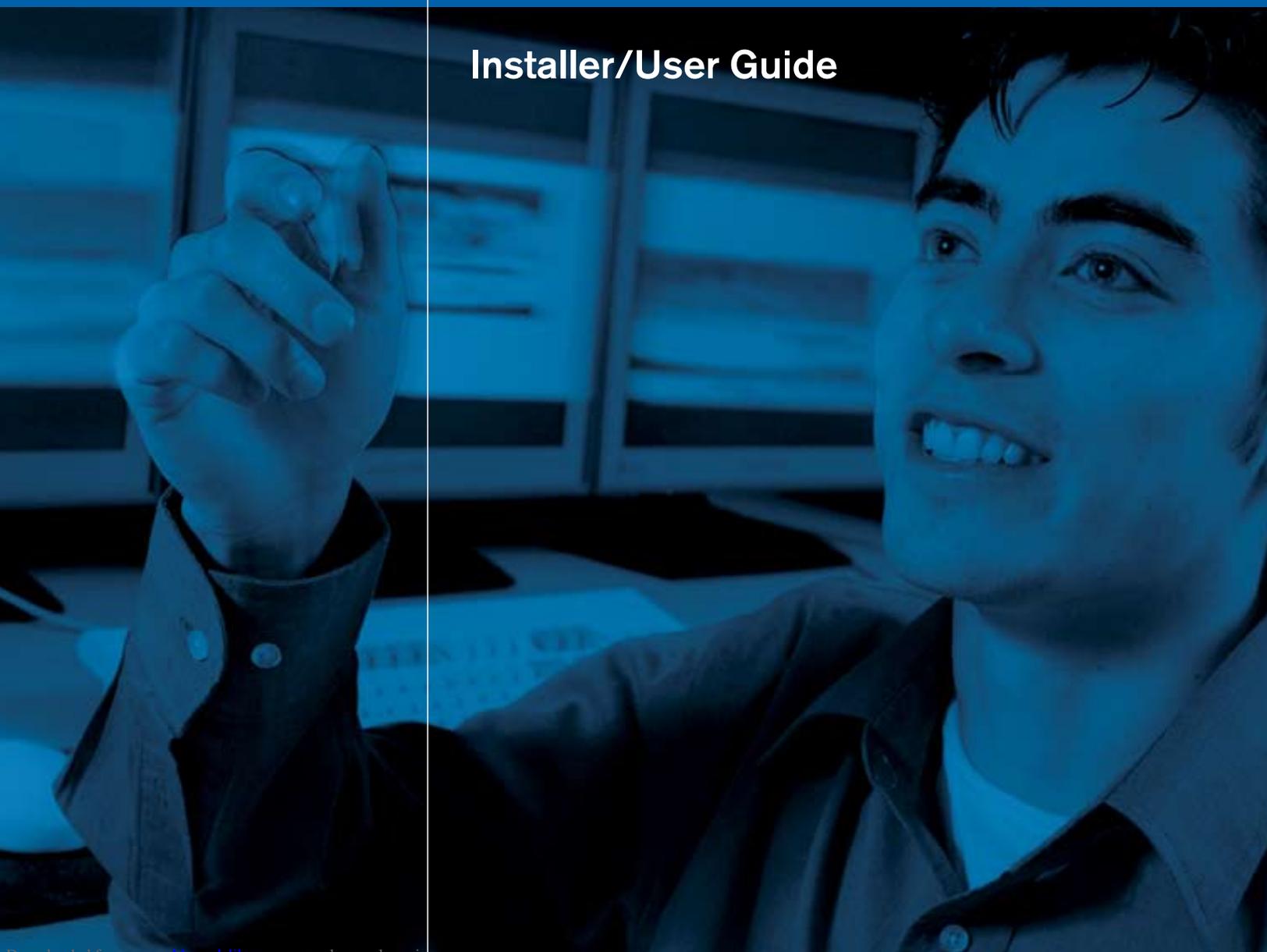


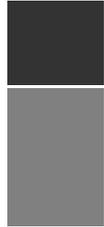


Avocent®

AMWorks®

Installer/User Guide





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Installer/User Guide

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Product Overview

The AMWorks[®] software is a Java[™]-based system administration tool that enables you to easily customize the user, server, device and security environments of your Avocent AMX[®] switching system. The AMWorks software supports the management of a cross-subnet AMX switch configuration and automatic synchronization of data through tiers.

Features and Benefits

Comprehensive system administration

The AMWorks software enables you to configure and manage all users, servers and AMX switching system devices across networks through one easy-to-navigate interface. Using AMWorks software, you can display user and server information and group membership, as well as user login status and device configuration. Overall system management includes verifying device communication, initiating software updates, removing offline devices and synchronizing databases.

Cross network discovery

Cross network discovery is the mechanism used by the AMWorks software to automatically determine the matrix switches on the AMX switching system configuration.

Multimedia modules

The AMWorks software enables you to discover AMIQDM-PS2, AMIQDM-USB and AMIQDM-VSN dual port/multimedia modules connected to your AMX switching system. The AMIQDM modules provide multimedia access to attached servers and may be connected to two AMX switches, an AMX switch and user station or two ports on the same AMX switch.

Multimedia feature

The AMWorks software provides settings for enabling and disabling the multimedia features (audio and serial) of the AMIQDM module for users and servers individually and globally. These features can also be set for the AMWorks software administrator.

Multilevel access to servers with password protection for each user

Each user profile supports a username and password for increased system security. User access to each system server can be individually configured with No access, View Only or Full access rights.

System synchronization

The AMWorks software provides enhanced system synchronization, which enables database changes (made on the AMX user station OSCAR[®] graphical user interface or from the AMWorks software) to be replicated across the entire AMX switching system in real time. This enhancement enables the AMX switching system to maintain a synchronized state without the need for users to perform repetitive synchronization. An overwrite option enables the pre-selected system database to replace all existing individual databases residing on the system. A merge option combines all existing databases, redistributes the new database across the AMX switching system and resolves any conflicts found on the system. The Sync Status Indicator displays the system synchronization state at a glance.

User and server groups

The AMWorks software enables you to create user groups to easily configure and manage multiple users with identical access rights to system servers. Change user group membership and server access rights at any time. Similarly, servers can be grouped for easy access management. Assign users specific access rights to all grouped servers with point and click ease. Both user and server groups allow easy viewing of group membership and characteristics.

System activity logs

The AMWorks software maintains detailed logs that record user, server and AMX switching system events for your reference. Events may be tailored by date and time intervals, type of device and type of event. Additionally, you may change the log's maximum size, event capacity and duration. Log maintenance operations include saving the event log contents to a specified location and clearing the log.

Seamless cascading

The AMWorks software enables you to seamlessly connect to servers attached to KVM switches cascaded below an AMX switch. The AMWorks software also enables you to change the mode of an MDM-capable device from Multiple Device mode to Single Device mode and back.

Redundancy and scalability

The AMX5111, AMX5121 and AMX5130 user stations may be connected to two AMX matrix switches in the same AMX switching system to allow redundancy and fault tolerance. In addition, you may increase the number of available target devices accessed from a single AMX user station.

Firmware updates

The AMWorks software provides the Update Firmware option, enabling you to update any of the devices in either Parallel or Sequential mode. In either mode, accurate update progress is reported from the system and displayed in the AMWorks software.

Resource switching router

The AMWorks software allows you to automatically control the switching of input ports to output ports on a resource switching router. This control is configurable, and based on AMX user station

and server combinations. Within the AMWorks software, you can add, delete and configure one or multiple resource switching routers. The AMWorks software supports standalone routers and backup routers for redundancy.

LDAP user authentication

The AMWorks software enables you to configure LDAP (Lightweight Directory Access Protocol) and/or native AMX user authentication on AMX switches in your system that support LDAP. When AMX switches are discovered on the system, the AMWorks software will identify the LDAP compatible AMX switches, enabling you to choose an authentication method and set server and query/search parameters.

Getting Started

Begin your AMWorks Java-based system administration tool session by installing and/or updating the AMWorks software. After installation, launch the AMWorks software and configure the network before using the management features. If a switching router has been installed in the AMX switching system, see *Resource Switching Router* on page 15 to add and configure the router.

For more information, see the following topics:

- *Installing and Updating the AMWorks Software* on page 6
- *Launching the AMWorks Software* on page 9
- *Configuring Network Settings* on page 67

NOTE: You must configure the network settings the first time the AMWorks software is installed. Once installation is complete, you may reconfigure the networks settings at any time.

- *Changing the Administrator's Password* on page 67
- *Adding AMX Switching System Devices* on page 65
- *Discovering Devices* on page 69
- *Updating Firmware* on page 74
- *Synchronizing the System Database* on page 73

Installation

If you already have the AMWorks software installed, we strongly recommend that you update to the most recent revision on your installation CD. If you are updating to the AMWorks software revision 5.0.x.x (or later) from 4.x.x.x (or earlier), we also recommend that you update the firmware on your AMX switches to revision 3.x.x.x (or later). The AMX switches must be at revision 3.x.x.x or later to be fully compatible with all revisions of the AMWorks software from 5.0.x.x and later. At this time, you also should update user station and server (AMIQ module) firmware. You may update your firmware either before or after you update the AMWorks software. Visit <http://www.avocent.com> to download the AMX switching system firmware update files.

NOTE: If you are installing an earlier version of the AMWorks software, we recommend that you delete the current database and then install the database of the desired version. Deleting the current database and installing the new one will guarantee its proper operation.

See *Updating Firmware* on page 74 for instructions on updating the firmware on your AMX switches.

System Requirements

To run AMWorks software, your PC must meet the following system requirements:

- Windows NT[®] with Service Pack 5.0 or higher.
- Windows[®] 2000 with Service Pack 2.0 or higher.
- Windows Server 2003.
- Windows XP.
- For optimal performance, at least 128 MB of RAM available for AMWorks software only.
- A minimum of 100 MB hard drive space. The total amount of storage space required will vary according to the size of the database and number of users, servers and Avocent AMX switch equipment being used.

You must have administrator privileges to install AMWorks software.

Installing and Updating the AMWorks Software

To install AMWorks software for the first time:

1. Place the AMWorks software installation CD into an appropriate drive and select *Setup*.
2. Follow the on-screen instructions.
3. Launch the AMWorks software. You will be prompted to enter a password. The default password is **password**. We recommend that you change the password from its default setting. See *Changing the Administrator's Password* on page 67.
4. After initial installation, follow the instructions in *Configuring Network Settings* on page 67.

NOTE: You must configure the network settings the first time the AMWorks software is installed. Once installation is complete, you may reconfigure the network settings at any time.

To update from AMWorks software revision 3.0.x.x (or earlier):

1. Ensure that the correct database information is distributed across the AMX switching system by performing a Synchronize System Database command from your existing AMWorks software installation. Use the AMWorks software database as the database reference source.
2. Note all user and server group information (see *User groups and server groups* on page 93 for more information). This upgrade will not restore current user and server group information.
3. Stop the mySql service. You must have administrator privileges to do this. If you are unsure about this process, contact your system administrator.
4. Uninstall the existing AMWorks software installation.
5. Continue with the previous instructions provided for installing AMWorks software for the first time.

To update from AMWorks software revision 4.x.x.x (or later):

1. Ensure that the correct database information is distributed across the system by performing a Synchronize System Database command from your existing installation. Use the AMWorks software database as your database source.
2. When synchronization has completed, close your version of AMWorks software.
3. Place the installation CD for your new version of AMWorks software into your CD drive, and select *Setup*.
4. Follow the on-screen instructions. You may install the new version of AMWorks software over the old version, and you may choose to keep your existing database intact.
5. Proceed to the next section.

To complete the installation:

1. After updating the AMWorks software, follow the instructions in *Discovering Devices* on page 69 or *Adding AMX Switching System Devices* on page 65. If the AMWorks software exists on the same physical network and subnet as the AMX switches, then you will only need to a

perform a Discover Devices command, and all of your AMX switches will be automatically discovered. If they are not automatically discovered, check that the configuration ID specified in the Network Settings dialog box matches the configuration ID specified on all of your AMX switches.

2. Perform a Synchronize System Database command on your newly configured system. See *Synchronizing the System Database* on page 73 for more information.
 - a. Choose one of your AMX switches as your database source.
 - b. Select the *Overwrite* option.
 - c. Click the *Start* button.
3. Update the firmware on your AMX switches, if necessary. See *Updating Firmware* on page 74 for more information. After updating firmware, proceed to step 4.

NOTE: Unless firmware updates are made to AMX switches, synchronization of the system databases will not be performed successfully.

4. If you wish to set up user groups and server groups, you may do so now.

Uninstalling the AMWorks Software

To uninstall the AMWorks software:

1. Go to the Windows Control Panel.
2. Select the *Add or Remove Programs* option from the Control Panel.
3. Select *Avocent AMWorks*.
4. Click the *Change/Remove* button.
5. Follow the uninstall instructions.

Basic Operations

Once installed, you may begin using the AMWorks software to manage the AMX switching system.

Launching the AMWorks Software

To launch the AMWorks software:

1. Select *Start - Programs - AMWorks* from the menu bar.
- or -
Click the *AMWorks* icon on your desktop, if available.
2. When prompted, type your password. The default is **password**. Click *OK*.

To change your password, see *Changing the Administrator's Password* on page 67.

NOTE: Only one instance of the AMWorks software is permitted to run at any one time.

Navigating the AMWorks Software

The AMWorks software window is divided into several areas: the menu bar, toolbar, tree view, display screen and synchronization status bar. The connectivity table is also displayed when applicable. The content of these areas changes based on whether a user, server or device is selected or what task is to be completed. The following section illustrates the AMWorks software window and provides descriptions of each area.

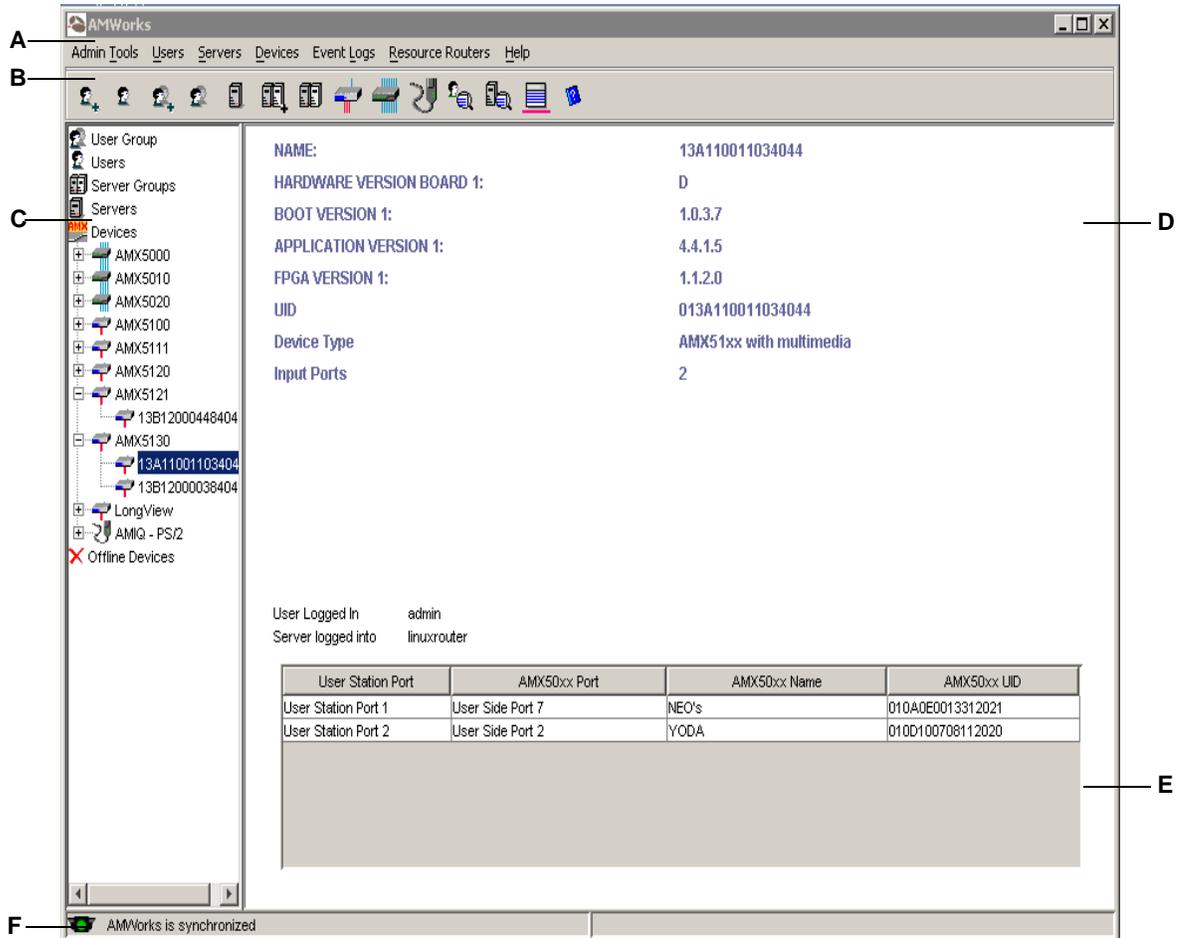


Figure 3.1: AMWorks Software Window

Table 3.1: Window Areas

Window Areas	Content
A: Menu Bar	<p>The menu bar at the top of the window contains command menus for Admin Tools, Users, Servers, Devices, Event Logs and Help.</p> <p>NOTE: The term “devices” is used in the AMWorks Java-based system administration tool to refer to AMX switches, AMX user stations and AMIQ modules.</p>

Table 3.1: Window Areas

Window Areas	Content
B: Group Selector Pane (Toolbar)	<p>The toolbar contains icons that are equivalent to certain menu commands:</p> <ul style="list-style-type: none"> • New User, Edit/View User • New User Group, Edit/View User Group, Edit/View Server • Add Server Groups, Edit/View Server Groups • Edit/View User Station, Edit/View Matrix Switch, View AMIQ Module, View All Matrix Switches • User Event Log, Server Event Log, System Event Log • Help <p>When you place the mouse pointer over a toolbar icon without selecting it, a tool tip appears, displaying the icon name.</p>
C: System Selector Pane (Tree View)	<p>The system selector pane in the left portion of the window contains icons for user groups, users, server groups, servers, devices and offline devices. Double-clicking an icon expands the tree view, enabling you to view the selected information. Right-clicking certain icons displays additional functionality.</p>
D: Display Screen	<p>The display screen in the right portion of the window contains user, user group, server, server group or device information, according to what has been selected in the system selector pane.</p>
E: Connectivity Table	<p>When a device is selected in the system selector pane, the connectivity table displays detailed connection information. If an AMX5111, AMX5121 or AMX5130 user station is connected to two AMX switches within the same AMX switching system, the connectivity table displays the connection information for both switches.</p>
F: Synchronization Status Bar	<p>The status bar at the bottom-left corner of the window indicates the AMWorks software synchronization status. The synchronization indicator is green when the local database is synchronized with the AMX switch databases. The synchronization indicator is red when a change has been made to the AMWorks software, and it is no longer synchronized with the local database.</p>

NOTE: Some AMWorks software operations have equivalent functions in the OSCAR interface. If a change is made to the same object using the AMWorks software and the OSCAR interface, the most recent change will take precedence.

Device icons

The AMX switching system and MDM devices are represented in the AMWorks software menu bar, tree view and connectivity table by the following icons.

