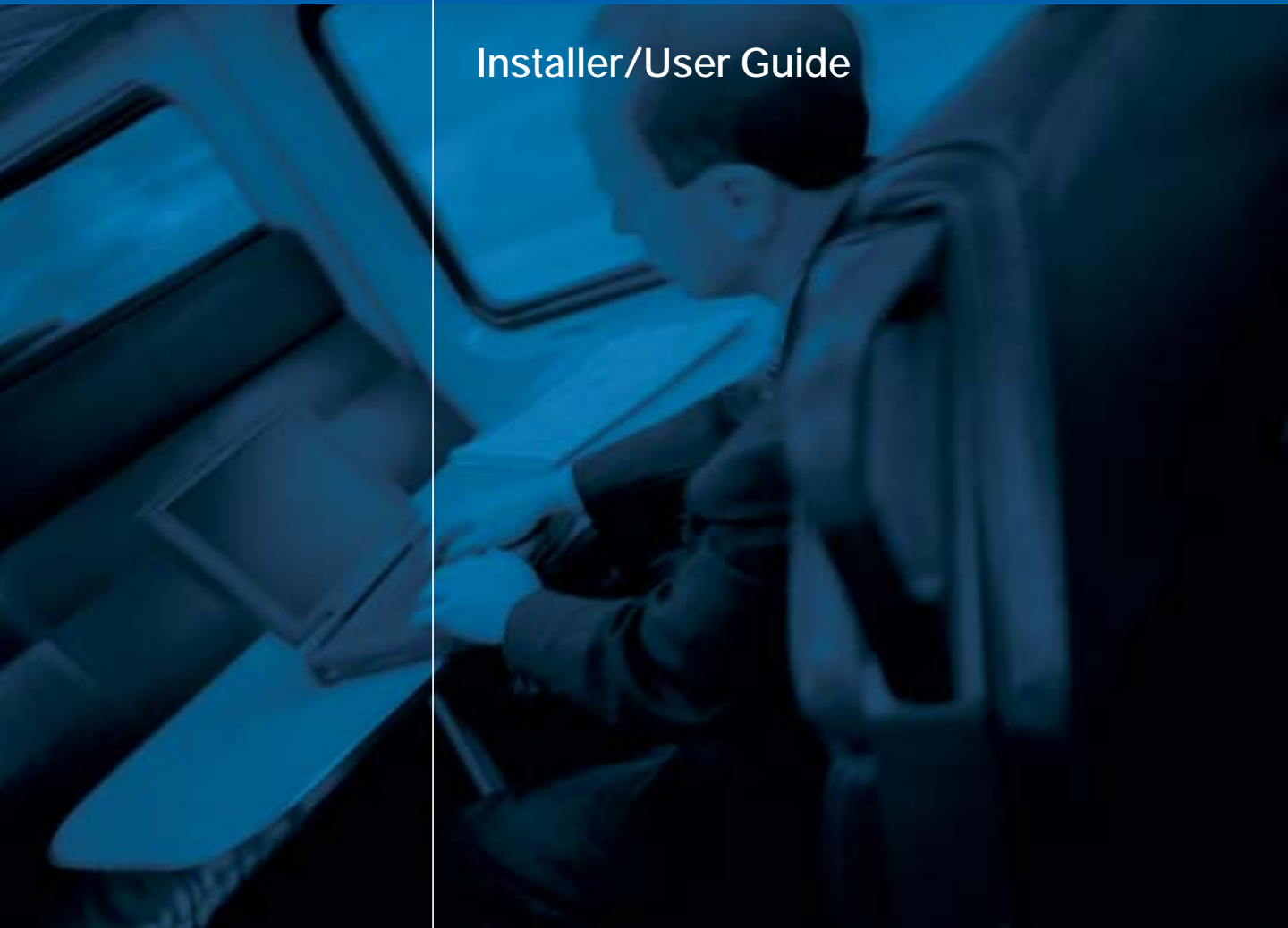




Avocent.

DSView™

Installer/User Guide





- DSVIEW™

Installer/User Guide

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1

Product Overview

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Chapter 1: Product Overview

Overview

The DS Management Software suite is used to manage DS, DSR and CPS network appliances and SPC power control devices.

The DS Management Software suite is comprised of three components:

- **DSView™** - A Win32® application that allows DS users to manage target devices through Avocent network appliances. The Client allows for IP-based video, serial and power management sessions. DSView consists of a node manager, video viewer and Telnet viewer.
- **DSAdmin** - A graphical application used to create and alter DS topology and permission information that is stored on a DSAuth Server.
- **DSAuth (DS Authentication Server)** - A central repository for DS topology information, DS user permissions and centralized services such as authentication, access control, audit, DS appliance monitoring and Client/DS appliance updates. DS users may specify a backup authentication server in addition to the primary server.

The DS Management Software suite includes secure, browser-based access to virtually any device in the data center, including access to all major server platforms and serial-based devices.

The following figure illustrates an example system configuration using the DS Management Software suite. For more information on how the components of the DS Management Software suite work together, see *Appendix B*.

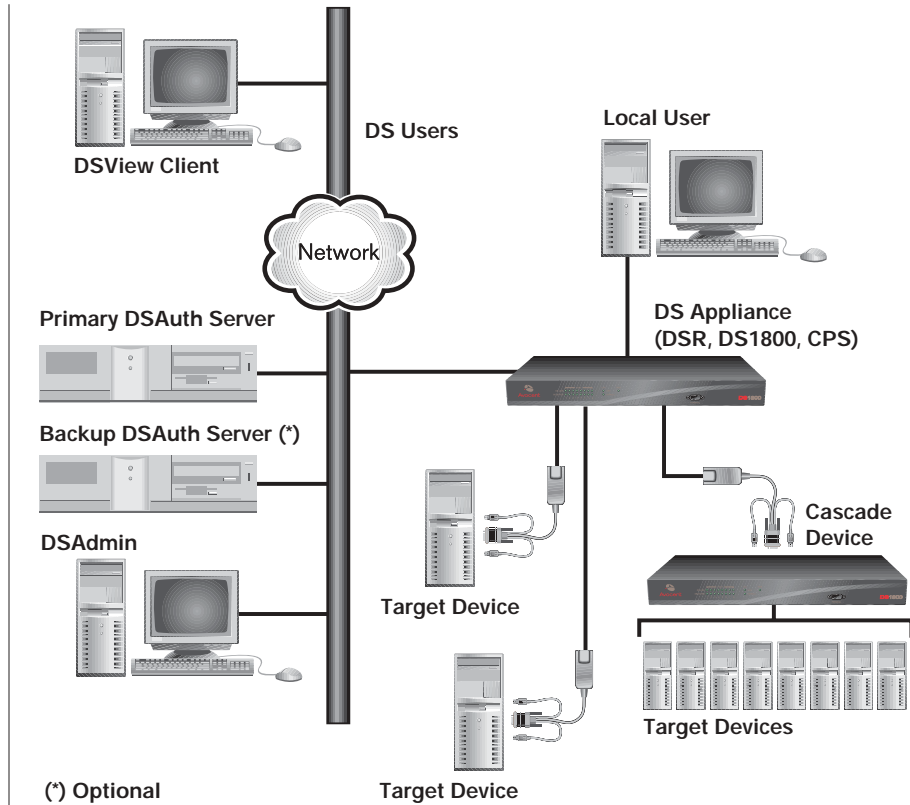


Figure 1.1: Example System Configuration Using DS Management Software

Features and Benefits

Network rebooting and troubleshooting

The DSView interface uses industry standard IP connections so that you can easily troubleshoot, or even reboot a server, from the Network Operations Center (NOC), from your desk or from any location in the world. With DSView, you can access all of your data center devices from a single screen - making complex network access and control remarkably easy.

Creating and managing user permissions

The DSAdmin and DSAAuth applications provide centralized network access, control and security for DS appliances. DSAdmin configures DS topology, permissions and per-device contact information. DSAAuth stores the DS topology, permissions and per-device contact information and performs third-party authentication during connection to the switch.



2

Installation

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Chapter 2: Installation

Installing the DS Management Software Suite

Installation of the DS Management Software suite is comprised of three steps:

- Installing the DSAAuth Server
- Installing DSAdmin
- Installing the DSView Client

The DS Management Software suite can be installed from the CD or using a self-extracting .zip file downloaded from the Avocent web site.

The DSAAuth Server, DSAdmin and the DSView Client must be present and configured before access can be gained.

NOTE: You will need to reboot your system as part of the installation process. This is necessary for Windows® to properly register the new application.

Installing the DSAAuth Server

NOTE: The DSAAuth Server MUST be installed on a PC running Windows 2000 or Windows XP with Service Pack 1, or on a PC running Windows NT® 4.0 Service Pack 4 or higher on an NTFS hard drive partition.

The DSAAuth Server is a central repository for DS topology information, user permissions and centralized services such as authentication, access control, audit, appliance monitoring and Client/appliance updates. DS users can define a primary and backup DSAAuth Server.

DSAdmin can be installed on the same machine as the DSAAuth Server, or on a separate machine. If DSAdmin is installed on a separate machine, it accesses the DSAAuth Server using a network connection.

For more information on how the DS (and CPS) appliances and DS Management Software communicate with each other, see *Appendix B*.

To install from the CD:

1. Log on to the PC as Administrator.
2. Insert the DS Management Software CD. An autorun file will bring up a menu of installation options.

3. When prompted to select a program to install, select *Install DSAuthentication Server*. The software will check the Avocent web site to ensure you have the latest version of the DSAAuth Server software. If a newer version is found, it will be automatically downloaded. The installation will then begin.
4. Follow the on-screen instructions. Windows will determine if the Microsoft Windows Installer Service is available. If it is not, Windows will install it and reboot the system. Setup will automatically continue after the reboot.
5. Continue following the on-screen instructions. The session time-out value will determine how long a DSVIEW session can remain inactive before it is automatically logged out. The default time-out is 15 minutes. Selecting *Disable inactivity timeout feature* or entering a \emptyset will disable this feature.
6. The Installer will determine if the Microsoft® Data Access Components (MDAC) need to be installed. If so, they will be loaded and the system will reboot. Setup will automatically continue after the reboot.
7. When the DSAAuth Server has finished installing, a system reboot is required.

To install using the DS Management Software downloaded from Avocent:

1. Log on to the PC as Administrator.
2. Using your DS appliance's installer/user guide and quick install guide, download the DS Management Software from the Avocent web site (Go to www.avocent.com and click the *Support* link. On the Technical Support page, click the *Product Upgrades* link.).
3. Double-click on the executable downloaded from Avocent. The installation will begin.
4. Follow the on-screen instructions. Windows will determine if the Microsoft Windows Installer Service is available. If it is not, Windows will install it and reboot the system. Setup will automatically continue after the reboot.
5. Continue following the on-screen instructions. The session time-out value will determine how long a session can remain inactive before it is automatically logged out. The default time-out is 15 minutes. Selecting *Disable inactivity timeout feature* or entering a \emptyset will disable this feature.
6. The Installer will determine if the MDAC components need to be installed. If so, they will be loaded and the system will reboot. Setup will automatically continue after the reboot.

