, the context menu displays as follows if a SAS is selected (the Set Interactive or Set Non-interactive menu selection does not appear if you right-click on the MAS row of the Application Server Dynamic View).



The context menu that opens when you right-click on a Application Server in the Dynamic View of Application Servers includes the following selections.

Table 29: Application Server Dynamic View Context Menu

Selection	Description
Edit	Click this menu selection to edit the Application Server record. The Application Server Editor opens.
Export Selection	Allows you to export the selected Application Server records to an XML or CSV file.
Find in Audit Log	Opens a Query Parameters dialog box in which you can enter prompts and/or modify the query criteria to search for entries in the Audit Log that reference the selected record. When found, the results display in a separate Dynamic View.
Find in Journal	Opens a Query Parameters dialog box in which you can enter prompts and/or modify the query criteria to search for entries in the Journal that reference the selected record. When found, the results display in a separate .
Set Interactive	<p>This selection is available only if you are a Global Operator viewing the Application Server Dynamic View from the MAS. The Set Interactive or Set Non-interactive menu selection does not appear if you right-click on the MAS row of the Application Server Dynamic View.</p> <p>Click this menu option to set the selected SAS to Interactive mode.</p> <p>An interactive SAS sends update messages to the Monitoring Station and updates to MAS Dynamic Views, the Hardware tree, and the Video tree.</p> <ul style="list-style-type: none"> Dynamic views which are Reading Data from the MAS receive all object notification messages from interactive SAS servers. That means that new and deleted object changes are displayed, and changes to object states are displayed temporarily (MAS Dynamic Views do not dynamically display status updates - if you refresh one of these dynamic views, all status data disappears). In contrast, for SAS servers which are non-interactive, no status data and no object additions or deletions are displayed. Manual refresh causes the object changes to be displayed. Hardware and Video trees which are displayed while the Default Server is the MAS also receive object notifications from interactive SAS servers. That means that new and deleted object changes are displayed. In contrast, for SAS servers that are non-interactive, no object additions, changes, or deletions are displayed on the tree until it is manually refreshed.
Synchronization Conflicts	<p>This selection is available only if you are viewing the Application Server Dynamic View from the SAS.</p> <p>Click this menu selection to open the Application Server Synchronization Conflicts Dynamic View. See Application Server Synchronization Conflicts View on Page 74.</p>

Partitions in Enterprise Architecture

This chapter explains how Partitions are used by Application Servers in an Enterprise Architecture environment.

In this chapter

Partition Overview	102
Objects and Partitioning	104
Global Only Objects	105
Optionally Global Objects	107
Non-Global Objects	109

Partition Overview

Partitioning is the creation of different sub-divisions. The classic example is that of the landlord with administration rights to an entire building and tenants with rights only over their own apartments.

When an Enterprise Architecture system is created, the following partitions are created automatically:

- **Global** – A protected system-wide partition that resides on the MAS given the name “Global”. It contains objects that are shared across the application servers (SASs) in the multiple application server environment. This partition cannot be deleted.
- **Default (MAS)** – A partition that is the default partition for the Master server and given the name “Default: MAS”.
- **Default (SAS)** – The default partition created when a satellite server is created and given the name “Default: SAS1”, “Default: SAS2”, etc.

Each Application Server can manage a selected subset (one or more Partitions) of the security devices and Personnel contained in the database. This allows greater flexibility in load balancing of security and personnel assets.

You can use the Partition Editor to create additional Partitions for a SAS, as necessary.



Do not attempt to create Partitions with the same name on different SAS or MAS systems. If two Partitions in the Enterprise have the same name, synchronization conflicts would result, so validation is performed when you create a Partition that prevents saving a Partition with the same name.

Best practice is to prefix Partition names with an identifier that is specific to the MAS or each SAS.

Types of Partitions

Global Partition

The Global partition, the system-wide partition that resides on the MAS, contains the intrinsic objects listed in [Non-editable Intrinsic Global Objects on Page 105](#) and [Editable Intrinsic Global Objects on Page 105](#), created when the system is installed. None of these objects can be deleted by users and because they are global, they can be referenced by local objects on any SAS, and also by global objects. Some of these global partition objects cannot be edited by users, while others can. The Global objects are owned by the MAS, but replicated to all SASes. (Hardware objects can never be put in the Global partition.)

MAS Default Partition

This partition contains the objects local to the **MAS** server that are not global and exist only on the **MAS**. Typically these include Reports, Queries, Dynamic Views, and Data Export.

MAS Local (User-Created) Partitions

You can create additional local partitions on the MAS system in your enterprise. These Partitions are available only to a client connected to the MAS; the objects in these Partitions are not synchronized to any SAS system.

SAS Default Partition

This partition contains the objects local to this **SAS** server that are not global and exist only on this **SAS**. This is the default Partition where Hardware and Video objects created for this **SAS** reside. These partitions are synchronized with the **MAS**.

SAS Local (User-Created) Partitions

You can create additional partitions on any SAS system in your enterprise. Typically you would create these partitions on a SAS that you wished to further organize and/or subdivide for Personnel or any other C•CURE 9000 objects. You can place any local objects, including Hardware and Video objects, in these Partitions. These Partitions are synchronized with the MAS.

Objects and Partitioning

There are three categories of objects in Enterprise Architecture:

- **Global Only Objects** on Page 105– objects that exist only in the **Global** Partition on the **MAS**.
- **Optionally Global Objects** on Page 107 – objects that can reside in the Global Partition on the **MAS**, but can also be created on a **SAS** in a local SAS Partition.
- **Non-Global Objects** on Page 109 – objects than can only reside on a single **SAS** or **MAS** and are not able to exist in the **Global** Partition.

All objects that are created in the context of a Partition cannot span multiple Partitions.

In any Enterprise Architecture system, Partition automatically appears as the right-most column of those displayed for the Dynamic views of all partitioned objects. (If you do not want a particular dynamic view to display the **Partition** field, you have to do the following: add the Partition field to your dynamic view and then set it to hidden. That will cause the **Partition** field to **not** display.)

NOTE Only Time Zones and Digital Certificates are not partitioned.

Moving Objects to Another Partition

Optionally Global objects can be moved from a local Partition to the Global Partition.

Example:

A local administrator moves an object from the **local** partition to the **Global** partition.

- **Scenario 1:** The user is connected to the **SAS** and performs the operation.

The **SAS** proxies the call to the **MAS** and the operation is performed there. This causes the **MAS** to send a notification of the change to the **SAS** and a synchronization is performed.

- **Scenario 2:** The user is connected to the **MAS** and performs the operation.

The **MAS** performs the operation locally, and the notification goes out to each **SAS**, which triggers a synchronization causing the local record to be updated.

NOTE Whenever you try to change an Object from a local Partition to the global Partition, you receive the following warning, and are given a chance to cancel the change:
 “This change from a local to a global partition cannot be undone. If you want to change the object back to a local partition, you must delete the object and re-create it. Do you want to continue?”

Restrictions for Moving Objects

An object **cannot** be moved from the Global partition to local partitions.

An object **cannot** be moved from a partition owned by one **SAS** to a partition owned by a different **SAS**.

Partitions themselves cannot be moved from one application server to another.

Global Only Objects

Non-editable Intrinsic Global Objects

These are non-editable objects that are intrinsic to the Global Partition; these objects are created when C•CURE 9000 is installed.

NOTE

These non-editable objects have a single, predefined name, which is translated in the language of the MAS, and **cannot** be changed.

- Groups (see [Group Objects](#) on [Page 106](#)):
 - All Doors Group/All Inputs Group/All Outputs Group/All Areas Group/All Events Group/All Elevators Group/All Floors Group/All Readers Group/All WAS Doors Group
- Privileges:
 - System All
 - Full privilege for partition: Global
 - Access to global common objects
- Schedules:
 - Never
 - Always
 - Nightly

Editable Intrinsic Global Objects

These are editable objects that are intrinsic to the Global Partition; these objects are created when C•CURE 9000 is installed.

- Four System Variables in the Personnel Category
 - Maximum Documents Per Person
 - Maximum Cards Per Person
 - Use General PIN for PIN Only Access
 - Allow Activation after Expiration
- Personnel Type:
 - None
 - Employee
 - Contractor
- CHUID Formats:
 - Card Only
 - All predefined CHUID Format Templates
- CCTV Protocol:
 - American Dynamics CCTV Switch
- Report Form:

- Default Form
- Advanced Form

NOTE

To look up in the Audit Log any changes made to these objects in prior versions, you will need to search for the object by Name, instead of Object ID. (These objects had their Object ID changed in C•CURE 9000 v.2.0 to make them synchronize correctly.)

Group Objects

The Group object is a special object that can be used to create groups of like objects, such as a Group of Personnel, or a Holiday Group.

Predefined \$ALL Groups are always Global-only objects. The following Groups are considered \$ALL Groups:

- All Doors Group
- All Areas Group
- All Floors Group
- All Inputs Group
- All Events Group
- All Readers Group
- All Outputs Group
- All Elevators Group
- All WAS Doors Group

Only one type of Group is an optionally-Global object: the Personnel Group.

All other Groups are Non-Global objects.

If a group is Global, it can only contain members which reside in the Global Partition.

If a Group resides in a SAS, it can only contain members which reside in the Global Partition or reside in the Group's Partition on the SAS.

Optionally Global Objects

The following types of objects are referred to as Optionally Global objects since they can be global or local depending on the Partition to which the user assigns them. If these objects are made global, they reside in the Global Partition and are available on the MAS and all SASs; if they are local, they reside in a local Partition on a single SAS (or in a local Partition on the MAS, with the exception of Clearances).

- Personnel
- Clearances
- Images
- Badge layouts
- Card Formats
- Personnel types
- Holidays
- Personnel Groups
- Operators
- Privileges
- Documents
- Pre-defined Log Messages

Rules for Modifying Optionally-Global Objects

- All objects assigned to the Global Partition with properties that reference other objects can only reference objects in the Global Partition.

Example:

If you have a Global Personnel record, the **Badge Layout** field in the credential can only contain a Global Badge Layout; it cannot contain a Badge Layout reference from a local SAS.

- Objects assigned to the Global Partition can have "link table" references (objects assigned from other tables, such as Personnel references to Clearances) from any local Partition (either from a SAS or the MAS).

Example:

A Global Personnel record can have Clearances local to different SASs, such as SAS1, SAS2, and SAS3. A global clearance can reference a door on SAS1, SAS2, and SAS3.

- When you are changing a **local** record to be a **global** record, the system checks to be sure the **local** record does not have any single-link references to other local objects; if it does, the partition change is stopped.
- All objects assigned to **MAS**-only partitions can reference objects from any other partition owned by the **MAS**, which live only on the **MAS**. (These are not the global partition; they are other partitions defined on the **MAS** and local only to the **MAS**).
- **Global** objects can be directly edited **only** at the **MAS**. However, a user at the **SAS** with proper privileges can edit the object via proxy, if the connection to the **MAS** is live. This appears to the **SAS** as though the object is being edited directly, with the following exceptions:

- If the edit fails for any reason, or if during editing, the connection fails, the user on the **MAS** will get a message back with the error.
- If the connection to the **MAS** is offline when the edit starts, the object is initially read-only, and the Administration title bar indicates that the **MAS** is offline. The personnel screen is the one exception as the whole screen is read-only except for the Clearances tab.
 - If the only edit being made is to the personnel clearance link table, then the edit can occur even if there is no connection to the **MAS**. In that case, the change is synchronized later.
- When the edit is performed remotely from the **MAS** server, the change may not be seen on the local server for several seconds—the user may not see the change they just made if they immediately reopen the same record.
- When editing a **Global** object, the data read for the object depends on where the object was retrieved from. If read from the **MAS**, the editor loads data from the **MAS**. If read from a **SAS**, the editor loads data from the **SAS**.
- Local objects can be directly edited only at the **SAS**. However, a user at the **MAS** with proper privileges can edit the object via proxy, if the connection to the **SAS** is live (The following rules are exactly parallel to the editing of global objects on the **SAS**, except for the last rule):
 - If the edit fails for any reason, or the connection fails during editing, the user on the **MAS** will get a message back with the error. If the connection to the **SAS** is offline when the edit starts, the object will initially be read-only, and the title bar of the admin will indicate that the **SAS** is offline. The personnel screen is the one exception as the whole screen is read-only except for the Clearances tab.
 - If the only edit being made is to the personnel clearance link table, then the edit can occur even if there is no connection to the **SAS**. In that case, the change is synchronized later.
 - Objects owned by a local **SAS** can only reference **global** objects and objects owned by the same **SAS** that owns the object being edited. The selection list enforces this by showing the user only the objects that they can reference.
- If you are on the **MAS**, you can add an object to a partition owned by a **SAS**; in that case, the add will be proxied to the **SAS**. Similarly, if you are on a **SAS**, you can add an object to the global partition, in that case, the add will be proxied to the **MAS**.
- Direct editing of the dynamic view is allowed for rows in the dynamic view that point to objects not owned by this server.
- Object Templates are treated like any other type of object: they can be **global** or **local**.
 - If you want to create a **local** object using a template, you can use a template **local** to the **SAS** where the object is being created, or a **global** template.
 - If you want to create a **global** object using a template, you must use a **global** template. Otherwise, you could be setting up inappropriate **local** links in your **global** template.

Non-Global Objects

User-created objects that are not Global only or Optionally Global are considered non-global objects. They are one of the following two types:

- Objects that reside on only a single SAS (locally) and are replicated to the MAS.
- Objects that are in a Partition on the MAS other than the Global Partition, residing locally only on the MAS.

Example:

An iSTAR controller or a VideoEdge video server is a non-global object. You can only create it in a Partition on a SAS. The object, however, is synchronized to the MAS, allowing it to be viewed and managed from the MAS.

- You cannot move a non-global object to the Global partition.
- Non-global objects can be edited on the SAS that owns them and, subject to privileges, on the MAS.
 - If the MAS owns the object, it can be edited only on the MAS.
 - If the SAS owns the object, it can be edited on either the SAS or the MAS.
- If your New Object Partition is set to Global, you cannot create a non-global object (the New button is unavailable). To create a non-global object, you must change your New Object Partition to a Partition other than Global.
- A **local** Operator with appropriate Privileges, on a Server that owns a Partition can create a non-global object in that Partition.
- A **Global** Operator connected to the **MAS** can create or edit a non-global object in any partition for which they have privileges. The object is read from the Server that owns the object's partition and is saved on that Server. If the Server that owns the object is offline or not connected, the object can only be viewed on the **MAS** (Read-only screen) and cannot be modified.

NOTE

In the preceding case, the **Read Data from** combo box has a label showing that the **SAS** is not connected.

Non-Global Objects with Fixed Partitions

There are a few objects that do not need to be able to be assigned to different partitions, but do need to be replicated from **SAS** to **MAS**.

- Hardware tree objects:
 - Floors
 - ISC Comm ports
- Video tree object:
 - CCTV Protocols

These objects are handled in the same way:

1. Each is given a fixed partition ID that is always set to "Default partition for xxx" (where xxx is the name of the particular Application Server the object resides on).
2. The Partition ID is visible on the the object's dynamic view and on its Editor screen.
3. The object's partition **cannot** be changed.