Table 3.2: Tree View

Device Icon	Description
	AMX switch
	AMX user station
	AMIQ/AMIQDM modules
	MDM-capable AMIQ module (AMIQ module attached to a KVM switch)
	MDM server (MDM servers within an AMIQ module that represent the physical servers attached through a KVM switch)

AMIQ/AMIQDM module icons

The AMIQDM modules are represented in the AMWorks software tree view by the MDM AMIQ module icon. The AMIQDM module is represented by only one MDM AMIQ module icon in the AMWorks software device tree regardless of how it is physically configured. You can display AMIQDM module connectivity information by clicking on the MDM AMIQ module icon. When you expand the MDM AMIQ module branch in the tree view and click on the attached server icon(s), the information panel will display the AMIQDM module name, device type and port information.

NOTE: The AMIQDM modules in your system will not operate in Dual mode or support multimedia functionality unless your AMX switching system is upgraded to the latest AMX switch system firmware.

Connectivity table

Connectivity information for each of the devices (matrix switches, user stations and AMIQ modules) present in the AMX switching system is displayed in a connectivity table when a device is selected. You may select a device by clicking the device icon in the tree view or by going to the menu bar and choosing *Admin Tools - Find*.

The task bar on the connectivity table displays the number and type of connections for the input and output ports on the selected AMX switch. See *Device icons* on page 12 for more information.

If an AMIQDM module is connected to two ports on the same switch, there will be two entries for the AMIQDM module in the connectivity table for that switch. Otherwise, the connectivity table will display a single entry for each AMIQDM module connected to the selected switch.

NOTE: Since the MDM servers are virtual and have no real connectivity, there is no connectivity table for the MDM server. However, MDM server port numbers and port names/UIDs are displayed in the existing connectivity table of the parent MDM AMIQ module.

Logging Out of the AMWorks Software

To log out of the AMWorks software:

1. Select *Admin Tools - Logout* from the menu bar.
- or -
Type **Ctrl+L**.
2. When you log out, the AMWorks software is minimized on the desktop. When you maximize the AMWorks software, you will be prompted for your password.

Exiting the AMWorks Software

To exit the AMWorks software:

Select *Admin Tools - Exit* from the menu bar.

- or -

Type **Ctrl+X**.

- or -

Click the *Close (X)* button in the upper-right corner of the window.

Resource Switching Router

The AMWorks software provides control of the resource switching router (nVision) through a series of pre-configured connections tables or “resource groups.” Resource groups define a set of input ports and/or output ports that will be connected (input to output) on the resource router when a connection or disconnection occurs between an AMX user station and a server. Using the Define Resource Groups [Define TRG (Target Resource Group), Define CRG (Console Resource Group) or Define DRG (Default Resource Group)] feature, you can create connections tables and associate them with system servers and user stations. These connection paths enable any input to be switched to any output having the same signal type. In addition, one input can be switched to many outputs. When the AMWorks software receives a switching event for an AMX user station and server combination, the switching of the proper resource groups is executed. Generally speaking, TRGs and DRGs define input ports and CRGs define output ports.

NOTE: Changes made to a router's partitions are not updated in the AMWorks software. After making changes to partition information, you must delete the router from the AMWorks software and re-add the router.

Perform the following tasks in the order shown to add and configure the nVision router using the Resource Routers feature:

- Add one or more switching routers.

NOTE: The nVision switching router does not respond to UDP broadcast messages; therefore, it must be manually added.

- Synchronize the system database, if you have not done this previously.
- If desired, name router levels and ports.

NOTE: Naming levels and ports is recommended.

- Configure the switching router(s) by defining resource groups.

Adding a Switching Router

You can add a router using the Resource Routers feature. If you add a backup to a primary router, ensure that both routers are identical in hardware and format. However, the primary and backup must have different IP addresses.

NOTE: The nVision switching router does not respond to UDP broadcast messages and cannot be automatically discovered; therefore, it must be manually added.

To add a switching router:

1. From the Resource Routers tab on the AMWorks software main menu, click *NVISION - Add*. The Add Resource Router dialog box displays.
2. In the IP Address field, type the IP address of the router you wish to add to your system.
3. (Optional) In the Device Name field, type a name for the router. This name can be up to 20 characters long.

NOTE: The IP address is used as the router name if you do not enter a device name in this field.

4. Click the *Backup* checkbox if you wish to designate this router as a backup. The Primary drop-down list displays a list of available primaries in the system that can be associated with the backup.

NOTE: The Backup checkbox is gray if no primary routers exist on the system.

5. From the Primary drop-down list, select the primary router connected to your system.
6. Click the *Add Device* button to add the router to your system.
7. Click *Cancel* to exit the Add Resource Router dialog box.
8. Repeat steps 1-7 to add another router to your system.

Deleting a Switching Router

Delete a primary or backup router from your system using the Resource Routers feature.

To delete a router:

1. From the Resource Routers tab on the AMWorks software main menu, click *NVISION - Delete*. The Delete Resource Router dialog box displays the names of the resource routers in your system.
2. Under Device Name, select the router you wish to delete and click the *Remove Device* button. If the primary has a backup associated with it, it will be deleted also.

NOTE: Clicking *Remove Device* removes all of the associations, backups and group definitions assigned to the selected router.

3. If you wish to delete a backup router, select the associated router, then click the *Remove Backup* button. The Delete Backup message box displays.
4. Click *Continue* to delete the selected backup(s).
5. After deleting routers, click *Exit* to dismiss the dialog box.

Configuring a Switching Router

The AMWorks software enables you to configure a switching router by using one of the Configure Resource Router options (Define TRG, Define CRG or Define DRG). Using the Configure Resource Router feature, you can create connections tables and associate them with system servers and AMX user stations (supported by AMX5120, AMX5121 and AMX5130 user stations). These connection paths enable any input to be switched to any output having the same signal type. Before defining resource groups, you may name the router levels and ports on the selected router.

To configure a switching router:

1. From the AMWorks software main menu, select the *Resource Routers* tab and then click *NVISION - Configure*.
2. (Optional) Name the levels and ports on the switching router. On the Resource Router Configuration dialog box, click the *Naming* tab and name the router as desired.
3. After naming the levels and ports, define CRGs, TRGs and DRGs for the switching routers in your system by selecting the appropriate tabs on the Configure Resource Router dialog box. For more information see *Defining TRGs* on page 18, *Defining CRGs* on page 20 and *Defining DRGs* on page 21.
4. After you have defined the resource groups for the switching router(s) in your system, view the router information by selecting the *Router Info* tab.

To change the IP address of a resource router:

1. From the AMWorks software main menu, select the Resource Routers tab and then click *NVISION - Configure*.
2. Using the Device IP Address drop-down menu, select the IP address of the resource router you wish to change and click the *Change Address* button.
3. Enter the new device name, device IP and backup IP in the provided spaces.

NOTE: Changing the device IP does not automatically change the device name: the device name is purely a label-string that is assigned by the user. Therefore, it is possible for the device-name to be inconsistent with the device-IP.

4. Click *OK* to accept the changes
- or -
Cancel to exit without making the change.

Naming Router Levels and Ports

After adding the switching router(s), you may enter descriptive names for a router's level for the input/output ports to replace the default internal numbers. These descriptive names will be displayed in the Define TRG, Define CRG and Define DRG tab dialogs to assist in creating the resource groups. After naming the levels, inputs and outputs for selected routers, begin defining the resource groups.

To name a router's levels and ports:

1. From the Resource Routers tab on the AMWorks software main menu, click *NVISION - Configure*. The Resource Router Configuration dialog box displays.
2. Click the *Naming* tab on the Resource Router Configuration dialog box.
3. From the Device drop-down list, select the switching router you wish to configure.
4. From the Level drop-down list, select the level you wish to name.

NOTE: The input and output tables will display the input and output port numbers for the level you selected.

5. (Optional) In the Level Name field, type a descriptive name to associate with the Level entry you selected. This name can be from 1-8 characters.

NOTE: The Level Name field will display a name if one has been defined or the ASCII character for its number if a name has not been defined. Leading and trailing spaces will be deleted when *Save Names* or *OK* is selected.

6. (Optional) In the Name fields of each table, type descriptive names for the input and the output ports for each port number. The port numbers will be displayed in the Input and Output columns.

NOTE: The Name fields in the tables will display names if they have been entered or ASCII characters for the numbers if names have not been defined. Leading and trailing spaces will be deleted when *Save Names* or *OK* is selected.

7. Click the *Save Names* button to save the association between the level and the level name, ports and port names.
8. Repeat steps 4-7 to name additional levels and ports in the selected router.
9. (Optional) If you wish to name levels and ports for an additional router, complete steps 3-7.
10. After naming the levels and ports for the selected router(s), click *OK* to save changes and exit the Resource Router Configuration dialog box.

- or -

Click the *Define CRG* tab to begin defining resource groups. For more information, see *Defining TRGs* on page 18, *Defining CRGs* on page 20 and *Defining DRGs* on page 21.

Defining TRGs

After you have added a switching router and named the levels and ports available in the router, define a Target Resource Group (TRG) for a particular server. The TRG you define will associate a router, an input or output port designation and an input port definition with the selected server for each index in the group. When this server is connected to a user station, the AMWorks software maps, by index number, the TRG with the corresponding Console Resource Group (CRG), enabling the switching of the proper input ports to output ports. After defining the TRG for a selected server, define a CRG and, optionally, a Default Resource Group (DRG) for AMX switching system user stations.

The AMX switching system also enables you to define TRGs that group each of the following:

- Multiple routers
- Multiple levels
- Both inputs and outputs

See *Defining TRGs - Multiple Routers, Levels, I/O* on page 23 for more information.

To define a TRG:

1. From the Resource Routers tab on the AMWorks software menu bar, click *NVISION - Configure*. The Configure Resource Router dialog box displays.
2. Click the *Define TRG* tab.
3. From the Server Name drop-down list, select the server for which you wish to define a TRG. The drop-down list contains the name of the available servers in the system. If a TRG has already been defined for the selected server, the information is displayed in the input and output tables.
4. From the Device drop-down list, select the switching router for the TRG.

NOTE: The switching router you select must be the same in the TRG, CRG and DRG for a specific index.

5. From the Level drop-down list, select the desired level available on the switching router for the TRG. If you named levels earlier, the Level drop-down list will display the named levels; otherwise, the name will be the ASCII character string representing the level number.
6. The *Port Disposition* button is selected by default. In this case, the Input button should be the default.

NOTE: The port disposition can be changed from the default. If changed, ensure that the DRG is set to the same port disposition as the TRG and the CRG is set to the opposite port disposition.

7. From the Port drop-down list, select a port (number or name) for the level you selected in step 5. The port name, if applicable, or the ASCII string representing the port number is displayed.
8. After selecting the router, level, port disposition and port, click the *Add* button to add the entry to the end of the table. The table accumulates the entries made and displays them when you click *Add*.

NOTE: The Index automatically numbers the TRGs you define, starting at one and incrementing each row you add. Ensure that the index (number) of the TRG entries matches the index (number) of the CRG and DRG entries.

9. Repeat steps 5-8 to continue defining the TRG for the selected server.
10. (Optional) Modify a table entry by selecting the entry in the table. The entry parameters are loaded into the fields to the left of the table. After making your selection from the drop-down lists, click *Update* to update the index parameters.
 - and/or -
 - Delete a table entry by selecting the entry table and clicking the *Delete* button.

11. After configuring the TRG for the selected server, click the *Save Group* button to save the TRG to the database and associate it with the selected server.
12. Click *OK* to save changes to all of the dialog boxes and exit the Configure Resource Router dialog box.
 - or -
 - Click the *Define CRG* tab to define a resource group for a particular user station.

Defining CRGs

After you have defined a Target Resource Group (TRG) for a particular server, define a Console Resource Group (CRG) for a particular user station. The CRG you define will associate a router, a level, an input or output port and an output port definition with the selected user station for each index in the group. When this user station is connected to a server, the AMWorks software maps, by index number, the TRG with the corresponding CRG, enabling the switching of the proper input ports to output ports. After defining the CRG for a selected user station, define a Default Resource Group (DRG) for AMX user stations.

The AMWorks software also enables you to define CRGs that combine each of the following:

- Multiple routers
- Multiple levels
- Both inputs and outputs

See *Defining CRGs - Multiple Routers, Levels, I/O* on page 24 for more information.

To define a CRG:

1. From the Resource Routers tab on the AMWorks software main menu, click *NVISION - Configure*. The Configure Resource Router dialog box displays.
2. Click the *Define CRG* tab.
3. From the User Station Name drop-down list, select the user station for which you wish to define a CRG. The drop-down list contains the names of the available user stations in the system. If a CRG has already been defined for the selected user station, the information is displayed in the input and output tables.
4. From the Device drop-down list, select the switching router for the CRG.

NOTE: The switching router you select must be the same in the TRG, CRG and DRG for a specific index.

5. From the Level drop-down list, select the desired level available on the switching router for the CRG. The Level drop-down list will display the named levels, if applicable, or ASCII character string representing the level number.
6. The *Port Disposition* button is selected by default. In this case, the Output button should be the default.

NOTE: The port disposition can be changed from the default. If changed, ensure that the DRG is set to the same port disposition as the TRG. The CRG must be set to the opposite port disposition.

7. From the Port drop-down list, select a port (number or name) for the level you selected in step 5. The port name, if applicable, or the ASCII string representing the port number is displayed.
8. After selecting the router, level, port disposition and port, click the *Add* button to add the entry to the end of the table. The table accumulates the entries made and displays them when you click *Add*.

NOTE: The Index automatically numbers the CRGs you define, starting at one and incrementing each row you add. Ensure that the index (number) of the CRG entries matches the index (number) of the TRG and DRG entries.

9. Repeat steps 5-8 to continue defining the CRG for the selected server.

NOTE: Selecting an entry in the table loads the entry's parameters. Clicking the *Update* button updates the index parameters after you have modified an index selection. Clicking the *Delete* button deletes the selected entry from the table.

10. (Optional) Modify a table entry by selecting the entry in the table. The entry parameters are loaded into the fields to the left of the table. After making your selection from the drop-down lists, click *Update* to update the index parameters.
 - and/or -
 - Delete a table entry by selecting the entry table and clicking the *Delete* button.
11. After configuring the CRG for the selected user station, click the *Save Group* button to save the CRG to the database and associate it with the selected user station.
12. Click *OK* to save changes to all the dialog boxes and exit the Configure Resource Router dialog box.
 - or -
 - Click the *Define DRG* tab to define a resource group for a particular user station under disconnect conditions.

Defining DRGs

After you have defined a Console Resource Group (CRG) for a particular user station, define a Default Resource Group (DRG) for a particular user station in a disconnected state. The DRG you define will associate a router, a level, an output port designation and an output port definition with the selected user station. When the user station is disconnected, the AMWorks software maps, by index number, the DRG with the corresponding CRG, enabling the disconnection of the switch.

The AMWorks software also enables you to define DRGs that combine each of the following:

- Multiple routers
- Multiple levels
- Both inputs and outputs

See *Defining DRGs - Multiple Routers, Levels, I/O* on page 25 for more information.

To define a DRG:

1. From the Resource Routers tab on the AMWorks software main menu, click *NVISION - Configure*. The Configure Resource Router dialog box displays.
2. Click the *Define DRG* tab.
3. From the User Station Name drop-down list, select the user station for which you wish to define a DRG. The drop-down list contains the name of the available user stations in the system. If a DRG has already been defined for the selected user station, the information is displayed in the input and output tables.
4. From the Device drop-down list, select the switching router for the DRG.

NOTE: The switching router you select must be the same in the TRG, CRG and DRG for a specific index.

5. From the Level drop-down list, select the desired level available on the switching router for the DRG. The Level drop-down list will display the named levels, if applicable, or the ASCII character string representing the level number.
6. The *Port Disposition* button is selected by default. In this case, the Input button should be the default.

NOTE: The port disposition of the DRG must be the same as the TRG. The port disposition of the CRG must be opposite.

7. From the Port drop-down list, select a port (number or name) for the level you selected in step 5. The port name, if applicable, or the ASCII string representing the port number is displayed.
8. After selecting the router, level, port disposition and port, click the *Add* button to add the entry to the end of the table. The table accumulates the entries made and displays them when you click *Add*.

NOTE: The Index automatically numbers the DRGs you define, starting at one and incrementing each row you add. Ensure that the index (number) of the DRG entries matches the index (number) of the TRG and CRG entries.

9. Repeat steps 5-8 to continue defining the DRG for the selected user station.

NOTE: Selecting an entry in the table loads the entry's parameters. Clicking the *Update* button updates the index parameters after you have modified an index selection. Clicking the *Delete* button deletes the selected entry from the table.

10. (Optional) Modify a table entry by selecting the entry in the table. The entry parameters are loaded into the fields to the left of the table. After making your selection from the drop-down lists, click *Update* to update the index parameters.
- and/or -
Delete a table entry by selecting the entry table and clicking the *Delete* button.
11. After configuring the DRG for the selected user station, click the *Save Group* button to save the DRG to the database and associate it with the selected user station.

12. Click *OK* to save changes to all of the dialogs and exit the Configure Resource Router dialog box.

Defining TRGs - Multiple Routers, Levels, I/O

You can define a TRG that includes multiple routers, multiple levels or a combination of inputs and outputs (I/O).



Figure 4.2: Defining TRGs - Multiple Routers

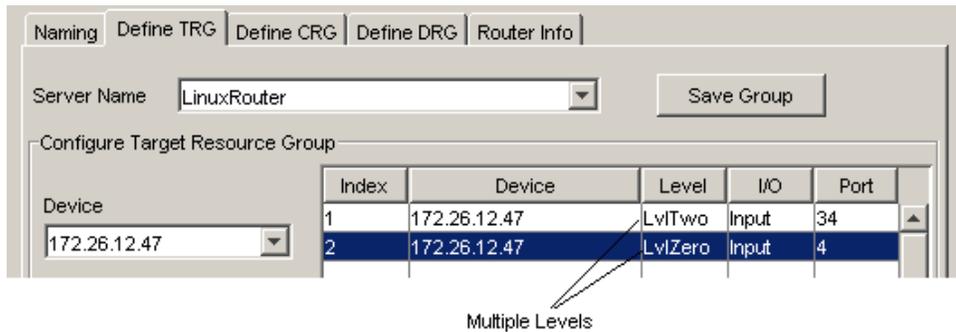


Figure 4.3: Defining TRGs - Multiple Levels

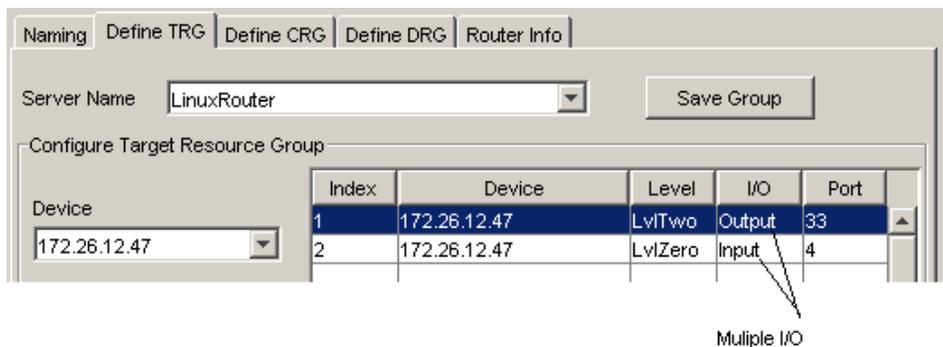


Figure 4.4: Defining TRGs - Multiple I/O

Defining CRGs - Multiple Routers, Levels, I/O

You can define a CRG that includes multiple routers, multiple levels or a combination of inputs and outputs (I/O).