7. When the DSAAuth Server has finished installing, a system reboot is required.

Installing DSAdmin

DSAdmin is the administrative front end for the DSAAuth Server that is used to configure user information and access levels. DSAdmin can be installed on the same machine as the DSAAuth Server, or on a separate machine and then connected to the DSAAuth Server through the network.

During the installation, a window will appear; enter the name or IP address of the PC where the DSAAuth Server is installed. This will be your primary DSAAuth Server. Also, if you are installing a non-English version of the DS Management Software, you will be prompted for the name of a default user setting.

To install from the CD:

1. Log on to the PC as Administrator.
2. Insert the DS Management Software CD. An autorun file will bring up a menu of installation options.
3. When prompted to select a program to install, select *Install DSAdmin*. The software will check the Avocent web site to ensure you have the latest version of the DSAdmin software. If a newer version is found, it will be automatically downloaded. The installation will then begin.
4. Follow the on-screen instructions.

To install using the DS Management Software downloaded from Avocent:

1. Log on to the PC as Administrator.
2. Using your DS appliance's installer/user guide and quick install guide, download the DS Management Software from the Avocent web site (Go to www.avocent.com and click the *Support* link. On the Technical Support page, click the *Product Upgrades* link.).
3. Double-click on the executable downloaded from Avocent. The installation will begin.
4. Follow the on-screen instructions.

Installing the DSView Client

The DSView Client displays a listing of servers that an individual user can access. The DSAuth Server will check your NT domain cached credentials and provide a list of target devices available to you. There is a refresh option in the event that a new target device is added, changed or deleted. Once you have selected a target device from the list, the video of the selected target device will display in a remote session window on the DS user's monitor. The DSView Client can be installed on any PC running a Win32 platform.

During the installation, a window will appear; enter the name or IP address of the PC where the DSAuth Server is installed. This should be the same name or IP address that you specified when installing the DSAdmin software. Also, if you are installing a non-English version of the DSView Client software, you will be prompted for the name of a default user setting.

To install from the CD:

1. Log on to the PC as Administrator.
2. Insert the DS Management Software CD. An autorun file will bring up a menu of installation options.
3. You will be prompted to select a program to install. Select *Install DSView*. The software will check the Avocent web site for a newer version of the DSView Client software. If a newer version is found, it will be automatically downloaded. The installation will then begin.
4. Follow the on-screen instructions.

To install using the DS Management Software downloaded from Avocent:

1. Log on to the PC as Administrator.
2. Using your DS appliance's installer/user guide and quick install guide, download the DS Management Software from the Avocent web site (Go to www.avocent.com and click the *Support* link. On the Technical Support page, click the *Product Upgrades* link.).
3. Double-click on the executable downloaded from Avocent. The installation will begin.
4. Follow the on-screen instructions.



3

Basic Operations

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Chapter 3: Basic Operations

Launching the DS Management Software

This section describes how to launch the DS Management Software so that you may begin using it to manage DS appliances and target devices.

To launch DSAdmin:

Select *Start - Programs - Avocent - DSAdmin*.

- or -

Double-click the *DSAdmin* icon. DSAdmin will launch.

To launch the DSView Client:

Select *Start - Programs - Avocent - DSView*.

- or -

Double-click the *DSView* icon. DSView will launch.

Working with the DS Management Software

The DSView Client consists of a Node Manager and a remote session window. When you launch the DSView Client, the Node Manager appears. The Node Manager allows you to view, access, manage and create custom groupings for all of the supported DS, CPS and SPC appliances in your data center.

You can double-click a port in the Node Manager to launch a remote session window. The remote session window allows you to control the keyboard, monitor and mouse functions of individual servers.

When you select an appliance, you can select *File - Properties* in the Node Manager to launch the Properties dialog box, which contains tabs that enable you to configure and control your appliance.

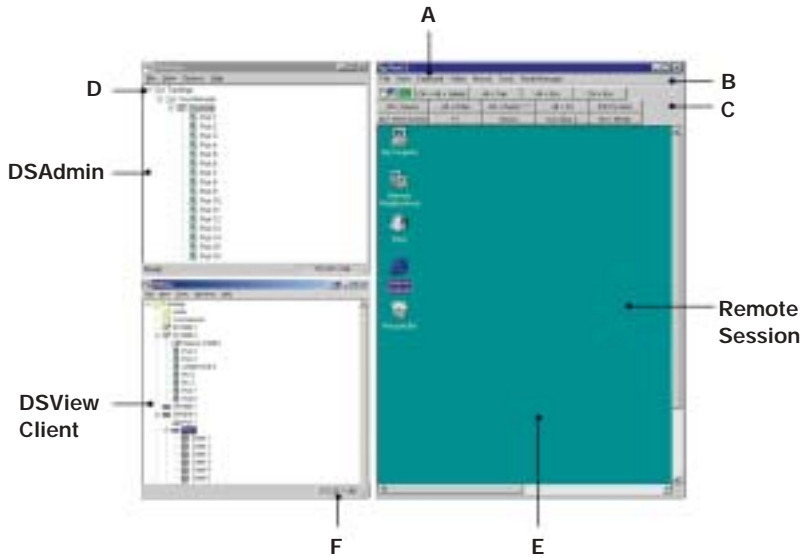


Figure 3.1: DSAdmin, DSView Client and Remote Session Windows

- A. **Title bar:** Displays the currently-selected port from the Node Manager.

- B. **Menu bar:** Allows you to access many of the features in the remote session window.

- C. **Toolbar:** Contains buttons to automatically align the mouse, refresh and adjust video, and access macros.

- D. **Root node:** Each tree consists of a root node and branches.

- E. **Accessed server desktop:** Interact with your server through this window.

- F. **Status bar:** Displays the net address of the highlighted network appliance.

Viewing Target Devices

Accessing devices with a DS series network appliance is accomplished through DSView. When DSView is opened, all host PCs and serial devices that may be accessed system-wide are displayed in a tree structure. This tree structure can be displayed in two ways: a DS topology view showing target devices and the appliances to which they're connected, or a server view that shows all available target devices. Both viewing methods can be selected under the View menu.

DS topology view

In the DS topology view, DS appliances and target devices are arranged in a tree structure. Available DS appliances and target devices are listed vertically by name or IP address. Each appliance can be expanded to display attached devices.

An SPC device will appear as a cascade device attached to a specific CPS port. Each outlet will appear with a power indicator cascaded below the port. To view an attached SPC and its outlets, click on the expand (+) button beside a CPS appliance, then the SPC expand button.

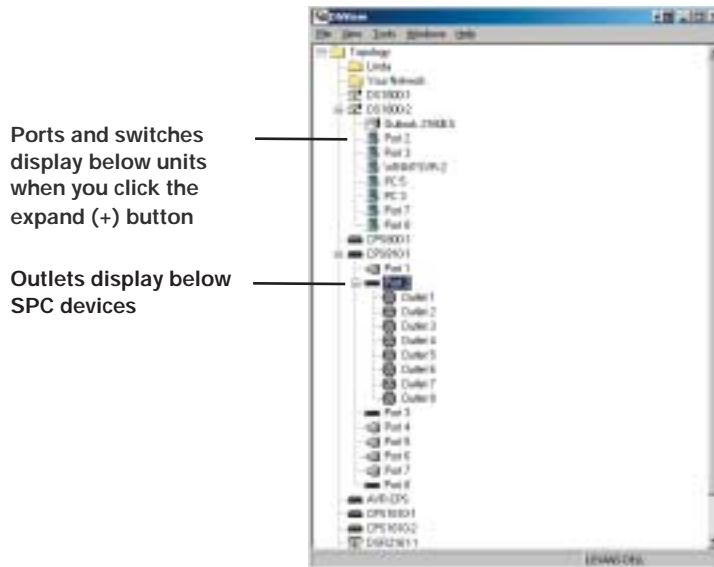


Figure 3.2: DS Topology Tree

To display the DS topology view:

1. In the DSAdmin window, double-click on *Topology* and then *Your Network*.
2. Each name or IP address listed may be expanded by double-clicking on it.

This will display the ports for the DS appliance corresponding to that address. Each of these ports shares the DS appliance's IP address.

If a target device is attached to a port, the properties of that port will be the same as the properties of the target device.

If a KVM switch is attached to one or more of these ports, double-clicking on the port name will display the channels on that KVM switch.

Server view









In server view, available target devices are listed by name only.



Figure 3.3: Server View

The DSView Client designates target device type with specific icons in the viewing panes. These icons are outlined in the Icons table.

Icons

Icon	Description
	DS appliance (DS topology view)
	A target device attached to a DS appliance or KVM switch
	CPS appliance (DS topology view)
	An SPC port (DS topology view)
	An SPC outlet
	A port on a CPS appliance (DS topology view)
	A KVM switch attached to a DS appliance (DS topology view)
	A port on a CPS appliance or a port on a CPS appliance attached to an SPC outlet (server view)

Port status indicators

Additionally, when port status polling is enabled, DSView indicates which ports and channels are in use, available, not powered or blocked, and the power state of SPC outlets. See *Port status polling frequency* in Chapter 4 for information on polling.

NOTE: Your CPS firmware must be up-to-date to view CPS and SPC poll status indicators.

Available

Available ports are highlighted in green. DS users may connect in any mode desired.

In use

A port that is in use will be highlighted in yellow. The usage state of a CPS800 or CPS1600 appliance attached to a DS/DSR appliance will appear as Unknown.

When a port is in use, DS users may only connect through sharing. More details on sharing are available later in this chapter.

Blocked

Blocked ports will have a red icon covered by a red "X." No additional DS users may connect to this port or channel in any mode. DS users with Administrator privileges may terminate the session. For more information, see *Sharing or Terminating a Device Session* later in this chapter.

Not powered

Ports that are not powered will have a grey icon covered by a black “X.” The power state of a CPS800 or CPS1600 appliance attached to a DS/DSR appliance will appear as Unknown.

Port status reporting can be toggled by selecting *File - Enable Port Status*. If there is no check mark beside this menu option, DSView will not request the port status information from the DSAuth Server. DS users may still get a snapshot of port status by selecting *View - Refresh*.

SPC device power state

SPC devices that are set as powered will appear with a different icon when they are not powered. For more information on setting SPC power states, see *To change the SPC device power state* later in this chapter.

The OnBackup status bar indicator

When DSView is communicating with its assigned primary DSAuth Server, that server name will appear in a status window. If DSView is unable to communicate with the primary DSAuth Server, it will attempt to communicate with the backup DSAuth Server. If DSView is communicating with a backup DSAuth Server, the server’s name will appear highlighted in yellow.

NOTE: When DSAdmin is communicating with the backup DSAuth Server, it is working in a degraded mode. The backup DSAuth Server allows only View operations and does not allow any modifications to the tree, properties or permissions settings. When DSAdmin is using a backup DSAuth Server, the OnBackup status bar will turn yellow.