4. The object can be replicated to the MAS, where you can see the SAS it belongs to by viewing its partition assignment.

System Defined Non-Global Objects

There are a several intrinsic objects that are non-global. These objects, some of which are editable and some of which are not, have a separate copy at their own SAS and a copy replicated to the MAS, like any other non-global object.

System-defined Not Synchronized Objects

There is a special class of objects which are created by the system (intrinsic objects) that are not synchronized between Application Servers. These objects are protected (cannot be deleted) and many of them cannot be edited. These objects can be referenced by local objects on the SAS or objects on the MAS, but they cannot be referenced by Global objects, since they are not Global objects.

The following not-synchronized intrinsic objects cannot be edited:

- Local System Operator
- All predefined SmartCardTemplates (these have names that start with SWH)
- Audit default Query
- Journal Default Query
- All predefined Queries, Dynamic Views, and Reports, which are used as samples and are created when an Application Server is first started after installation. All these objects have names that start with SWH.

Editable Not Synchronized Objects

There are a number of system created intrinsic objects that are not replicated but which can be edited by users. Just like the non-editable objects, these objects can be referenced by local objects on the SAS or objects on the MAS. However, this results in some limitations for these objects.

You can edit these objects at both the MAS and the SAS, and other objects can refer to them, but each Application Server has its own instance of the object that is distinct from other objects of the same name at the MAS and each SAS.

Example:

The **Remove Report Results** event could be renamed by an Operator at a SAS to be called **Once Nightly Event**, and could have several new actions added to it. When viewed at the MAS, none of these changes would appear, because the MAS would have its own separate **Remove Report Results** object.

The configuration of these objects at each SAS cannot be viewed at the MAS, unlike all other objects.

Because these objects are used by other objects in the system, it is important that Operators not make changes that would alter the meaning and usage of these objects.

[Table 30](#) on [Page 111](#) lists all editable but not synchronized intrinsic objects.

Table 30: Editable But Not Synchronized Intrinsic Objects

Object Type	Object
Application Layouts	Default Application Layout, Default View 1, Default View 2
Dynamic views	Audit Log View, Credentials View, Digital Certificates View Holidays View, Journal View, Personnel View, Report Form View Report Results View, Reports View, Schedules View System Variables View, Time Zone View
Event	Remove Report Results Audit LogBackup Event Journal LogBackupEvent
Schedule	Audit Log Backup Schedule Journal Log Backup Schedule
Images	Client_mapStripe1.bmp
SwipeShow	Default View 1, Default View 2
Time Zones	More than 100. (All time zones are predefined, the user cannot add new ones).
System-created Personnel Views	(Can only be enabled/disabled, no other editing).

Editable Intrinsic Local Objects

- Hardware Folder:
 - Company Name (Hardware tree)
 - Company Name (Video tree)
- Intrinsic Card Formats (user-created Card Formats are optionally Global):
 - MIFARE Serial Number
 - Smart Card Serial Number
 - Simplex Wiegand 36
 - Simplex Wiegand 26
 - HID Keypad
 - HID Simplex Grinnell 36
 - Standard Wiegand 26
 - Software House 37
 - HID Corporate 1000+

Non-editable Intrinsic Local Objects

Each SAS system has a separate copy of these system-defined objects, and these copies are synchronized with the MAS.

- Privileges:
 - Access to common objects
 - Full Privilege for Partition: <Partition-name>

Non-global MAS Objects

Several types of non-global objects can be created on the MAS so you can run reports, dynamic views and exports, customized for the MAS, in part to support Central Monitoring and Central Reporting. Each of these MAS local objects can only reference Queries that belong to Partitions owned by the MAS. (The Queries themselves are also MAS local objects.) Here are some examples:

- Data Export
- Dynamic View
- Report
- Query

Example:

If you look at the Dynamic View for Reports on the MAS, you can see the pre-defined Reports for the MAS, as well as the user-defined reports on the MAS and each SAS. You cannot, however, see the pre-defined Reports that exist on each individual SAS. If you then proceed to edit one of the MAS pre-defined reports, you see that only MAS Queries are available for use with the report. In addition, all MAS local Reports can link only to Report Forms that are also local to the MAS.

Personnel in Enterprise Architecture

This chapter explains how Personnel and related objects are configured on Application Servers in an Enterprise.

In this chapter

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Personnel Overview

The Enterprise Architecture provides all the features and benefits of C•CURE 9000 Personnel, and in addition, it allows you to configure Global Personnel and related objects.

Global Personnel records can be used across an enterprise that consists of multiple C•CURE 9000 servers. A Global person can be assigned Clearances on any and all C•CURE 9000 servers in the enterprise.

- The person's record and access credentials can be managed centrally but be applied locally. Therefore, a Global person's access credentials can be used at multiple facilities throughout a geographically distributed enterprise.
- Global Personnel records are created in the Global Partition on the MAS so that they can be available to every SAS in the enterprise.

Personnel can also be defined as local if the Personnel need to have access credentials only for one C•CURE 9000 server. This can be done by simply creating a Personnel record in a local Partition owned by a SAS.

See [Configuring Personnel in Enterprise Architecture](#) on Page 115 for more details on Personnel in an Enterprise Architecture and [Disabling Credentials for Inactivity in Enterprise Architecture](#) on Page 121

You can define/create the following Personnel-related objects as Global:

- Personnel - see [Global Personnel](#) on Page 117
- Clearances - see [Global Clearances](#) on Page 119.
- Custom Clearances - see [Global Custom Clearances](#) on Page 120
- Images - see [Images in Enterprise Architecture](#) on Page 129.
- User-defined fields - see [Editing User-defined Fields in Enterprise Architecture](#) on Page 122.
- Personnel Types - see [Personnel Type in Enterprise Architecture](#) on Page 128.
- CHUID Formats - see [CHUIDs in an Enterprise](#) on Page 125.
- Badge functions - see [Editing C•CURE ID Objects in Enterprise Architecture](#) on Page 124.

Configuring Personnel in Enterprise Architecture

The configuration of Personnel and Personnel-related objects differs from a standalone C•CURE 9000 server environment in the following ways.

- Personnel records are an optionally-Global object. They can be created in the Global Partition or in any local Partition, such as the Default Partition on a SAS.
- The INT6, Text12, and Text13 fields are unique only across a single Partition. Therefore, for a Global Personnel record, these fields have unique values in the Global Partition, but these fields are not guaranteed to have a unique value compared to the same fields in another partition.

Example

A Personnel record in the Global Partition has a Text12 value of "2347" that represents an Employee Number. That value is unique for Text12 in the Global Partition. But a Personnel record in a SAS local Partition would not be prevented from having a Text12 value of "2347".

- For personnel records being saved on a SAS, the CHUID is unique for all records existing on that SAS. However, it is not guaranteed to be unique across all Personnel records existing at the MAS but owned by local SAS systems. Instead, on the MAS, when you save a credential and change the CHUID field of a **Global** credential record, it verifies that there are no other records which exist on the MAS which have the same CHUID. No verification is done at the MAS for local records (which are owned by a SAS), when they are replicated up from a SAS. See [CHUIDs in an Enterprise on Page 125](#) for more information on the types of CHUID replication conflicts that can occur.
- The CHUID format field determines how the CHUID is constructed for each personnel record. The CHUID Format is a special type of record which is always Global; therefore CHUID Formats are always available at any SAS.
- The Autoincrement card number system variables are treated similarly to the Int 6, etc., uniqueness: The autoincrement value is unique for all records on a particular SAS. See [Auto Increment Card Number System Variables on Page 143](#).
- The AutoGeneratePIN feature is also unique across a given SAS only. If you are on a SAS editing a local record, a PIN which is unique to that SAS only is generated. If you are on the MAS editing a Global record, a PIN which is unique across the whole MAS is generated.
- The **Maximum Clearances Per Person** system variable is enforced only per SAS. In other words, when assigning local or Global Clearances to a Global Personnel record, each SAS is checked so that the maximum number of Clearances (local + global) per person for that SAS is not exceeded. However, the total number of local Clearance assignments on all SAS systems plus Global Clearances assignments for each person on the MAS is not limited. See [Maximum Clearances Per Person System Variable on Page 143](#)
- Custom clearances assigned to a **global** Personnel record are always **global**, while custom clearances assigned to a **local** Personnel record are always **local**. Consequently, on each SAS a global person can be assigned up to the maximum number of global custom clearances per person set by the MAS system variable. See [Maximum Custom Clearances Per Person System Variable on Page 144](#).
- The Pin Length system variable will be enforced only per Application Server. In other words, you can set a different PIN length on each SAS and on the MAS. See [PIN Length System Variable on Page 144](#) for more information.
- Documents assigned to a Global Personnel record must be Global.
- See [Editing User-defined Fields in Enterprise Architecture on Page 122](#) for rules about how User-defined Fields defined as unique fields work.

The following fields are considered "real-time" and are not synchronized:

- AreaID
- AreaAccessTime

Global Personnel

Global personnel can be directly edited at the MAS. All objects assigned to the Global Partition can have single-link references only to other objects in the global partition. This affects the following fields:

- Personnel record Personnel type field
- Personnel record Operator field
- Credential object CHUID Format field
- Credential object Badge layout Field

A check for valid single-link fields is done by the Selection control that lists objects that can be assigned to a field, and also in the field validation code. It is also enforced during Data Import.

When you are changing a local Personnel record to be a Global Personnel record by moving it to the Global Partition, a check is made to make sure the local Personnel record does not have any single-link references to other local objects; if it does, the change of Partition is not allowed (Because a Global Personnel record cannot reference local-only objects).

All objects assigned to MAS-only Partitions can reference single-link objects from any other Partition owned by the MAS because these objects exist only on the MAS

Clearance and Custom Clearance assignments for Global Personnel can be made to clearances on any SAS or on the MAS. These Clearance/Custom Clearance assignments are synchronized to the appropriate SAS systems.

Editing Personnel from the MAS

Local personnel can be directly edited only at the SAS. However, a properly privileged Operator at the MAS can edit the person remotely, if the connection to that SAS is online.

- If the edit fails for any reason, or the connection fails, the Operator on the MAS gets a message back explaining the error.
- If the connection to the SAS is offline when the edit starts, the Personnel editor initially is read-only and the title bar of the Administration client indicates that the SAS is offline.
- Personnel records residing on a local SAS can only reference Global objects and objects owned by the same SAS that owns the Personnel record being edited. For example, a Personnel record owned by SAS1 cannot reference a Badge Layout or a Clearance owned by SAS2. This rule is enforced by restricting the selection list to showing the Operator only objects that can be referenced. This rule is also enforced for Data Imports for linked objects.

When the edit is performed remotely on the MAS server, the change may not be seen on the local SAS system for several seconds.

As an Operator on the MAS, you can add an object to a Partition owned by a SAS; in that case, the object is added remotely to the SAS. When you add the object, you are allowed to choose any template you want to use, based on the list of the templates available to the MAS (even if some of those templates don't exist on the SAS to which you are adding the object).

Direct editing of Personnel from the Dynamic View is allowed for rows in the Dynamic View whether or not they point to objects owned by the MAS. (If you can see the objects, you can edit them.)

Editing Personnel from a SAS

The following rules apply if you are editing Personnel from a SAS:

- Personnel residing in a SAS Partition can be fully edited at the SAS. These records can reference linked objects residing in the Global Partition or by this SAS.
- Global Clearance and Custom Clearance assignments are allowed to Personnel residing on this SAS. These assignments are replicated to the MAS; they can be made whether the MAS is online or offline.
- Global personnel can be directly edited only at the MAS, however, a properly privileged user at the SAS can edit the Global Personnel record remotely, if the connection to the MAS is online:
 - If the edit fails for any reason, or the connection fails, the Operator on the SAS receives a message back with the error.
 - If the connection to the MAS is offline when the edit starts, the Personnel editor is initially read-only, except for the Clearances tab, and the title bar of the administration client indicates that the MAS is offline.
 - If the only edit the Operator is making is to Personnel Clearances, then the edit can happen even if there is no connection to the MAS. In that case only, the change is made locally (not remotely as is usual) and synchronized later. Global and local Clearances from any SAS can be assigned.
 - Global Custom Clearances can be assigned to Global Personnel at a SAS, even when the MAS is offline.
 - When a Global Personnel record is edited, it can reference only other linked objects owned by the Global Partition.

When the edit is performed remotely on the SAS server, the change may not be seen on the local server for several seconds.

As an Operator on a SAS, you can add an object to the Global Partition; in that case, the added object is remotely saved to the MAS. When you perform the edit, you are allowed to choose any template you want to use, based on the list of the templates available to the SAS (even if some of those templates don't exist on the MAS to which you are adding the object).

Direct editing of the Personnel Dynamic View is allowed for rows in the Dynamic View whether or not they point to objects owned by the SAS. (If you can see the objects, you can edit them.)

Global Clearances

The Clearance object is a optionally-Global object. A Global Clearance can contain doors and schedules from the local SAS systems.

You can create Global Clearances if you need to provide access credentials to Personnel who must access Doors or Elevators configured on separate SAS systems.

Assigning Clearances to Personnel from a Dynamic View

When multiple Personnel from different SAS systems are selected in a Dynamic View, the selections available in the context menu are limited to Clearances that can be assigned to the selected Personnel.

Example

If multiple Personnel are selected from different SAS servers, then the **Assign Clearances** context menu selection functions differently depending on the Partition ownership of the selected Personnel.

Table 31: Assigning Clearances from a Dynamic View

Selected Personnel	Clearances can be assigned from:
Global partition only	All SAS partitions, plus Global.
One SAS	Only the SAS that owns the Personnel, plus Global.
One SAS and Global partition	Only the SAS that owns the Personnel, plus Global.
Multiple SAS systems	Global clearances only.

Global Custom Clearances

In an Enterprise Environment, although Custom Clearances relate to Doors/Elevators that are specific to a particular SAS, assigning Custom Clearances works as follows:

- Custom Clearances assigned to a Global Personnel record are always global.
- Custom Clearances assigned to a Local Personnel record are always local.

Custom Clearances and Door/Elevator Groups

If the MAS is offline, you can add the same Custom Clearance at both the MAS and SAS. Once the MAS is back online, only one Custom Clearance should remain in the database.

Each Custom Clearance can include only one Clearance item (either a Door/Door Group or an Elevator/Elevator Group). Since a Door/Elevator group can only include Doors or Elevators from the same SAS, even a global Custom Clearance will have only Door(s) or Elevator(s) for one specific SAS. However a global person can have multiple custom clearances which are relevant for different SASes in the system.

When you view a Custom Clearance Dynamic View at a particular SAS, you see only those global Custom Clearances that are applicable to Doors and Elevators at that SAS, in addition to the local Custom Clearances for the SAS.

The default Dynamic View for Custom Clearances in an Enterprise environment includes the following columns:

- Personnel Name
- Access Type
- Clearance Item Name
- Schedule Name
- Partition Name

Right-clicking any of these column headings opens a context menu with other possible Custom Clearance fields that you can choose to display as columns.

Removing Expired Custom Clearances from a Personnel Record

To remove Custom Clearances in an Enterprise environment you must create the following:

- An Event on the MAS to remove an expired **Global** Custom Clearance.
- A separate Event at the relevant local SAS to remove an expired **Local** Custom Clearance.