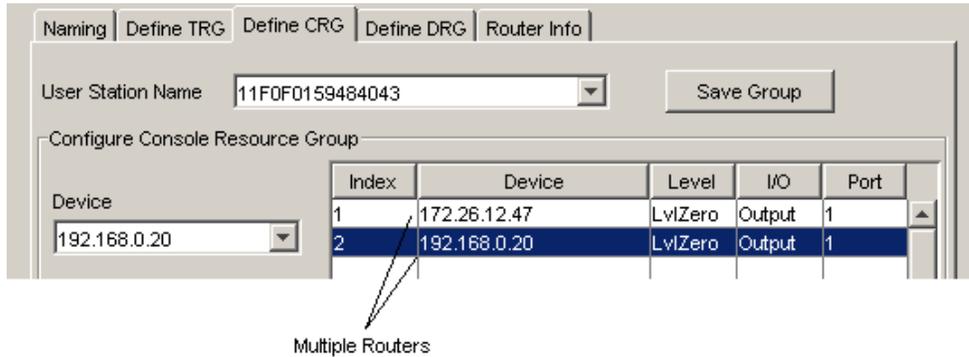


Figure 4.5: Defining CRGs - Multiple Routers

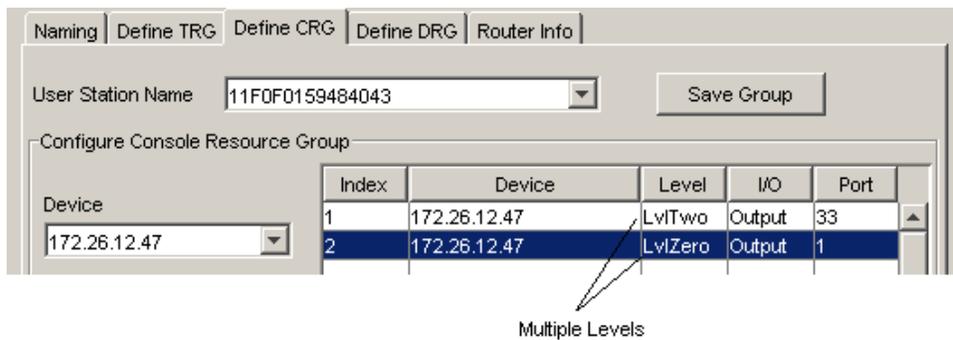


Figure 4.6: Defining CRGs - Multiple Levels



Figure 4.7: Defining CRGs - Multiple I/O

Defining DRGs - Multiple Routers, Levels, I/O

You can define a DRG that includes multiple routers, multiple levels or a combination of inputs and outputs (I/O).

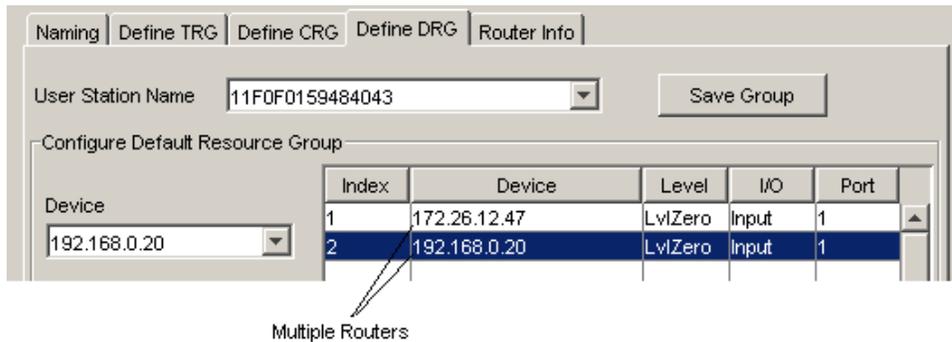


Figure 4.8: Defining DRGs - Multiple Routers

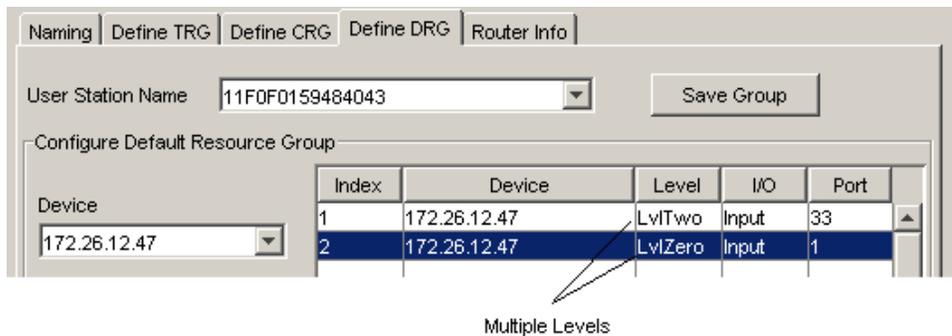


Figure 4.9: Defining DRGs - Multiple Levels



Figure 4.10: Defining DRGs - Multiple I/O

Viewing Switching Router Information

You can view partition and connection information related to all switching routers available in your system from the Configure Resource Router dialog box.

To view router information:

1. From the Resource Routers tab on the AMWorks software main menu, click *NVISION - Configure*. The Configure Resource Router dialog box displays.
2. Click the *Router Info* tab.
3. From the Device Name drop-down list, select the name of the switching router. Selecting the name of the router displays its IP address in the Device IP Address field and also populates the partition information table. The partition information is manually set when the router is first added and is assumed to be current as long as the router is in the system.

NOTE: You can edit the name of the selected switching router in the Device Name field. Type the new name and click *OK* to execute the change. Placing your cursor over the Device IP Address field displays a tool tip with the associated backup IP address if one is present.

4. If you wish to show connection information, click the *Get Conn Info* button. The connection information table displays the current state of the switching router's crosspoints.
5. Click *OK* to save any edits to a router's name and to exit the Configure Resource Router dialog box.

Managing Multimedia

The AMWorks software enables you to set the multimedia (audio and serial) feature globally and for individual users and servers.

NOTE: The AMIQDM modules in your system will not operate in Dual mode or support multimedia functionality unless your AMX switching system is upgraded to the latest firmware.

Setting Audio and Serial for Users

The multimedia (audio and serial) feature will be operational under the following conditions:

- All AMX switching system hardware devices in a single path, including the server, the AMIQDM module, the AMX switch and the AMX5130 user station, are multimedia capable.
- The user's multimedia settings are enabled.

To set audio and serial for a user:

1. Select *Users - Edit/View User* from the menu bar.
 - or -
 - Type **Ctrl+U**.
 - or -
 - Click the *Edit/View User* icon in the toolbar.
2. Type or select a username from the list. Click *OK*. The Edit/View User window is displayed.
3. Click *User Settings - Audio/Serial*. The default audio and serial settings display as checked (enabled) for all users.
4. Click the checkboxes to enable or disable the audio in, audio out and serial features.
5. Click *OK* to save revised user information.
 - or -
 - Click *Cancel* to exit the dialog box without saving the changes.

Setting Audio and Serial for Servers

To set audio and serial for a server:

1. Select *Servers- Edit/View Server* from the menu bar.
 - or -
 - Type **Ctrl+U**.
 - or -
 - Click the *Edit/View Server* icon in the toolbar.
2. Type or select a server name from the list. Click *OK*. The *Edit/View Server* window is displayed.
3. Select the *Audio/Serial* tab. The default audio and serial settings display as checked (enabled) for all servers.

NOTE: The *Audio/Serial* tab will be active when the server is capable of supporting the multimedia feature.

4. Click the checkboxes to enable or disable the audio in, audio out and serial features.
5. Click *OK* to save revised user information.
 - or -
 - Click *Cancel* to exit the dialog box without saving the changes.

Setting Global Audio and Serial for Users and Servers

The checkboxes used for the global multimedia settings can represent three different system states. In addition, the function of the checkboxes is slightly different when the dialog box is first displayed and when the settings are being configured (enabled or disabled). Follow the procedures below to set multimedia features (audio and serial) globally for all users and all servers.

Checkbox settings when first displayed

All checkboxes will be checked, gray background, with the exception of the *Include Administrator* checkbox, which will be unchecked.

Checkbox settings after configuration

- Unchecked - All eligible multimedia users or servers in the system will be disabled for this feature.
- Checked - All eligible multimedia users or servers in the system will be enabled for this feature.
- Checked, gray background - The multimedia states for the users or servers for this feature remain unchanged.

To display and change global audio and serial settings:

1. Select *Users - Edit/View Users* from the menu bar.
 - or -

Type **Ctrl+U**.

- or -

Click the *Edit/View User* icon in the toolbar.

2. Select the administrator from the list of users. Click *OK*. The Edit/View Administrator window displays.
3. Click the *Global* button. The Global Multimedia Settings window displays.

NOTE: All checkboxes and buttons under All Users will be inactive if there are no users in the AMX switching system.

4. Under All Users, click the checkboxes to enable or disable the audio in, audio out and serial features globally for all servers.
5. Click the *Include Administrator* checkbox to apply these global settings to the administrator.
6. Click the *Apply to Users* button to apply the changes to all users in the system.

NOTE: All checkboxes and buttons under All Servers will be inactive if there are no multimedia capable servers in the AMX switching system.

7. Under All Servers, click the checkboxes to enable or disable the audio in, audio out and serial features globally for all servers.
8. Click the *Apply to Servers* button to apply the changes to all servers in the system.
9. Click *Exit* to exit the dialog box.

Setting Audio and Serial for the Administrator

The multimedia (audio and serial) feature will be operational under the following conditions:

- All AMX switching system hardware devices in a single path, including the server, the AMIQDM module, the AMX switch and the AMX5130 user station, are multimedia capable.
- The administrator's multimedia settings are enabled.

To set audio and serial for the administrator:

1. Select *Users - Edit/View User* from the menu bar.
- or -
Type **Ctrl+U**.
- or -
Click the *Edit/View User* icon in the toolbar.
2. Select the administrator from the list of users. Click *OK*. The Edit/View User window is displayed.
3. Click *User Settings - Audio/Serial*. The default audio and serial settings display as checked (enabled) for the administrator.
4. Click the checkboxes to enable or disable the audio in, audio out and serial features.

5. Click *OK* to save revised information for the administrator.
- or -
Click *Cancel* to exit the dialog box without saving the changes.

NOTE: Clicking *Global* enables you to display the global multimedia settings for all users and all servers. It also enables you to include the administrator in the list of users' global settings.

Managing Users and User Groups

The AMWorks software enables you to manage users and user groups in your AMX switching system. For an introduction to user and server groups, see *User groups and server groups* on page 93.

By using AMWorks software to manage users and user groups, you can:

- Add up to 295 users (see *Adding and Removing Users* on page 31)
- Display a list of all users and their login status, a list of logged in users and information about a logged in user's session (see *Editing and Viewing Users* on page 34)
- Display and change a user's configuration information (see *Editing and Viewing Users* on page 34)
- Set audio and serial for users (see *Setting Audio and Serial for Users* on page 27)
- Set global audio and serial for users and servers (see *Setting Global Audio and Serial for Users and Servers* on page 28)
- Remove users (see *Adding and Removing Users* on page 31)
- Log out users (see *Logging Out Users* on page 40)
- Add user groups (see *Adding and Removing User Groups* on page 38)
- Display and change user group configuration information (see *Editing and Viewing User Groups* on page 39)
- Display user memberships in user groups (see *Editing and Viewing User Groups* on page 39)
- Remove user groups (see *Adding and Removing User Groups* on page 38)

Adding and Removing Users

Follow the procedures below to add and remove users in the AMX switching system. For more information, see *User groups and server groups* on page 93.

To add a user:

1. Select *Users - New User* from the menu bar.
- or -
Click the *New User* icon in the toolbar.

2. The New User dialog box appears. In the Username field, type a 1-15 character username.
3. In the Password field, type a 6-15 character password. In the Confirm Password field, retype the password.
-or-
If you wish to set a blank password for the user, select *Allow Blank Password*. The Password and Confirm Password fields will be disabled.

NOTE: See *Rules for usernames and passwords* on page 90 for more information.

4. If you wish to associate this user with a user group, click the *User Groups* tab. The UnAssociated Groups column lists all user groups.

NOTE: If you create user groups on your system, you must use the AMWorks software for all subsequent user access rights changes on the system. If you make any subsequent changes from an AMX user station OSCAR interface, the system will go out of sync. See *Synchronization status indicator turns red* on page 98 for more information.

To associate the new user with one or more groups, select a group name, or use the **Shift** or **Ctrl** keys to select multiple group names. Then click the right angle (>) button. The selected group name(s) will move from the UnAssociated Groups column to the Associated Groups column.

To associate the new user with all groups, select any group name in the UnAssociated Groups column. Then click the double right angle (>>) button. All group names will move from the UnAssociated Groups column to the Associated Groups column.

To remove group associations, select one or more group names in the Associated Groups column and click the left angle (<) or double left angle (<<) button to move them to the UnAssociated Groups column.

5. Click the *Servers* tab. The dialog box that appears contains three columns: No Access, View Only and Full Access. Each column has two buttons underneath it, labeled with the names of the remaining columns. By default, a user has no access to any server.
To change server access rights for the user, select the server name and click the button below it that corresponds to the desired rights. This moves the server name from the current access column to the access column indicated on the button. For example, if you select a server in the No Access column and then click the *View Only >* button, that server name moves to the View Only column, granting the user View Only access to that server.
6. Click the *Server Groups* tab. The dialog box that appears contains the same access columns and boxes as the Servers tab. By default, a user has no access to any server groups. To change server group access rights, select a server group name and then click one of the boxes below the column in the same manner described in step 5.
7. Click *OK* to save the new user information.
- or -
Click *Cancel* to exit the dialog box without saving the user information.

To remove a user:

1. Select *Users - Remove User* from the menu bar.
2. Select a user, or use the **Shift** or **Ctrl** keys to select multiple users.
3. Click the *Delete User(s)* button. A confirmation box appears.
4. Click *Yes* to confirm the deletion.
- or -
Click *No* to cancel the deletion.
5. Click *Exit*.

Importing Usernames

Usernames can be added to the AMWorks software database from comma separated value (CSV) files or LDAP servers. When the usernames are added, a default password of 123456 is automatically assigned to the AMX switch database for each username.

NOTE: The Import Wizard filters the list of names being imported. Names already appearing in the system will not appear in the list of usernames found.

To import usernames from a CSV file:

1. Select *Admin Tools - Import* from the menu bar.
2. In the Import Type box, click the *User Names* radio button.
3. In the Import Source box, click the *File* radio button. Then click the Next button.
4. Enter the name of the file you wish to import, then click the *Import* button.
5. A list of usernames will be displayed. Highlight the users that you wish to import and click the *Finish* button.

To import usernames from an LDAP server:

1. Select *Admin Tools - Import* from the menu bar.
2. In the Import Type area, select *User Names*.
3. In the Import Source area, select *LDAP Server* and then click *Next*.
4. In the Host Address field, type the IP address or DNS name for the LDAP server from which you wish to import names. If LDAP authentication settings are not present, the default value of the field is blank.
5. In the Port field, enter the port number that will be the target for the calling socket. By default, port 389 will be used for LDAP and port 636 will be used for LDAPS.
6. In the User Name field, type an LDAP Distinguished Name. (If LDAP authentication settings are available, they will be entered already.) You must follow standard LDAP authentication formatting rules to specify an LDAP Distinguished Name. An example would be:
`cn=Administrator,cn=Users,dc=yourDomainName,dc=com`

NOTE: This example represents a user called administrator, which exists in the Users container on the yourDomainName.com Authentication server. At a minimum, you must replace the "yourDomainName" text with a valid domain name for your Authentication server.

7. In the Password field, type the password associated with the entered username. If the user is the administrator, you must specify the administrator password recognized by the Authentication server. The password you enter may be up to 30 characters long. All standard Microsoft Windows characters are allowed. Asterisks (*) will display for each character you type in the field.
8. In the Mode area, select either *LDAP* or *LDAPS* to specify the server type for your system. The default selection is LDAP, a server type that sends system communications without encryption, a method often called "in the clear." The LDAPS server type encrypts system communications by sending them over an SSL connection.
9. (Optional) You may choose to use the fields within the Schema area to narrow the search for server names.

In the Search DN field, you may type an LDAP Distinguished Name using the criteria defined in step 6. The Search DN must represent the name of a user (whose permissions on the Authentication server will determine the scope of the LDAP search), and the domain name of the LDAP server on which this user exists.

In the Object Criteria field, you may type additional parameters for the search, such as country or organizational information.

In the Name Attribute field, you may type the name attributes of the server names you wish to be included in the search results.

10. Click the *Import* button to begin the search.
11. A list of usernames will be displayed. Highlight the users that you wish to import and click the *Finish* button.

NOTE: If errors occur on import, you will need to synchronize the system. See the Troubleshooting section for more information.

Editing and Viewing Users

Follow the procedures below to display and change user information.

To display a list of all users with their login status:

Click the *Users* icon in the group selector pane. The display screen will list all usernames and the login status of each user.

To display a list of logged in users:

Double-click the *Users* icon in the group selector pane, then click the *Logged In Users* icon. The display screen will list all usernames and the number of logins for each user.

To display information about a logged in user:

1. Select *Users - Logged In Users* from the menu bar.
2. Select a user from the User list box. The display will include the time the user logged in and the session duration.

To display and change a user's configuration information:

1. Select *Users - Edit/View User* from the menu bar.
 - or -
 - Type **Ctrl+U**.
 - or -
 - Click the *Edit/View User* icon in the toolbar.
2. Type a username or select a name from the list. Click *OK*.
3. The user's configuration information is displayed. You may change the username, set a new or blank password, and modify settings for user groups, server access and server group access. The User Settings tab also enables you to configure hot keys, target flag position, scan dwell time and audio and serial settings for system users. See *Setting Audio and Serial for Users* on page 27 and *Setting Hotkeys, Target Flag and Scan Dwell Time* on page 36 for more information.
4. Click *OK* to save revised user information.
 - or -
 - Click *Cancel* to exit the dialog box without saving the changes.

NOTE: See *Rules for usernames and passwords* on page 90 for more information.

Viewing User Permissions

To display a user's effective permissions:

1. Select *Users - View Effective Permissions* from the menu bar. A list of users will appear.
2. Select the user whose permissions you wish to display and click *OK*. The permission list will be displayed.
3. When you're finished viewing permissions, click *Exit* to close the window.

Editing and Viewing the Administrator

To display information about a logged in system administrator:

1. Select *Users - Logged In Users* from the menu bar.
2. Select *admin* from the User list box. The display will include the time the administrator logged in and the session duration.

To display and change the system administrator's configuration information:

1. Select *Users - Edit/View Users* from the menu bar.
- or -
Type **Ctrl+U**.
- or -
Click the *Edit/View User* icon in the toolbar.
2. Select *admin* from the list. Click *OK*. The Edit/View Administrator window displays.
3. You may change the system administrator's username and password. The User Settings tab also enables you to configure hot keys, target flag position, and scan dwell time and audio and serial settings for the system administrator. Refer to *Setting Audio and Serial for Users* on page 27 and *Setting Hotkeys, Target Flag and Scan Dwell Time* on page 36 for more information.
4. Click *OK* to save revised administrator information.
- or -
Click *Cancel* to exit the dialog box without saving the changes.