Adding and Configuring DS Appliances and Target Devices

Once you have installed your hardware and software, you will need to configure the DS appliances. You may also need to configure KVM switches and associate SPC devices with an appliance port.

To add a new DS/DSR appliance to the system:

1. Load the DSAdmin software.
2. Double-click on the icons labeled *Topology* and then *Your Network*. A listing of all DS appliances accessible by the system will be displayed.
3. From the DSAdmin window, select *File - New - [DS/DSR appliance]*. The New [*appliance type*] dialog box appears.
4. In the [DS/DSR appliance] tab, enter the IP address for the appliance that you are adding. This is the IP address that you assigned in the Terminal Applications menu. See the installer/user guide for your DS/DSR appliance for more information.
5. Enter a name for the appliance that you are attaching. DS/DSR appliances can be identified by name or IP address.
6. Click on the *Port* tab and configure each individual port.

Configuring host PCs

A computer attached directly to your DS/DSR appliance is called a “host PC.” If you are directly attaching a host PC, you may give it a descriptive name in the Port field. No further configuration is necessary.

Configuring attached KVM switches

NOTE: DS appliances support specific AutoView® and OutLook® brand switches. Contact Avocent Technical Support or your reseller for details.

Before the ports on an attached KVM switch can be accessed, DSAdmin must be configured to recognize the attached cascaded or non-cascaded switch.

To configure DSAdmin for an attached cascaded or non-cascaded KVM switch:

1. Attach the switch as directed in your hardware installer/user guide.
2. Activate DSAdmin, and display the DS/DSR appliance to which the switch is attached.
3. Right-click on the DS/DSR appliance and select *Properties*. The Properties dialog box will appear.
4. Select the *Ports* tab.

5. You will see a list of ports and a corresponding drop-down menu beside it. Using the drop-down menu, select the number of channels supported by the KVM switch you are configuring.

Repeat this procedure for every KVM switch you plan to configure. Click *OK* when complete.

After all DS/DSR appliances are configured, you may add CPS appliances and SPC devices to the system.

To add a new CPS appliance to the system:

1. Load the DSAdmin software.
2. Double-click on the icons labeled *Topology* and then *Your Network*. A listing of all DS appliances accessible by the system will be displayed.
3. First, you must configure the CPS appliance for use with a DS/DSR appliance. Begin by establishing a Telnet session to your CPS appliance. From the CPS command line, enter the following command:

```
SERVER SECURITY MODE=DSSSL DSAUTH=[Authentication Address]
```

In place of *[Authentication Address]*, enter the proper information for your DS/DSR appliance.

In configurations where security is enabled, enter the primary DSAuth Server's IP address followed by the secondary server.

For example:

```
SERVER SECURITY MODE=DSSSL DSAUTH=111.11.11.1, 222.22.22.2
```

In configurations where security is not enabled, enter the word *any*.

For example:

```
SERVER SECURITY MODE=DSSSL DSAUTH=any
```

Press *Return* to accept the configuration.

4. From DSAdmin, select *File - New - CPS*. The Properties dialog box will appear.
5. In the Device Identification tab, enter the IP address for the CPS appliance that you are adding. This is the IP address that you assigned in the Terminal Applications menu. See the *CPS Installer/User Guide* for more information.

6. Enter a name for the CPS appliance and select the type of CPS appliance that you are adding.
7. Click on the *Ports* tab. Give each port a descriptive name in the Port field. No further configuration is necessary. However, you may click on the *Properties* tab to list descriptive information for the CPS appliance that you are configuring. When all configuration is complete, a dialog box will appear prompting the user to reboot. On acceptance, all changes are saved and the system will reboot.

Adding an SPC device as a CPS appliance port

NOTE: A CPS appliance must be configured to use an SPC device. See the CPS Installer/User Guide for more information.

Once a CPS810 or CPS1610 appliance has been added to DSAdmin, you may associate its port with an SPC device.

An SPC device is an outlet that can be used to control the power state of an attached device using DSView. To do this, you must associate the port of the DS appliance with an SPC device. If the server has multiple power supplies, the appliance's port can be associated with multiple SPC device outlets.

NOTE: To use an SPC, there must be at least one CPS810 or CPS1610 on your network.

The integrated power management of the SPC enables you to remotely power up, power down or reboot servers attached to the SPC device. An SPC device will appear as a cascade switch attached to a CPS appliance port in the DS topology view. Each outlet will appear with a power indicator cascaded below the port.

If a port is already associated with an SPC device, you may modify or remove its association using either the Ports tab or the Properties tab of the CPS Properties dialog box.

An SPC device may be directly associated with your DS appliance's port.

To associate a DS appliance port with an SPC device:

1. In DSAdmin, right-click on a DS appliance and then select the *Power State* menu item. The Power State dialog box will appear.

2. Click the *Link* button. The Server/SPC Outlet Links dialog box will appear, containing a list of all SPC device names that are present on the DSAuth Server. Any SPC devices that were previously linked to DS appliance ports also appear at the bottom of the dialog box.
3. Click on an SPC in the Current Server/SPC Outlet Links list, then click *Add*. The SPC is associated with the DS appliance port and appears in the New Server/SPC Outlet Links list at the bottom of the dialog box. To remove an association, click on an SPC device/DS appliance port association in the Current Server/SPC Outlet Links list and then click *Remove*.
4. Click *OK* to save your changes and close the dialog box, and then click *OK* on the Power State dialog box to close it.

To add an SPC to a DS appliance port using a CPS appliance:

1. From the DSAdmin window, select a CPS810 or CPS1610.
2. From the DSAdmin menu, select *File - Properties*. The [appliance name] Properties dialog box will appear.
3. Click the *Properties* tab. A list of all ports will appear. The DSAuth Server will examine appliances to determine if new SPC devices are present.
4. If new SPC devices have been added to the CPS ports, a message box will appear, prompting you to save the new configuration. Click *Yes* to automatically update the settings, or click *No* to cancel the addition of the SPC devices.
5. If desired, type a name in the Port field to the left of a port's drop-down menu to change its name.
6. Click the *OK* button.

To add an SPC to a DS appliance port using a CPS appliance port:

1. From the DSAdmin window, select a CPS810 or CPS1610 port.
2. From the DSAdmin menu, select *File - Properties*. The [port name and number] Properties dialog box will appear. The DSAuth Server will examine appliances to determine if new SPC devices are presently associated with the appliance's ports.
3. If new SPC devices have been added to the CPS ports, a message box will appear, prompting you to save the new configuration. Click *Yes* to automatically update the settings.

4. If desired, type a name in the Name field and modify any other information in the dialog box.
5. Click the *OK* button.

Adding and Managing DS Users

Adding DS users

You must add DS users within DSView in order for them to have access to the system. Users are assigned a default access level when they are added. If you wish to assign DS users a different access level, you will need to change their permissions.

To add a user:

1. Within the DSAdmin window, right-click on the DS appliance or port you wish to change and select *Permissions*. This will activate the Permissions dialog box.
2. You may either type the username of the DS user you wish to add, or click on the button marked *Add*. Clicking *Add* will display a listing of all DS users on the Windows domain network. Double-click on the DS user you wish to add. This will move that DS user's name to the permissions list.

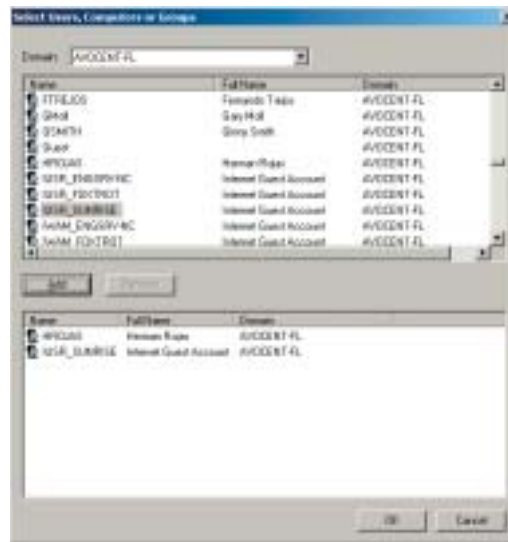


Figure 3.4: Selecting DS Users to Modify

3. Click on the new DS user's name and check the access boxes appropriately.

To change default DS user permissions:

1. Right-click on the DS appliance or port you wish to change and select the *Permissions* command.
2. A DS user listing will appear. You will see a DS user listed as *Everyone*, which is configured with the default permissions. Any DS user you do not set up with individual permissions will use this default configuration.

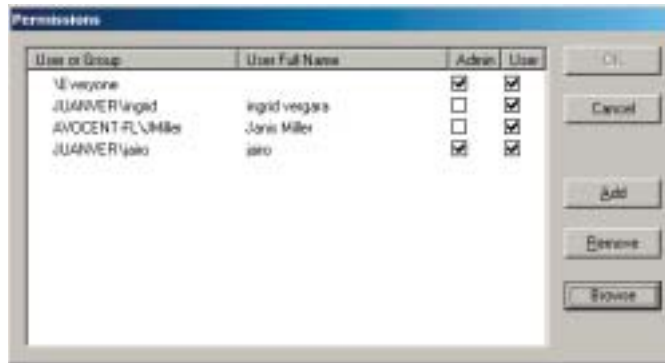


Figure 3.5: Permissions Dialog Box

3. Click *Everyone*. The default setting shows both boxes checked. Check or uncheck the *Admin* and *User* boxes to control access for all DS users without a specifically assigned configuration.

NOTE: Remember, Administrator access will allow the DS user to change permissions in DSAdmin for any DS user listed.

To change specific user permissions:

1. Right-click on the entry you wish to change and select *Permissions*.
2. The Permissions dialog box will appear, listing all configured DS users. Change an individual DS user's access level by clicking on the username and selecting the access level you wish the user to have. If a DS user isn't listed, click the *Add* button. Refer to the previous section, *Adding DS users*.

NOTE: If you remove all permissions from a port or DS appliance, access to that port or DS appliance will be lost.

Setting the Remote Session Window Size

Before using DSView for the first time, you will need to enter the default remote session window resolution. This is the default window size that will be applied to every DSView session. DSView will automatically adjust the display if the window size changes during a session as long as autoscaling is enabled. When a DS user accesses a channel via sharing, the display will be adjusted to match the input resolution of the first person to access that channel.

To set the default remote session window resolution:

1. Load the DSView software. This will activate the Node Manager and provide you with a list of target devices that you may access.
2. Select *File - Default Session Window Resolution* and click on the resolution that you wish to use. Available resolutions are:
 - None
 - 640 x 480
 - 800 x 600
 - 960 x 720
 - 1024 x 768

Setting the color depth

The DSR Dambrackas Video Compression™ (DVC) upgrade enables DSView users to adjust the number of viewable colors in a remote session window. You may choose to display more colors for the best fidelity, or fewer colors to reduce the data transferred on the network.

NOTE: The DSR DVC upgrade is standard on all newer DS/DSR appliances. Older DS/DSR appliances use standard video compression. For DSR DVC upgrade purchase information, contact Avocent Technical Support or your Avocent reseller.