Disabling Credentials for Inactivity in Enterprise Architecture

The *Disabling by Inactivity* capability, which allows you to configure your C•CURE 9000 system to automatically disable Personnel Credentials that have not been used for a specified period of time, has some special requirements in the Enterprise environment.

NOTE

Only Card Admits are considered 'card activity' by the Disabling for Inactivity service. Card Rejects do not count.

Since Credentials are expired on their own server, the two **Personnel** category System Variables, **Disable by Inactivity Enabled** and **Disable by Inactivity Scan Time**, must be configured appropriately on each individual MAS and SAS server.

- A Global Person's Credentials are expired by the MAS server based on the MAS's settings, but using information propagated from each SAS server. The MAS will **only** expire a Global person's Credentials if there has been no reported card activity (Card Admits) on any of SAS servers in the Enterprise system for the time period set on the MAS .

Example:

John Scott is a Global Person who regularly travels between the three facilities in an Enterprise Architecture system: SAS1 in San Francisco, SAS2, in Los Angeles, and SAS3 in Boston.

Say that John has no Card Admits at SAS3 in Boston for a length of time that exceeds the Inactivity Period set on the MAS for his Personnel Type.

- If he still continues to have Card Admits at SAS1 and/or SAS2, his Credential will **not** be expired by the MAS server.
- If at some point **no** Card Admits are reported for John at any of the SAS sites in the system for an inactivity period longer than that set on the MAS, his Credential will be expired.
- A Local Person's Credentials are expired by the SAS server based on the SAS's own settings.

Software House assumes that the MAS and all its SASes are synchronizing normally on a regular basis. Delays in synchronization can cause inaccurate expirations, as well as inaccurate data on any of the Inactivity Reports.

Editing User-defined Fields in Enterprise Architecture

Although User-defined Fields can be defined for any Partition, they are treated as Global-only objects when created, edited, and synchronized. All User-defined Field definitions, no matter what partition they reside in, are synchronized to all SAS systems.

All User-defined Field objects are owned by the MAS, regardless of the Partition in which the User-defined Field object resides. [Table 32](#) on [Page 122](#) summarizes when User-defined Fields can be edited.

Table 32: Editing User-defined Fields

Client Status	Operation Allowed
Client connected to the MAS.	Create, Edit, View, Delete.
Client connected to a SAS owning the Partition in which the User-defined field resides, and MAS is available.	Create, Edit, View, Delete.
Client connected to a SAS, and MAS is unavailable.	View only.
Client connected to a SAS that does not own the Partition in which the User-defined field resides.	No privileges (cannot even view).

The Partition where a User-defined field resides can control which Operators (and which SAS systems) have privileges to the User-defined field. The User-defined fields are replicated to all SAS systems, even those that do not own the User-defined fields' Partition, but Operators connected to those SAS systems cannot view or edit the User-defined fields.

Uniqueness for User-defined fields is enforced only within Partitions owned by a single SAS or MAS, and within the Global Partition itself.

Examples

A User-defined field in a Global Personnel record is unique only across all other Personnel records that reside in the Global Partition. A Personnel record in a Partition other than Global could have an identical value.

A User-defined field in a non-Global Personnel record in a SAS is unique only across all other Personnel records that reside in any Partition owned by that SAS. A Personnel record in the Global Partition, or in a Partition owned by a different SAS or the MAS could have an identical value.

Editing Customer Tab Field Labels

The Personnel Customer tab and Customer Extended tab field labels (such as Text1 through Text25 and Int1 through Int9) are treated as Global only objects that are available for every Personnel record on each SAS and on the MAS. These fields are synchronized across all SAS systems to make them available to client applications at each SAS. Thus only one set of Custom Personnel field labels (including all language translations) available across all servers in the enterprise.

The labels for these fields are stored in TranslatedResource objects for each Language. When a client system starts a C•CURE 9000 application such as the Administration or Monitoring Station, the resources needed to display these fields is saved or updated to the client's local disk in the same manner as in previous versions.

Once the Customer field labels are synchronized to a SAS, a client of that SAS, starting up via the WinShell shortcut icon, will create the proper resource assemblies on the client's machine. The mechanism to update the resource files on the client's local disk is the same as in previous versions.

Only an Administration application with the MAS as the primary connection and the **New Object Partition** set to Global can change the labels on the Customer tab and Customer Extended tab fields, because it will have the Personnel Customer tab **Design** button enabled. This button is not available on any other Administration application.

If you upgrade a standalone C•CURE 9000 to an Enterprise Architecture SAS, any previously existing TranslatedResource entries are removed. If your Enterprise already has customized versions of these fields, these will replace the previous version. If you have not customized these fields, you will need to recreate your custom field translations on the MAS.

Editing C•CURE ID Objects in Enterprise Architecture

If you are editing objects that reside on a remote server, and the remote server is not connected, some functions may not be available.

Examples

You are connected to the MAS, editing a Personnel record that resides on SAS1, when SAS1 is not connected to the MAS.

You are connected to SAS1, editing a Personnel record that belongs to the MAS, when SAS1 is not connected to the MAS.

- If you are editing a Personnel record that resides in a Partition on a remote server, and that server is not connected to your primary server, the **Print Badge** button and the **Preview Badge** button are unavailable.
- If you try to perform **Batch Print Badges** from a Personnel Dynamic View, and one or more personnel you select reside in a remote Partition on a remote server, and that server is not connected to your primary server, the badges for remote personnel fail to print, and a printing error message window is displayed that explains the error.
- If you are editing remote Personnel when the remote server is not connected, the buttons on the Personnel Badging tab that launch C•CURE ID functions will be disabled.
- If you try to edit a remote Badge Layout when the remote server is not connected, the **Launch C•CURE ID Badge Designer** button is disabled.

Note that the Badge Layout has three identical linked object fields, the Card Format fields. Like all such linked fields, if the badge layout is Global, the card formats referenced must also be Global.

CHUIDs in an Enterprise

In the Enterprise Architecture, each CHUID format object resides in the Global Partition. That means that CHUID formats can only be created and edited on the MAS; it also means that all Operators who can access the Global Partition can view all the CHUID formats.

However, because changing a CHUID Format can have a large impact throughout the enterprise, only an Operator on a client connected to the MAS can create or modify a CHUID Format.

An Operator connected to a SAS can use the CHUID Format editor to view, Enable/Disable, or validate fields of a CHUID Format. But a SAS Operator cannot create or change the fields and format of the CHUID Format.

Once you have saved a CHUID Format, you cannot change the fields and their formats. You can edit the **Name**, **Description**, and the **Enabled** setting. If you want to modify a CHUID Format, you need to make a copy of the CHUID Format to edit it.

Making a Copy of a CHUID Format

1. Select CHUID Format in the Personnel pane and click  to display a list of CHUID Formats.
2. Open the CHUID Format you want to copy by double-clicking it. The CHUID Format Editor opens.
3. Use the **Create Copy** button to make a copy with a different name.
4. Edit the copy to make modifications.
5. Click **Save and Close** to save the copy.

Applying CHUID Formats

If you use the **Apply this CHUID Format** button to apply a CHUID Format to existing credentials that currently use a different CHUID format, it is best to do so at a time when no new credentials are being added to the enterprise.

If another Operator is creating credentials at the same time that have not yet been synchronized to the MAS, these credentials might not be changed to use the CHUID Format you applied. If this does occur, you can apply the CHUID Format again to those records using the **Apply this CHUID Format** button at a later time.

CHUID Templates

C•CURE 9000 comes with a set of CHUID Format templates. These intrinsic templates are Read-only. You can use these templates to create new CHUID Formats from the MAS by clicking the drop-down list of the **New** button and selecting a template to use as a basis for the new CHUID Format.

If a new CHUID Format or a change that is made to any CHUID Format causes a change in the Maximum CHUID Format length, the iSTAR drivers are notified to initiate a full download. In order to minimize downloads, the system calculates the maximum CHUID Length by considering all non-template CHUID Formats, not just the enabled ones.

Handling Credential CHUID Uniqueness Conflicts

There are two ways that CHUID uniqueness conflicts can be created. Both methods can happen most often when the MAS is offline to one or more SASes:

- Create a Credential for a Global Personnel record which has particular CHUID on the MAS, while at same time, a Credential for a local Personnel record is created with the same CHUID on the SAS. This can also happen on update instead of create.
- Change the Partition of a Person which contains a particular CHUID to be Global instead of local, when a local Personnel record from another SAS system which has not yet synchronized to the MAS already contains the same CHUID.

When synchronizing from MAS to SAS, CHUID uniqueness conflicts can occur and create synchronization conflicts, preventing the associated Credential record from replicating to the SAS. However, when synchronizing from SAS to MAS, none of this happens – the record with a duplicate CHUID just replicates to the MAS, with no error. However, when you try to edit one of the affected Personnel on the MAS, which had a replicated CHUID conflict, you cannot save the credential record until you correct the CHUID conflict.

In order to make it easier to find and manage CHUID uniqueness conflicts on the MAS, a **Query to find Duplicate CHUIDs** on the MAS allows you to easily create a report or dynamic view which displays all Credentials that have CHUID uniqueness conflicts involving Global Personnel records. This query, or a report that includes it, by default excludes CHUID uniqueness cases which only involve local Personnel records owned by different SAS systems, since those cases do not cause any synchronization conflicts and do not prevent saving of any credential records on the MAS.

Query to find Duplicate CHUIDs

A new predefined query can provide information about duplicate CHUID records stored in the system. The result of the query execution is a list of the Credential records limited to credentials that have duplicate values in the CHUID field. The query has the ability to filter the duplicate records by any field in the Credential records. There is one additional field called **Is Conflict** available in the search criteria that can filter duplicate credentials. This field is not displayed in the Dynamic View of duplicate credentials.

Duplicate CHUID records can exist on the MAS server only. SAS servers prevent creation of duplicate CHUID values through the restrictions in the SQL database. This predefined query as well as the ability to create such a query manually is not installed on standalone C•CURE 9000 systems or on SAS systems, only on the MAS system.

New Query Type: Credential with Duplicate CHUIDs

A new custom subtype 'Credential with Duplicate CHUIDs' is created to support the request of getting cards with duplicate CHUIDs. This type is available for selection from the 'Instance Query' menu of the Credential type, from 'Sub Type' list on the Query editor and from the 'Sub Type' list of a Report editor.

If this subtype is selected on the Report editor it allows assigning a query to the report of the same type. All the fields the report can show on the layout are the same but it selects only the records with the duplicate CHUID values even if the query is not selected.

Selecting this subtype on the Query UI allows the user querying on all the fields from the Credential type. It also creates a virtual field 'Is Conflict' (see below) so the user can filter out records that cause replication conflicts from the records that are duplicates but do not cause the conflict. If the query of this type is used it always limits the selected list of Credentials to the cards with duplicate CHUID values even if no parameters are specified in the query.

New Query Field: Is Conflict

There are two type of duplicate records the system shall recognize:

1. All the duplicate records belong to different SAS servers. This case consider to be a normal case because it is allowed to create local credentials with the same CHUID on different SAS servers. (The system prevents creating duplicate CHUID records within one SAS server but allows if the same CHUID is assigned to local records located on different SASs). If all the records with the same CHUID value are local SAS records the field 'Is Conflict' is defined as false for that records.
2. If there is a group of records with the same CHUID value and one record in the group belongs to a global partition, the case represents a conflict because the global MAS record is rejected once the system replicates it to a SAS that already has a local credential record with the same CHUID. The field 'Is Conflict' is defined as true for all the records in the group for this case.

Running a Query for Duplicate CHUIDs in Credentials

You can run a pre-defined Query from the MAS to find Duplicate CHUIDs in Credentials.

To Run the Predefined Query for Duplicate CHUIDs in Credentials

1. From the MAS Data Views pane drop-down, select **Query**.
2. Click  to see a Dynamic View of pre-defined queries.
3. Select **SWH-01 - MAS Credentials With Duplicate CHUID**.
4. When the query starts, it asks you to specify the 'Is Conflict' parameter.
 - If **Is Conflict** is left undefined, the query shows all the records with the duplicate CHUID values located on the MAS server.
 - If **Is Conflict** is set to **True**, the result shows the credential records that cause conflicts during replication from MAS to a SAS only.
 - If **Is Conflict** is set to **False**, the result shows the records that are duplicates but do not generate any replication conflicts.
5. Click **Run** to run the Query.

Personnel Type in Enterprise Architecture

The Personnel Type object is a standard optionally-Global object.

You can change a Personnel Type object from a local object in a SAS partition to a Global object in the Global Partition.

You cannot change the Partition of a local Personnel Type object to another local Partition on a different SAS.

A possible synchronization conflict could occur for a Personnel Type object if an Operator on the MAS assigned a Personnel Type to a Personnel record while a user on a SAS deleted the Personnel Type referenced by that Personnel record.

Images in Enterprise Architecture

The Image object is a standard optionally-Global object.

However, it is unusual in that it can have (one of) several possible owners:

- A Personnel record (most commonly)
- A Badge Layout record (in the case of a static image)
- No owner (in the case of dynamic badge layout)
- Created by System (In case of system image) This is a local object (client_magstripe1.bmp) which cannot be modified, and it is replicated to the MAS.

In the first two cases above, the Image is part of an existing object, and it is synchronized as part of that object. It inherits the Partition of the object in which it is contained.

For a dynamic Image, the Image is not owned by any other object. In this case, the Image can have its Partition explicitly set by the Operator, instead of inheriting it from the object containing it.. The Image can reside in a local or a Global Partition when it is created.

Hardware in Enterprise Architecture

This chapter explains how security hardware is configured in an Enterprise Architecture.

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Configuring Hardware in Enterprise Architecture

Access Control hardware can only reside on a SAS – hardware components cannot be created or configured to reside in a MAS Partition because the MAS is not licensed to use any C•CURE 9000 hardware drivers.

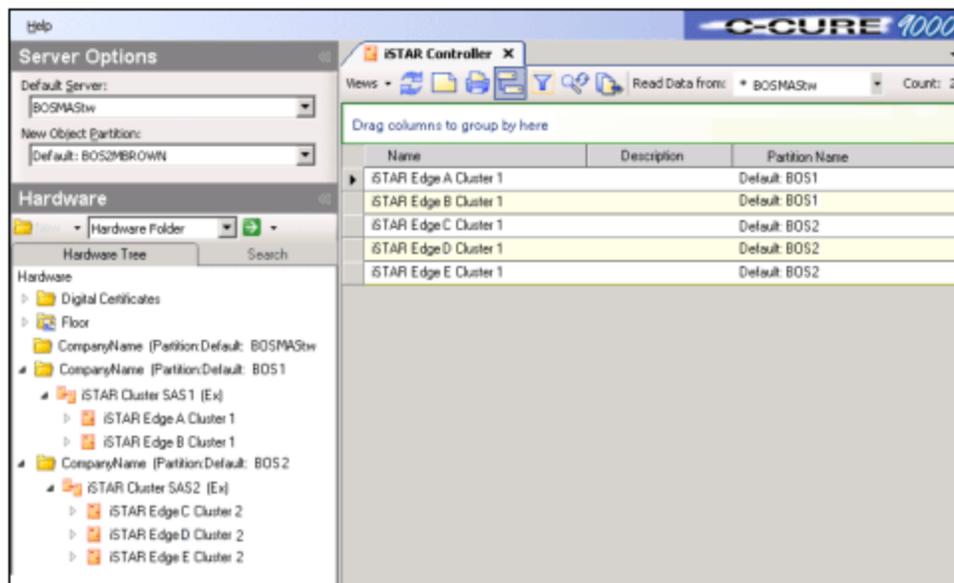
However, the hardware that is configured for each SAS is visible at the MAS because the objects representing the hardware are replicated and synchronized at the MAS.