Setting Hotkeys, Target Flag and Scan Dwell Time

Follow the procedures below to assign hotkeys to system servers, place the Target Flag on user screens and set the time the server channel will remain on the screen while it is in Scan mode. You can define up to 12 hotkey sequences for each AMX switching system user.

To set hotkeys:

1. Select *Users - Edit/View User* from the menu bar.
- or -
Type **Ctrl+U**.
- or -
Click the *Edit/View User* icon in the toolbar.
2. Type a username or select a name from the list. Click *OK*. The user's configuration information is displayed.
3. Click the *User Settings* tab. The HotKeys settings display. The defined keys table displays existing hotkey sequences and associated server information for the selected user.
4. Select the hotkey sequence from the Assigned Key drop-down list that you wish to assign to a specific server.
5. Select the server name from the Assigned Server drop-down list. The Assigned Server Details displays information corresponding to the selected server, including the name and the IUD switch to which the server is connected.
6. Click the *Define* button to display the assigned hotkey sequences in the defined keys table.

NOTE: The Clear and Clear All buttons enable the removal of defined hotkey sequences and associated servers from the defined keys table and the AMX switching system. Selecting *None* from the Assigned Server drop-down list also enables the removal of a hotkey sequence.

7. Click *OK* to save changes.

To set the Target Flag position:

1. Select *Users - Edit/View User* from the menu bar.
 - or -
 - Type **Ctrl+U**.
 - or -
 - Click the *Edit/View User* icon in the toolbar.
2. Type a username or select a name from the list. Click *OK*. The user's configuration information is displayed.
3. Click the *User Settings* tab.
4. Click the *Target Flag* tab. The current Target Flag settings are displayed.
5. In the Display panel, click *Yes* to display the Target Flag.
 - or -
 - Click *No* to hide the Target Flag.
6. Click *Name* to display the server name on the Target Flag.
 - or -
 - Click *UID* to display the UID on the Target Flag.
7. Click *Yes* to display the Target Flag for the time period specified in the Duration field.
 - or -
 - Click *No* if you do not wish to specify a time period in the Duration field. The Duration field will be disabled.
8. Select a time period between 3 - 99 seconds for the Target Flag to be displayed. The default is 5 seconds.
9. Select a hotkey for the display of the Target Flag.
 - or -
 - Select *none* if you do not wish to assign a hotkey to the Target Flag display.

NOTE: Hotkeys used as server switching hotkeys will be unavailable for the Target Flag and will not display in the hotkey list.

10. Select a location for the Target Flag.
11. From the Color panel, select the text and the background colors for the Target Flag.
12. Click the *Preview* button to display the Target Flag.

NOTE: During preview, the target flag may disappear and the system may become unresponsive. For more information, see *Target flag disappears after preview* on page 100.

13. Double-click or press **Esc** to dismiss the Target Flag.

14. Click *OK* to save changes.

To set the dwell time:

1. Select *Users - Edit/View User* from the menu bar.
- or -
Type **Ctrl+U**.
- or -
Click the *Edit/View User* icon in the toolbar.
2. Type a username or select a name from the list. Click *OK*. The user's configuration information is displayed.
3. Click the *User Settings* tab.
4. Click the *Scan* tab.
5. Select a time period between 3 - 99 seconds that the server channel will be displayed before going to the next server.
6. Click *OK* to save changes.

Adding and Removing User Groups

Follow the instructions below to add or remove user groups in the AMX switching system. For more information, see *User groups and server groups* on page 93.

NOTE: If you create user groups in your system, you must use the AMWorks software for all subsequent user access rights changes in the system. If you make any subsequent changes from an AMX user station OSCAR interface, the system will go out of sync. See *Synchronization status indicator turns red* on page 98 for more information.

To add a user group:

1. Select *Users - New User Group* from the menu bar.
- or -
Click the *New User Group* icon in the toolbar.
2. The Add New User Group dialog box appears. In the Name of New Group box, type a name.
3. In the Description box, you may type an optional description containing up to 80 characters. This description appears during user group dialog.
4. Click the *Users* tab. The UnAssociated Users column lists all defined users.

To associate users with the new group, select a user, or use the **Shift** or **Ctrl** keys to select multiple users. Then click the right angle (>) button. The selected user(s) will move from the UnAssociated Users column to the *Associated Users column*.

To associate all users with the new group, select any user in the UnAssociated Users column. Then click the double right angle (>>) button. All users will move from the UnAssociated Users column to the Associated Users column.

To remove group associations, select one or more users in the Associated Users column. Then click the left angle (<) or double left angle (<<) button to move them to the UnAssociated Users column.

5. Click the *Server Access Rights* tab. The dialog box that appears contains three columns: No Access, View Only and Full Access. Each column has two buttons underneath it, labeled with the names of the remaining columns. By default, a user group has no access to any server.

To change server access rights for the group, select one or more server names and click the button below that corresponds to the desired rights. This moves the server name(s) from the current access column to the access column indicated on the button.

For example, if you select a server in the No Access column and then click the *View Only >* button, that server name moves to the View Only column, granting the group View Only access to that server.

6. Click *OK* to save the new group information.
- or -
Click *Cancel* to exit the dialog box without saving the group information.

To remove a user group:

1. Select *Users - Remove User Group* from the menu bar.
2. Select a group, or use the **Shift** or **Ctrl** keys to select multiple groups.
3. Click the *Delete User Group(s)* button. A confirmation box appears.
4. Click *Yes* to confirm the deletion.
- or -
Click *No* to cancel the deletion.
5. Click *Exit*.

Editing and Viewing User Groups

Follow the procedures below to display and change user group information. For more information, see *User groups and server groups* on page 93.

To display the names of user groups to which a user belongs:

1. Select *Admin Tools - Find* from the menu bar. In the Select Entity list box, choose *Users*. Type a username or select a name from the list. Click *OK*.
- or -
Double-click the *Users* icon in the group selector pane. Double-click the *All Users* icon in the group selector pane or click the handle to the left of the All users icon. Select a user.
2. The display screen will list the user group(s) to which that user belongs.

To display a list of user groups and their member counts:

Click the *User Group* icon in the group selector pane. The display screen will list the user group names and the number of members in each user group.

To display the names of users in a user group:

1. Select *Admin Tools - Find* from the menu bar. In the Select Entity list box, choose *User Groups*. Type a user group name or select a name from the list. Click *OK*.
- or -
Double-click the *User Group* icon in the group selector pane. Select a user group.
2. The display screen will list the names of users in that user group.

To display and change a user group's configuration information:

1. Select *Users - Edit/View User Group* from the menu bar.
- or -
Type **Ctrl+G**.
- or -
Click the *Edit/View User Group* icon in the toolbar.
2. Type a user group name or select a name from the list. Click *OK*.
3. The user group's configuration information is displayed. You may change the group name, description, associated users and server access rights.
4. Click *OK* to save revised group information.
- or -
Click *Cancel* to exit the dialog box without saving the changes.

Exporting Usernames

A list of all usernames within the AMWorks software database can be exported to a comma separated value (CSV) file.

To export usernames to a CSV file:

1. Select *Admin Tools - Export* from the menu bar.
2. In the Name Type box, click the *Users* radio button. Then click the *Next* button.
3. Enter the name of the file to which you wish to export, then click the *Export* button.

Logging Out Users

Follow the procedure below to log out users from one or more AMX user stations.

To log out users:

1. Select *Users - Logged In Users* from the menu bar.
2. To log out a specific user, select the name from the User list box, then click the *Logout from the user station* button.
- or -

If a user is logged in to more than one AMX user station, you may select one or more AMX user stations from the User Stations list box and then click the *Logout from the user station* button.

- or -

To log out all users from all AMX user stations, click the *Logout all Users* button.

3. Click *Done*.

Managing Servers and Server Groups

The AMWorks software enables you to manage servers and server groups as listed below. For an introduction to user and server groups, see *User groups and server groups* on page 93.

By using AMWorks software to manage servers and server groups, you can:

- Display information about servers (see *Editing and Viewing Servers* on page 46)
- Display and change a server's configuration information (see *Editing and Viewing Servers* on page 46)
- Display and change configuration information for an MDM-capable device (see *Editing and Viewing MDM-Capable Devices* on page 53)
- Set audio and serial for servers (see *Setting Audio and Serial for Servers* on page 28)
- Set global audio and serial for users and servers (see *Setting Global Audio and Serial for Users and Servers* on page 28)
- Add and remove server groups (see *Adding and Removing Server Groups* on page 43)
- Display and change server group configuration information (see *Editing and Viewing Server Groups* on page 47)
- Display server memberships in server groups (see *Editing and Viewing Server Groups* on page 47)
- Remove server groups (see *Adding and Removing Server Groups* on page 43)

Adding and Removing Server Groups

Follow the instructions below to add or remove server groups in the AMX switching system. For more information, see *User groups and server groups* on page 93 for more information.

NOTE: If you create server groups in your system, you must use the AMWorks software for all subsequent user access rights changes on the system. If you make any subsequent changes from an AMX user station OSCAR interface, the system will go out of sync. See *Synchronization status indicator turns red* on page 98 for more information.

To add a server group:

1. Select *Server - New Server Group* from the menu bar.
- or -
Click the *New Server Group* icon in the toolbar.
2. The Add New Server Group dialog box appears. In the Name of New Server Group field, type a name.
3. Click the *Servers* tab. The UnAssociated Servers column lists all servers.

To associate a server with the new group, select a server, or use the **Shift** or **Ctrl** keys to select multiple servers. Then click the right angle (>) button. The selected server(s) will move from the UnAssociated Servers column to the Associated Servers column.

To associate all servers with the new group, select any server in the UnAssociated Servers column. Then click the double right angle (>>) button. All servers will move from the UnAssociated Servers column to the Associated Servers column.

To remove group associations, select one or more servers in the Associated Servers column. Then click the left angle (<) or double left angle (<<) to move the selected server(s) to the UnAssociated Servers column.
4. Click the *Users* tab. The dialog box that appears contains three columns: No Access, View Only and Full Access. Each column has two buttons underneath it, labeled with the names of the remaining columns. By default, no users have access to the server group.

To change user access for the server group, select one or more usernames and click the button below that corresponds to the desired rights. This moves the username(s) from the current access column to the access column indicated on the button.

For example, if you select a user in the No Access column and then click the *View Only >* button, that username moves to the View Only column, granting the user View Only access to that server group.
5. To add a description for the server group, click the *Description* tab. You may type up to 80 characters.
6. Click *OK* to save the new server group information.
- or -
Click *Cancel* to exit the dialog box without saving the server group information.

To remove a server group:

1. Select *Users - Remove Server Group* from the menu bar.
2. Select a group, or use the **Shift** or **Ctrl** keys to select multiple groups.
3. Click the *Delete Server Group(s)* button. A confirmation box appears.
4. Click *Yes* to confirm the deletion.
- or -
Click *No* to cancel the deletion.
5. Click *Exit*.

Importing Server Names

Server names can be added to the AMWorks software database from comma separated value (CSV) files or LDAP servers.

NOTE: The Import Wizard filters the list of names being imported. Names already appearing in the system will not appear in the list of usernames found.

To import server names from a CSV file:

1. Select *Admin Tools - Import* from the menu bar.
2. In the Import Type box, click the *Server Names* radio button.
3. In the Import Source box, click the *File* radio button. Then click the *Next* button.
4. Enter the name of the file you wish to import, then click the *Import* button.
5. A list of UID numbers, server names and imported names will be displayed. Select a name from the Imported Names list, select the server(s) to update in the system servers table and click the *Update* button. Repeat until all desired names have been assigned.
6. Click the *Finish* button to exit.

To import server names from an LDAP server:

1. Select *Admin Tools - Import* from the menu bar.
2. In the Import Type area, select *Server Names*.
3. In the Import Source area, select *LDAP Server* and then click *Next*.
4. In the Host Address field, type the IP address or DNS name for the LDAP server from which you wish to import names. If LDAP authentication settings are not present, the default value of the field is blank.
5. In the Port field, type the port number that will be the target for the calling socket. By default, port 389 will be used for LDAP mode and port 636 will be used for LDAPS mode.
6. In the User Name field, type an LDAP Distinguished Name. Use standard LDAP authentication formatting rules to specify the name. An example would be:
cn=Administrator,cn=Users,dc=yourDomainName,dc=com

NOTE: This example represents a user called administrator, which exists in the Users container on the yourDomainName.com Authentication server. At a minimum, you must replace the "yourDomainName" text with a valid domain name for your Authentication server.

7. In the Search Password field, type the password associated with the entered username. If the user is the administrator, you must specify the administrator password recognized by the Authentication server. The password you enter may be up to 30 characters long. All standard Microsoft Windows characters are allowed. Asterisks (*) will display for each character you type in the field.
8. In the Mode area, select either *LDAP* or *LDAPS* to specify the server type for your system.

The default selection is LDAP, a server type that sends system communications without encryption, a method often called “in the clear.” The LDAPS server type encrypts system communications by sending them over an SSL connection.

9. (Optional) You may choose to use the fields within the Schema area to narrow the search for server names.

In the Search DN field, you may type an LDAP Distinguished Name using the criteria defined in step 6. The Search DN must represent the name of a user (whose permissions on the Authentication server will determine the scope of the LDAP search), and the domain name of the LDAP server on which this user exists.

In the Object Criteria field, you may type additional parameters for the search, such as country or organizational information.

In the Name Attribute field, you may type the name attributes of the server names you wish to be included in the search results.

10. Click the *Import* button to begin the search.
11. A list of UID numbers, server names and imported names will be displayed. Select a name from the Imported Names list, select the server(s) to update in the system servers table and click *Update*. Repeat this process until all desired names have been assigned.
12. Click *Finish* to write the names to the AMWorks software database.

-or-

Click *Cancel* to exit without saving.

NOTE: If errors occur on import, you will need to synchronize the system. See *Troubleshooting* on page 95 for more information.

Editing and Viewing Servers

Follow the procedures below to display server information and to change a server's configuration information.

To display a list of all servers:

Click the *Servers* icon in the group selector pane. The display screen lists each server name with its unique identification number (UID) and location.

To display information about a server:

1. Select *Admin Tools - Find* from the menu bar. In the Select Entity list box, choose *Servers*. Type a server name or select a name from the list. Click *OK*.
- or -
Double-click the *Servers* icon in the group selector pane and select a server.
2. The display screen will list the UID, location and comments for that server.
3. To display and change a server's configuration information, select *Servers - Edit/View Server* from the menu bar.

- or -

Type **Ctrl+S**.

- or -

Click the *Edit/View Server* icon in the toolbar.

4. Type a server name or select a name from the list. Click *OK*.
5. The server's configuration information is displayed. You may change the server name, location, server group association, user group access, user access, comments and Audio Serial options.
6. Click *OK* to save the new server information.
- or -
Click *Cancel* to exit the dialog box without saving the changes.

Editing and Viewing Server Groups

Follow the procedures below to display and change server group information. For more information, see *User groups and server groups* on page 93.

To display a list of server groups and their member counts:

Click the *Server Groups* icon in the group selector pane. The display screen will list the names of server groups and the number of members in each group.

To display a list of associated servers in a server group:

1. Select *Admin Tools - Find* from the menu bar. In the Select Entity list box, choose *Server Groups*. Type a server group name or select a name from the list. Click *OK*.
- or -
Double-click the *Server Groups* icon in the group selector pane and select a server group.
2. The display screen will list the names of servers in that server group.

To display and edit a server group's configuration information:

1. Select *Users - Edit/View Server Group* from the menu bar.
- or -
Type **Ctrl+R**.
- or -
Click the *Edit/View Server Group* icon in the toolbar.
2. Type a server group name or select a name from the list. Click *OK*.
3. The server group's configuration information is displayed. You may change the group name, description, associated servers and user access.
4. Click *OK* to save revised group information.
- or -
Click *Cancel* to exit the dialog box without saving the changes.

Offline servers

Servers that cannot be contacted by the AMWorks software are considered “offline.” Offline servers are placed in the offline database under the following conditions:

- While the AMWorks software is running, a server is removed from an AMX switch in the system. The AMWorks software will move the server to the offline database.
- The server was previously online and the AMWorks software was not continuously running and did not receive notification of server removal. When the AMWorks software queries the switch for the servers attached to it during discovery, the AMWorks software discovers that the server is missing and will move the server to the offline database.
- During synchronization, a user was given rights to a server that does not exist in the AMWorks software database (for instance, from a user station or from legacy servers that were never removed). The AMWorks software will move the server to the offline database.
- In the Offline Devices tree node, each server will be identified by type. Under each type, the server is identified by its previous name or its UID.

Exporting Server Names

All server names within the AMWorks software database can be exported to a comma separated value (CSV) file. You may export up to 4096 target server names from your AMWorks software database.

To export server names to a CSV file:

1. Select *Admin Tools - Export* from the menu bar.
2. In the Name Type box, click the *Servers* radio button. Then click the *Next* button.
3. Enter the name of the file to which you wish to export, then click the *Export* button.

Managing AMX Switching System Devices

The AMWorks software enables you to view and edit the following devices configured in your AMX switching system:

- AMX switches
- AMX user stations
- AMIQ/AMIQDM modules

Editing and Viewing AMX Switches

Follow the instructions below to display a list of AMX switches in the system and to edit related information.

To display a list of AMX switches:

1. Double-click the *Devices* icon in the group selector pane.
2. Select *AMX Switch*. The display screen will list the names of attached AMX switches and their UIDs.

To display information about an AMX switch:

1. Select *Admin Tools - Find* from the menu bar. In the Select Entity box, choose *AMX Switch*. Type the name of an AMX switch or select a name from the list. Click *OK*.
- or -
Double-click the *Devices* icon in the group selector pane. Double-click the *AMX switch* icon. A list of all AMX switches appears under the icon. Select an AMX switch.
2. The information screen will list the IP address, hardware version, software version, FPGA version, UID, MAC address and device type. It will also list the number of input and output ports on the switch and how many of these ports are currently connected. The connectivity table below the display screen will list detailed connection information for each port on the switch. For more information, see *Connectivity table* on page 12.

To display and edit AMX switch configuration information:

1. Select *Devices - Edit/View Matrix Switch* from the menu bar.
- or -

Type **Ctrl+M**.

- or -

Click the *Edit/View Matrix Switch* icon in the toolbar.

2. Type the name of an AMX switch or select one from the list. Click *OK*.
3. The AMX switch information is displayed. You may change the name.
4. Click *OK* to save the revised information.
- or -
Click *Cancel* to exit the dialog box without saving the changes.

Offline matrix switches

Matrix switches that cannot be contacted by the AMWorks software are considered “offline.” Offline matrix switches are placed in the offline database under the following conditions:

- When you manually add a matrix switch using the Add Devices command, and the switch cannot be contacted, the AMWorks software will prompt you to add it to the offline database. If *Yes* is selected from the dialog box, the matrix switch will be placed in the Unknown tree node.
- If a matrix switch was previously in the Online database, it failed to respond to the AMWorks software discovery queries during device discovery. The matrix switch is automatically placed into the offline database. The offline matrix switch is placed into the Offline Devices tree node under its own name.
- If the matrix switch was previously in the Online database, it failed to respond to the AMWorks software required synchronization queries during system synchronization. The matrix switch is automatically placed into the offline database. The offline matrix switch is placed into the offline tree node under its own name.

Dual AMX Switch Configuration

This feature enables you to connect an AMX user station to two AMX switches in the same switching system to take advantage of the following benefits:

- Redundancy - Connect your target servers using dual port AMIQDM modules to two AMX switches in the same switching system. Through this connection method, you may log in once to both AMX switches enabling access to the same set of target servers. If one of the AMX switches has a power failure, the second AMX switch provides an alternate path to access the target servers.