Remote session windows can be viewed using the best color available (slower updates), the best compression (fastest updates), a combination of best color and best compression or in grayscale.

If a DSView user starts a video session by double-clicking on a port or channel and a color depth setting has not been previously specified, the Video Settings dialog box will appear. The specified setting will be used globally for all ports or channels and any remote session windows opened from the ports.

The color depths of individual ports and channels can be specified by selecting the *Video - Settings* command in a remote session window. These settings are saved individually per port and channel and override the global color depth setting. See *Adjusting Video Parameters* in Chapter 4 for more information on these settings.

NOTE: A color depth cannot be applied to a remote session window during a shared device session. See *Sharing or Terminating a Device Session* later in this chapter for more information.

To set the initial color depth for all ports and channels:

1. Double-click on a port or channel. A remote session window will appear.
2. Select *Video - Settings* from the remote session window. The Video Settings dialog box will appear.
3. Move the slider to the Best Color position.
 - or -
 - Move the slider to the middle position.
 - or -
 - Move the slider to the Best Compression position.
 - or -
 - Select the *Grayscale Video* checkbox.
4. Select the *Use as Default* checkbox to use the specified setting for all ports that have not been assigned an individual color depth setting.
5. Click *OK* to apply your changes.

To set the color depth for an individual port or channel:

1. Double-click on a port or channel. The Video Settings dialog box appears.

2. Move the slider to the Best Color position.
 - or -
 - Move the slider to the middle position.
 - or -
 - Move the slider to the Best Compression position.
 - or -
 - Select the *Grayscale Video* checkbox.
3. Click *OK* to apply your changes.

Accessing Target Devices

You may access one or more target devices within a DS series appliance at the same time. To access multiple target devices, double-click on every port that you wish to display. Windows may be tiled or cascaded as you choose.

NOTE: When tiling windows from the Node Manager, each remote session must be in Full Scale mode in order for windows to tile properly. By default, the scaling mode is specified as Auto Scale. To change the scaling mode, select *Video - Scaling - Full Scale* in the remote session window.

To access a target device:

1. Load the DSView software. This will display the Node Manager and provide you with a list of target devices that you may access.
2. Double-click on the target device that you wish to access. This will open a remote session window and allow the DS user control of the target device.

NOTE: If you are using the DSR DVC upgrade and have not set the color depth, the Video Settings dialog box appears and you must set a color depth. See *Setting the color depth* earlier in this chapter for more information.

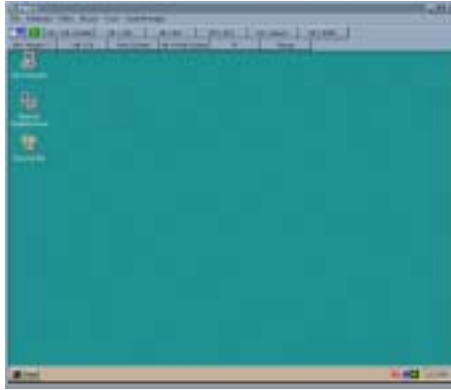


Figure 3.6: The Remote Session Window

Using Privacy mode

If a DS user needs to access a port while excluding all others, Privacy mode is used. When a port is selected in Privacy mode, no other DS user in the system may switch to that port. If another DS user initiates a connection to a port in Privacy mode, that user will receive a message indicating that the port is in Privacy mode.

To access a target device in Privacy mode:

1. Load the DSView software. This will display the Node Manager and provide you with a list of target devices that you may access.
2. Highlight the target device that you wish to access and select *File - Privacy Mode Select*.
- or -
Right-click on the target device's name and select *Privacy mode*.

Sharing or Terminating a Device Session

If at any time the channel to which you are connecting is already in use, you will receive a notification message and have the choice of two options:

- You may access a port with other users and share the device session.
- If you have Administrator privileges, you may disconnect other users from a port and terminate the users' device session.

Sharing a device session

When you attempt to access a port already in use, you will receive a notification message that the port is in use along with the name of the current DS user(s). At this point, you may request to share access to the port with the current DS user(s). The DS users that are currently active will receive a request to allow sharing. If they confirm, the new DS user will gain access to the port. When sharing access to a port, all DS users may monitor the port and may take control if no other DS user is currently active.

When you attempt to connect to a port, the DSView Connection Sharing dialog box displays. If you select the Stealth Connection checkbox and then click *Share*, the DS user that is currently active will not receive notification that access is being shared and no request to authorize sharing will be made.

NOTE: The only way to prevent a stealth connection to a port is by enabling Privacy mode.

Up to 12 DS users may share a single port at one time. If a 13th DS user attempts to connect, an error message will inform the DS user that no sessions are available. Administrators will be given the option of terminating a DS user session.

At any time, DS users may select *View - List of Shared Users* to view a list of DS users sharing their port or channel. DS users in Stealth mode are excluded from this list.

Session time-out

A remote session will time-out if there has been no activity in a Session window for a specified time. The session time-out value is configured by your Administrator by selecting *Options - System Settings* in the DSAdmin window.

You may override this value within the DSView. If you specify a new time-out value, it will be used the next time DSView is started.

To change a remote session time-out value:

1. From the Node Manager, select *Tools - Settings*, enabling the Program Settings dialog box to appear. Click the *General* tab.

2. Select one of the following from the General tab:
 - Default System Timeout Values - The value set by an Administrator and stored on the DSAAuth Server (default).
 - No Timeout - A remote session will never time-out due to inactivity.
 - Timeout Value - A remote session will time-out after the number of minutes of inactivity specified. Type a number from 1-60 in the Minutes field.
3. Click *OK* to save the settings.

Terminating a target device session

If you have Administrator privileges and the target device you are attempting to access is currently being viewed by a local DS user, DSView allows you to disconnect the local DS user so that you may access that target device. To terminate a local DS user's session, you must first specify the ability to do so in DSAdmin's System Settings dialog box.

When you choose to terminate a local DS user's connection, a message box will display prompting you to confirm the termination. The local DS user will receive a notification message when you click *Yes* in the message box. Control of the port is then transferred to you.

Administrators may also disconnect a DS user by selecting the port that the user is accessing and choosing *File - Disconnect*, or by right-clicking on the port and selecting *Disconnect* in the DSAAuth window.

NOTE: You cannot preempt a local user that is in Broadcast mode. See the DSR Installer/User Guide for additional information.

To specify settings to terminate the local DS user session:

1. Select *Options - System Settings* in the DSAdmin window. The System Settings dialog box will appear.
2. Select the DSR Local Port Session Termination *Enable* checkbox in the area.
3. Click *OK* to save your settings and close the dialog box.

To terminate the current DS user session using the Disconnect command:

1. Select a port in the DSAdmin or DSView Client window and then select *File - Disconnect*. A message box will appear prompting you to confirm the termination of the current DS user connection.
2. Click *Disconnect*. A message box displays prompting you to confirm the termination of the DS user session. Click *OK*. The current DS user will then receive a notification message.

Rebooting and Changing Power States

If you have Administrator privileges, you may perform a warm reboot on a DS appliance at a remote location.

To reboot a remote DS appliance:

1. Select the DS appliance in the DSAdmin window.
2. Select *File - Reboot*. A confirmation message box will appear.
3. Click *OK* to reboot the remote DS appliance.

Changing the SPC device power state

NOTE: To change the power state of a target device powered by an SPC, the SPC must be connected to a CPS810 or CPS1610 appliance. For more information on connecting an SPC to a CPS appliance, see the SPC Installer/User Guide.

The power state of either a particular SPC device, CPS appliance or server powered by an SPC device may be turned on or off. The SPC may also be used to reboot a server.

To change the SPC device power state:

1. Load the DSView software. This will activate the Node Manager and display a list of DS appliances with ports linked to SPC devices that you may access.
2. Select an SPC, then right-click on the item and select *Power State* from the shortcut menu. This will open the Power State dialog box with the current power state of the SPC selected. If a CPS port is linked to one or more SPCs, these linkages will appear in the dialog box.

3. Do one of the following:

- Click *On* to turn the SPC on.
- Click *Off* to turn the SPC off.
- Click *Reboot* to reboot the SPC and any attached servers. The SPC device's On or Off state will remain the same as the last time the Power State dialog box was accessed.

4. Click *OK* to perform the selected action and close the Power State dialog box.

NOTE: One DS port may have multiple SPC ports associated with it. Any on, off or reboot operation you choose to perform to one SPC port associated to a specific DS port and target server occurs to every SPC port associated to the DS port and target server.



4

Advanced Operations

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Chapter 4: Advanced Operations

Changing the System Settings

Depending on the level of security that you require, certain settings may be configured via the use of DSAdmin's System Settings dialog box. These options may be accessed by selecting *Options - System Settings*.

Changing the remote session window time-out

DSView may be configured to automatically log a DS user out after a specified inactivity period. Use this feature to heighten security or prevent a DS user from blocking access to a channel by forgetting to log out. To change the time-out, select the *Enable* checkbox, then enter the desired inactivity period within the provided field. You may also disable this feature by unselecting the *Enable* checkbox.

Limiting DS user port information

When a DS user attempts to select a channel that is in use, DSAdmin will report who is currently using that channel and offer DS users with administrative rights the option to log the current user out. If the *Administrators only* box is selected, this message will be limited to Administrators; DS users without Administrator access will only receive a message that the port is in use.

Connection sharing

By default, the DS Management Software is set to prompt connected users to allow sharing of their session. When the box marked *Allow Shared Connections Automatically* is checked, sharing will be initiated without a prompt.

Automatic creation and deletion of audit logs

Administrators may specify the following:

- The directory where the audit log file is stored (default is root).
- How long the audit log file is stored before it is deleted. If you do not wish to have logfiles automatically deleted, enter a \emptyset in the provided field.

NOTE: Allowing logfiles to build for an extended period may consume a great deal of disk space. Routine deletion is recommended.

NOTE: When changing the location of the Audit log, the Administrator must make sure that the full path chosen exists, is accessible to both the primary and backup DSAAuth Servers and is mapped to the same letter for both machines. If the log file is moved to a location other than the local system, both the primary and backup DSAAuth Servers will use the same location for the files.

Port status polling frequency

This option, when enabled, allows Administrators to configure how often DSAAuth polls appliances and how often DSVIEW polls DSAAuth. Entering a 0 in a field will disable polling on that field.

DS Management Software suite update

In order to ensure that all DS users have the latest version of the DS Management Software suite, Administrators may specify a system wide software suite version number.

To specify a version number:

1. Enter the desired DSVIEW update version in the Update version text box.
2. Enter the IP address of the TFTP server where the update resides.
3. If you wish to make updates mandatory, click the *Update is mandatory* checkbox. If *Update* is not selected, the DS user must upgrade DSVIEW software manually. See *Updating Firmware* later in this chapter for more information.

When a DS user with an older version of the DS Management Software suite logs into the system, the user will receive an upgrade prompt. Selecting *Yes* will begin the upgrade process. If the upgrade is mandatory, DS users with older versions of the DS Management Software suite will not be able to access the system until the upgrade is performed.