An Operator connected to the MAS can also create and edit new hardware on each SAS. An Operator can use the **Default Server** drop-down list to limit the scope of the hardware visible at the MAS. If the Operator selects a SAS system in **Default Server**, the Hardware tree shows only the hardware from the selected SAS, and new Hardware objects can be created on that SAS.

Example:

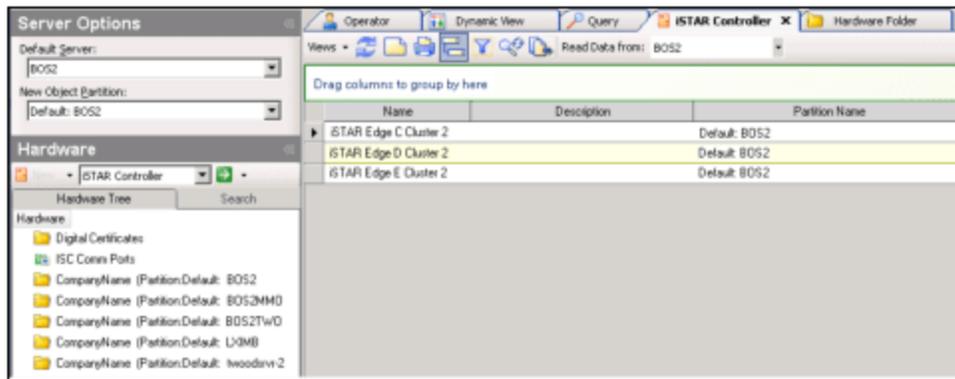
If you have an iSTAR cluster with two controllers configured on one SAS named BOS1 in your enterprise, and another iSTAR cluster with three controllers on a second SAS named BOS2, you can view, manage, monitor and report on both of these iSTAR clusters from the MAS (named BOSMAStw. See [Figure 21](#) on [Page 132](#)).

Figure 21: iSTAR Controllers visible from the MAS



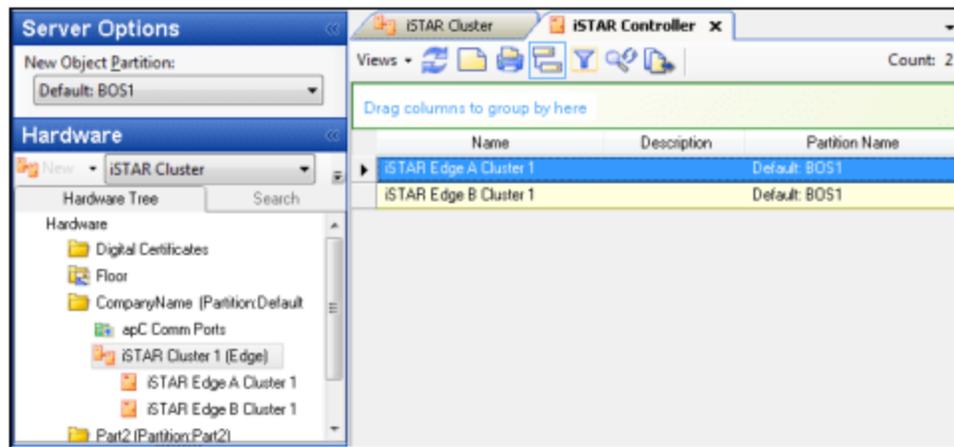
If you select a SAS in the Default Server drop-down list, you can only see the iSTAR Cluster and iSTAR controllers that are configured on that SAS (see [Figure 22](#) on [Page 133](#) showing a Dynamic View of BOS2 iSTAR Controllers).

Figure 22: iSTAR Controllers Visible with BOS2 as Default Server



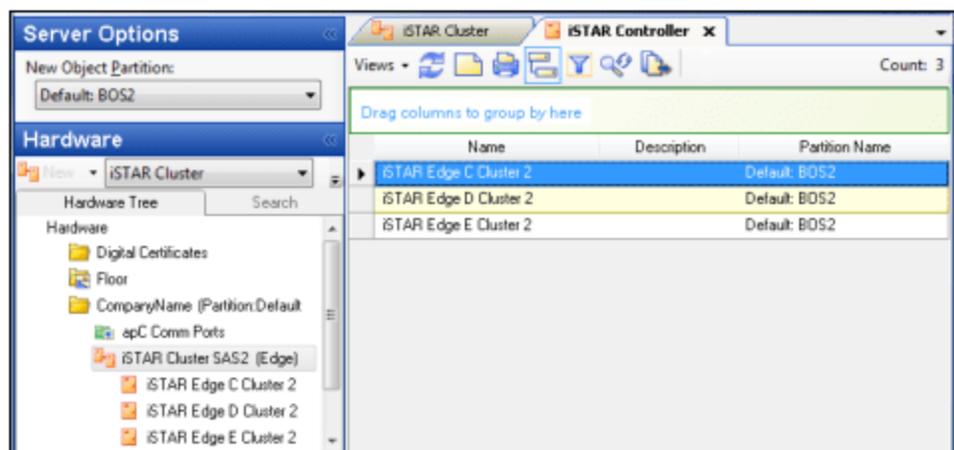
If you are connected to the first SAS, BOS1, you can only see one iSTAR Cluster with two controllers - the iSTAR cluster that is in the BOS1 Default Partition. See [Figure 23](#) on [Page 133](#).

Figure 23: iSTAR Controllers Visible from BOS1



Of you are connected to BOS2, you can only see one iSTAR Cluster with three controllers - the iSTAR cluster that is in the BOS2 Default Partition. See [Figure 24](#) on [Page 133](#).

Figure 24: iSTAR Controllers Visible from BOS2



apC Support on a SAS System

apC controllers are supported in an enterprise environment. apC Hardware Audit, which prevents the apC driver service from having to do a full download to each apC every time the driver restarts, is now supported. When the apC driver service on a SAS is restarted, the apC panels connected to that SAS no longer need to perform a full download.

ISC Controllers are Not Supported on SAS or MAS

The Enterprise Architecture does not provide support for ISC Controllers. C•CURE 9000 version 2.0 or later in standalone mode continues to support ISC Controllers.

Video in Enterprise Architecture

This chapter explains how Video servers and cameras are configured in an Enterprise Architecture..

In this chapter

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Configuring Video in Enterprise Architecture

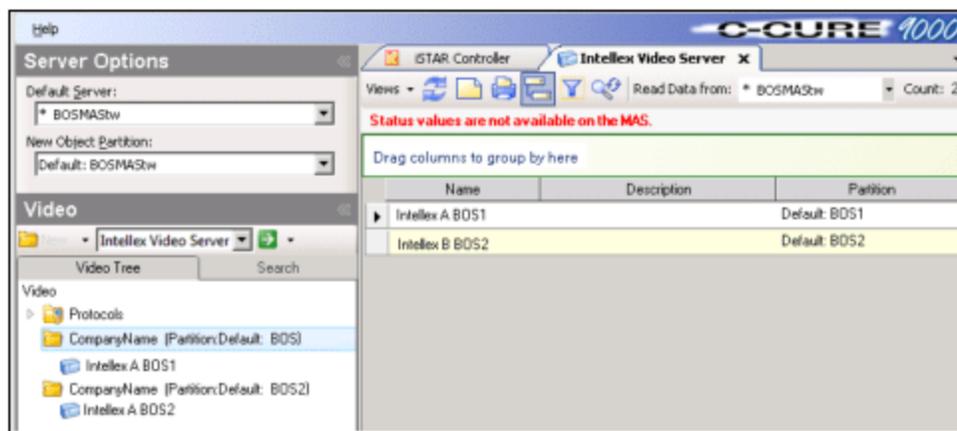
Video hardware can only reside on a SAS – video components cannot be configured directly on a MAS because the MAS is not licensed to use any C•CURE 9000 hardware drivers.

However, the hardware that is configured for each SAS is visible at the MAS because the objects representing the hardware are replicated and synchronized at the MAS.

Example:

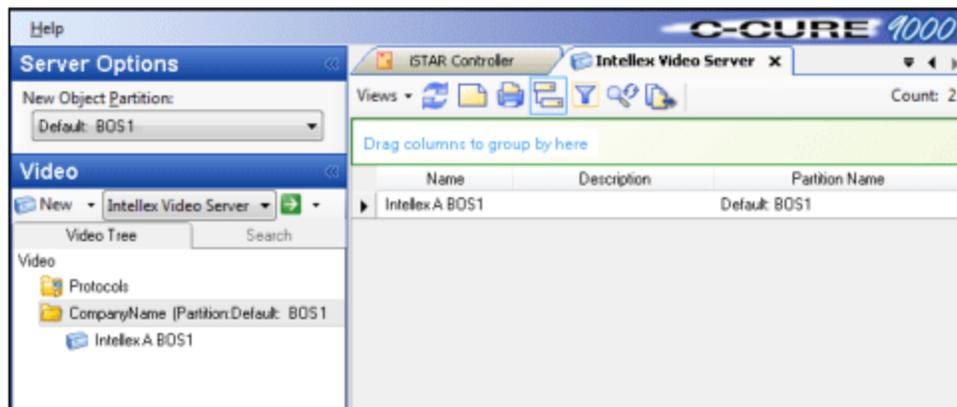
If you have an Intellex Video Server with two cameras configured on one SAS named BOS1 in your enterprise, and another Intellex Video Server with three cameras on a second SAS named BOS2, you can view, manage, monitor and view video from both of these Intellex Video Servers from the MAS (named BOSMAStw). See [Figure 25](#) on [Page 136](#).

Figure 25: Intellex Servers visible from the MAS



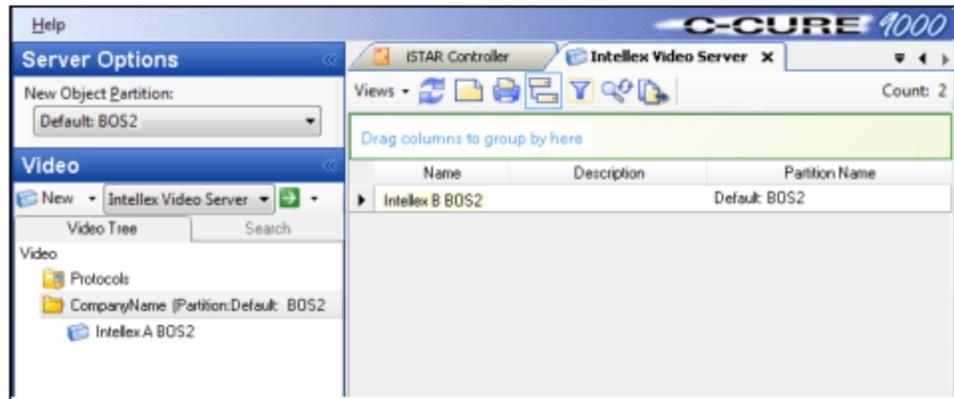
From the first SAS, BOS1, you can only see one Intellex Video Server - the Intellex Video Server that is in the BOS1 Default Partition. See [Figure 26](#) on [Page 136](#).

Figure 26: Intellex Servers Visible from BOS1



From BOS2, you can only see one Intellex Video Server - the Intellex Video Server that is in the BOS2 Default Partition. See [Figure 27](#) on [Page 137](#).

Figure 27: Intellex Servers Visible from SAS2



For C•CURE 9000 Connected Program Video integrations, refer to the product documentation for information on how a given product is supported in an Enterprise Architecture environment.

System Variables in Enterprise Architecture

This chapter describes how system variables are used in an Enterprise Architecture.

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System Variables Overview

In the Enterprise environment, the following four system variables in the Personnel category are **global**; they reside in the **global** partition and apply to all application servers:

- Maximum Documents per Person
- Maximum Cards Per Person
- Use General Pin For PIN Only Access
- Allow Activation After Expiration

All other system variables are **local**; they apply to each individual application server and consequently must reside in that SAS's default **local** partition.

The **global** system variables are **always global**, while all the other system variables are **always local**; no operator can choose whether to make a system variable **local** or **global**. In fact, an operator cannot choose which partition the system variable resides in.

Global system variables behave as follows:

- Like all other **global** objects, changes to these system variables are synchronized from the **MAS** to all **SAS** servers, and thus affect the entire enterprise.
- The four **global** system variables can be edited from a **SAS** as well as the **MAS** as long as the **SAS** and the **MAS** are connected.

Local system variables behave as follows:

- A separate copy of these system variables exists for each **SAS**, and also for the **MAS**.
- When editing an object on the **MAS**, sometimes the client validation requires the value of a system variable. In that case, the proper value of the system variable is used based on the **SAS** partition of the object being edited.

Example:

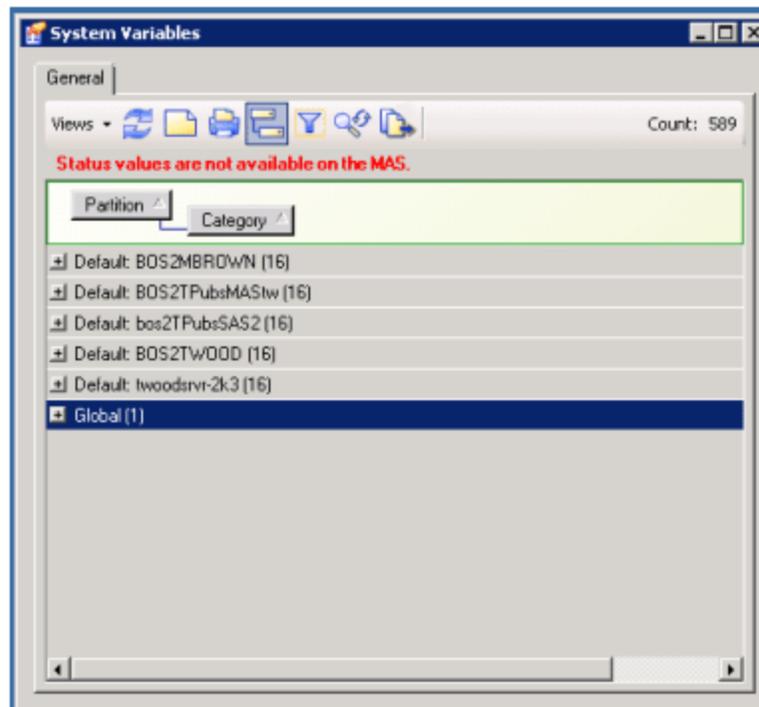
If a person is owned by SAS3, then the system variable values associated with SAS3 are used in Personnel validation of, for example, PIN Length.

System Variables Dynamic View

On the MAS, System Variables are grouped by Default Partition and then by Category in the System Variables dynamic view, as shown in [Figure 28](#) on [Page 141](#).

The dynamic view on the MAS displays a copy of the local system variables belonging to each SAS in the Enterprise System—whatever that number is—as well as the system variables for the default MAS partition, and the global system variables, as shown in [Figure 28](#) on [Page 141](#).