NOTE: Connection through an alternate path may happen automatically if Persistent mode is enabled on the user station OSD. Refer to the AMX Switch Installer/User Guide for configuration information.

- Scalability - Extend your user station access to additional target servers connected to a second AMX switch in the same switching system.

You may create an environment where critical servers that require redundancy are connected to both AMX switches. In addition, you can increase user station access to non-critical target servers connected to either of the two AMX switches.

In a dual matrix switch configuration, all connection and configuration changes are made through port 1 of the user station.

NOTE: The dual AMX switch configuration is supported on AMX5111, AMX5121 and AMX5130 user stations.

Editing and Viewing AMX User Stations

When you select an AMX user station from the list of devices, the screen displays hardware and software information. In addition, the connectivity table displays the user station ports connected to the AMX switch. In a dual AMX switch configuration where you have connected both user station ports, the connectivity table displays the connection information for each port. The connectivity table is updated as changes take place in the AMX switching system. For example, when a cable is connected or disconnected from an AMX user station, the connectivity table is updated dynamically. In a dual matrix configuration when both cables are disconnected from the AMX user station, the user station is removed from the list of devices.

To display a list of AMX user stations:

1. Double-click the *Devices* icon in the group selector pane.
2. Select *AMX User Station*. The display screen will list the names of attached AMX user stations, their identification numbers and the name of the user logged in to each.

To display information about an AMX user station:

1. Select *Admin Tools - Find* from the menu bar. In the Select Entity box, select *AMX User Station*. Type an AMX user station name or select one from the list. Click *OK*.

- or -

Double-click the *Devices* icon in the group selector pane. Double-click the *AMX user station* icon and select an AMX user station.

The display screen list the hardware version, software version, FPGA version, UID, number of input ports, the name of the user logged in and the server that is logged into. In addition, the connectivity table displays the user station ports and AMX switch ports configuration.

2. To display and edit AMX user station configuration information, complete one of the following steps:

Select *Devices - Edit/View User Station* from the menu bar.

- or -

Type **Ctrl+A**.

- or -

Click the *Edit/View User Station* icon in the toolbar.

3. Type the name of an AMX user station or select one from the list. Click *OK*.
4. The AMX user station configuration information is displayed. You may change the name.

5. Click *OK* to save the revised information.
 - or -
 - Click *Cancel* to exit the dialog box without saving the changes.

Viewing AMIQ and AMIQDM Modules

NOTE: Unless otherwise stated, commands for AMIQ modules are applicable to AMIQDM modules.

To display a list of AMIQ modules:

1. Double-click the *Devices* icon in the system selector pane.
2. Select *AMIQ* modules. The display screen will list the names of AMIQ modules and their identification numbers.

To display information about an AMIQ module:

1. Select *Admin Tools - Find* from the menu bar.
2. In the Select Entity box, choose *AMIQ module*. Type the name of an AMIQ module or select a name from the list. Click *OK*.
 - or -
 - Double-click the *Devices* icon in the group selector pane. Double-click the AMIQ module icon and select an AMIQ module.
3. The display screen will list the name of the associated server, hardware version, software version, FPGA version, UID, attached server and number of output ports.

To view AMIQ module configuration information:

1. Select *Devices - View AMIQ module* from the menu bar.
 - or -
 - Type **Ctrl+P**.
 - or -
 - Click the *View AMIQ module* icon in the toolbar.
2. Type a name or select one from the list. Click *OK*.
3. The AMIQ module information is displayed.
4. Click *OK* to save the revised information.
 - or -
 - Click *Cancel* to exit the dialog box without saving the changes.

Viewing All Matrix Switches

To view a list of all matrix switches in the AMX switching system:

Double-click the *Devices* icon in the group selector pane. The display screen will list the names of all attached matrix switches, device names, device IP and status.

Editing and Viewing MDM-Capable Devices

NOTE: Before configuring an MDM-capable device, ensure that the MDM-AMIQ module is not in Emulation mode.

To view and edit information for MDM-capable devices:

1. Select *Servers - Edit/View Server* from the menu bar.
 - or -
 - Type **Ctrl+S**.
 - or -
 - Click the *Edit/View Server* icon in the toolbar.
2. Type an MDM-capable device name or select an MDM-capable device name from the list. Click *OK*. The Edit/View Server window displays information for the selected MDM-capable device.
3. Click the *Multiple Device Mode* checkbox.

NOTE: You can change a Multiple Device mode to a Single Device mode by unchecking the Multiple Device Mode checkbox. The Configure button is disabled when the Multiple Device Mode checkbox is unchecked.

4. Click the *Configure* button. The Configure Device window displays.
5. Select a device type from the Device Type drop-down list. For more information about device types and a list of KVM switches that can be cascaded in an AMX seamless switching system, see *KVM switches in seamless switching system* on page 90.
6. Select a hotkey sequence from the Device Hotkey drop-down list.
7. Select the number of ports provided by the selected MDM-capable device from the Number of Ports drop-down list.
8. (Optional) Edit the port names.

NOTE: A port name may consist of 1-15 characters.

9. Click *OK* to save revised information.
 - or -
 - Click *Cancel* to exit the dialog box without saving the changes.

Connection Control

The AMWorks software can issue commands to AMX user stations and AMIQ modules to perform switches remotely and/or connect and disconnect users and servers. These commands may be issued one at a time or to a pre-defined group of devices.

Before connection control commands can be issued, the following must be in effect:

- The system must be synchronized.
- If the command is being sent to a user station, a user must be logged in at that station.
- The logged in user must have permission to access the designated device.

Some instructions may be sent to several user stations/servers at once through the use of a saved group called a matrix. Once a matrix has been configured, it may be loaded from the Configure Matrix window as needed.

Forcing a Connection

To remotely switch a user station to a different device:

1. Select *Devices - Force Connect* from the menu bar to activate the Force Single Connection window.
2. Using the drop-down menu, select the user that will be switched. A list of user stations that the user is logged in on will be displayed beside a list of servers that may be accessed. All users currently logged into the system are displayed in the User Name drop-down list. Select the user for whom you wish to force a connection.
3. Select the type of connection by clicking *Shared*, *Private* or *Maintain*.
4. In the User Station column, click the user station that will perform the switch.
5. Click the name of the server to which you wish to connect.
6. Click the *Connect* button to force the switch.
- or -
Click *Exit* to exit without forcing a switch.

NOTE: In a dual AMX switch configuration, each AMIQ module appears once in the server list on the Force Single Connection dialog box.

Forcing a Disconnect

To remotely disconnect one or several user station(s):

1. Select *Devices - Force Disconnect* from the menu bar. A list of user stations and their connections will be displayed.
2. Select the user station that is to be disconnected. You may select multiple user stations by holding the **Ctrl** key and clicking the desired user stations.
3. Click the *Disconnect* button to perform the disconnect(s).
- or -
Click *Exit* to exit without forcing a disconnect.

NOTE: In a dual AMX switch configuration, the user station is displayed once in the Force Disconnect dialog box.

Configuring a Matrix

NOTE: It could take up to four seconds for each connection to be made. Please allow the system proper time to complete the connections that you have configured. The more connections configured, the more time it will take to make them.

To configure a new matrix:

1. Select *Devices - Configure Matrix* from the menu bar. The Configure Matrix window will appear.
2. From the Configure Matrix window, select *Configuration - New*. (If a matrix has not been saved, the dialog box will be blank and there will be no need to click *New*.)
3. Enter a name for the configuration in the Name field.
4. Select the connections that the matrix will perform by right-clicking the table cell where the user station and server intersect and selecting the mode of the video signal (*None*, *Shared*, *Private* or *Maintain*) for the connection.
5. When all servers have been assigned, complete one of the following steps:
Click *Configuration - Save* to save the matrix for future use.
- or -
Click *Connect* to use it immediately.

To edit an existing matrix:

1. Select *Devices - Configure Matrix* from the menu bar. The Configure Matrix window will appear.
2. From the Configure Matrix window, select *Configuration - Load*.
3. Click the name of the matrix that you wish to load and click the *Load* button.
4. When all servers have been assigned, complete one of the following steps:

Click *Configuration - Save* to save the matrix for future use.

- or -

Click *Connect* to use it immediately.

To delete a matrix:

1. Select *Devices - Configure Matrix* from the menu bar. The Configure Matrix window will appear.
2. From the Configure Matrix window, select *Configuration – Delete*.
3. Click the name of the matrix that you wish to delete. You may select multiple configurations by holding the **Shift** key while you click each configuration. When the desired configurations have been selected, click the *Delete* button.

NOTE: In a dual AMX switch configuration, the matrix configuration dialog box displays the user stations and AMIQ modules once.

Follow Mode

The AMWorks software can be configured to designate certain user stations and servers as leaders. When a user station designated as a leader performs a switch, the AMWorks software will force other user stations that have been assigned Follow mode setting to switch to the same server as the leader.

In Multi-Video mode, the AMWorks software will maintain a connection between the individual user stations in a group and individual servers in a group. When the leader switches to a server also designated as a leader, the user stations in the leader's group will be force switched back to corresponding servers in the server group.

NOTE: If at any time the leader logs out of the AMX switching system, all user stations in the user station group will be logged out regardless of their mode or connection.

Example of Follow mode

In a classroom environment, an instructor has 10 student servers and his own linked via an AMX switch. He has designated his user station as leader and the student user stations as part of its group. Likewise, he has designated his server as server leader and grouped the student user stations and servers with it. He has also grouped each student's user station with his or her own server.

When a student asks a question, the instructor switches to that student's server. In this case, a leader user station is switching to a non-leader server. This is basic Follow mode. When the instructor executes the switch, the AMWorks software will force switch every student along with him so everyone will be viewing the same video source.

When the instructor has answered the question, he switches back to his server. (Leader user station to leader server.) This is Multi-Video mode. The AMWorks software will then force switch each user back to his or her own server.

To create a new user station group for Follow mode:

1. Select *Devices - Follow Mode* from the menu bar to activate the Follow Mode Settings window.
2. Click the *Userstation Groups* tab.
3. Click the *New* button. (This step can be skipped if no other user station groups exist.)
4. In the Userstation drop-down list, select the user station that you wish to be the leader and click the *Add* button.
5. In the Userstation drop-down list, select a user station that will be a part of the group. Enable the *Multi-Video + Follow* checkbox if you wish to enable Multi-Video Follow mode for the selected user station and click the *Add* button.
6. Repeat step 5 for each user station that will be part of the group.
7. When finished, select the *Save* menu option to save the group or click the *Exit* button to close the window without saving.

NOTE: A user station may only be a member of one group.

To create a new server group for Follow mode:

1. Select *Devices - Follow Mode* from the menu bar to activate the Follow Mode Settings window.
2. Click the *Server Groups* tab.
3. Click the *New* button.
4. In the Servers drop-down list, select the server that you wish to be the leader and click the *Add* button.
5. Select the rest of the servers that will be a part of the group and click the *Add* button.
6. When finished, select the *Save* menu option to save the group or click the *Exit* button to close the window without saving.

NOTE: A server may be a member of many groups but can only lead one. In Follow mode servers are identified by name only, not UID. Ensure that all servers have unique names.

To edit a user station or server group:

1. Select *Devices - Follow Mode* from the menu bar to activate the Follow Mode Settings window.
2. Select the Userstation Groups or Server Groups tab corresponding to the group you wish to edit.
3. In the *Group Name* drop-down window, select the group that you wish to edit.
4. You may now make any desired changes. Click *Exit* when the desired changes are complete.

NOTE: If you are using Follow Mode while the authentication setting is configured to LDAP user-login authentication only, the lead user station login attempt is authenticated through a configured LDAP server. When the user connects to a lead server, all preconfigured follower user stations are logged in automatically as the same user by the AMWorks software, and are connected to the lead server. When the lead user station disconnects or logs out, the follower user stations are disconnected or logged out as well.

Managing Event Logs

The AMWorks software maintains event logs that record user events, server events and/or system events. You may:

- Display the content of a user event, server event and/or system event
- Change the properties of the logs
- Save log contents to your PC
- Clear the logs

You may change the ordering of the columns in an event log and the ordering of events within a column for the duration of the current display.

Changing the Order in an Event Log Display

To change the order in an event log display:

1. To change the column order, position the cursor over the header of the column to be moved. Press and hold the left mouse button. Drag the column header horizontally to the desired position. Release the mouse button. The displaced column(s) shift accordingly.
2. To change the order of events within a column, click on the column header that corresponds to the sort order you prefer. The display will be re-sorted according to that column's subject, in the order indicated by the arrow in the column header: up for ascending and down for descending.

NOTE: When you change a log display's order, the reordering remains in effect only for the duration of the current display. The next time you display that event log, the columns appear in the original order.

Changing Log Properties

To change log properties:

1. Select *Event Logs - Log Properties* from the menu bar.
2. The top portion of the window specifies log properties.
To change the maximum size of the log file, click the *Maximum log size* checkbox and select a value from the list box. The range is 1-10,000 Kb.

To change the maximum number of events the log file can hold, click the *Maximum number of events* checkbox and select a value from the list box. The range is 1-99,995 events.

To change the maximum duration of the logging operation, click the *Maximum duration* checkbox and select a value from the list box. The range is 1-52 weeks.

3. Click *OK* to save the changes
- or -
Click *Cancel* to exit the dialog box without saving the changes.
4. To save the log, click the *Save Log* button and indicate where the log should be saved on your PC.

Clearing the Log

To clear the log:

1. Click the *Clear Log* button. A confirmation box appears.
2. Click *Yes* to confirm the clear.
- or -
Click *No* to cancel the clear.

Displaying the User Events Log

To display the User Events log:

1. Select *Event Logs - User Events* from the menu bar.
- or -
Click the *User Events Log* icon in the toolbar.
2. You may optionally specify a date and time interval by selecting the year, month, day, hour, minute, second and AM or PM in the Date From and To boxes. If you omit this information, all user events are displayed from the last time the log was cleared.
3. Select a username or *All Users* from the Users list box. The default is All Users.
4. Enable one of the three user event radio buttons: Server Access, Failed Attempts or Login Times.
5. Click the *Retrieve Data* button. If the log contains entries for the specified events, they are displayed. If there are no log entries, a message reports that there are no results for specific criteria.
6. To close the log, click the *Exit* button.

Displaying the Server Events Log

To display the Server Events log:

1. Select *Event Logs - Server Events* from the menu bar.
- or -
Click the *Server Events Log* icon in the toolbar.
2. You may optionally specify a date and time interval by selecting the year, month, day, hour, minute, second and AM or PM in the Date From and To boxes. If you omit this information, all server events are displayed from the last time the log was cleared.
3. Select a server name or *All Servers* from the Servers list box. The default is All Servers.
4. Enable one of the three server event radio buttons: Server Access, Failed Switches or Power On.
5. Click the *Retrieve Data* button. If the log contains entries for the specified events, they are displayed. If there are no log entries, a message displays that there are no results for specific criteria.
6. To close the log, click the *Exit* button.

Displaying the System Events Log

To display the System Events log:

1. Select *Event Logs - System Events* from the menu bar.
- or -
Click the *System Events Log* icon in the toolbar.
2. You may optionally specify a date and time interval by selecting the year, month, day, hour, minute, second and AM or PM in the Date From and To boxes. If you omit this information, all system events are displayed from the last time the log was cleared.
3. Select a system event type from the list box below the Devices list box.
4. Click the *Retrieve Data* button. If the log contains entries for the specified criteria, they are displayed. If there are no log entries, a message displays, indicating that there are no results for specific criteria.
5. To close the log, click the *Exit* button.

Displaying the All Events Log

To display the All Events log:

1. Select *Event Logs - All Events* from the menu bar.
2. Select an event from the list box, or use the **Shift** or **Ctrl** keys to select multiple events.

3. Click the *Retrieve Data* button. If the log contains entries for the specified events, they are displayed. If there are no log entries, a message displays, indicating that there are no results for specific criteria.
4. To close the log, click the *Exit* button.

System Administration Tools

Use the AMWorks software system administration commands to perform the following operations:

- Add a device (see *Adding AMX Switching System Devices* on page 65)
- Change the session time-out value (see *Changing the Session Time-out Value* on page 66)
- Configure network settings (see *Configuring Network Settings* on page 67)
- Change your password (see *Changing the Administrator's Password* on page 67 or *Setting Blank Passwords* on page 68)
- Set AMWorks software to automatically log in the administrator (see *Enabling Auto Login* on page 68)
- Discover a device (see *Discovering Devices* on page 69)
- Display any differences between original and current AMX switch connections (see *Displaying Connection Comparisons* on page 70)
- Find an entity (see *Find* on page 71)
- Ping an AMX switch (see *Pinging Devices* on page 71)
- Remove an offline device, server or switch (see *Removing Offline Devices* on page 72, *Removing Offline Servers* on page 72 and *Removing Offline Switches* on page 72)
- Synchronize the system database (see *Synchronizing the System Database* on page 73)
- Update AMX switch firmware (see *Updating Firmware* on page 74)
- Force a user login (see *Forcing a User Login* on page 74)
- View an offline device (see *Viewing Offline Devices* on page 75)
- Backup and restore the user database (see *Database Maintenance* on page 75)
- Control multiple AMX switching systems (see *Controlling Multiple AMX Switching Systems from the AMWorks Software* on page 76)
- Work offline (see *Working Offline* on page 77)

Adding AMX Switching System Devices

The AMWorks software enables you to manually add an AMX switching system device, including switches, user stations and AMIQ/AMIQDM modules, by providing the IP address of the device. If

a device cannot be automatically discovered, perform an Add Devices command to add one manually. A device that does not respond when you attempt to add it manually will be placed into the Offline Devices database, if desired. For more information, see *Removing Offline Devices* on page 72 and *Viewing Offline Devices* on page 75.

NOTE: All AMX switches that are added manually must have their default gateway set up correctly from the console menu of the AMX switch.

To add a matrix switch:

1. Click *Admin Tools - Add Device* from the menu bar.
2. Type the IP address of the AMX switch, user station or AMIQ/AMIQDM module you wish to add.
3. Click the *Add Device* button.
4. If the AMWorks software successfully contacts the device, the Contacting Device dialog box displays the IP address, the status of the device being contacted and the name of the device contacted (if one exists). If the firmware version of the AMX switch is earlier than 3.x.x.x, the Add Device dialog displays a request to update the firmware. Click *OK* to close the dialog box.
5. If the device cannot be contacted, the Add Device Error dialog box will prompt you to add the device to the offline database. Click *yes* to add the device to the database.
- or -
Click *no* to avoid adding the device to the offline database.
6. Repeat steps 2 - 5 for each device that you wish to add to your AMX switching system.

NOTE: When all of the devices have been either discovered or added, you must synchronize the AMX switching system database.

Changing the Session Time-out Value

The security time-out specifies the number of minutes the AMWorks software will remain idle before ending the current session. When there is no session activity for this interval, the session closes and a dialog box is displayed, requesting your password.

To change the time-out value:

1. Select *Admin Tools - Security Settings* from the menu bar.
2. Choose a value from the Security Time Out list box. The range is 1 - 99 minutes.

NOTE: Setting the value in the Security Time Out list box to 0 disables the time-out.