Terminating a DSR appliance local port session

If the *Enable* checkbox has been selected in the DSAdmin System Settings, a user with Administrator privileges may terminate a local port session.

To terminate a DSR appliance local port session:

1. Select a port on a DSR appliance.
2. From DSVIEW, select *File - Disconnect*.
- or -

Right-click and select *Disconnect* from the shortcut menu.

A message box will appear prompting you to disconnect the local port session.

3. Click *Disconnect*. Another message box will appear prompting for verification that the current connection should be terminated.
4. Click *Yes* to terminate the local port session.

Configuring SNMP trap logging

DSAuth may be configured to log enterprise (SNMP) traps sent by DS appliances.

NOTE: SNMP trap logging cannot be enabled if SNMP services has not been installed.

All SNMP Traps are logged in the DS[mm][yy][dd].csv audit log file, where [mm] is the month, [dd] is the day and [yy] is the year when log entries were last added.

The audit log file contains the following columns:

- DATE - Date of the log entry
- TIME - Time the log entry was made
- EVENT TYPE - Type of log entry, which is 9 SNMP_TRAP for SNMP traps
- USERNAME - Username of the user who created the trap, or “Unknown Username” if the username is not given
- DEVICE_PORT - Displays the following for SNMP traps:
Appliance:[appliance name]::[appliance IP address]:
[community of the trap]
- DESCRIPTION - Displays the following for SNMP traps:
[generic trap code]:[specific trap code]::[generic trap name]::
[specific description of trap]

See *Appendix E* for more information on SNMP traps.

To configure SNMP logging:

1. From the DSAdmin menu, select *Options - System Settings*. The System Settings dialog box will appear.
2. Click the *Enable SNMP Trap Log* checkbox to log SNMP traps over UDP port 161.

3. Enter the community of the traps you wish to log in the SNMP Trap Community text field. The default community is public.
4. In the Delete logfiles older than text field, specify the number of days to keep the audit log file.
5. Specify the pathname for the audit log file in the File Location text field.
6. Click *OK* to save the settings and close the dialog box.
- or -
Click *Cancel* to exit the dialog box without saving.

Configuring the Event Log

The DS Management Software suite uses the DSAAuth component's functionality to log event information in a text file that may be audited at a later time.

Events logged by DSAAuth include:

- Failed DSAAuth authentication attempts. (For example, the error message *Channel Blocked, insufficient right access* may be output to the event log.)
- Server power state changes
- Appliance reboot requests
- Appliance reFLASH
- SNMP alerts defined by the appliance's firmware
- CPS authentication

When all software programs are installed, a modification to the event log of the computer running DSAAuth is required.

To configure the event log for use with Windows NT:

1. From the Start menu, select *Programs - Administrative Tools (Common) - Event Viewer*. This will display the Event Viewer window.
2. From the Event Viewer window, select *Log - Log Settings* to display the Event Log Settings window.
3. Select *Overwrite Events as Needed* and click the *OK* button.

To configure the event log for use with Windows 2000:

1. From the Start menu, select *Settings - Control Panel* to open the Control Panel.
2. Double-click on the *Administrative Tools* icon, then the *Event Viewer* icon.

3. In the left viewer pane, click on *Application Log* and then choose *Action - Properties* from the menu at the top of the window. This will activate the Application Log Properties window.
4. Select *Overwrite Events as Needed* and click *OK*.

Setting Up a DSAuth Server

DSAuth may be installed and configured on multiple computers to increase system flexibility. For maximum security, a backup computer running DSAuth may be added to an existing DS/DSR appliance installation.

The DS Management Software is designed to automatically determine the primary and backup DSAuth Server. However, you may choose to change these settings at a later date.

To add a new DSAuth Server:

1. Load the DSView or DSAdmin software and select *File - Select Authentication Server* to activate the Select Authentication Server dialog box.
2. Click the *Add* button on the right side of the dialog box.
3. You will be prompted for a name of the new server. You may enter it in the provided dialog box or browse for it by clicking the *Browse* button.
4. You may also enter a backup DSAuth Server for the new server using the same method in the provided field. If you do not wish to associate a backup, leave the field blank.
5. Click *OK* to exit and save changes.

To delete a DSAuth Server:

1. Load the DSView or DSAdmin software and select *File - Select Authentication Server* to activate the Select Authentication Server dialog box.
2. Click on the server name that you wish to delete, then click *Delete*. This will remove the primary/secondary pair.

To select an alternate DSAuth Server:

1. Load the DSView or DSAdmin software and select *File - Select Authentication Server* to activate the Select Authentication Server dialog box.

2. Click on the primary/backup server pair that you wish to use and click *OK*.

If you select the *Show on Startup* box, you will be prompted to select a server pair every time that you start the machine.

To add a backup DSAAuth Server:

1. Install the DSAAuth software on the PC that is going to be the new backup DSAAuth Server.
2. From the Start menu, select *Settings - Control Panel* and double-click on the *DS Auth Configuration* icon. The DSAAuth Configuration dialog box will appear.
3. Select *Backup Server* and enter the name of the primary DSAAuth Server in the block provided.
4. When prompted, restart the Avocent Authentication Server service.
5. From the Start menu, select *Settings - Control Panel* and double-click on the *DS Auth Configuration* icon on the primary DSAAuth PC. The DSAAuth Configuration dialog box will appear.
6. Select *Backup Server* and change the name of the backup DSAAuth Server to the new name.
7. When prompted, restart the Avocent Authentication Server service.
8. From the Start menu, select *Settings - Control Panel* and double-click on the *DS Auth Configuration* icon on the primary DSAAuth PC. The DSAAuth Configuration dialog box will appear.
9. Click the *Install Authentication Tokens* button. This will issue new authorization tokens to all attached systems running the DSView Client, identify any communications issues that the system is having and provide an opportunity to correct them.

To promote the backup DSAAuth Server to primary:

1. From the Start menu, select *Settings - Control Panel* and double-click on the *DS Auth Configuration* icon on the primary DSAAuth PC. The DSAAuth Configuration dialog box will appear.

2. Within the dialog box, change the mode of operation to Backup Server and enter the name of the primary DSAAuth PC. When prompted, restart the service.
3. From the Start menu, select *Settings - Control Panel* and double-click on the *DS Auth Configuration* icon on the backup DSAAuth PC. The DSAAuth Configuration dialog box will appear.
4. Within the dialog box, change the mode of operation to Primary Server and enter the name of the backup DSAAuth PC. When prompted, restart the service.

Forcing a full resynchronization

If the integrity of the DS topology view of the backup server should come into question or if a PC is moved to control a different DS topology view, a full resynchronization should be performed. This will force a check of all elements and should only be performed when necessary as it consumes a great deal of time and network bandwidth.

To force a full resynchronization:

1. From the Start menu, select *Settings - Control Panel* and double-click on the *DS Auth Configuration* icon. The DSAAuth Configuration dialog box will appear.
2. Select your DSAAuth backup server and select the *Force Full Resynchronization* checkbox.
3. Click *OK* to begin the resynchronization.

Altering Settings in DSView

Under most circumstances, the DS Management Software will function smoothly with the default settings. However, depending on your system, you may wish to fine tune some aspects of its performance.

Changing your default desktop size and window scaling

There are occasions when you may wish to change the resolution on your desktop to one resembling the host DS/DSR appliance.

To change your remote session window resolution:

1. Select *Tools - Desktop* from the command bar at the top of the remote session window.

2. Choose a resolution. Your desktop will be resized to the resolution specified. Repeat this command to return to your original resolution.

DSView also supports a user-defined default window size that is applied to every software session.

To change the default window resolution:

1. From the Node Manager select *File - Default Session Window Resolution*.
2. Choose your default window size. Choosing *None* disables this feature.

Once a DS user with a default window size has connected to a port, additional DS users will have their default displays overridden to match the first DS user. This will prevent the first DS user's display from being affected.

If the target device's resolution changes any time during a session, the display will be adjusted automatically.

Creating and Using Keyboard Macros

Since DSVIEW is running on a PC, certain commands must be sent to the controlled target device via keyboard macros. For example, pressing **Ctrl+Alt+Delete** on your keyboard would reset the PC running DSVIEW rather than resetting the target device. To reset the target device, a macro is needed. Your software comes with numerous sequences pre-configured for ease of operation.

Local and Global Macros

Two kinds of macros are available:

- **Local Macros** - Local macros are created on the local computer by selecting *Tools - Keyboard -Macros* in the DSVIEW Client Node Manager window. Local macros may be customized and grouped in any manner you wish.
- **Global Macros** - Global macros are created and maintained by DS users with Administrator privileges by selecting *Options - Keyboard Macros* in the DSAdmin window and are stored on the DSAuth Server. They cannot be modified by non-administrative DS users. Global macros are also stored on any backup servers that you have specified.

When a session is started, you may choose to use either local macros or global macros and switch between using them at any time during the session. If you choose to use local macros, the macros stored on the local computer will be

used. If you choose to use global macros, a temporary copy of the global macro file will be transferred to DSView from the DSAuth Server.

To use local macros, go to the DSView Client Node Manager window and select *Tools - Keyboard - Local Macros*. To use global macros, go to the Node Manager window in the DSView Client and select *Tools - Keyboard - Global Macros*.

Displaying/editing macro selection buttons

You may access a list of local programmed keyboard macros by selecting *Tools - Keyboard - Macros* from your Node Manager window. To access a list of global programmed macros, select *Tools - Keyboard - Macros* from your DSAuth window. Each programmed macro will have a checkbox by it. Checked local macros or checked global macros will appear at the top of remote session windows, depending on which have been chosen for use in the Node Manager.

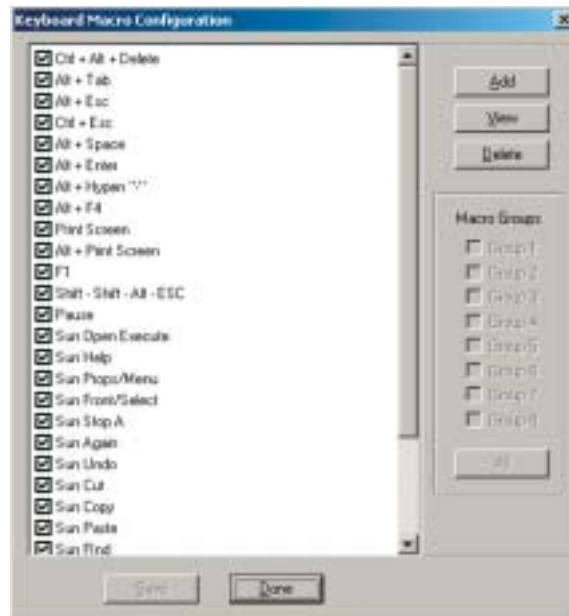


Figure 4.1: Keyboard Macro Configuration Dialog Box

Sending keyboard macros

You may send a macro command by either clicking on the macro buttons in the remote session window or selecting it from the macro list and clicking the *Send* button.

Programming a keyboard macro

If you require a key sequence that is not pre-programmed into the DS/DSR appliance, you may add a macro by performing the following steps.