Figure 28: System Variables Dynamic View on a MAS



On the SAS, the System Variables dynamic view includes a non-editable Partition Name field on the far right for each variable, as shown in [Figure 29](#) on [Page 142](#).

The dynamic view on the SAS displays the default partition for that SAS's system variables. (The partition name for a system variable owned by a SAS named "SAS1" will be "Default: Sas1".) These system variables control the server that owns the system variables. For global system variables, there is only one copy of the system variable, whose partition is always Global.

Figure 29: System Variables Dynamic View on a SAS

The screenshot shows a window titled "System Variables" with a "General" tab. Below the tab is a toolbar with icons for search, refresh, and other actions. A "Views" section contains a "Category" dropdown menu. The main area displays a table of system variables under the "Personal (1)" category. The table has columns for Name, Description, Value, Minimum, Maximum, and Partition. The variables listed are: Maximum Cards Per Person, Use General PIN for PIN Only Access, Allow activation after expiration, PIN Length, and Maximum Clearances Per Person.

Name	Description	Value	Minimum	Maximum	Partition
Maximum Cards Per Person	The number of cards that users will be able to add to a single person record.	1	1	5	Global
Use General PIN for PIN Only Access	If the users want to use the PIN on the general tab as the PIN in the PIN-only access (object). If this is true, then clicking the auto-generate button on the credential screen will overwrite the PIN on the general screen.	False			Global
Allow activation after expiration	Setting this to true will allow activation date to be after expiration date. If activation date is before expiration date, the credential will be active from the activation date to the expiration date. Otherwise, the credential will be active before the expiration date, and after the activation date. In the time between it will be rejected. If this is set to false, users will not be able to save a credential that has activation date after expiration date.	True			Global
PIN Length	The number of digits of the PIN in the personal record. -If you try to import a personal record with a PIN that is too long, you will be given an error message. -If you edit a personal record containing a PIN that is too long for the current setting, you will get a warning on the PIN field. -If you modify the PIN length value, the system will not validate any current personal records against the new PIN length, which means that the original PIN is still used.	7	3	9	Default: BOSIMBROWN
Maximum Clearances Per Person	The maximum number of clearances that users can assign to a person. This value can not be changed if the BTAR driver or APC driver is running. (spc Supports up to 40 clearances per person.)	10	1	150	Default: BOSIMBROWN

Personnel Related System Variables

The personnel-related system variables involve changing how personnel validation works. It is possible for an operator to lower the value of one of these system variables in a way that makes existing personnel records invalid. In such cases, the system permits the change to the system variable and does not check to see if any personnel records violate the new value. Later on, however, when the record is being edited, if it violates the new system variable value, it cannot be saved.

Example:

The PIN Length or Maximum Clearances per Person variables.

Auto Increment Card Number System Variables

The Auto increment card number system variables are separately unique for all records on each SAS. Each SAS (and the MAS) has its own Auto increment card number start system variable. The system administrator at each SAS is responsible for configuring their SAS with a separate non-overlapping auto increment card number. The MAS also has to be configured with its own range for global records, which must not overlap any of the ranges of any SAS.

Disable by Inactivity Enabled and Disable by Inactivity Scan Time System Variables

The Disable by Inactivity Enabled and Disable by Inactivity Scan Time system variables must be configured appropriately on each individual server, both MAS and SAS, since Credentials are expired on their own server.

A global Person's Credentials are expired by the MAS server using the latest card activity information propagated from each SAS server.

NOTE

Only Card Admits are considered 'card activity' by the Disabling for Inactivity service. Card Rejects do not count.

Software House assumes that the MAS and all its SASes are synchronizing normally on a regular basis. Delays in synchronization can cause inaccurate expirations, as well as inaccurate data on any of the related Inactivity Reports.

Maximum Clearances Per Person System Variable

The Maximum Clearances Per Person system variable is enforced differently for **global** and **local** personnel.

For Global Personnel – The system variable is enforced per **Application Server**. Consequently, when **local** and/or **global** clearances are being assigned to a **global** personnel record, the system validates separately for each **Application Server** that the maximum number of clearances per person (**local + global**) is not exceeded for that **Application Server**.

- The number of global clearances that can be assigned to a **global** person can not be greater than the value of the Maximum Clearances Per Person system variable on the MAS.
- For each SAS, the number of global clearances plus the number of local clearances for that SAS must **not** exceed the value of the Maximum Clearances Per Person system variable for that SAS.

Example:

If the Maximum Clearances Per Person system variable on the MAS is set to 10 while it is set to 20 for SAS1 in Boston and to 25 for SAS2 in NYC, then you can only assign 10 local clearances on SAS1 and 15 local

clearances on **SAS2** to a global person who already has **10** global clearances.

For Local Personnel – The system variable is also enforced per **Application Server**. But when **local** and/or **global** clearances are being assigned to a **local** personnel record, the system simply validates that the maximum number of clearances per person (**local + global**) does **not** exceed the value set for that **SAS**. The system does **not** care about the Maximum Clearances Per Person value set for global clearances on the **MAS**.

Example:

If the Maximum Clearances Per Person system variable on a **SAS** is set to **5**, you can assign a local person on that **SAS** **5** global clearances. This is true even if the Maximum Clearances Per Person value set for global clearances on the **MAS** is **3**. (You could also assign that local person **4** global clearances and **1** local clearance.)

The following situations are essentially handled in the same way. The system permits excess clearances to be added to the system. Later, however, when the personnel record is being edited, the clearance numbers have to be reduced to the maximum allowed before the record can be saved.

- Due to the simultaneous addition of clearance assignments to a personnel record on the **MAS** and on a **SAS**, it is possible for a personnel record on the **SAS** to exceed the maximum number of allowed clearances.
- If you are assigning **global** clearances to **global** personnel, a special situation can occur if the assignment is happening on a **SAS** not currently connected to the **MAS**. In this case, the **SAS** has no information about the clearance assignments on the other **SASes**. Consequently, it can validate only that assigning this **global** clearance does not exceed the maximum number of clearances allowed on itself; no validation is done for the **global** clearance exceeding the maximum number of clearances allowed for the other **SASes**. This situation can easily cause the maximum number of clearances to be exceeded.
- If the apC or iSTAR driver detects that the maximum number of clearances is exceeded, it writes an entry in the system trace log for each personnel record it tried to download that had this problem. In addition, only the number of clearances allowed are downloaded to the controllers.

Maximum Custom Clearances Per Person System Variable

Since custom clearances assigned to a **global** Personnel record are always **global** while custom clearances assigned to a **local** Personnel record are always **local**, enforcing the Maximum Custom Clearances Per Person system variable in an Enterprise environment is quite simple.

- A **global** person can have the maximum number of **global** custom clearances per person set on the **MAS** (up to the maximum of 20) at each different **SAS** in the system.

Example:

If the Maximum Custom Clearances Per Person system variable on the **MAS** is set to **15**, then you can assign **15 global** custom clearances on each **SAS** in the Enterprise system: **15 global** custom clearances on **SAS1**, **15 global** custom clearances on **SAS2**, and **15 global** custom clearances on **SAS3**.

- A **local** person can only have the maximum number of **local** custom clearances per person set for his/her **SAS**—up to the maximum of 20.

PIN Length System Variable

The PIN Length system variable is enforced per Application Server. In other words, you can set a different PIN length for each **SAS** and for the **MAS**. When the PIN length for an Application Server is reduced by editing the system variable, an operator trying to edit that record will be unable to save any changes until the PIN length has

been reduced to the maximum allowed size. As a result Software House recommends that the system administrator set the PIN length for all Application Servers to the same value.

NOTE

As long as the operator can display PINS, they can open the Personnel dynamic view, add the PIN column, and filter on all PINs with a value "> a specified value". This makes it easy to find all personnel who have exceeded the maximum PIN size.

Audit/Journal Synchronization System Variables

The C•CURE 9000 audit/journal synchronization operation from a SAS to the MAS requires the upload of a great many database records. Therefore, batch mode is used to upload these records block by block. The size of the block is defined by system variables, one in the Audit category and one in the Journal category.

Audit Synchronization System Variable

The Audit category system variable is named Audit Sync Upload Block Size. It has a type of integer, a default value of 1000, a range of 100 to 10000, and the following description: "This setting affects only Satellite Application Server and defines how many Audit records will be uploaded to Master Application Server in each block for batch-upload sync operation."

Journal Synchronization System Variable

The Journal category system variable is named Journal Sync Upload Block Size. It has a type of integer, a default value of 1000, a range of 100 to 10000, and the following description: "This setting affects only Satellite Application Server and defines how many Journal records will be uploaded to Master Application Server in each block for batch-upload sync operation."

Restarting Drivers When Changing System Variables

The following **local** system variables require the driver (iSTAR and apC) to be shut down before you can modify the system variable:

- Personnel Category\Maximum Clearances Per Person
- Personnel Category\Maximum Custom Clearances Per Person

You must also restart the apC driver in order to change the following:

- Personnel Category\PIN Length
- apC Category\ Maximum Issue Code
- apC Category\ Maximum Clearances Per Person on apC
- apC Category\ Maximum Number of apC Clearances
- apC Category\Is Using Activation Dates
- apC Category\Is Using Deactivation Dates

If you try to change any the preceding system variables on the **MAS** while the driver on the **SAS** is running, the system displays a message that the change is **not** allowed. You must go to the **SAS**, shut down the driver, change the system variable, and then restart the driver.

The following **local** system variables require a restart of the appropriate driver(s) to take effect:

- apC Category\Hours of Down Time require full download
- apC Category\Minimum number of changes require full download
- apC Category\Minutes between sending date and time
- Hardware Driver Category\Default base priority for causes
- iSTAR Category\ Many iSTAR system variables require driver restart. The descriptions for these iSTAR system variables specify if a restart is needed.
- WAS Category\WAS transaction time
- WAS Category\WAS Status poll time

For the preceding system variables, even if you edit them on the **MAS** rather than the **SAS**, you must later go to the requisite **SAS** and stop and restart the appropriate driver for the change to go into effect.

Journal/Audit In Enterprise Architecture

This chapter explains how Journal and Audit work in an Enterprise Architecture.

In this chapter:

Using Journal and Audit Logs in Application Server	150
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Using Journal and Audit Logs in Application Server

C•CURE 9000 logging functions allow you to review previous system activity in the Journal and configuration changes in the Audit Log. The data is collected at the SAS and the MAS in separate log files. The log files have two components:

1. The Activity Journal maintains a record of activity monitored by the system. Records in the Activity Journal can provide a historical view of activity that has occurred within the system, and can verify events when serious issues occur. Journal messages can also provide statistical information on resource usage or help locate people or assets within a facility.
2. The Audit Log provides a history of all configuration changes to the system objects within C•CURE 9000. Changes are recorded as they occur and a record of each is stored in the Audit Database. Depending on your Privilege, you can view the Audit Log at any time.

An Operator with the **Access to common global objects** privilege has Read-Only access to Journal and Audit logs as global objects.

Synchronizing Log Files

Log file synchronization is used to combine the Journal and Audit data from a SAS system in the enterprise with the Journal and Audit logs at the MAS for central reporting and monitoring.

Unlike database synchronization, Journal and Audit synchronization occurs on a scheduled basis so that overall performance of the MAS and SAS is not affected. When the Schedule you assign for Journal or Audit synchronization becomes active, the SAS sends its Journal changes to the MAS for synchronization. You can schedule the synchronization of your SAS logs to the MAS from the Administration Station of the SAS whose logs you want to synchronize. You can only upload from the SAS to the MAS on the SAS. You cannot use a remote connection or request the upload from the MAS.

There is a configurable option on the Administration Station for specifying a schedule to synchronize the journal and the audit data. See [Synchronization Tab Tasks](#) on [Page 92](#).

NOTE

You can also configure an Event to be triggered when the synchronization of the Audit or Journal database from the SAS to the MAS fails. For detailed steps, see the [Application Server Triggers Tab](#) on [Page 94](#).

Audit Logs

Audit logs are accessible through the reporting interface and the results of these report types can be generated and displayed in the Report View page or saved in the desired file format.

For more information on configuring, querying, and scheduling maintenance on an Audit Log, see the *C•CURE 9000 System Maintenance Guide*.

Log Management

To enable efficient management of the potentially large numbers of log entries in the C•CURE 9000 Audit Log and Journal databases, see the *C•CURE 9000 System Maintenance Guide*.

The SAS log files are synchronized with the MAS log files on a configured basis. Because these log files can get very large, it is recommended that the synchronization process occurs when the MAS and SAS are not busy. See [Application Server Synchronization Tab on Page 92](#) for instructions on how to setup the synchronization schedule for the SAS.

The journal/audit logs remain on their current scheduled synchronization interval even if the MAS is shut down and restarted.

Managing the log files is necessary so that:

- Your databases do not get too large.
- You can retrieve off-loaded volumes for viewing.

NOTE For the best performance, the maximum number of concurrent log file synchronizations should be four.

In C•CURE 9000, you can efficiently manage the potentially large numbers of log entries in the Audit Log or Activity Journal by using system variables to set a predetermined maximum message numbers allowed in these logs. You can also control the size of the log file partition and the number of days to store the data. See [Using System Variables for Synchronization on Page 151](#) for more information.

Using System Variables for Synchronization

To synchronize C•CURE 9000 audit log and activity journal from a SAS to a MAS requires that a large number of database records are uploaded. Microsoft Sync Framework uses one database transaction to do synchronization operations. C•CURE 9000 uses batch mode to upload these records block by block with each block size defined by a system variable.

The audit log and activity journal records are uploaded on a configurable basis.

Two system variables are available for a synchronization operation from SAS to MAS: **Audit Sync Upload Block Size** and **Journal Sync Upload Block Size**. For more information on these system variables, see [Audit/Journal Synchronization System Variables on Page 146](#).

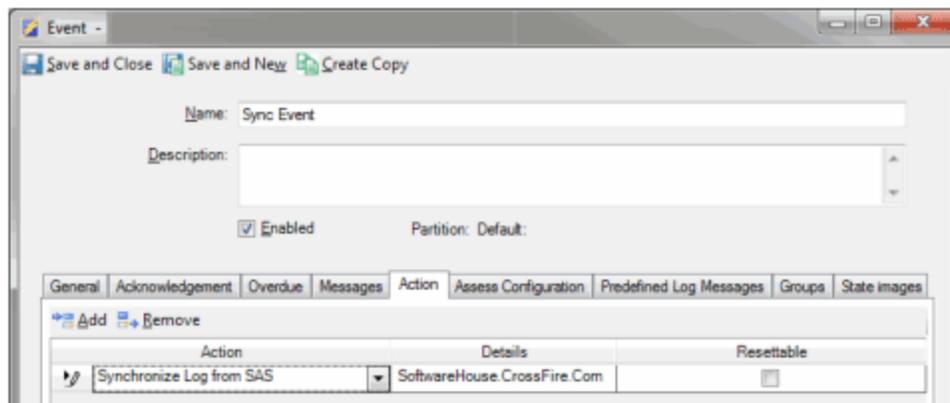
Using an Event to Manually Synchronize Log Files

You can control the synchronization of log files by creating an event that causes these files to synchronize without waiting for the configured schedule. You must create the event on the SAS to upload the log files to the MAS.