3. Click *Start*.

Configuring Network Settings

After installing the AMWorks software for the first time or changing the IP address of the PC on which the AMWorks software is running, you must configure the network settings to associate the AMWorks software with the IP address of your server. If your server has only one IP address, a single IP address will display in the Choose Network IP drop-down list. If your server is bound to multiple IP addresses, select the address from the list that the AMWorks software will use to communicate with system devices. After you have configured the network settings, see *Synchronizing the System Database* on page 73 to complete the installation.

NOTE: You may change the network settings at any time.

To configure the network settings:

1. Select *Admin Tools - Network Settings* from the menu bar.
2. Select the IP address you wish to associate with the AMWorks software from the Choose Network IP drop-down list. There will be one entry for each IP address you have bound to your system.
3. Enter the subnet mask of your local network.
4. If you intend to automatically discover AMX switches, the configuration ID of the AMWorks software should be the same as that of the AMX switches in the system. If you have never changed the configuration IDs on the AMX switches, set the configuration ID of the AMWorks software to 000000.
5. Click *OK* to save your settings.

Changing the Administrator's Password

You may change the administrator's password at any time during an AMWorks software session. All AMWorks software passwords are encrypted for enhanced security.

See *Rules for usernames and passwords* on page 90 for more information about setting passwords.

To change your AMWorks software password:

1. Click *Admin Tools - Password* from the menu bar.
2. In the Old Password box, type your current password.
3. In the New Password box, type a new 6-15 character password.
4. In the Confirm Password box, retype the new password.
5. You may select *Enable auto login* if you wish to allow AMWorks software to automatically log you in as the administrator without requiring a password. See *Enabling Auto Login* on page 68 for more information.
6. Click *OK*.

NOTE: You may also change your AMX switching system administrator password by selecting *Users - Edit/View Users* from the menu bar and *admin* from the list of users. See *Editing and Viewing the Administrator* on page 35 for more information.

Setting Blank Passwords

The administrator may set a blank password for any normal user (a blank password may not be set for the administrator). When a blank password is set, the user will not have to enter any characters in the password field to log in to the AMX switching system at the user station.

To create a blank password for a new user:

1. Select *Users - New User* from the menu bar.
- or -
Click the *New User* icon in the toolbar.
2. The New User dialog box appears. In the Username field, type a 1-15 character username. A username may not contain spaces, quotation marks or exclamation points.
3. Select *Allow Blank Password*. The Password and Confirm Password fields will be disabled.
4. Click *OK* to save revised user information.
- or -
Click *Cancel* to exit the dialog box without saving the changes.

NOTE: For more information about creating new users, see *Adding and Removing Users* on page 31.

To set a blank password for an existing user:

1. Select *Users - Edit/View User* from the menu bar.
- or -
Type **Ctrl+U**.
- or -
Click the *Edit/View User* icon in the toolbar.
2. Type a username or select a name from the list. Click *OK*.
3. The user's configuration information is displayed. Select *Allow Blank Password*. The Password and Confirm Password fields will be disabled.
4. Click *OK* to save revised user information.
- or -
Click *Cancel* to exit the dialog box without saving the changes.

NOTE: For more information about viewing and editing user settings, see *Editing and Viewing Users* on page 34.

Enabling Auto Login

You will be prompted to log in with a password when the AMWorks software is launched or when the inactivity timer expires. If you want the AMWorks software administrator to be logged in

automatically during these instances, you may enable the auto login feature. Enabling auto login provides unrestricted access to the AMWorks software and is typically only used when the AMWorks software server is in a secure location.

To enable auto login in AMWorks software:

1. After logging in to AMWorks software, click *Admin Tools - Password* from the menu bar.
2. Select *Enable auto login*.
3. Click *OK*.

Discovering Devices

The AMWorks software enables the “discovery” of AMX switching system devices, including switches, user stations and AMIQ/AMIQDM modules. The Discover Devices command detects devices present on different subnets by the use of a directed UDP (User Datagram Protocol) broadcast. During this phase of discovery, only devices with the same configuration ID will respond to these UDP broadcasts. After compiling a list of the devices that have responded, the AMWorks software gathers information about the system topology. The AMWorks software also contacts online devices to ensure that they still exist and also attempts to re-establish contact with offline devices.

The AMWorks software enables you to automatically discover AMX switches that are:

- Located on the same physical network and have the same subnet and configuration ID settings as the AMWorks software.
- Located on a different network and subnet, provided that any intervening network routers allow directed broadcast. The configuration ID setting on the AMWorks software must be the same setting on all of the AMX switches.

NOTE: If you cannot discover a device automatically, (for instance, if a network router will not forward a directed broadcast) see *Adding AMX Switching System Devices* on page 65 to add a device manually.

To discover devices:

1. Select *Admin Tools - Discover Devices* from the menu bar.

NOTE: When first displayed, the fields on the Discover Devices dialog box display the local network’s default settings.

2. Type a name in the Name field for the new subnet. Once the subnet is discovered by, this name will be used by the AMWorks software to identify the subnet and associated devices.
3. Type the subnet address of the subnet to be discovered. If you do not know the subnet address, enter the IP address of a matrix switch on that subnet. The subnet address will be calculated automatically before the discovery begins. This subnet address will be stored for the history, not the individual IP address.
4. Type the subnet mask for the subnet to be discovered in the Subnet Mask field.

NOTE: The configuration ID shown in this dialog box is for information purposes only. You cannot change it here. If you need to change the configuration ID, see *Configuring Network Settings* on page 67.

5. Click the *Add Subnet* button to add the subnet to the Subnet(s) History list and the Discovery List with the name you assigned to it in step 2.

NOTE: Double-clicking on a user-defined name in either the Subnet(s) History list or the Discovery List will cause the subnet parameters to be displayed in the Subnet Properties section.

6. If necessary, repeat steps 2 - 5 to automatically discover AMX switches on all other subnets.
7. If the subnet address and the subnet mask that you entered resolve to the same directed broadcast address, the Duplicate Address message box prompts you to add the new parameters.
8. Click *yes* if you wish to add the entry (even though it is a duplicate).
- or -
Click *no* if you do not wish to add the entry.

NOTE: Although duplicate entries may exist in the subnet history, each subnet will only be discovered once.

9. Click *Discover* to locate the devices on the new subnet(s). Only the subnets listed in the Discovery List window will be discovered. The Subnet(s) History list is for reference only. After discovery is complete, a Discover Results dialog box displays a list of the devices discovered on the subnet(s) you specified. The Discover Results dialog box displays the following information:
 - Device Name: Name of the device found. If the firmware version is older than the baseline, an information icon is placed next to the device name and an explanation is shown in the upper-right corner of the dialog box.
 - Device IP: The IP address reported by the device.
 - Revision: The current revision of the AMX switching system firmware.
10. Click *OK*. All newly discovered matrix switches, previously online matrix switches and offline matrix switches will be queried for system topology. Those that respond will be moved to the online database. Those that do not respond will be put into the offline database. At this point, the AMWorks software has identified all existing system devices and their topology. User databases may not be in a synchronized state at this point.

NOTE: When all of your AMX switches have been either discovered or added, you must synchronize the system database. See *Synchronizing the System Database* on page 73 for more information.

Displaying Connection Comparisons

When the AMX switching system is initially installed, the AMWorks software collects and stores information about the devices that are connected to each AMX switch. A connection comparison displays the differences, if any, between the original AMX switch connections and the current connections.

NOTE: This comparison is only useful if the system goes out of sync for any reason. For more information, see *Synchronizing the System Database* on page 73.

To display connection comparison information:

1. Select *Admin Tools - Connectivity Overview* from the menu bar.
- or -
Type **Ctrl+C**.
2. Click the *Start* button to list the AMX switches with connectivity errors.
3. Choose an AMX switch.
4. Click *Start* again to view the errors for the AMX switch.
5. To stop the operation, click the *Cancel* button.
6. To end the operation and close the window, click the *Exit* button.

Find

The Find tool enables you to find and display information on users, user groups, servers, server groups and devices in your AMX switching system configuration.

To find an entity:

1. Click *Admin Tools - Find*.
2. Select an entity from the Select Entity drop-down list.
3. Double-click a named entity in the list.
4. Click *OK*.

Pinging Devices

Pinging a device from the AMWorks software ensures device accessibility. The AMX switches will respond to the traditional command line ping; however, using the AMWorks software produces a more reliable measure of device integrity.

To ping an AMX switch:

1. Select *Admin Tools - Ping Devices* from the menu bar.
2. Choose an AMX switch from the Select AMX switches to ping list box.
3. Click the *Start* button. The device name and ping results are displayed.
4. To cancel the operation, click the *Cancel* button.
5. To end the operation and close the window, click the *Exit* button.

Removing Offline Devices

The Remove Offline Devices operation permanently removes an offline device (AMX switch or AMIQ module) from the AMX switching system databases. After a device has been permanently removed, there are three ways to retrieve an offline device:

- User rediscovers the device (AMX switch or AMIQ module). See *Discovering Devices* on page 69.
- User manually adds the device (AMX switch). See *Adding AMX Switching System Devices* on page 65.
- Device notifies the AMWorks software of its presence (AMIQ module).

Follow the instructions below to remove a matrix switch or AMIQ module from the AMX switching system.

To remove a device:

1. Select *Admin Tools - Offline Devices - Remove* from the menu bar.
2. From the submenu, select *Matrix Switch* to display all the matrix switches in the database.
- or -
Select *Server(s)* to display all the servers in the database.
3. In the Remove Device box, select the matrix switch you wish to delete from the database and click *Remove*.
- or -
In the Remove Device box, select the server you wish to delete from the database and click *Remove*.

NOTE: If the matrix switch is still present on the network and its network settings and configuration ID have not been changed, it will be added back to the database when a discovery operation is performed.

Removing Offline Servers

The AMWorks software enables you to remove servers no longer connected to the AMX switching system from the database.

To remove an offline server:

1. Click *Admin Tools - Offline Devices - Remove - Server* from the menu bar.
2. In the Remove Device dialog box, select the server(s) you wish to remove and click *Remove*.
3. Click *Exit* to close the dialog box.

Removing Offline Switches

The AMWorks software enables you to remove AMX switches no longer connected to the AMX switching system from the database.

To remove an offline matrix switch:

1. Click *Admin Tools - Offline Devices - Remove [Switch Type]* from the menu bar.
2. In the Remove Device dialog box, select the matrix switch(s) you wish to remove and click *Remove*.
3. Click *Exit* to close the dialog box.

Synchronizing the System Database

Once the system devices have been synchronized, they will maintain the sync state unless there is a temporary network error. If this occurs, the status bar at the bottom of the AMWorks software window will turn red, requiring that you re-synchronize the system database. You must perform system synchronization in the following cases:

- After you have set up and configured the system for the first time.
- After you have either manually added or automatically discovered a new AMX switch.
- After you have physically removed (for example, powered down and removed) an existing AMX switch.
- Once you have created user and/or server groups and then make user rights changes from an AMX user station OSCAR interface.
- When user information has been modified, and/or user-to-server permissions have been modified.
- There was a network error which prevented the modifications from successfully replicating across the entire system.

NOTE: The indicator will be green when the system databases are in sync. If the indicator is red, the system databases are not in sync and will have to be synchronized to restore system operation.

To synchronize the system database:

1. Select *Admin Tools - Synchronize System Database* from the menu bar.
2. In the Synchronize System dialog box, click *Merge* to merge all existing databases residing on the system and redistribute the new database to all AMX switches in the system. See *Merge Synchronization mode* on page 92 for more information.
- or -
Click *Overwrite* to overwrite the existing system database with a preselected (for instance, the AMWorks software) database. See *Overwrite Synchronization mode* on page 92 for more information.
3. Click *Start* to synchronize the system database. After the operation is completed, click *Exit*.

CAUTION: If you use the Overwrite option and specify an AMX switch database, you will lose the information associated with any user and server groups that you have configured in the AMWorks software.

Updating Firmware

Make sure that you have access to the appropriate update files before you begin updating the firmware. See *Firmware update files* on page 88 for more information.

NOTE: During the initial installation/configuration of the AMWorks software, it may be necessary to update the AMX switches to a compatible revision before the Synchronize System Database operation can be performed successfully. See *Installation* on page 5 for details.

To update the AMX switching system firmware:

1. Select *Admin Tools - Firmware Updates* from the menu bar.
- or -
Type **Ctrl+O**.
2. In the Device Type list box, select the appropriate switch, user station or AMIQ module.
3. Choose a device to update from the Devices box.
4. Under Update Type, click *Sequential* to update selected devices one at a time.
- or -
Click *Parallel* to update all devices at one time.

NOTE: Using Parallel mode enables you to complete updates in less time.

NOTE: You must update the firmware of the AMX switch before updating the firmware of any attached user stations or AMIQ/AMIQDM modules.

5. If the file displayed in the File Name field is the desired upgrade file, click *Begin Update* to start the software upgrade.
- or -
Click *Browse* to locate the desired file.
6. After locating the desired file, click *Begin Update* to start the software upgrade.
- or -
Click *Cancel* to cancel the operation.
7. To end the operation and close the window, click the *Exit* button.

Forcing a User Login

If necessary, an administrator can remotely log a user in to a user station.

To remotely log a user in to a user station:

1. Select *Users – Log In User*.
2. Use the drop-down list to select the name of the user you wish to log in.
3. Click the name of the user station to which you wish to log in the user.
4. Click the *Login* button.

Viewing Offline Devices

The AMWorks software enables you to view matrix switches or servers no longer connected to the AMX switching system.

To view an offline device:

1. Click *Admin Tools - Offline Devices - View* from the menu bar.
- or -
In the Devices tree view, double-click *Offline Devices* and the device type to view a list of devices.

NOTE: Devices display in the device tree only when they exist in the database.

2. The Offline Devices dialog box displays the type, ID and name of each offline device in the database.
3. Click *OK* to dismiss the Offline Devices dialog box.

Database Maintenance

The AMWorks software allows administrators to manually backup, restore and clear the user database as well as automatically backing up the user database at certain events. It allows administrators to take a “snapshot” of their configuration as it currently exists and saves that file to a directory separate from everyday database operations. It is recommended that the system be in sync before any backup functions are started.

To manually backup the user database:

1. Select *Admin Tools - Database - Backup Database* from the menu bar.
2. Enter the directory for the backup.
3. Click the *Execute* button.

To restore a user database:

1. Select *Admin Tools - Database - Restore Database* from the menu bar.
2. Enter the directory where the backup is stored.
3. Click the *Execute* button.

To schedule automatic database backups:

1. Select *Admin Tools - Database - Event Backup* from the menu bar.
2. Select when you would like for automatic backups to occur.
3. Click the *OK* button.

NOTE: You must perform at least one manual backup before enabling automatic backups.

To clear a user database:

1. Select *Admin Tools - Database - Clear Database* from the menu bar.
2. Confirm that you want all users, permissions and switches removed from the database.

Controlling Multiple AMX Switching Systems from the AMWorks Software

The AMWorks software administrators can manage multiple separate and distinct AMX switching systems from the AMWorks software. This feature is much like backup and restore except when an administrator switches between multiple managed systems, the AMWorks software will perform a mini-sync with the Master switch, if necessary, in an effort to keep the system in sync.

When an administrator changes to a new environment, the AMWorks software will:

- Restore the database from the chosen location
- Restore the network properties file from the chosen location and update the network properties in the AMWorks software
- Try to contact the master of the new system to retrieve its database and overwrite the AMWorks software database
- Refresh the AMWorks software GUI with new database

Changing network environments

Before changing network environments, back up the current database and verify that the AMWorks software is in sync.

To change network environments for the AMX switching system:

1. Select *Admin Tools - Database - Change Environment* from the menu bar.
2. Enter the directory path to the database backup for the AMX switching system to which you want to switch.
3. Click the *Execute* button.

Managing event logs

After changing environments, all of the events logged from the previous network are still saved in the event log files. To avoid confusion, you should clear the events in the log files before operating in the new environment.

To save and clear the event log:

1. Select *Event Logs - Log Properties* from the menu bar.
2. (Optional) Click *Save* to save the existing log.
3. Click *Clear Log*. All events logged from the previous network environment will be removed.
4. Click *OK*. AMWorks software will begin logging events for the new network environment.

Working Offline

The AMWorks software enables you to work “offline.” This means that you can execute a limited set of administrative functions without being connected to the network. When working offline, the changes you make will be added to the local database only. After you reconnect to the network and resynchronize the system, the changes made while working offline will be added to the AMX switching system database.

NOTE: The option to work offline is only available if Discover Devices and Synchronize System Database commands have been performed previously.

When the AMWorks software is launched, it attempts to contact AMX switching system devices on the network for system synchronization status. If devices are not responding, or if there is no network connection, the AMWorks software displays a message dialog box prompting you to work offline. Clicking the *Yes* button enables you to modify the offline database. Clicking *No* provides you with two options: quitting the AMWorks software or performing the Discover Devices command to determine if the devices will respond.

To work offline:

Unplug the network cable from the server running the AMWorks software. After the AMWorks software is launched, the Startup Error message box prompts you to work offline. Click *Yes* to work offline to perform the following operations:

- *Adding AMX Switching System Devices* on page 65
- *Editing and Viewing Users* on page 34
- *Adding and Removing Users* on page 31
- *Adding and Removing User Groups* on page 38
- *Adding and Removing Server Groups* on page 43
- *Editing and Viewing Server Groups* on page 47

After connecting to the network, perform a synchronize system database command. See *Synchronizing the System Database* on page 73 for more information.

Configuring LDAP

The AMWorks software enables you to configure LDAP (Lightweight Directory Access Protocol) user login authentication on your AMX switching system (provided the firmware on your AMX switches supports LDAP). The LDAP Configuration menu option will only be enabled if the AMWorks software discovers AMX switches that support LDAP; otherwise, the menu option will be disabled. The LDAP Configuration interface enables you to select either LDAP or Matrix user login authentication, or both (providing a backup login authentication if one fails). This interface also allows you to set any required LDAP server parameters and set search and query parameters for use with a specific server.

LDAP enables users to log in to the AMX switching system remotely using their default Windows Authentication usernames and passwords; however, these users will not have server-access rights on the AMX switching system, since the users have not been created in the AMWorks software. Once users have been created and access rights have been assigned, a user who is remotely logged into the system will be authenticated against the remote authentication server, and server access permissions will be granted from the local AMX switching system. Refer to the following topics to create a user and then assign server-access rights:

- *Adding and Removing Users* on page 31
- *Editing and Viewing Users* on page 34

Selecting a User Authentication Option

The AMWorks software enables you to select LDAP and/or Matrix user authentication.

NOTE: The LDAP Configuration interface is enabled *only* if at least one of your AMX switches supports LDAP.

To select an authentication option:

1. From the AMWorks software main menu, click *Users - User Authentication*. The LDAP Configuration dialog box displays.
2. From the Options list, click the desired option for user authentication. If you select *Matrix user-login authentication only*, the authentication setup tabs for LDAP will be disabled. If you select any of the other options, you will have to enter LDAP setup details in the Server Parameters and Search and Query Parameters setup-tabs.
3. Click *OK* to save changes and exit the dialog box.

NOTE: You will not be able to save changes if you have selected one of the LDAP user login authentication options, but have not configured the LDAP parameters.

Setting Server Parameters for LDAP User Authentication

After selecting an LDAP user login authentication option, you will need to set up the LDAP server parameters that will be used by an AMX switch to connect to the LDAP authentication server when a user attempts to log in.

NOTE: The LDAP Configuration interface, including the Server Parameters and the Search and Query Parameters tabs, will be enabled *only* if AMX switches support LDAP and an LDAP user login authentication option has been selected.