To add a macro:

1. From the Node Manager window, select *Tools - Keyboard - Macros* to add a local macro.
- or -
From the DSAuth window, select *Options - Keyboard Macros* to add a global macro.
2. A menu will appear listing the currently available macros. Click on the *Add* button in the upper right-hand corner.
3. The Keyboard Macro Configuration menu will appear.
4. Enter a unique description for the macro in the Macro Description field.
5. In the Double-click for Key Press list, double-click the first keystroke of your macro. This will move the keystroke to the Double-click for Key Release list.
6. If this key needs to be released before the next keystroke is entered, double-click the keystroke in the Double-click for Key Release list to move it to the Macro Created list. If not, leave this key in the Double-click for Key Release list at this time. Repeat step 5 with your next keystroke. When you have no further keystrokes, proceed to step 7.
7. Now, double-click on the remaining commands, if any, under the Double-click for Key Release list in the order in which you'd like them released to move them to the Macro Created list. The Macro Created list will now show the key sequence in the exact order that it will be performed by the system. There should be no keys remaining in the Double-click for Key Release list.
8. If you are creating a local macro, click *OK* to save the macro to the local computer.
- or -
If you are creating a global macro, click the *Save* button to save the macro to the DSAuth Server and any defined backup servers.

The macro will now appear in the macro list and also in the macro commands on every DS/DSR appliance's window.

Example: creating a macro where the Ctrl key is held while F1-F2-F3 are typed:

1. Enter a name for the macro. In this case, Ctrl-F1-F2-F3.



Figure 4.2: Entering the Macro Name

2. The Ctrl key is pressed first and held, so double-click on the *Left* or *Right Ctrl* keystroke under Double-click for Key Press. It will move to the second list and the command Press [Left Ctrl] will appear in the third list.
3. F1, F2 and F3 are pressed and released in order. Locate *F1* in the Double-click for Key Press list and double-click it. It will move to the second list and the command Press [F1] will appear in the third list.
4. F1 will be released before F2 is pressed, so you will need to double-click on *F1* under the Double-click for Key Release list before proceeding. This will create a Release <F1> command in the Macro Created list and F1 will disappear from the second list.



Figure 4.3: Macros Appearing in the Third List

5. Repeat steps 3 and 4 with F2 and F3.
6. The last step is to release the Ctrl key. Double-click on *Left Ctrl* in the middle list. The command Release [Left Ctrl] will appear in the third list.



Figure 4.4: The Completed Macro

7. The keystrokes will be listed in correct order in the third list. Click *OK* to accept the macro if you are creating a local macro, or *Save* if you are creating a global macro.

Macro groups

Since DSView may be used to access different computer platforms, users may find it helpful to assign distinct macro groups to global macros or local macros on individual systems.

To create a macro group:

1. From a remote session window, select *Keyboard - Macro* to activate the Keyboard Macro Configuration dialog box to group local macros.
- or -
From a DSAuth window, select *Options - Keyboard Macros* to activate the Keyboard Macro Configuration dialog box to group global macros.
2. The dialog box's Macro Groups contains eight macro groups available for configuration.

To assign a macro to a group:

1. Click on the macro name.
2. In the box labeled Macro Groups, select the groups to which you'd like to have the macro assigned.

To activate a macro group:

1. Select *Keyboard - Toolbar Macro Set* from the remote session window.
2. Select the macro group you wish to use.

The macros belonging to the group you selected will appear along the top of the remote session window.

NOTE: These macros will override your default selections.

Changing Cursor Settings

When using the DS Management Software, your mouse pointer will change shape when over a session window. You may change the appearance of this second pointer or eliminate it from within the DSView software.

To change cursor settings:

1. From the Node Manager, select *Tools - Settings - Cursor*.
2. The Program Settings dialog box will appear. You may select an alternate cursor from the drop-down menu under the Cursor heading.
3. To see what the alternate cursor will look like, move your mouse pointer over the area labeled Preview Area.
4. When you have selected a new cursor, click on the *OK* box at the bottom of the dialog box.

To eliminate the local mouse pointer:

From DSView, select *Tools - Local Mouse - Invisible*.

When this option is selected, only the target device's mouse pointer will be visible. The local pointer may be temporarily restored by pressing **Ctrl+Alt+m**. This keystroke sequence may be changed by selecting *Tools - Settings - Mouse Mode Control* and entering a new sequence.

NOTE: When using a device that captures keystrokes before they reach the OS, you should avoid using the keys that restore the mouse pointer.

Adjusting Video Parameters

In some situations, DS users may wish to view several target devices at the same time on the same screen.

In most cases, you will not need to alter the Video Settings from the default. The system will automatically adjust and use the optimal video parameters. DSView performs best when the video parameters are set such that no (zero) video packets are transmitted for a static screen.

To automatically adjust video parameters:

You may easily adjust your video parameters by clicking on the *Auto Adjust Video* button, which instructs the DS/DSR appliance to optimize the video to ideal settings.

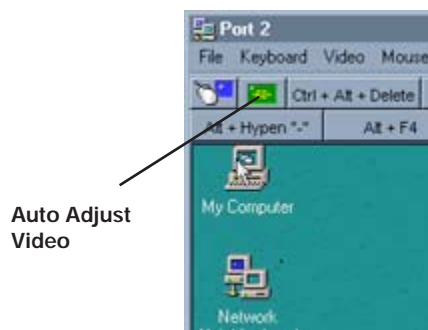


Figure 4.5: The Auto Adjust Video Button

Customizing video parameters

DS users who wish to fine tune their video performance may do so by selecting *Tools - Video - Manual Adjustments* in the remote session window. This displays the Video Adjustments dialog box. This dialog box will appear in one of two ways, depending on whether you are using standard video compression or the DSR DVC upgrade. See figures 4.6 and 4.7.

NOTE: The DSR DVC upgrade is standard on all newer DS/DSR appliances. Older DS/DSR appliances use standard video compression. For DSR DVC upgrade purchase information, contact Avocent Technical Support or your Avocent reseller.

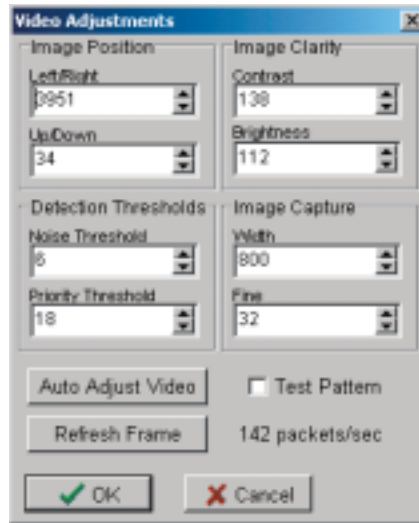


Figure 4.6: Video Adjustments Dialog Box (Standard Video Compression)

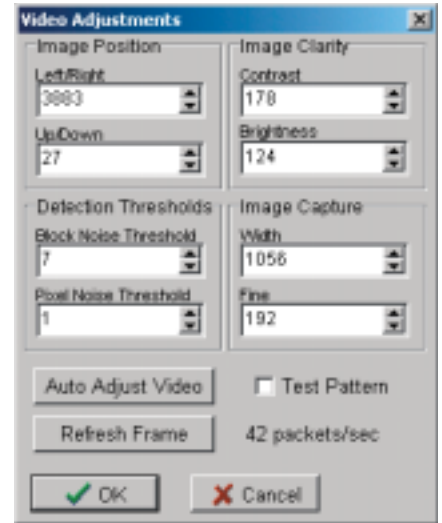


Figure 4.7: Video Adjustments Dialog Box (DSR DVC Upgrade)

Modified video settings are written to the target device. Settings are also stored per port/channel session on a system when they are made and saved so they may be used during a non-shared session as follows:

- If sharing is not enabled, the video settings made on the local DS/DSR appliance during the session are used.
- If sharing is enabled, video settings are read from the target device.

See *Sharing a Device Session* in Chapter 3 for more information on session sharing.

Users may verify the level of packets per second required to support a static screen by observing the packet rate which is located in the lower right-hand corner of the dialog box.

The following sections describe the effects of the video adjustments. Clicking *OK* after modifying any adjustment saves the changes.

Image position

If DSView and target device mouse cursors do not align exactly when you select the *Mouse - Align* function, video centering may be needed using the Image Position settings. Generally, only a few increments are required.

To move the screen to the right, click the **Up Arrow** on the Left/Right setting. Clicking the **Down Arrow** moves the image to the left. Similarly, the image may be moved up and down. Moving the mouse into the remote session window will show if the correction is complete. The point (hot spot) of both DSView and the target device should be superimposed.

Image clarity

If the image in the remote session window is not clear, select *Tools - Video - Auto Adjust* first. This command is also available in the Video Adjustments dialog box. In most cases, this will correct video problems. In those cases where clicking on *Auto Adjust* several times does not clear up a mottled screen, adjusting the contrast and brightness may help.

First increase the brightness. Do not go more than 10 increments before moving the contrast. Generally the contrast should not be moved much.

When the packet count gets close to zero, refresh the screen. If the packet count stays at zero, the video adjustment is completed.

Detection thresholds

In some cases, noise in the video transmission keeps the packets/sec count up. This may be seen when little dots change in the area of the cursor when it is moved. Varying the threshold values may result in “quieter” screens and improved cursor tracking.

Noise Threshold and Priority Threshold values may be modified if you are using standard video compression. Block Noise Threshold and Pixel Noise Threshold values may be modified if you are using the DSR DVC upgrade. Default threshold values can be restored by clicking *Auto Adjust Video*.

NOTE: The DSR DVC upgrade is standard on all newer DS/DSR appliances. Older DS/DSR appliances use standard video compression. For DSR DVC upgrade purchase information, contact Avocent Technical Support or your Avocent reseller.

Noise Threshold and Priority Threshold (Standard Video Compression)

The Noise Threshold and Priority Threshold values set the minimum levels in terms of changed pixels per thousand that are allowed without updating the video block. The thresholds are described below:

- Raising the Noise Threshold will usually make the packets/sec count decrease. The result will be larger cursor image artifacts remaining on the screen. Decreasing the value will make the size of these artifacts smaller.
- The Priority Threshold sets the level where a significant change is noted, such as a new cursor position. Increasing the value will make the mouse movements more sluggish. The Priority Threshold setting should always be greater than the Noise Threshold setting, and usually two to three times its value. Setting these thresholds to zero will cause a constant refresh of the screen, which will make cursor tracking very difficult and may make it difficult for other network users. The goal is to reduce the packet rate to zero.

Block Noise Threshold and Pixel Noise Threshold (DSR DVC Upgrade)

The Block Noise Threshold and Pixel Noise Threshold values set the minimum color levels in terms of changed video blocks and pixels per thousand that are allowed. See *Setting the color depth* in Chapter 3 for information on changing the color depth of a remote session window. The thresholds are described below:

- The Block Noise Threshold sets the minimum color change that will occur in a single video block. Increasing the value will reduce the network bandwidth. Decreasing the value will make the size of these artifacts smaller.
- The Pixel Noise Threshold sets the minimum color change in a single pixel. Decreasing the value will reduce the number of low-contrast artifacts, but will increase network bandwidth.