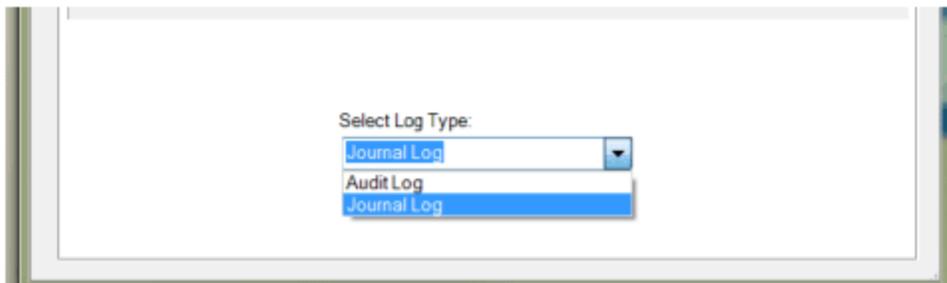
To Create an Event for Synchronization

1. From the SAS, in the Administration Client, click on the **Configuration** pane. Select **Event**.
2. Click **New**. The Event Editor opens.

3. Type in a name for this **Event** in the **Name** field, and optionally the **Description** of the event you are creating. Check **Enabled** to make the Event available to the Operators..
4. At the Default state, check **Armed**.
5. From the **Options** tab, select **Send state changes to Journal** or any of the other available options.
6. From the **Messages** tab, optionally choose to display a message when the event is activated or deactivated.
7. From the **Action** tab, click **Add**. From the **Action** column, select **Synchronize Log from SAS**.



8. Optionally check **Resettable**.
9. From the Log Type combo-box at the bottom of the **Event** window, choose the type of log file you want to synchronize: **Audit** or **Journal** Log.



10. On the Event **State Images** tab, choose the State Images settings that you want to use for the Event.
11. Click **Save and Close** to save the event you have just configured.

After you have created the event on the SAS, you can activate the event from either:

- Administrative Workstation - From the Configuration Pane, select **Event** and click . Select the name of the Event you have just created. Right-Click for the context menu and select **Activate**.
- Monitoring Station - From **Non Hardware > Events > Status List - Event**, Right-click on the name of the event you have just created and select **Activate**.

Journal Messages

There are journal messages for System Activity that refer to the state of the Audit and Journal Synchronization: started, aborted, completed, or failed to start. At the start of the synchronization process, a journal message is sent out and another message is sent when the process is completed.

The Messages are system activity messages with text in the format as follows:

- Application Server "Server X" started Audit Synchronization.
- Application Server "Server X" aborted Audit Synchronization.
- Application Server "Server X" completed Audit Synchronization.
- Application Server "Server X" failed to start Audit Synchronization due to Master Application Server offline.
- Application Server "Server X" started Journal Synchronization.
- Application Server "Server X" aborted Journal Synchronization.
- Application Server "Server X" completed Journal Synchronization.
- Application Server "Server X" failed to start Journal Synchronization due to Master Application Server offline.

Journal Triggers in an Enterprise

A Journal Trigger is a Query-like object that evaluates Journal Messages and pulses an event when the criteria specified in the trigger is logged in the Journal. Journal Triggers in an Enterprise are Local Only objects, and only trigger Events that are local objects on the same server as the Journal Trigger. Journal Triggers cannot be created in the Global Partition

You can create Journal Triggers on a SAS that evaluate Global objects, but each SAS is not aware of Journal Triggers on other SASs. The MAS displays Journal Triggers from all SASs.

When you create a Journal Trigger on a SAS, you can select any object (Global or local) to be evaluated (as allowed or constrained by Privileges). However, when you are editing a SAS Journal Trigger while connected to the MAS, you cannot select objects from a different SAS.

If you are editing a Journal Trigger located in a local Partition on the MAS, you can only select Events local to the MAS to be activated by the trigger. You can select objects from other Partitions in the query that defines the trigger.

Example:

You have created a Journal Trigger on a local MAS Partition. You can select objects to evaluate from other Partitions (such as an Object Changed State for an object that resides in a SAS Partition. But you can only use the Journal Trigger to activate an Event that is local to the MAS Partition in which the Journal Trigger resides.

Because the MAS does not have any directly-connected hardware, many of the possible Journal Messages are never created on a MAS.

NOTE

You cannot use MAS Journal Triggers to evaluate Journal Messages that are generated on a SAS and are replicated to the MAS (such as . SAS Journal Messages do not generate notifications on the MAS when they are generated at a SAS, so the MAS Journal Trigger cannot evaluate these messages.

Central Reporting in Enterprise Architecture

This chapter describes how central reporting is used in an Enterprise Architecture.

In this chapter:

Central Reporting 156

Central Reporting

C•CURE 9000 Reports provide the capability to create detailed reports about any C•CURE 9000 object, to customize the appearance of reports, print reports, view reports, save reports for later printing/viewing, or convert reports to several output formats.

The MAS database allows for Enterprise-wide reporting. All SAS data is synchronized up to the MAS. Central reporting and configuration is available from the MAS because it receives configuration, journal, and audit data from all Satellite Application Servers. For general information on designing and running Reports, see the Reports chapter in the *C•CURE 9000 Data Views Guide*.

An Operator connected to the MAS, with appropriate Privilege, can run Reports that reside in the MAS default Partition which can include data from every server in the enterprise.

Reports can only reside in local Partitions, not in the Global Partition. Report objects created on the MAS are not synchronized to other SAS systems. Therefore, Operators cannot create a report that is shared between all the SAS servers. However, a report object created on the MAS can get data from any particular SAS.

Retrieving Enterprise Data

The data contained in a report depends upon which specific application server you are connected to, and where the report resides. The same request made from a different application server could return different results because the local data is different.

If your client application is actively connected to the MAS when you run a report, then the report runs on the server that owns the report. If the report resides in a Partition owned by the MAS, then all the data in the enterprise that the Operator has access to can be included in the report. All of the pre-configured Reports that reside in the MAS default Partition can report on enterprise data, as can user-created reports that reside in that Partition.

Conversely, if your client application is connected to the MAS and you run a report that resides in a Partition owned by a SAS, then the data returned only contains the data residing at the SAS, as well as the global data to which you have access. You can use the **Read Data from** drop-down list to select a Report that resides on a specific SAS to get data from a particular SAS and from the Global Partition, based on your Privileges. You can also use the **Read Data from** drop-down list in the Report Viewer or in the Query attached to a report to redirect the report to get data from any other server. This technique allows applying a report from SAS1 to get data from SAS2 (when the client is connected to the MAS).

If your client application is actively connected to a particular SAS, or if it is connected to the MAS but you log in to it as a local SAS Operator, you can only run the Reports that reside on that SAS, and the data returned by the Report contains only data from that SAS and from the Global Partition, based on your Privileges.

Pre-configured Reports

The Default Partitions of each SAS and of the MAS have the same set of pre-configured C•CURE 9000 reports. These reports are created when the SAS/MAS is installed. The pre-configured reports are not synchronized to other servers, and they cannot be modified. However, you can edit these reports and save copies (using the **Create Copy** button) that can be modified.

Operator Privileges

If you are a Global Operator, you can run reports that show data from the entire enterprise. You can attach a query to the report that filters out data from specific partitions. For example, if you want to create a Personnel Report that lists all personnel who are not global, you can attach a Query that specifies **Partition Name <> Global**, and your report does not list Global personnel, only the personnel from non-Global partitions.

You can run reports from the MAS that can show data from across the Enterprise. However, if you run the same report from a SAS, you will only see data that is visible from that SAS and the global data from the MAS.

The Reports Dynamic View

The Report Dynamic View displays a new column that lists the Partition in which the report resides. See [Figure 30](#) on [Page 157](#) for the columns displayed in the Reports View. By default, the report is executed on the server that owns that Partition and displays all the data from that server the Operator can see. Notice that the Partition of the report does not limit the scope to one Partition, but to the entire server that owns the Partition.

An Operator on the MAS can select an available server from the **Read Data from** drop-down list to see a list of the Reports available on that server.

Figure 30: MAS Reports View

Name	Query/Name	Report Form Name	Description	Partition
SwH00 - apC Report		Default form (Global)	List of apC panels including their address, type, port, and status. (web-sample)	Default BOS2TPubMASStw
SwH06 - Door Access Report (Admit or Reject)	SwHrep006 - Cardholders admitted or rejected at a specified door in a date range (Default BOS2TPubMASStw)	Default form (Global)	List all admits and rejects at a specified door by a specific person. If run with defaults it lists all doors and all cardholders. This version produces a standard report. (web-sample) If the Person or Door is not specified all cardholders at all doors will be displayed. (web-sample)	Default BOS2TPubMASStw
SwH07 - All Clearances Report	SwHrep07 - All Door and Elevator Clearances (Default BOS2TPubMASStw)	Default form (Global)	List of all clearances including door, door group, elevator, and elevator group clearances. Report shows list of door/elevator names and schedules assigned to each clearance. (web-sample)	Default BOS2TPubMASStw
SwH08 - Find A Special Warden Query Description	SwH08 - Query Description (Default BOS2TPubMASStw)	Default form (Global)	List of queries with "web-sample" signature in description. (web-sample)	Default BOS2TPubMASStw

Report Results

When a Report Result is created by running a report, it is created in the Partition defined by the **New Object Partition** drop-down list, so it is possible to run a report that gets data from one server and stores its results on another server. For example, an Operator on the MAS can select a SAS in the **Default Server** drop-down list, run a report, then select a different SAS in the **Default Server** drop-down list, and click **Save Result** on the Report Viewer. In this instance, the report result is saved on the second SAS.

If a Report Result is created by activating an event or by executing the **Run on Server** command, it is stored on the server where the report is executed.

Report Results are not replicated from SAS to MAS. If a Dynamic View of the Report Results objects is displayed and the **Read Data from** drop-down list points to the MAS, only the Report Results stored on the MAS are displayed. To review local SAS report results, the Operator has to select that particular SAS system in the **Read Data from** drop-down list.

Central Management in Enterprise Architecture

Central Monitoring in the Application Server offers you an enterprise view of events, activities, and views.

In this chapter:

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Central Management Overview

Central Management involves two components, the Central Administration Station and the Central Monitoring Station, which need access, rights and privileges, and a set of tasks that are defined through the configuration process.

Configuration is performed at the MAS by the Administrator. As the administrator creates Activity Layouts for each Operator, access and privilege are configured.

Central Administration

Central Administration takes place on the MAS. The Central Administrator configures personnel, operators, synchronization, and other Enterprise tasks. Central Administration gives you the capability to control all of the C•CURE 9000 capabilities in the enterprise from a single Administration client application.

Features:

The Central Administration Station offers the following features:

- Data synchronizes between the MAS and the SAS. See [Server Synchronization](#) on [Page 47](#)
- Enterprise Reporting and Configuration - Receives configuration, journal, and audit data from all Satellite Application Servers. See [Central Reporting](#) on [Page 156](#)
- Global Personnel Management - Defines global data that should be shared at every Satellite Application Server, for example, personnel clearances and badges. See [Personnel Overview](#) on [Page 114](#)

Capabilities:

- Administering personnel and performing clearances across an Enterprise - See [Personnel Overview](#) on [Page 114](#) and [Assigning Clearances to Personnel from a Dynamic View](#) on [Page 119](#) for more information.
- Central control of card enrollment - See [CHUIDs in an Enterprise](#) on [Page 125](#)
- Network authentication and distributed management - See [Using the Administration Client from the MAS](#) on [Page 26](#)
- Centralized reporting enables a single card to be valid across an entire enterprise. See [Central Reporting](#) on [Page 156](#).
- Supports multiple CHUIDs See [CHUIDs in an Enterprise](#) on [Page 125](#).
- Encryption available (SQL database encryption options). See the *C•CURE 9000 Installation and Upgrade Guide* for more information.
- Support for 20 servers. See the *C•CURE 9000 Installation and Upgrade Guide* for more information.
- Central badging and photo imaging. See [Editing C•CURE ID Objects in Enterprise Architecture](#) on [Page 124](#).
- Supports automated synchronization. See [Enterprise Architecture Capabilities Summary](#) on [Page 32](#).
- Central management of video and hardware resources. See [Enterprise Architecture Capabilities Summary](#) on [Page 32](#).

Master Database

In the Central Administration environment, the configured Master Application Server (MAS) resides on an enterprise server with the Master database that contains the superset of all the enterprise data.

All data is synchronized in real time except for Journal and Audit data which is synchronized on a configured basis, and status values (see [Dynamic View Restrictions](#) on [Page 64](#) for more information).

Application Layouts

Application Layouts for central monitoring are built around the same concept of multiple Panes containing Viewers as the standalone Monitoring Station. However, in an Enterprise Architecture, the Application Layouts can show an Operator on the MAS a view of Activity/Events on all systems in the enterprise, or from discrete individual servers. See the *C•CURE 9000 Monitoring Station Guide* for more information.

As administrator, you can define Application Layouts for specific Operator views. For example, you may want an Operator to view only events in a specific Partition or a specific application server.

Default Server

When connected to the MAS, the Administration Station provides a drop-down list which lets you select your vantage point on the MAS. You can access the MAS or any of the application servers attached to the MAS from the Default Server drop-down list. If you are an Operator on the MAS you can change vantage points by selecting a server from the **Read data from** drop-down list. See [Understanding The Enterprise Environment](#) on [Page 18](#)

Creating Views for Central Monitoring Operators

A Global Administrator can create views and Application Layouts for Central Monitoring Operators that allow them to monitor activities and perform manual actions according to the privileges that you assign them. The Operator can have any number of SAS and MAS layouts assigned to them.

There are two kinds of Application Layouts:

- An Application Layout created on a SAS - the Operator can view only the messages from the server that "owns" the layout.
- An Application Layout created on a MAS - the Operator can view the messages from all the interactive SAS servers and the MAS server. (See [Setting Application Servers Interactive](#) on [Page 164](#)).

For example, you can have a configuration that consists of an Operator that has a MAS layout showing only the critical events on the Activity viewer and additionally having two SAS layouts where each SAS layout is configured to show all events from that SAS. Placing these layouts on different screens can help the Operator/Guard monitor several servers but avoid the flood of activity events on a single list.

If the controls are attached to a SAS layout, the Operator receives messages from the SAS even if the SAS is not interactive but he does not receive messages from any other SAS servers.

The Central Monitoring Operator may need to:

- Respond to Alarms
- Change Global Personnel data
- Perform Event Actions
- Generate global reports

To Configure an Application Layout

1. Design the appropriate layout for the responsibilities assigned to the Operator. Create an Application Layout. See the *C•CURE 9000 Data Views Guide* for more information on this step and the next three steps.
2. Add up to 6 panes per view to the Layout.
3. Add Viewers to the Panes.
4. Lock the Layout if you do not want Operators moving or changing the Layout.
5. Assign the Layout to Operators. See the *C•CURE 9000 Software Configuration Guide* for more information.

NOTE It is important to configure privileges of the Central Monitoring Operator in a way that they cannot modify the configuration of the system. The configuration should just provide actions the Operator is responsible for.

NOTE Application Layout provides additional filtering of activity messages. The Administrator can limit an activity viewer to show only messages of certain types and configure the Operator to have a subset of application servers in the interactive mode (taking away the ability to turn on/off interactive mode for the servers through the Monitoring Station).