To set server parameters:

1. From the AMWorks software main menu, click *Users - User Authentication*. The LDAP Configuration dialog box displays.
2. From the Authentication tab, select one of the options that enables LDAP.
3. Click the *Server Parameters* tab.
4. In the Domain Name/IP Address field, type the IP address (or Domain Name) of the primary authentication server. Parameters for a secondary authentication are optional. If the Primary field is empty, fields in the Secondary and DNS sections of the dialog box will be disabled.
5. The entry in the Port field is the port number for the primary (and secondary) LDAP authentication server(s). Default values depend on the choice of security level. For secure communication (LDAPS), the default port number is 636. For unsecure communication (LDAP), the default port number is 389. User input entries must be within the range of 0-65535.
6. Under Security, select the *LDAP* radio button to send queries in a Non-secure mode (clear text).
- or -
Select *LDAPS* to send queries in Secure mode [over Secure Sockets Layer (SSL)]. The port number is updated based on whether you chose LDAP or LDAPS.

NOTE: The default Security mode is LDAP.

7. In the Primary DNS IP Address field, you may type the IP address of your primary DNS server in network dot notation. This field will be enabled if an entry exists in the Primary Domain Name/IP address field. If you have specified a primary authentication server as a domain name (not as an IP address), the Primary DNS IP Address becomes a required field. The DNS address that you specify here will be used to resolve the authentication server domain name. You must specify a DNS if your user exists in a domain other than the primary domain.

8. In the Secondary DNS IP Address field, you may type the IP address of your secondary DNS server in network dot notation, if one is desired. This field is enabled only if there is an entry in the Primary DNS IP Address field, and is not a required field.
9. In the Tertiary DNS IP Address field, you may type the IP address of your tertiary DNS server in network dot notation, if one is desired. This field is enabled only if there is an entry in the Secondary DNS IP Address field and is not a required field.

NOTE: The primary DNS IP address will be addressed first for DNS resolution. The secondary and tertiary DNS IP addresses will be addressed only if the primary DNS machine is not available for DNS resolution.

10. Click *OK* to apply your changes and to dismiss the LDAP Configuration dialog box.

NOTE: Clicking *OK* checks that all required fields in the Server Parameters tab and the Parameters tab are filled in. If a required field is left blank, a message box displays indicating the missing required field.

Setting Search and Query Parameters for LDAP User Authentication

After selecting an LDAP user login authentication option, you must set up the LDAP search and query parameters that will be used by an AMX switch to search the specified containers within the Authentication server when a user attempts to log in.

NOTE: The LDAP Configuration interface, including the Server Parameters and Search and Query Parameters tabs, will be enabled only if AMX switches support LDAP and an LDAP user login authentication option has been selected.

To set search and query parameters:

1. From the AMWorks software main menu, click *Users - User Authentication*. The LDAP Configuration dialog box is displayed.
2. From the Authentication tab, select one of the options that enables LDAP.
3. Click the *Search and Query Parameters* tab.
4. In the Search DN field, type an LDAP Distinguished Name. You must follow standard LDAP authentication formatting rules to specify an LDAP Distinguished Name. The default is the following: `cn=Administrator,cn=Users,dc=yourDomainName,dc=com`

NOTE: This default represents a user called administrator, which exists in the Users container on the yourDomainName.com Authentication server. At a minimum, you must replace the "yourDomainName" text with a valid domain name for your Authentication server. The Search DN must represent the name of a user (whose permissions on the Authentication server will determine the scope of the LDAP search), and the domain name of the LDAP server on which this user exists.

5. In the Search Password field, type the password that corresponds with the user that you specified in the Search DN field. In the default case (where the user is administrator) you must specify the administrator password that is known on the Authentication server. The password

you enter may be up to 30 characters long. All standard Microsoft Windows characters are allowed. Asterisks (*) will display for each character you type in the field.

6. In the Confirm Password field, retype the password entered in the Search Password field.
7. In the Search Base field, type the starting domain for the LDAP search or query. You must follow standard LDAP authentication formatting rules to specify the Search Base as an LDAP Distinguished Name. The field will be validated for label=value pairs, separated by commas. The default format is the following: dc=yourDomainName,dc=com

NOTE: At a minimum you must replace the "yourDomainName" text with a valid domain name for your Authentication server.

8. In the UID Mask field, type the text to be used as a user ID search. This text is schema dependent. The default is the following: sAMAccountName=%1

NOTE: The text entered in the UID Mask field will determine the format of the username that must be typed in at the AMX user station OSCAR interface login prompt.

9. Click *OK* to apply all your changes and exit the dialog box.

NOTE: Clicking *OK* checks that all required fields in the Server Parameters tab and the Search and Query Parameters tab are filled in. If a required field is left blank, the password fields do not match or a parameter string is incorrectly formatted, a message box will be displayed to report an error.

APPENDICES

Appendices

The following information is contained in this section:

- *System Configuration* on page 83
- *Glossary* on page 86
- *Reference* on page 88
- *Troubleshooting* on page 95
- *Technical Support* on page 103

Appendix A: System Configuration

AMWorks software and AMX switches on same network segment

The configuration shown below is the simplest configuration for an AMX switching system. All nodes are on the same physical network and the same network subnet. In this configuration, the AMWorks software will be able to automatically discover all of the connected matrix switches.

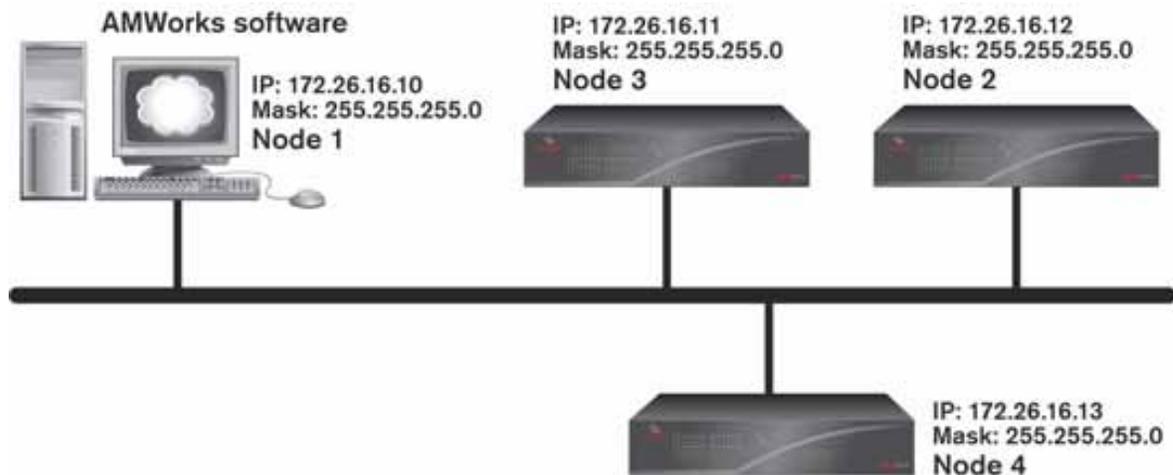


Figure 1.1: AMWorks Software and AMX Switches on the Same Network Segment

AMWorks software and AMX switches separated by router

In the configuration shown below, the AMX switches are separated by a router into different physical network segments. The AMWorks software will be able to automatically discover the matrix switch at node 2. The AMWorks software *may* be able to automatically discover the matrix switches at nodes 3, 4 and 5; however, it is more likely that the administrator will have to manually add the switches at those nodes.

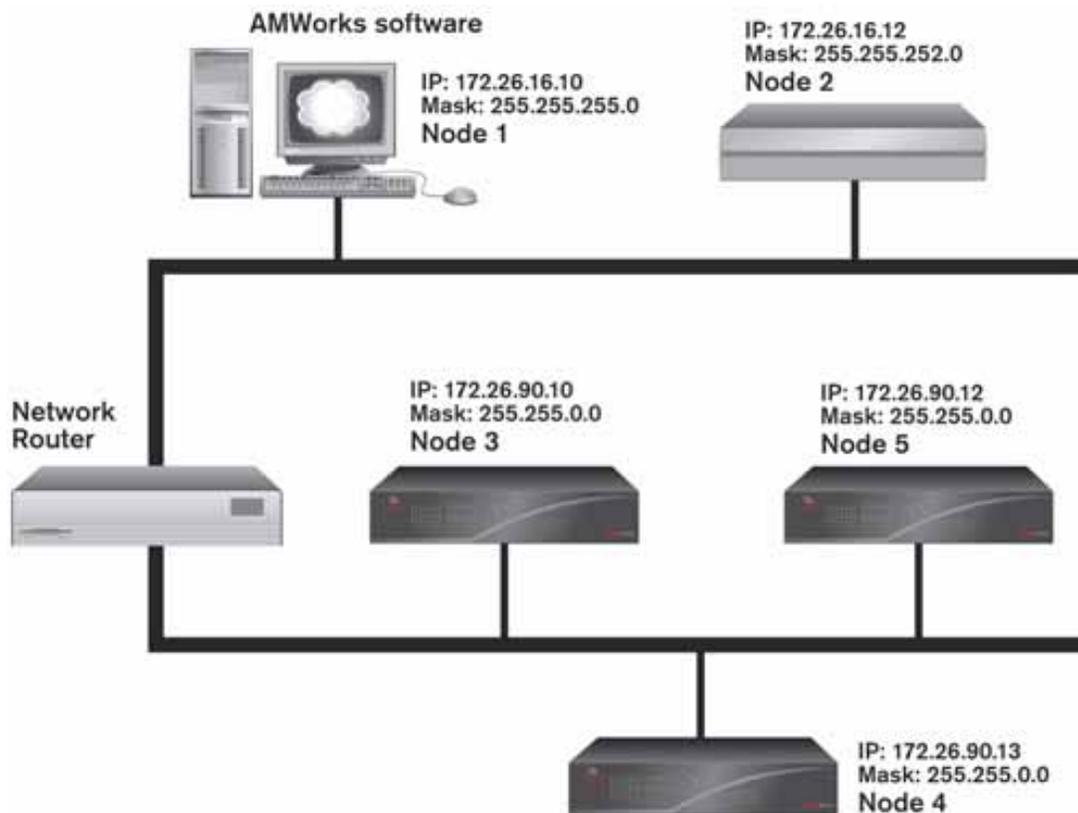


Figure 1.2: AMWorks Software and AMX Switches Separated by a Router

AMWorks software and AMX switches separated by WAN

In the configuration shown below, the AMWorks software is separated by a WAN (Wide Area Network), a VPN (Virtual Private Network - a secure or “private” data network that uses a public communication infrastructure) and a firewall. Despite these limitations, the AMWorks software administrator can manually add all of the matrix switches located at nodes 2, 3 and 4, because all networked AMX switches are located on the same logical WAN.

NOTE: The assistance of a corporate network administrator may be required to configure the firewalls.

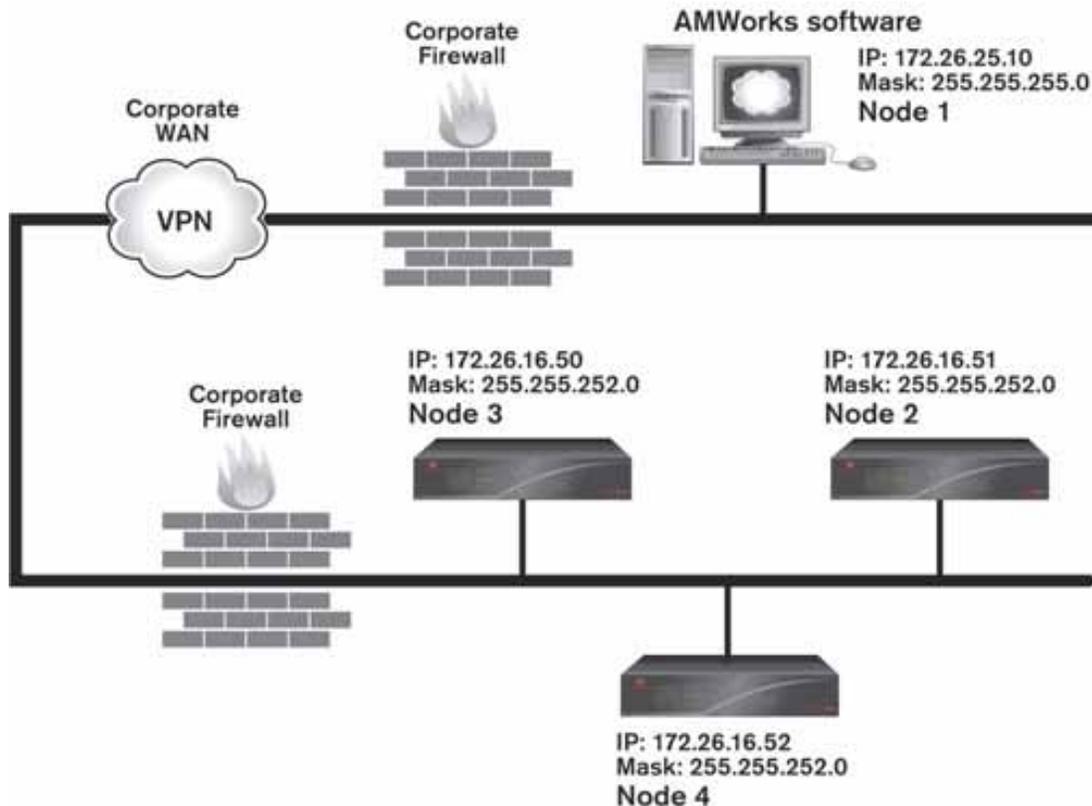


Figure 1.3: AMWorks Software and AMX Switches Separated by WAN

Appendix B: Glossary

- AMIQ module (AMX Switch Intelligent Module) - The AMIQ module connects a target device to an AMX switch.
- AMIQDM module (AMX Switch Intelligent Module Dual Port/Multimedia) - The AMIQDM module has two RJ45 ports and can connect a target device to one or two AMX switches or to one or two ports on the same AMX switch. The AMIQDM module can also support multimedia (audio and serial) features.
- Cascading - A method of configuring matrix switches in an AMX switch system configuration to provide a user access to a much larger set of target devices than can be provided through a single matrix switch.
- Configuration - A grouping of all AMX switch networkable system components (AMWorks software and matrix switches) having the same configuration ID.
- Configuration ID - A group of resources associated with a particular user station under connection conditions.
- Console Resource Group (CRG) - A group of resources associated with a particular user station under connection conditions.
- Crosspoint - The switch from input to output executed by a router.
- Default Resource Group (DRG) - A group of resources associated with a particular user station under disconnect conditions.
- Discovery - The mechanism used by AMWorks software to automatically determine the matrix switches on the AMX switching system configuration.
- Index - An incrementing number used to relate TRG entries to CRG entries in the resource routers table.
- LDAP (Lightweight Directory Authorization Protocol) - A network used to authenticate a user.
- Level - A group of input ports and output ports of the same type. Partition is another name for level.
- Local discovery - Automatic discovery of devices that exist on the same physical network segment and on the same subnet as AMWorks software. The devices must have the same configuration ID as AMWorks software.
- Matrix switch - A device that provides matrix switch connectivity from user ports to server ports.
- Merge synchronization - A synchronization method which merges all existing individual databases residing on AMWorks software and on the matrix switches and re-distributes the new database.
- Multimedia - Refers to the audio and serial feature supported by the AMX switching system through the AMX5130 user station and AMIQDM module.
- Multiple Device Mode (MDM) - The device mode used to configure an MDM-capable device for seamless cascading of servers attached to KVM switches cascaded below the AMX switch.

- Non-local discovery - Automatic discovery of devices that are updated to the latest software, exist on a reachable physical network and on a specified subnet. The devices must have the same configuration ID as AMWorks software.
- Offline devices - Devices that cannot be contacted by AMWorks software but still exist in its database or in a system AMX50xx switch database. Only matrix switches and servers (AMIQ modules) can have offline status.
- Overwrite synchronization - A method of synchronization which replaces all existing individual databases that reside on AMWorks software and on the matrix switches with a pre-selected database.
- Pinnacle FAK - Pinnacle Fast Action Keyboard.
- Resource group - A group of signal resources, including input or output status, level (partition) and port number, associated with a server or a user station in the AMWorks software.
- Seamless cascading - Cascading KVM switches below the AMX switching system without the use of special cascading protocols.
- Server group - A defined selection of associated servers. Users can be granted No Access, View Only or Full Access rights to a server group (and therefore, all servers in the group).
- Synchronization indicator - The status bar at the bottom-left corner of the window that indicates the AMWorks software synchronization status.
- System synchronization - A feature of AMWorks software used to (1) merge all existing individual databases residing on AMWorks software and on the matrix switches and re-distribute the new database, or (2) replace all existing individual databases that reside on AMWorks and on the matrix switches with a pre-selected database.
- Target Resource Group (TRG) - A group of resources associated with a particular server.
- Tiers - A method of configuring matrix switches in an AMX switching system configuration to provide a user access to a much larger set of target devices than can be provided through a single matrix switch.
- UDP broadcast (User Datagram Protocol) - The communication protocol used by the AMWorks software to discover AMX switching system devices. Only matrix switches with the same configuration ID will respond to the UDP broadcast.
- UID - Unique identification number.
- User group - A defined selection of associated users. This group (and therefore, all the users in the group) can be granted No Access, View Only or Full Access to individual servers.
- VPN (Virtual Private Network) - a secure or “private” data network that uses a public communication infrastructure.
- WAN - Wide Area Network.

Appendix C: Reference

AMX switching system

The AMX switching system refers to the cluster of AMX switches that are synchronized together through the AMWorks software. When AMWorks software synchronizes a cluster of AMX switches, one of the switches is designated as the master switch. For switches to be considered part of the same AMX switching system, they must have the same master switch.

The AMWorks software may be used to manage one or more AMX switching systems. Each switching system has its own database which stores information on a set of AMX switches, user stations, AMIQ modules and the associated username settings and permissions.

When you add an AMX switch, all user stations and AMIQ modules connected to that AMX switch are added automatically. To add an AMX switch to a database, you need to either discover the switch on the subnet, or if the switches are on different subnets, add them manually.

Cross network discovery

The AMWorks software provides the following methods of adding AMX switches to a configuration:

- Local discovery: AMX switches that exist on the same physical network segment and on the same subnet as the AMWorks software may be automatically discovered. The AMX switches must have the same configuration (config) ID as the AMWorks software.
- Non-local discovery: AMX switches that are updated to the latest software, exist on a reachable physical network and reside on a specified subnet may be automatically discovered. The AMX switches must have the same configuration ID as the AMWorks software.

Manual addition: AMX switches that exist on any reachable network may be specified by IP address. In this case, the AMWorks software does not need to have the same configuration ID as the specified AMX switches.

Firmware update files

Each device type has one or more file(s) containing the programming code or firmware that the AMWorks software can use for the updates. Before beginning the firmware update, access the files for each device type you wish to update, as shown below.

CAUTION: The term “update” can refer to either a firmware upgrade or downgrade. Since the name of the update file for each device is the same regardless of firmware version, ensure that the update files that you are using are the correct versions.