Image capture

The Width and Fine adjustments pertain to how the target video is captured and digitized and are seldom changed.

The Width parameter is automatically changed by the Automatic Adjustment function. A special image is required on the target in order to make accurate adjustments independently.

The Fine setting may be adjusted up or down in eight unit increments.

Video scaling

At times, a user may connect to a computer running at a higher resolution than that configured at the user's remote system. When this occurs, the host system will be displayed in a DSView window with scroll bars. The host resolution will remain the same and users may scroll to the areas that fall outside of the frame.

If a user wishes to display the host system's entire screen, it may be scaled to fit within the current resolution with the scaling tools.

Mouse alignment

Because DSView cannot get constant feedback from the mouse, there are times when the mouse on the DS appliance system may lose sync with the mouse on the host system. When this occurs, users may resync the mouse by clicking on the *Mouse Align* button. In most cases, this will correct the problem.



Figure 4.8: The Mouse Align Button

Updating Firmware

The firmware on attached DS appliances may be updated using *File - Update Firmware*. All DS appliances of the same model type may be updated at the same time. To update a different DS appliance model, you will need to perform the following process again when the current model update is completed.

NOTE: When updating the CPS810 or CPS1610 appliances, application image updates must be performed prior to boot image updates.

To update firmware:

1. Select *File - Update Firmware* from the DSAdmin main menu. The Appliance Firmware Update dialog box appears.
2. In the spaces provided, enter the filename of the update firmware and the IP address of the TFTP server where it is stored. Alternately, you may browse for the file by clicking the *Browse* button.
3. Select the DS appliance type that you wish to upgrade from the *Select Appliance type* drop-down menu. All available DS appliances will be listed in the Appliance Selection area of the dialog box.
4. Click on the appliances you wish to upgrade and use the add (>) button to move them to the list on the right.
5. Click the *Update* button to complete the upgrade.



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Appendices

Appendix A: 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:

1. Check the pertinent section of the manual to see if the issue may 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 Avocent Technical Support for assistance at (888) 793-8763. Visit the Avocent web site at <http://www.avocent.com/support> and click on *Support Phone Numbers* for current phone support hours.

Appendix B: TCP Ports

When the DSVIEW Client is launched, the Node Manager will become active. Node Manager will attempt to establish a Security Support Provider Interface (SSPI) Messenger Class session using TCP/IP over port 2068 to the DSAuth Server (Authentication Service). First, Node Manager will use the current NT/2000 cached credentials to establish the session. If the cached credentials have the proper permissions, the browse list is returned from the DSAuth Server over TCP/IP port 2068. Note that the DSVIEW Client caches this list. Using the refresh option will update the list from the DSAuth Server. If the session is refused using the cached credentials, a pop-up dialog box will prompt for the proper username and password.

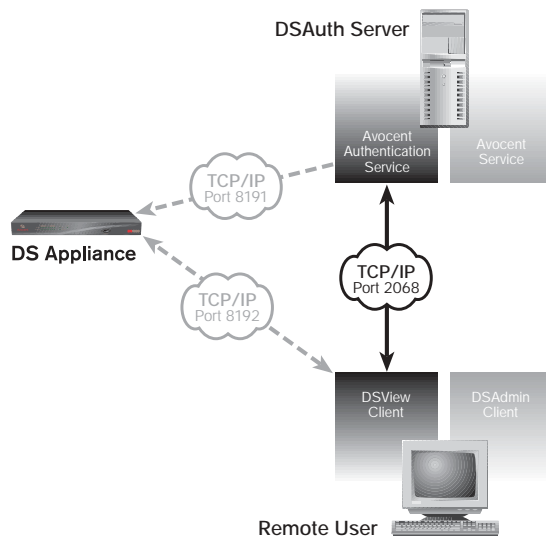


Figure B.1: SSPI Messenger Class Session Establishment

After the browse list is returned to Node Manager, the user may double-click on a specific port to initiate a KVM session with that port on the DS appliance. The DSView Client contacts the DSAuth Server, which checks the permissions on the port again. If the logged user has permissions to the port selected, the DSAuth Server will establish a connection to the DS appliance using TCP/IP port 8191. The DSAuth Server then tells the appliance to listen to port 8192 for a DSView connection.

For debugging purposes, the details of this connection may be seen by using the console port to place the DS appliance into debug mode.

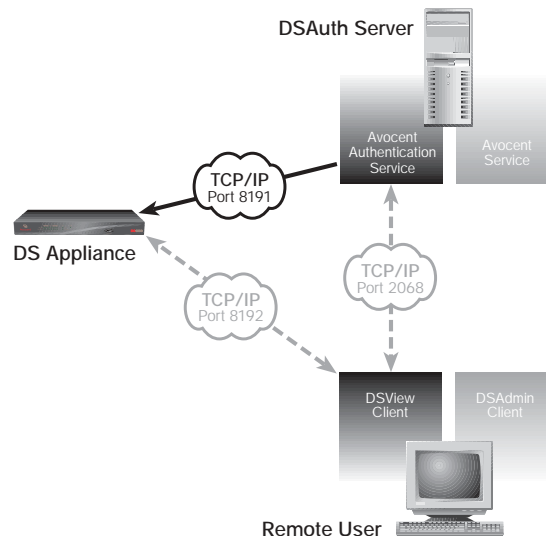


Figure B.2: Establishing Connection to a DS Unit

The DSView Client establishes a TCP/IP session with the appliance over the TCP/IP port 8192. The DSAuth Server will establish a connection to the DS appliance using TCP/IP port 8191. The DSAuth Server then communicates to the appliance to listen to port 8192 for a DSView connection. All communication between the DS appliance and the DSView Client takes place over TCP/IP port 8192 until the DSView Client closes the session.

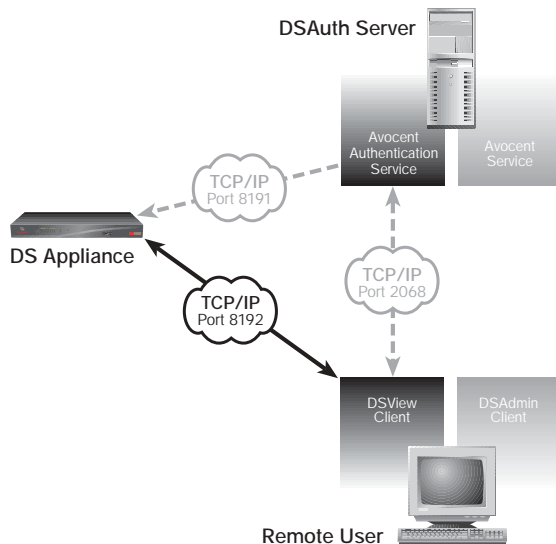


Figure B.3: DSView Client Establishing a Session with a DS Unit

If the DSView user wishes to establish a session with another port on the DS appliance, the same process is used.

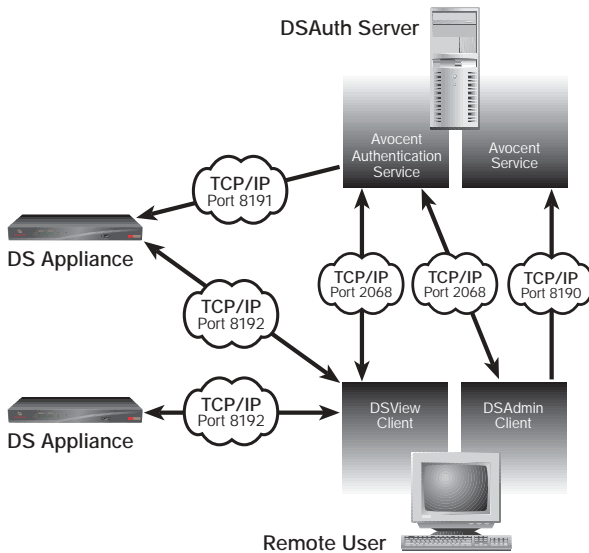


Figure B.4: Establishing a Session with an Additional DS Unit Port

DSAdmin functions similarly to the DSView Client. It establishes a connection using TCP/IP port 2068, and uses the same process for authentication and return of the browse list. Changes made to the browse list through DSAdmin are transmitted back to the DSAAuth Server using TCP/IP port 8190. After the changes are made, DSAdmin refreshes its browse list view over the TCP/IP port 2068 connection.

When the backup Authentication Service is active, it communicates with the Primary Authentication Service via TCP port 8193. Changes to the topology are copied to and from the Primary over this port.

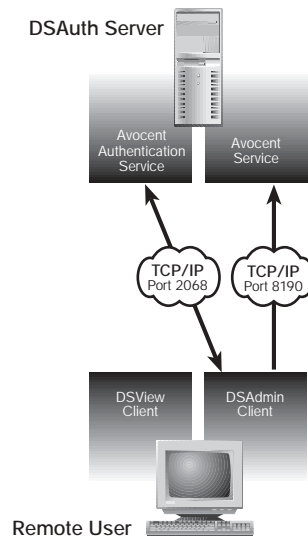


Figure B.5: DSAdmin Client Functionality

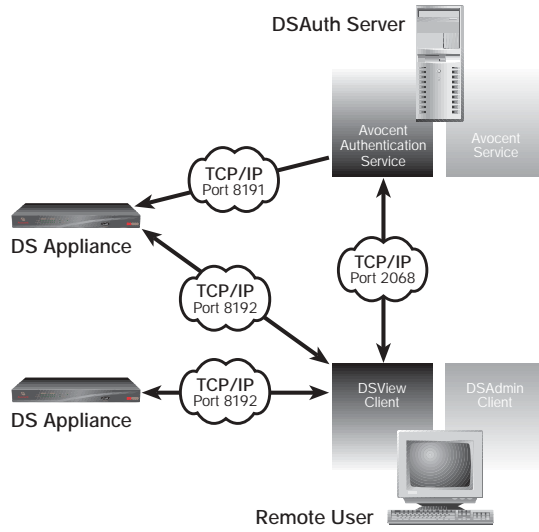


Figure B.6: Full Diagram

Appendix C: Telnet Operations

DSView ships bundled with a built-in proprietary Telnet application that provides features unavailable in many other Telnet programs. These features include configurable session properties tailored for each device, and configurable user preferences for all sessions.

Additionally, DSView Telnet offers a separate history mode to review session data, a choice of connection modes to a DS appliance, a scripting function for automatic device login and a logging function for saving session data to a file.

You may use DSView Telnet to access any DSView device that supports Telnet connections, as well as DS appliance ports.

If you do not specify a communications application for a device, DSView uses the DSView Telnet application by default. See the installer/user guide for your DS appliance for information about setting and changing the default application.

DSView Telnet screen

The title bar at the top of the screen displays the name of the device to which you are connected. If you are connected to a port on a device, the title bar displays the device name followed by the port number and port name.