Action Constraints

In the Activity or Event Viewers, an action on a Global Object is taken in the context of the server that sent the activity message.

If you select multiple objects from different Application Servers, the set of **items** available in the context menu is limited by the ownership of the object. For example, if multiple Personnel are selected from different servers, then the **Assign Clearances** action behaves differently depending on the ownership of the selected Personnel. See [Table 33](#) on [Page 163](#)

Table 33: Actions and Assign Clearances

Multiple Personnel Selected from:	Clearances shown from:
Global partition only	All SAS partitions
One SAS only	SAS owning Personnel and Global
One SAS and Global partition	SAS owning Personnel and Global
Multiple SASs	Global Clearance only

For the **Change Partition** action, the list of available partitions is constrained by multiple selections. If local-only objects are included in the selection, then the Global partition is not selectable. If the class of objects is optionally global, then the Global partition is selectable.

You can find more information on privileges and partitions in [Access to Global Common Objects](#) on [Page 54](#).

Setting Application Servers Interactive

An Application Server object has an activity named **Interactive** which sets the Server in Interactive mode. Once set Interactive, the SAS sends Activity Messages to the MAS. The Activity Viewer and Event Viewer, as well as Dynamic Views, start to display information from the Activity Messages received.

At the Central Monitoring Station startup (when the Monitoring Station application is started from a client attached to the MAS), Events are fetched from all servers that are set as interactive. Whenever a server is **interactive**, that server's list of active events is added to the Event Viewer. When a server is disconnected, its Events from that server are removed.

The Dynamic View of Application Server objects shows which servers are currently in the Interactive mode. If you are reading data from the MAS, setting the server Interactive does not automatically show newly added objects in a dynamic view and hardware/video folders. You have to use the **Read Data from** drop-down list to select the server you want to observe, and perform a refresh operation.

The ability to have multiple Interactive Application Servers is limited to Global operators where the operators connect their Monitoring Station application to the MAS server. Local operators are limited by their privileges to receive activity messages from their local server only.

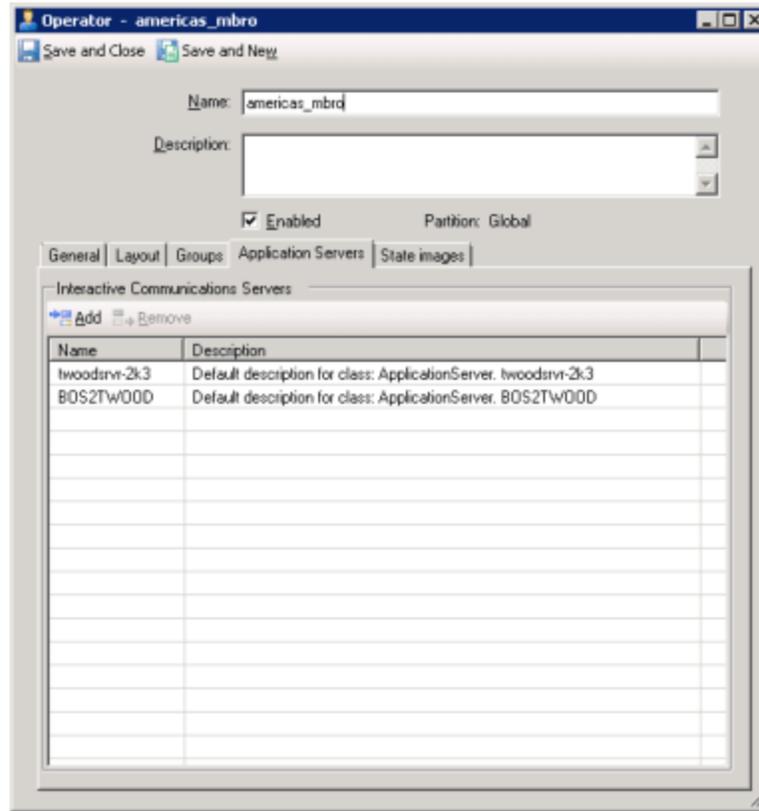
Setting a Server Interactive from the Administration Station

You can set an Application Server as interactive for the Central Monitoring Station Operators by assigning the Application Server records to the Operator record on the Operator Editor Application Server tab. See [Figure 31](#) on [Page 165](#) for a view of the Operator Editor.

Servers assigned to the Operator record become interactive automatically when the Central Monitoring Station starts up.

The Operator you are editing must be in the Global partition. You can then select the application servers which are assigned to the Operator. To configure a Global Operator, see [Accessing the Operator Editor](#) on [Page 60](#)

Figure 31: Operator Editor - Set Interactive.



Setting a Server Interactive from the Monitoring Station

If the Operator has the appropriate privileges, they can set a server interactive (on or off) if it is displayed in the Dynamic View.

To Set an Application Server Interactive

1. From the Central Monitoring Station Explorer Bar, go to Hardware Status and click on Application Server. The Status List of Application Servers displays.
2. Right-click on the server name that you want to set interactive. Click **Set Interactive** from the Context Menu. The server must be online in order for the Interactive selection to be available.
3. If the selected server is currently **Interactive**, you can right-click on the server name and click **Set Non-interactive** to change the server to Non-interactive for this Operator.

Central Monitoring Station

Central monitoring offers you an enterprise view of events, activities, and views. Central monitoring is performed by a Global operator using the Monitoring Station from the MAS to monitor activities across the Enterprise.

Central Monitoring Overview

The Central Monitoring Station lets you keep track of Events, Activities, Access and Device Status, and ongoing security access from an Enterprise level. You can perform Central Monitoring operations across multiple Application Servers in the system and stay aware of all system activity. The Central Monitoring Station is always connected to the MAS. From this vantage point, the Operator can switch from one server to another.

NOTE If your system running the Central Monitoring Station loses its connection to the MAS, much of the Central Monitoring functionality will not work until the connection is restored.

Features

The Central Monitoring Station offers the following features:

- Activity and Event messages from multiple Application Servers are viewable in a single Activity Viewer.
- Swipe and Show activity from multiple Application Servers is viewable from a single Swipe and Show Viewer.
- Replication of data across the system - The remote application servers replicate appropriate data with the MAS.
- Enterprise Reporting and Configuration - receives configuration, journal, and audit data from all SASs.
- Global Personnel Management - defines global data that should be shared at every SAS, for example, personnel clearances and badges.

Operator Privileges

Central Monitoring provides the ability to connect a Monitoring Station client to multiple Application Servers simultaneously. The Monitoring Station Operator can see activities and events from several application servers at once. Operators have privileges to perform manual actions and view activities and events on a global level.

Only a Global Operator can connect their Monitoring Station application to the MAS server and use it as a Central Monitoring Station. (CMS). A local Operator (with only SAS Privileges) who connects their Monitoring Station to the MAS will see only notifications from their SAS.

Master Database

In the Central Monitoring environment, the configured Master Application Server (MAS) resides on a regional server with the Master database that contains the superset of all the enterprise data.

All data is replicated in real time except for Journal and Audit data which is replicated on a configured basis.

Application Layouts

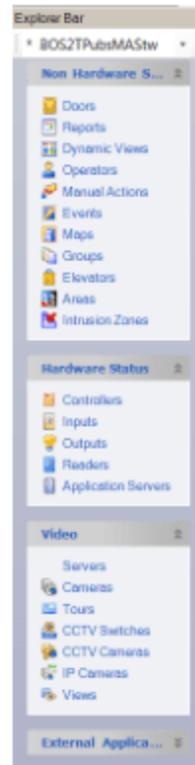
The application layouts are built around the same concept of multiple Panes containing Viewers as the SAS Monitoring Station.

Central Monitoring Explorer Bar

In a Central Monitoring Station, the Explorer Bar has an entry for Application Servers that launches a Dynamic View of Application Servers.

From the Explorer Bar, the Operator can select a server in the "Read data from" combo box which determines the source of the collection displayed in the Dynamic Views opened from the Explorer Bar. The Dynamic View shows all objects known at the selected server. See [Figure 33](#) on [Page 168](#)

Figure 33: Central Monitoring Station - Explorer Bar



With the Explorer Bar, you can launch multiple Dynamic Views from different servers for each class of objects shown. For example, you can select a SAS and see a Dynamic View of Doors. However, the Dynamic View is no longer cached and every time a new view of the same type is opened, the layout is reset to the default.

Restrictions on the Dynamic View are as follows:

- The status values of SAS objects are not replicated to the MAS. The Monitoring Station shows only blanks for status values when you launch the dynamic views from the Explorer Bar and it has the MAS server selected in its "Read data from" combo box.
- You cannot view the creation or deletion of objects until you manually refresh such a Dynamic View.
- You can select a particular SAS server in the "Read data from" combo box of a Dynamic View screen if it is important to obtain information about status. However, in this mode, only objects from a particular SAS and the global objects are displayed.

Selecting Objects

You can select objects in the Dynamic Views launched from the Explorer Bar from the MAS or a selected Satellite Application Server (SAS).

Components

In the Central Monitoring environment, the Explorer Bar offers similar objects on the MAS that you find on the SAS. The following components have some differences in the Enterprise environment if they are placed on an Application Layout owned by the MAS:

Table 34: Explorer Bar Component Differences

Component	Description
Event Viewer	Lists all active events available from all the interactive servers. When a server is disconnected or set to non-interactive mode, the events of this server are removed from the Event Viewer.
Context Menu Actions	A right-click menu that allow actions on the object owned by a specific server. Actions are available on objects in a Dynamic View, an Activity Viewer, an Event Viewer, and Swipe and Show pane. All the actions including the actions on a Global object is taken in the context of the server that sent the Activity message, if an object is selected on a view. If an object (or several objects is selected on a Dynamic View, the context menu behaves the same way as in the Admin application.
Object Viewer	The Object Viewer displays an object assigned to the viewer in the context of ownership. The object view of a local object uses the context of the owner of the object. The object view of the global object uses the context of the owner of the Application Layout.
Operator Menu	Shows all the online operators logged into any server.
Application Servers	Using an action from the context menu, you can set a server to interactive to view events and activities in the Central Monitoring environment. Setting a server to interactive mode adds that server's active events to all MAS application layouts.
Swipe and Show	Swipe and Show activity indicates the name of the Application Server from which the entry is sent.

Central Monitoring and Privileges

Privileges are used to limit the scope of what an Operator can see. Depending on the Application Layouts and the Privileges assigned to you as an Operator, you can perform certain tasks and view certain objects from the Central Monitoring Station.

For example, the Administrator can limit privileges of the Operator to see objects from only certain partitions.

There are also differences between local and global operators. Local Operators cannot see objects from other SAS servers so only global Operators can use the Monitoring Station application to perform Central Monitoring tasks.

Operator Access

You can have read access to regular objects and also to objects which are in the Global partition. A privilege can grant you access to objects in the same partition as that of the privilege.

Operators can have access to Global objects in the Central Monitoring environment. The **Access to common global objects** privilege is read-only.

For information about Privileges and Operators, see the C•CURE 9000 Software Configuration Guide or see [Privileges in Enterprise Architecture](#) on Page 53.

Central Monitoring and Actions

In Central Monitoring, actions (right-click menu items) are redirected to the server which owns an object. For example, if you take the **Activate** action on an Event, the event is activated on the correct server. This rule applies for actions selected on objects in a Dynamic View in the Event Viewer, in an Activity Viewer and in a Swipe and Show pane.

Using Context Menu Actions

For any objects that are visible from the Central Monitoring Station, the Operator is able to use actions that are available on that object. For example, **Unlock Door** unlocks a door selected in an Activity Viewer message or in a Dynamic View. The manual action is directed to the correct server for that object.

Central Monitoring - Performing Manual Actions

If you are an Operator known to the server's database, you have the ability to create and edit objects on a specified server and to perform manual actions on those objects.

Some Operators may need to be assigned limited access to objects across servers. For example, an Operator may need access only to Personnel and only to edit and assign clearances. A Global Operator with the right assigned Privileges can be limited to this function.

Because manual actions on Global objects are created in the default Partition where the manual action happens, if an Operator needs to perform manual actions on Global objects, that Operator should be given full access to manual actions in the default Partition of this server, or the Operator will not be able to control these manual actions fully.

Restrictions:

- Depending on their Operator Privileges, a local MAS operator may not be able to see or edit objects which are not owned by the MAS.
- Depending on their Operator Privileges, a local SAS operator connected to the MAS may not be able to see or edit objects owned by a different SAS.

Enterprise Architecture Backup and Restore

This chapter explains how to perform backup and restore database management in an Enterprise Architecture environment.

In this chapter

Back Up and Restore for C•CURE 9000 in an Enterprise System174

Back Up and Restore for C•CURE 9000 in an Enterprise System

You can use the regular database maintenance tools provided in C•CURE 9000 to back up the main C•CURE 9000 databases on a regular basis so the data is available for recovery in the event of a system crash, or you can back up and restore the C•CURE 9000 databases directly in Microsoft SQL. For more information, see the “Database Maintenance for C•CURE 9000” chapter and Appendix A, “Backing Up and Restoring the SQL Server Database” in the *C•CURE 9000 System Maintenance Guide*.

The following differences exist in an Enterprise Architecture Configuration:

- A MAS cannot back up and restore a SAS database. Each SAS has to back up and restore its own database.
- After a database restore is completed, you need to signal the restored server to re-Synchronize with the other servers in the enterprise, using the **Enterprise DB Restore Integrity Check** option in the Server Configuration Application. See [Re-Synchronizing Servers after a Database Restore from Backup](#) on Page 175.



You must perform a backup of the MAS databases after each installation of a new SAS system. You must make a MAS backup because a MAS system crash without a backup that includes all SAS systems could result in one or more SAS systems that cannot connect to any MAS - the SAS expects to be able to connect to a specific MAS, but the MAS has no record of that SAS being included in the enterprise.

How Synchronization Interacts with Backup and Restore

Whenever a database is restored from a backup, the restored system—a SAS, for example—is now live, but out-of-date with its synchronization partner—the MAS. This is because since the time when that restored backup was made for the SAS, normal transactions occurred on both the SAS and the MAS. The system is going to lose the transactions that occurred since the backup was made, causing the following:

- The SAS may have entries it is responsible for that do not exist on the MAS. This happens when these entries had been deleted after the backup was made.
- The SAS may be missing global entries that the MAS has. This happens when those global entries were made after the backup.
- The SAS can have global entries that the MAS does not have. This happens when the global entries were deleted from the MAS after the backup was made.
- The MAS can have entries the SAS does not, for which the SAS is responsible. This happens when entries were added to the SAS after the backup was made.
- The SAS has incorrect values for some global records. This happens when these global records were changed after the backup was made.
- The MAS has incorrect values for some records the SAS is responsible for. This happens when those records were changed after the backup was made.

For Synchronization to continue to work correctly, the enterprise system must make an adjustment when the restored Application Server starts up. This happens when you restart the restored server with **Enterprise DB Restore Integrity Check** enabled in the Server Configuration Application for that server. The Synchronization process is now re-run to re-synchronize the servers and resolve the preceding issues.

Example:

After a database is restored on an Application Server, the data on the server reflects that which was

restored. In other words, if changes were made to Personnel on a SAS (in a partition owned by that SAS) and it became necessary to restore that database to a time before those changes, those Personnel changes would be lost—even if they had synchronized to the MAS. Once the restored SAS was brought online it would synchronize and the MAS would reflect the restored values as well.