Table 1.1: Firmware Update Files for AMX Switches

AMX Switch Device Type	Filename
Any AMX switch	amx50xx.avt

Table 1.2: Firmware Update Files for AMX User Stations

AMX User Station Device Type	Filename
AMX5100 User Station	amx51xx.avt
AMX5110, AMX5120 User Station	amx51p2.avt
AMX5111, AMX5121, AMX5130 User Station	amx51p3.avt

Table 1.3: Firmware Update Files for IQ Modules

IQ Module Type	Filename
AMIQ-PS2, AMIQDM-PS2 modules	amiqps2.avt
AMIQ-SERIAL module	amiqsrl.avt
AMIQ-USB, AMIQ-VSN, AMIQDM-USB, AMIQDM-VSN modules	amiqsusb.avt

Keyboard emulation and layout selection

The Emulation and Layout fields enable you to select a keyboard emulation and a country code layout for devices in the AMX switching system.

To select a keyboard emulation and layout:

- Under Emulation, select a setting for the device type in your system as shown below.
 - AMIQDM-USB module - Standard or Sun-USB
 - AMIQDM-PS2 module - Standard or Pinnacle FAK
 - All other modules and MDM servers - The field is disabled

NOTE: The Chyron keyboard uses Standard emulation.

- Under Layout, select the desired keyboard layout if the device is an AMIQDM-USB module or AMIQDM-VSN module. For all other devices, the field is disabled.

KVM switches in seamless switching system

The following KVM switches can be seamlessly cascaded in an AMX switching system. No special cascading protocols are required between the AMX switching system and these KVM switches.

Table 1.4: KVM Switches in Seamless Cascaded Switching System

KVM Switches in Cascaded Seamless Switching System	
AutoView switch	AutoView [®] 2000 switch
AutoView 200 switch	DSR [®] switch
AutoView 416 switch	OutLook [®] ES switch
AutoView 424 switch	SwitchView [®] OSD switch
AutoView 1000R switch	XP [®] switch
AutoView 2000R switch	

Rules for usernames and passwords

Usernames must be 1-15 characters. A normal user's password must have 6-15 characters or be set as a blank password. See *Setting Blank Passwords* on page 68 for more information. The administrator's password must have 6-15 characters and cannot be set as a blank password.

You may use special characters in the username and password. However, in some cases, you may need to press the key twice to enter the character. See *LDAP usernames and passwords* on page 90 for more information.

Usernames and passwords may not contain spaces, quotation marks or exclamation points.

LDAP usernames and passwords

When entering your LDAP username and password, you will need to press some keys twice to enable characters, such as é or á, to be displayed on the OSCAR interface without requiring a keyboard containing these characters. If you need to use one of these characters in your username or password, press the key twice and then erase the second character.

Merge mode conflict resolution

The System Synchronization command in AMWorks software can be used to (1) merge all existing individual databases residing on the AMWorks software and on the matrix switches and re-distribute the new database, or (2) replace all existing individual databases that reside on the AMWorks software and on the matrix switches with a pre-selected database. The System Synchronization Database - Merge Synchronization mode automatically detects, resolves and logs conflicts in user passwords, administrator passwords and user-to-server permissions as shown in the following table.

Table 1.5: Merge Mode Conflict Resolution

Type of Conflict	Resolution
User Passwords	Password is reset automatically and randomly. Neither the administrator nor the user will know what the password is. Only the AMWorks software administrator can resolve this situation. The Conflicts Found message box displays. Conflicting users are listed in the Status window.
Administrator Passwords	The password is reset automatically to the last known good password or defaults to "password." If it defaults to "password," the administrator should change it immediately by selecting the <i>Admin Tools - Password</i> command. The Conflicts Found message box displays. The administrator password conflict will be listed in the Status window.
User-to-server Permissions	Permissions are resolved by assigning the lowest user-to-server permissions that were found during the merge synchronization. For more information see <i>User to-server-permissions resolution</i> on page 91. NOTE: Conflict resolution only applies to users that exist in the system. If a user exists in one system database and does not exist in another system database, the user will be added to the second system database with existing user permissions. No conflict will be logged.
Group versus Individual User Permissions	The system will go out of sync if you have set up user and server groups on the AMWorks software and then change user-to-server permissions from an AMX user station OSCAR interface. After re-synchronizing the system, conflicts will be resolved by taking the highest user-to-server permissions from the user groups and server groups.

User to-server-permissions resolution

The following table shows how the user-to-server permissions are resolved by a merge synchronization.

NOTE: Permissions will be resolved by assigning the lowest of all the user-to-server permissions found during the merge synchronization.

Table 1.6: User-to-User Server Permissions Resolution

Servers List	User A's Rights on AMX Switch 1	User A's Rights on AMX Switch 2	Access Rights After Merge
Server 1	Full	Full	Full (no conflict)
Server 2	Full	View	View
Server 3	Full	None	None
Server 4	View	Full	View

Table 1.6: User-to-User Server Permissions Resolution

Servers List	User A's Rights on AMX Switch 1	User A's Rights on AMX Switch 2	Access Rights After Merge
Server 5	View	View	View (no conflict)
Server 6	View	None	None
Server 7	None	Full	None
Server 8	None	View	None
Server 9	None	None	None (no conflict)

Merge Synchronization mode

The System Synchronization Database - Merge Synchronization mode performs the following:

- Merges the user and permissions data that exists on all AMX switches and on the AMWorks software

NOTE: The AMWorks software shows accurate progress status information as the synchronization is progressing.

- Shows synchronization details in real-time in the Status window
- Automatically detects, resolves and logs the following conflicts:
 - The same user record on one or more matrix switch(es), but with conflicting passwords
 - The same administrator record on one or more matrix switch(es), but with conflicting passwords
 - The same user record on one or more matrix switch(es), but with conflicting sets of user/server permissions records

See *Merge mode conflict resolution* on page 90 for more information about conflicts.

NOTE: If more than 295 users are detected by the AMWorks software during merge synchronization, the process is aborted and a failure message displays at the end of a merge synchronization. For more information see *System synchronization fails after merge* on page 99.

Overwrite Synchronization mode

Overwrite Synchronization mode, a method of synchronization which replaces all existing individual databases that reside on the AMWorks software and on the matrix switches with a pre-selected database, performs the following:

- Copies the selected database source over all the databases in the AMX switching system

NOTE: The AMWorks software shows accurate progress status information as the synchronization is progressing.

- Shows synchronization details in real-time in the Status window

- Performs faster than the Merge Synchronization mode with no conflicts to resolve

CAUTION: If you use the Overwrite option and specify an AMX switches database, you will lose the information associated with any user and server groups that you have configured in the AMWorks software.

System limit dependencies

Due to the physical memory limits in the AMX switching system hardware, the following system constraints have been imposed and will be enforced by the AMWorks software:

- Rule defining the maximum number of users allowed in the system.
- Rule defining the maximum number of servers allowed in the system.
- Rule defining the maximum number of records present in the system permission databases. One record is defined as a user-to-server permission combination. The system can handle 65,536 permission records.

NOTE: The rule defining the maximum number of records present in the system permission databases affects the rules defining the maximum number of users and servers. This means that the number of users times the number of servers with permissions must be less than or equal to 65,536. An AMWorks software administrator can define a large number of combinations within this limit.

User groups and server groups

A user group consists of a defined selection of associated users. This group (and therefore, all the users in the group) can be given No Access, View Only or Full Access rights to individual servers. A user can be a member of a number of user groups and can also be given different access rights to a number of server groups. A user can also be assigned individual access rights to a server.

A server group is a defined selection of associated servers. Individual users can be given No Access, View Only or Full Access rights to the server group (and therefore, all servers in the group). A server can be a member of more than one server group and can also be given different access rights from a number of user groups. A user can also be assigned individual access rights to a server.

If a user is a member of two or more groups with different permissions to the same server, the AMWorks software will always assign the highest privilege level to that server for that user.

Example of user groups and server groups

A new user joins the company. By default, when the user is added to the system, the user has no access rights to any of the AMX switching system servers. The AMWorks software administrator adds the user to the Employees user group, which has View Only access rights to all the servers in the company. However, the new user needs full access rights to a small group of servers belonging to the user's department. In this case, the administrator assigns the user Full Access rights to the Accounts Servers server group. The new user will have the following access rights:

- When logged into the AMX user station, the user will have Full Access rights to the servers in the Account Servers server group and View Only access to all other servers.

- If removed from the Employees user group, the user will have Full Access rights to the Accounts Servers server group, but will have no access to all other servers.
- If a server is removed from the Accounts Servers server group, the user will no longer have any access to this server.

CAUTION: After you have created user and/or server groups using the AMWorks software, do not modify any user-to-server access rights from an AMX user station OSCAR interface. Doing so will result in the system going out-of-sync.

Appendix D: Troubleshooting

Cancel button does nothing during firmware update

If the Cancel button is clicked during a firmware update, a cancel message is sent to the system devices to stop any further updating. However, aborting firmware updates can leave the device in an undetermined state. So, the device is instructed to finish the update that is in progress, but do nothing more. The consequences of canceling a firmware update differ for the Sequential and Parallel modes as follows:

- Sequential mode: The device that is currently being updated is finished and the update stops. No additional devices are updated.
- Parallel mode: Once the update has progressed past a fail safe point, the Cancel button is disabled. Aborting after this point would leave all the updating devices in an undetermined state. As a result, the update continues until it completes.

Devices are not updated in the tree view

Table 1.7: Troubleshooting - Devices Are Not Updated in the Tree View

Cause	Recommended Solution
The devices connected to the AMX switch are not updated properly in the tree view.	The AMX switch must be synchronized with the current version of the AMWorks software to receive all events from the switch.

The CSV of LDAP Add User Wizard fails

Table 1.8: Troubleshooting - The CSV of LDAP Add User Wizard Fails

Cause	Recommended Solution
The user was not successfully added to the Master Switch or the AMWorks software database.	Synchronize the AMWorks software database and run the ADD User Wizard again.

Discover devices does not detect AMX switches in the system

Automatic discovery only succeeds if all AMX switches have been updated to a compatible software revision. For the initial installation of AMWorks software, all AMX switches in the

existing system (if any) on a different subnet from the AMWorks software must be manually added and updated before discovery is successful.

Table 1.9: Troubleshooting - Discover Devices Does Not Detect AMX Switches in the System

Cause	Recommended Solution
The Discover Devices operation does not detect all AMX switches in the system.	<p>Initial Installation: If the AMX switches are on a different subnet than the AMWorks software, perform the Add Devices and the Update Firmware commands. Then perform the Discover Devices command.</p> <p>General: Ensure that all AMX switches have compatible firmware. If so, then verify that switches and routers in the system (if any) have directed IP broadcast enabled and the AMX switch(es)/AMWorks software have the correct default gateway(s) configured. If directed IP broadcast is not enabled, discovery will not be successful. Perform the Add Devices command to manually add devices.</p>
The Discover Devices command does not work if the local PC's UDP or TCP protocols are disabled.	Enable the local PC's UDP (port 9737) or TCP (port 9734) protocols. This operation may be performed through a router, firewall or operating system.

Log in delay at user station

The delay you experience when logging in to the user station may have the following causes:

- LDAP is enabled and you have a multi-domain tree. The user that is logging in may be in a domain other than the primary domain.
- All users will experience a delay while logging in to the user station as the number of LDAP users increases.

Log in failure at user station

Table 1.10: Troubleshooting - Log In Failure at User Station

Cause	Recommended Solution
When a user was created on the Enterprise Authentication server, the option to force the user to change their password was selected. The next time the user logs in to the user station, the login fails.	Request that users log in to the Windows workstation environment and change their Enterprise passwords before logging into the user station and the OSCAR interface.
User does not exist.	Create a new user.
You have entered the incorrect password for that user.	Re-enter the user's password.

Table 1.10: Troubleshooting - Log In Failure at User Station

Cause	Recommended Solution
LDAP authentication is enabled and you are entering your AMX switch password.	Enter your LDAP password.
LDAP is enabled and at least one of your LDAP parameters is incorrect.	Make corrections to your LDAP Configuration parameters.

Grouping conflicts

Table 1.11: Troubleshooting - Grouping Conflicts

Cause	Recommended Solution
If you attempt to edit a user's access permissions from a user station (while logged in as the administrator) and the user is associated with one or more user and/or server groups, the user will be removed from all group associations.	Once you have set up groups in the AMWorks software, you should only administrate the system from the AMWorks software. You should not permit any administration to occur from the user station interface.
Groups were removed as a result of an overwrite synchronization. If you perform an overwrite synchronization that uses a database stored on an AMX switch instead of stored in the AMWorks software, all user and server groups will be automatically removed. Users that were associated with groups will maintain their system-wide effective rights. User server access rights will become individual user-to-server rights.	When performing an overwrite synchronization, select the AMWorks software as the source database in order to preserve current groups settings.

Lost password

If you should lose your password, contact Avocent Technical Support for assistance. Visit <http://www.avocent.com/support> for more information.

AMWorks software hangs during firmware update

If the matrix switch is powered down or the network is lost during the ftp portion of a firmware update, the AMWorks software may appear to hang. There will be a delay before the AMWorks software becomes responsive again.

Table 1.12: Troubleshooting - AMWorks Software Hangs During Firmware Update

Cause	Recommended Solution
The matrix switch was powered down or the network connection was lost during a firmware update.	Terminate and restart the application. Once the network problem is fixed, start a new firmware update. See <i>Updating Firmware</i> on page 74 for more information.

Synchronization status indicator turns red

When the synchronization status indicator turns red, the AMWorks software may be “out of sync.” The causes and solutions for the out-of-sync state are shown below.

Table 1.13: Troubleshooting - Synchronization Status Indicator Turns Red

Cause	Recommended Solution
A new AMX switch has been manually added to the system or a new AMX switch has been automatically discovered.	Perform another synchronization to return the system to a synchronized state.
An existing AMX switch has been removed from the system.	Perform another synchronization to return the system to a synchronized state.
The system is newly installed and has not yet been synchronized.	Perform an initial synchronization to complete the installation.
You have set up user and/or server groups on the system using the AMWorks software, but have made user access rights changes from an AMX user station OSCAR interface.	Perform another synchronization to return the system to a synchronized state. NOTE: If you have set up user and/or server groups, use only the AMWorks software to administer the system.
You have made database changes from the AMWorks software (for example, added or removed users) and a network error prevented your changes from propagating to the distributed AMX switch configuration.	Perform another synchronization to return the system to a synchronized state.
You have made database changes from the AMWorks software or from an AMX user station OSCAR interface and one or more of your configured AMX switches was not powered at the time.	Perform another synchronization to return the system to a synchronized state.

NOTE: After the AMWorks software has been synchronized successfully, you may take the AMWorks software offline and perform database changes. When the AMWorks software comes back online, it will automatically attempt to synchronize with the rest of the AMX switch distributed system.

System cannot retrieve synchronization status

After launching the AMWorks software, the Startup Error dialog box displays indicating that the system cannot retrieve synchronization status from the system.

Table 1.14: Troubleshooting - System Cannot Retrieve Synchronization Status

Cause	Recommended Solution
<p>The AMWorks software cannot contact the network for these reasons:</p> <ul style="list-style-type: none"> • It is not connected to the network. • One or more of the AMX switches may be turned off or have been removed from the system. • There is a network error. 	<p>Click <i>Yes</i> on the Startup Error dialog box to work offline.</p> <p>- or -</p> <p>Click <i>No</i> on the Startup Error dialog box. Run the Discover Devices and Synchronize System Database commands.</p> <p>- or -</p> <p>Fix the network problems, then restart the AMWorks software.</p>

System synchronization fails after merge

The AMX switching system limits the number of users to 295. If more than 295 users are detected by the AMWorks software during merge synchronization, the process is aborted and a failure message displays at the end of a merge synchronization.

Table 1.15: Troubleshooting - System Synchronization Fails After Merge

Cause	Recommended Solution
<p>More than 295 users are detected by the AMWorks software. These users may be different on all the AMX switches being synchronized.</p>	<p>Verify that there is a maximum of 295 users present on the system.</p> <ul style="list-style-type: none"> • Perform the Synchronize System Database command and select the <i>Overwrite</i> option. Select one of the AMX switches or the AMWorks software as the database source. • Delete the required number of users from the AMX switch(es) through an AMX user station. Perform the Synchronize System Database command.

Target flag disappears after preview

The target flag disappears after you have clicked the *Preview* button. The AMWorks software is unresponsive.

Table 1.16: Troubleshooting - Target Flag Disappears After Preview

Cause	Recommended Solution
The position of the target flag coincides with that of the Windows task bar. The Windows task bar may have a setting of Always on top and/or Auto hide. The AMWorks software is waiting for the target flag preview window to be dismissed and will not respond to any other input stimulus.	Resize the task bar with the <i>Always on top</i> setting selected. - or - Reset the task bar settings to access the target flag.

Unable to connect to database

The AMWorks software is busy accessing the database during an operation and receives a request to access the database for another operation. The Unable to Connect to Database message box displays.

Table 1.17: Troubleshooting - Unable to Connect to Database

Cause	Recommended Solution
The AMWorks software is busy accessing the database in an operation that may take a considerable amount of time and then receives another request that involves accessing the database.	Retrying the same action will usually succeed.

Update file is invalid

The multimedia module will fail a firmware update request and will display the following message: *Started the update successfully, but the Update File is Invalid For Device UID <Device Number>*.

Table 1.18: Troubleshooting - Update File is Invalid

Cause	Recommended Solution
The version of the firmware update is less than the required version.	Visit http://www.avocent.com for the correct version of the firmware.

User does not hear sound

Table 1.19: Troubleshooting - User Does Not Hear Sound

Cause	Recommended Solution
The connected devices may not be capable of supporting multimedia or multimedia may not be enabled in the AMWorks software.	Ensure that all connected devices can support the multimedia feature and the multimedia settings in the AMWorks software are enabled for the user.

User station displays in connection table, not in tree view

Table 1.20: Troubleshooting - User Station Displays in Connection Table, Not in Tree View

Cause	Recommended Solution
An attempt to update the firmware on a user station has resulted in the device running from boot code.	Update the user station firmware. In the Firmware Update dialog box, under Device Type, select the type of user station. If a device named InBootloader displays in the Devices list, update to the most current firmware. See <i>Updating Firmware</i> on page 74 for more information.

User station gets “lost” after attempting to update it

Table 1.21: Troubleshooting - User Station Gets “Lost” After Attempting to Update It

Cause	Recommended Solution
An unsuccessful attempt to update the firmware on an AMX user station has resulted in the device running from boot code. The AMWorks software is no longer able to communicate with the device.	Perform a system discovery. The AMX user station will display in the AMX switch connection table in the AMWorks software. It still may not display in the Device tree view. Attempt to update the firmware on this device again. For more information, refer to <i>User station displays in connection table, not in tree view</i> on page 101.

Cannot successfully connect a user station to two AMX matrix switches

Table 1.22: Troubleshooting - Cannot Successfully Connect a User Station to Two AMX Matrix Switches

Cause	Recommended Solution
The user station does not support dual AMX switch configuration.	Dual AMX matrix configuration is supported on AMX5111, AMX5121 or AMX5130 user stations. If you are using any of the supported user stations, please ensure the firmware is updated to the latest revision.
One or both AMX switches do not support the dual AMX switch configuration.	Ensure that both switches are updated with the latest firmware revision.
AMX switches are not in the same environment.	Discover and synchronize both AMX switches, and power cycle the user station.

Appendix E: Technical Support

Our Technical Support staff is ready to assist you with any installation or operating issues you encounter with your Avocent product. If an issue should develop, follow the steps below for the fastest possible service.

To resolve an issue:

1. Check the pertinent section of this manual to see if the issue can be resolved by following the procedures outlined.
2. Check our web site at www.avocent.com/support to search the knowledge base or use the on-line service request.
3. Call the Avocent Technical Support location nearest you.



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