NOTE

When restoring a MAS database, the data in the Global partition will be restored throughout the Enterprise system.

Re-Synchronizing Servers after a Database Restore from Backup

For Synchronization to continue to work correctly after you restore the MAS or a SAS from a database backup, you need to re-synchronize the restored system with the other servers in the enterprise. You must perform this procedure on each server (MAS or SAS) that you restore from backup.

To Re-Synchronize Servers after Restoring

1. Complete the restore from backup for your server. See the *C•CURE 9000 System Maintenance Guide* for instructions.
2. Run the Server Configuration Application on the server that was restored, using **Start>All Programs>Software House>C•CURE 9000>Server Configuration Application**.
3. On the Settings tab, enable **Enterprise DB Restore Integrity Check** to begin re-synchronization.
4. Start the CrossFire and Component Framework services. The integrity check takes additional time to run, so there may be some delay before the Administration Application or Monitoring Station can connect to the server.

Enterprise DB Restore Integrity Check is a run-once option. If you perform a subsequent restore from backup, you need to repeat this procedure. During day-to-day operations, this option should not be enabled because it may affect performance.

Import and Export in an Enterprise

This chapter describes the Data Import and Data Export capabilities of the Enterprise Architecture environment.

In this chapter

Importing Data in Enterprise Architecture178

Importing Data in Enterprise Architecture

Data Import works the same way as it does with a standalone C•CURE 9000 server. The major difference is that imported data is physically saved in the database of the server that owns the Partition into which the data is imported. Therefore, for performance reasons, it is best practice to perform the import of the data at the server that will own the data.

Example:

Your configuration has a MAS in Denver, a SAS in Boston, and a SAS in Los Angeles.

The Boston SAS System owns the Floor1Partition. The MainCampusPartition is owned by the Los Angeles SAS system.

If you wanted to perform a Data Import at the Los Angeles SAS, and some of the records you import are designated to reside in Floor1Partition on the Boston SAS, these records are rejected because the Los Angeles SAS system is not aware of the Floor1 Partition.

However, if the import is performed on the MAS system in Denver, the records are saved on the proper servers, but the performance of the import will be slower than importing the data records separately at each SAS system.

Import Watcher in the Enterprise Architecture

The Import Watcher on a SAS or MAS can only run an Automated Import that resides in a Partition on that SAS/MAS.

Example:

The Import Watcher on the MAS can only run Automated Imports that reside in a MAS local Partitions.

Exporting Data in Enterprise Architecture

Data Export works the same way as it does with a standalone C•CURE 9000 server. The major difference is that exported data is physically read from the database of the server that performs the export. However, the data exported from the MAS can differ from the data exported from the SAS if the synchronization of any object changes from SAS to MAS is delayed. Therefore, for performance reasons, it is best practice to perform the export of the data at the server that owns the data.

If you want to export only objects from a specific SAS, log in as an Operator with the privileges which gives you a view only of the partitions belonging to the SAS. You can export only the records to which you have the privilege or partial privilege to view.

You can use C•CURE 9000 Export to do the following:

- Export data to be imported by another database or a Human Resources or other external database.
- Export files in both manual and automated modes.
- View historical logs for all exports.
- Convert the internal data schema into an external XML document.

Enterprise Architecture FAQ

This appendix contains a list of commonly asked questions and answers about Enterprise Architecture.

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Enterprise Architecture FAQ

What is Enterprise Architecture?

Enterprise Architecture is a purchasable option for C•CURE 9000 that lets you establish a Global framework for distributed management of security objects and personnel. Using Enterprise Architecture, you can have multiple C•CURE 9000 servers, distributed regionally, managing local (and Global) personnel, local hardware, and local video resources, while centrally managing and monitoring the entire enterprise from a Master Application Server (MAS). The local satellite application servers (SAS) systems can make use of global resources defined at the MAS to provide access control at each locale. Operators at the MAS can manage and monitor resources across the enterprise, or can be restricted via Privilege and Partitions to managing any subset of the enterprise. Operators at a SAS can manage only local objects at the SAS (and Global objects on the MAS), while utilizing available Global objects to provide access to Personnel as needed at each site. Local SAS Operator access to Global objects can be limited via Privileges.) See [Architecture Overview](#) on [Page 42](#) for more information.

What is an Application Server?

An Application Server is a C•CURE 9000 server that participates in the Enterprise Architecture. A Satellite Application Server (SAS) is a C•CURE 9000 server with local security objects (such as Personnel, access control hardware, and video servers and cameras), and a local SQL database that is synchronized with a Master Application Server (MAS) to provide enterprise level management and monitoring. See [Introduction](#) on [Page 16](#) for more information.

What is the Microsoft Sync Framework?

The Microsoft Sync Framework version 2.1 is a comprehensive synchronization platform enabling collaboration for applications, services and devices, with support for any data type, any data store, any transfer protocol, and network topology.

Microsoft's Synchronization Framework operates using time stamps for data changes. So when data is synchronized, it is time stamped and the next time a synchronization is initiated, all data that has changed since the last synchronization operation is performed, and at that point can be filtered based on specific business rules.

What is a MAS?

A Master Application Server acts as the central server in an Enterprise Architecture. It aggregates information about security objects that reside on Satellite Application Servers, and provides a platform for central monitoring of activities and events across the enterprise. See [Introduction](#) on [Page 16](#) for more information.

What is a SAS?

A Satellite Application Server (SAS) is a C•CURE 9000 server that contains local data for personnel, hardware, and video security objects, and local configuration data (such as Maps, Schedules, Holidays, Queries, etc.) that can be used to manage access control and video surveillance at a local site in an enterprise. See [Introduction](#) on [Page 16](#) for more information.

Can Video or Access Control Devices be Connected to a MAS?

Video and access control hardware cannot be directly connected to a MAS. The MAS is prevented from running the driver services that control video and hardware objects. The MAS server license do not include license to run the hardware and video drivers. The MAS is designed to synchronize the databases of all Satellite servers, so that the enterprise can be centrally managed, not to provide connection of video and hardware. Even though the MAS does not have any directly connected hardware, the MAS can view, manage, and control all the video and access control hardware that is connected to each SAS in the enterprise, as well as getting notification messages from the hardware located on the SAS systems. See:

- [Configuring Hardware in Enterprise Architecture on Page 132](#)
- [Configuring Video in Enterprise Architecture on Page 136](#)

Can a MAS act as a Badging Station?

A MAS can be used for designing and printing of badges for Personnel in the enterprise. Badge layouts designed at the MAS can be saved in the Global partition and can be applied to local Personnel. Global and local Personnel badges can be printed at a badging printer connected to the MAS or to an Administration client workstation connected to the MAS. [Editing C•CURE ID Objects in Enterprise Architecture on Page 124](#).

What is a Global Object?

A Global object is a security object that resides in the Global Partition on the MAS, and is available for use (subject to privileges) on each SAS in the enterprise. [Objects in the Enterprise Architecture on Page 43](#).

What is a Local Object?

A local object is a security object that resides in a local Partition on a MAS or SAS, and is available for use only on the server in which it resides. A local object can be viewed or edited from the MAS, but it does not reside on the MAS or on another SAS. A local object from a SAS or the MAS cannot be viewed or accessed on a different SAS.

What is an Optionally-global Object?

A type of object which can either be made Global (resides on the MAS and is available to every SAS) or local (resides on at most a single SAS or the MAS and can be viewed/edited from the MAS). There are a limited number of object types which can be optionally global. A specific object cannot be both Global and local at the same time. An enterprise can have some objects of a type that are Global while other objects of the same type are local. For example, you can have some Global Personnel in an enterprise, along with some local Personnel objects. See [Objects in the Enterprise Architecture on Page 43](#).

What is a Local-only Object?

An type of object which can reside on only a single SAS or the MAS, in a Default or user-created Partition. It cannot reside on multiple SAS systems, not can it reside in the Global Partition. Many types of objects must be local-only. See [Objects in the Enterprise Architecture on Page 43](#).

Can You Edit a Global Object from a SAS?

An Operator on a SAS can edit a Global object if they have the correct Privileges. The MAS system must be running and available on the network for editing capability to be available.

Can a Global Event Trigger Local Events on One or More Satellite servers?

Global Events and Triggers are not supported in version 2.0 or later of C•CURE 9000.

Can You Move a Local Object to the Global Partition?

Yes, you can change the Partition of some types of local objects (optionally Global object types) to the Global Partition, so that the objects become available throughout the enterprise. If an object is a local-only object type, it cannot be moved to the Global Partition.

However, if the local object you are moving to the Global Partition has links to local objects, the local object may need to be modified before the change of Partition is allowed. See [Moving Objects to Another Partition](#) on [Page 104](#).

Can You Move a Global Object to a Local Partition?

Once an object has been made global (residing in the Global Partition), it cannot be moved to a local Partition. The object could be recreated at the local Partition and then deleted from the Global Partition. See [Moving Objects to Another Partition](#) on [Page 104](#).

How Does a MAS Communicate with a SAS?

The MAS communicates with a SAS using the Microsoft Synchronization Framework. It synchronizes changes to Global data to each SAS, and it receives updates to local data from each SAS so that the MAS contains a complete picture of all security objects in the enterprise.

What is Synchronization?

Synchronization is the process used to make sure that all Global objects are available to every SAS system in the enterprise, and that all data in the databases on each SAS is available to the MAS for central monitoring and central reporting.

What are Synchronization Conflicts?

When C•CURE 9000 attempts to synchronize records between the MAS and SAS systems, sometimes errors can occur that prevent synchronization. Usually such errors occur when two Operators modify related data independently on two different servers.

Example:

An Operator on SAS1 tries to add a Global Clearance to a Personnel record, but another Operator on the MAS is deleting that Global Clearance. When the servers attempt to synchronize these conflicting edits, a synchronization conflict could occur.

These errors are logged in the database and can be displayed and resolved by an Operator using the Synchronization Conflicts Dynamic View. In some cases the Operator has to edit data on one of the servers (or on both servers) to resolve the conflict manually.

How Do You Resolve Synchronization Conflicts?

From the Application Server Dynamic View, you can open a Synchronization Conflicts Dynamic View for a SAS that lists all of the synchronization conflicts for that server. You can right-click on a conflict in the list and you can click **Delete** to delete the conflict record, or you can right click and select **Verify and Delete conflict**. You can also edit the object that is listed in the conflict record by choosing **Edit associated record**. See [Application Server Synchronization Conflicts View](#) on Page 74.

What is a Global Partition?

The Global Partition is a system Partition that resides on the MAS and is available to every SAS. The Global Partition is protected (cannot be deleted) and encompasses objects that are shared across application servers. The contents of the Global Partition are synchronized to each SAS. Objects that arenon-Global object types cannot be created in the Global Partition

What is a Default Partition?

A system Partition that resides on every SAS and the MAS. Each server has its own default Partition. The Default Partition is created automatically during installation and cannot be deleted. The Default Partition is the primary Partition for objects on a SAS. It is automatically selected in the **New Object Partition** drop-down list each time the Operator selects a new server in the **Default Server** drop-down list.

What is a Local Partition?

A Local Partition is a user-created Partition on a SAS or the MAS that can contain local-objects that are available only to that specific SAS and to the MAS.

Can a Partition be Moved from One Application Server to Another?

A Partition cannot be moved directly from one Application Server to another Application Server. Nor can you move local objects directly from one SAS to another.

You can still move local objects on a single SAS from one Partition to another within the SAS, and you can move optionally Global objects from a local SAS Partition to the Global MAS Partition.

However, you can export objects from one SAS, delete them on that SAS, and then import them to a different SAS. (You cannot import the same object on several SAS servers because each object must have a unique value in its GUID field. If the same object is imported on different SAS servers, it will likely generate synchronization conflicts.)

What is Central Monitoring?

Central Monitoring lets you keep track of Events, Activities, Access and Device Status, and ongoing security access from an enterprise level.

Central Monitoring lets you see activities and events from several application servers at once. Operators have privileges to perform manual actions and view activities and events on a global level. Privileges are constrained by

local and regional access rights. Central Monitoring becomes available when a Global Operator connects a Monitoring Station application with the MAS Server. See the [Central Monitoring Station](#) on [Page 166](#) for more information.

What is Central Reporting?

Central Reporting is the ability to create Queries and Reports on the MAS that can contain data from throughout the enterprise. Because information about all objects, Audits, and Journal entries are visible to a Global Privileged Operator, the Operator can create and run Reports that cover the entire enterprise. For example, an Operator can print a list of doors in all the areas a particular Global person went through during the last week (assuming the person visited several different areas during this week). See [Central Reporting](#) on [Page 156](#).

Can ISC Controllers be Used in the Enterprise Architecture?

ISC controllers are not supported in Enterprise Architecture.

Can apC Controllers be Used in the Enterprise Architecture?

apC controllers are supported in Enterprise Architecture. apC Hardware Audit, which prevents the apC driver service from having to do a full download to each apC every time the driver restarts, is now supported. When the apC driver service on a SAS is restarted, the apC panels connected to that SAS no longer need to perform a full download.

Can a SAS Communicate with More than One MAS?

A SAS can communicate only with the MAS designated as its master server. You cannot switch an installed SAS to communicate with a different MAS.

Can a SAS Communicate to Another SAS?

There is no direct SAS-to-SAS communication in the Enterprise Architecture. Each SAS communicates only to the MAS. The MAS communicates with each SAS in the enterprise.

What is Upstream Communication?

Communication from Server to Client (an example is notifications) is termed upstream communication.

What is Downstream Communication?

Communication from Client to Server (for example, persistent changes such as update/delete/create) is termed downstream communication.

What is a Global Administrator?

A Global Administrator is an Operator who has access to all the data/application servers in the enterprise when connected to the MAS. This Operator's record resides in the Global Partition, and has Global SYSTEM ALL Privileges assigned on the MAS.

What is a Global Operator?

A Global Operator is an Operator whose Operator record resides in the Global Partition, but who does not have Global SYSTEM ALL Privileges. This Operator, when connected to the MAS, may have the Privilege to access to all the data/application servers in the enterprise.

What is a Local Administrator?

A Local Administrator is an Operator whose Operator record resides in a local Partition on a SAS in the enterprise, and who has access to all data at the local server (SAS) and global data at the MAS, subject to Privilege limitations and exceptions. Usually a local administrator has SYSTEM ALL Privilege on the local SAS. However, that Privilege does not give the local administrator the rights to see data from other SAS systems when connected to the MAS.

Can the Enterprise Architecture Support Multiple Languages?

The Enterprise Architecture follows the standard method of translation that the 9000 uses, and all character data in the 9000 is already stored in UTF-8 or Unicode. There should not be issues with different SAS servers being used in different languages, even if the languages are in different language families and code pages. There are three caveats, however:

- The operating system on an Application server should be a version that properly displays characters from other code pages (using the correct fonts).
- Each C•CURE 9000 database has a collation (sort order), which is typically based on the default set by the operating system. If different Application Servers have databases with different language-based collations sequences, then the sort order for the same objects may be different on different Application Servers.
- Data stored in the C•CURE 9000 database (names of objects or labels on a report's layout, for example) are not translated. Each client displays the same object name the way it was originally entered. However, each client shows the user interface elements using the language package installed on that particular client.

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