The status bar at the lower left corner of the screen indicates *Connected* when you are operating in normal terminal emulation mode during a Telnet session. When you are in the history mode, the status bar indicates *ESC to return to terminal mode*. When you are logging, the status bar indicates *Logging* or *Logging Paused* as appropriate.

The lower right corner of the status bar contains an icon that, when clicked, activates the console application, bringing it to the foreground. With this feature, you may access the console tree view without having to close the Telnet session.

Each toolbar icon has a tooltip that appears when you rest the mouse pointer on the icon without clicking.

Security property

The Telnet security property specifies whether Telnet sessions to a DS appliance will be in Plain Text mode or SSL mode.

In Plain Text mode, all data is sent unencrypted to the DS appliance. When Plain Text mode is used, any Telnet application that supports VT52, VT100, VT100+, VT102, VT220, VT320 or ASCII terminal emulation may be used to access the DS appliance.

In SSL mode, all data sent to the device during the DSVIEW Telnet session is DES encrypted. The DS appliance supports anonymous Diffie-Hellman key exchange. The exchange of certificates for authentication is not supported. When SSL mode is used, only the built-in DSVIEW Telnet application may be used to access the DS appliance. The ports on a DS appliance have the same security property as the device.

The security property is set in DSVIEW and in the DS appliance from the Command Line Interface (CLI). When you initiate access to a DS appliance or port via Telnet from DSVIEW, DSVIEW attempts to read the security property directly from the DS appliance.

If the SSL property has not been enabled on the DS appliance, and DSVIEW receives confirmation from the DS appliance, DSVIEW will automatically open its built-in Telnet application and you will be prompted for a DS appliance username and password.

After that information has been entered, an SSL connection to the DS appliance is established over TCP port 8192. When that connection is established, the DS appliance validates the user's access privileges and port availability. In this case, the Telnet property screen in DSVIEW for that DS appliance will automatically be set to SSL values, even if they previously held Plain Text mode values. The property screen will be disabled, and you will not be allowed to change any of its values. The DSVIEW database will be updated with the information read from the DS appliance.

If DSVIEW does not receive a reply from the DS appliance, it will use the security mode settings in the DSVIEW database. In this case, the Telnet property screen in DSVIEW for that DS appliance will show the database values, and you will be able to change them.

Setting the security property

The security property that is set when a DS appliance is added to the DSVIEW database depends on the method being used to add the device.

If the Run New Device Install wizard method is used, you are prompted to select the security mode. It should match the DS appliance Server Security Mode value that was set via the DS appliance CLI.

- or -

If the Discover Configured Devices method is used, the security value that is reported by the DS appliance is used.

- or -

When the Manually Add a Device method is used, a default value of Plain Text is used.

If a discrepancy occurs between the configuration of the DS appliance and DSView, the determining factor will be whether DSView is able to communicate with the DS appliance. If possible, the DS appliance settings will overrule any security settings in the DSView database. However, if DSView cannot communicate with the DS appliance, DSView will use the current information from its own database.

To configure DSView Telnet for SSL mode:

1. In the DSView tree view, select a DS appliance.
2. Select *View - Properties* from the menu bar.
3. Click the *Telnet* tab. DSView will attempt to access the DS appliance.
4. The Properties dialog box appears. If the SSL security mode has been set on the DS appliance, and DSView successfully accesses that device, the DSView Telnet properties are automatically updated with SSL mode information, and then disabled.

Opening and closing a session

A DSView Telnet session is opened from DSView.

To open a DSView Telnet session with a DS appliance:

1. In the DSView tree view, select a DS appliance.
 2. Select *Device - Configure* from the menu bar.
- or -
- Click the *Launch Telnet to configure ...* icon in the toolbar.

To open a DSView Telnet session with a DS appliance port:

1. In the DSView tree view, select a DS appliance.
 2. Select *Device - Connect* in the menu bar.
- or -
- Double-click on a port.
- or -
- Press Enter after selecting a port.
- or -
- Click the *Connect to the ... attached device* icon in the toolbar.

To open a DSView Telnet session with a target device:

1. In the DSView tree view, select a generic device.
2. Select *Device - Telnet* from the menu bar.
- or -
Click the *Launch Telnet to the selected device* icon in the toolbar.

To close a DSView Telnet session:

Select *Telnet - Exit* from the menu bar.

To activate DSView from the DSView Telnet application:

Click the *DSView* icon in the lower right corner of the display.

Customizing the application

You may specify preferences for the DSView Telnet application that will be used for every session, regardless of the device to which you connect. These application preferences are entered from the DSView Telnet display when you are connected to a device or port. After the preferences are entered, they are applied to devices/ports during subsequent DSView Telnet sessions.

Changing colors

You may change the background color and text color on the DSView Telnet screen at any time.

To change the DSView Telnet window background color:

1. Select *Options - Preferences* from the menu bar.
2. In the Colors panel, click the *Background/Normal Mode* box, and choose a color. The default value is blue.

To change the DSView Telnet text color:

1. Select *Options - Preferences* from the menu bar.
2. In the Colors panel, click the *Text/Normal Mode* box, and choose a color. The default value is white.

Changing the cursor

You may specify whether the cursor (caret) on the DSView Telnet screen appears as an underline or as a block.

To change the DSView Telnet cursor appearance:

1. Select *Options - Preferences* from the menu bar.

2. In the Caret list, choose *Block* to display the cursor as a block or choose *Underline* to display the cursor as an underline. The default value is Underline.

Enabling and disabling the exit warning prompt

When the exit warning prompt is enabled, a message appears when you select *Telnet - Exit*. You may then choose to exit or continue the session. When disabled, the session closes without further prompting.

To enable/disable an exit warning prompt for DSView Telnet sessions:

1. Select *Options - Preferences* from the menu bar.
2. Enable or disable the *Prompt on Exit* checkbox. The default value is enabled.

Customizing session properties

When you are connected to a device or port using DSView Telnet, you may specify session properties that will be stored and reused every time you connect to the selected device or port. When you select *Options - Session Properties* in DSView Telnet, the Terminal, Login Scripts and Logging tabs appear.

Changing the terminal window size

The Terminal Size lists specify the number of rows and columns to display in the virtual terminal window. These values determine the window's height and width.

To change the DSView Telnet terminal window size:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Terminal* tab.
3. In the Rows list, choose a value of *24* or *48*. The default value is *24*.
4. In the Columns list, choose a value of *80* or *132*. The default value is *80*.

Changing the terminal emulation mode

You may set the DSVIEW Telnet application to emulate ASCII, VT100, VT100+, VT102, VT52, VT220 or VT320 terminals, depending on the connected device.

Appendix D contains encoding and decoding information for each of the terminal emulation types.

To change the DSVIEW Telnet terminal emulation mode:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Terminal* tab.
3. From the Terminal Emulation list, choose one option: ASCII, VT100, VT100+, VT102, VT52, VT220 or VT320. The default value is VT100.

NOTE: When connecting to a DS appliance, the terminal type setting must match the terminal emulation type.

Changing Arrow key sequences

When the terminal emulation mode is VT100, VT100+, VT102, VT52, VT220 or VT320, you may specify either VT100 or ANSI Arrow key sequences. The following table lists the Arrow keys and the sequences transmitted for each.

Arrow Key Sequences

Key	VT100	ANSI	VT52 *
Up Arrow	<Esc> [A	<Esc> OA	<Esc> A
Down Arrow	<Esc> [B	<Esc> OB	<Esc> B
Right Arrow	<Esc> [C	<Esc> OC	<Esc> C
Left Arrow	<Esc> [D	<Esc> OD	<Esc> D

* When the terminal emulation mode is VT52, the **Arrow** keys are interpreted as indicated in this column, regardless of the value in the Arrow Keys list.

To change the DSVIEW Telnet Arrow key sequences:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Terminal* tab.

- In the Arrow Keys list, choose either *VT100* or *ANSI*. The default value is VT100.

Changing the terminal type

The terminal type is used during Telnet session negotiation. You may change this value at any time.

To change the terminal type:

- Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
- Click the *Terminal* tab.
- In the Terminal Type box, enter a value of up to 40 characters, beginning with a letter and ending with a letter or digit. Valid characters are the letters A-Z, digits 0-9, forward slash, dash, left parenthesis and right parenthesis.

NOTE: When you are connected to a DS appliance, the terminal type must be entered in the Terminal Type field exactly as shown below for each terminal emulation mode:

Terminal Emulation	Terminal Type
VT52	DEC-VT52
VT100	DEC-VT100
VT100+	DEC-VT100
VT102	DEC-VT102
VT220	DEC-VT220
VT320	DEC-VT320

Changing the linefeed settings

When connecting to devices that do not insert a carriage return in incoming or outgoing data, you may instruct DSView to automatically insert a line after each line of data. This prevents overwriting data when a new line is received.

To change the linefeed settings:

- Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
- Click the *Terminal* tab.
- If the *New Line Mode - Inbound* box is checked, an inbound carriage return from the device will be treated as if both a carriage return and a linefeed were received. If not checked, a linefeed is not added to an inbound carriage return.

If the *New Line Mode - Outbound* box is checked, an outbound carriage return to the device will always be followed by a linefeed character. If not checked, a linefeed is not sent with a carriage return. The default value is disabled for inbound and outbound.

Enabling and disabling line wrap

When line wrap is enabled, characters wrap onto the next line when a new character is received and the cursor is at the end of the line. When disabled, new characters will overwrite the last character on the current line when the cursor is at the end of the line.

To enable/disable line wrap:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Terminal* tab.
3. Enable or disable the *Auto Wrap Line* checkbox. The default value is enabled.

Enabling and disabling local echo

When you are connected to a device that does not repeat or echo the data that you type, you may enable local echo mode. Otherwise, DSVIEW Telnet will not display the text you type. However, if you are connected to a device that echoes data, and you are in local echo mode, all of the data you type will appear on your terminal twice.

To enable/disable local echo:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Terminal* tab.
3. Enable or disable the *Local Echo* checkbox. The default value is disabled.

Enabling and disabling 7-bit ASCII

When you are connected to a device that requires transmission of 7-bit ASCII, you may instruct DSVIEW Telnet to strip the eighth bit of every character that is sent and received.

To enable/disable 7-bit ASCII:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Terminal* tab.
3. Enable or disable the *Strip 8th Bit* checkbox. The default value is disabled.

Login scripts

The DSView Telnet application has a login scripting function that enables you to automatically log in to a device. A login script is built with a sequence of expect and send strings, and initial transmission characters that work with them. To use a login script, you must enable automatic login in a checkbox.

The first Initial character (that is, the first entry in the Initial character column) specifies what is sent to the device as soon as the Telnet session is established. This is selected from a list containing the choices: None, CR (carriage return), CR+LF (carriage return and linefeed), ESC (Escape) and CTRL+P (Control and P).

The first Expect string indicates what the device will send as its first prompt.

The first Send string indicates what the login script will send to the device after it receives the first Expect string.

You may then build additional Expect and Send strings according to what the particular device will prompt for and what will be sent in response.

To build a login script and enable/disable automatic login:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Login Scripts* tab.
3. Enable or disable the *Automate Login* checkbox. The default value is disabled.
4. In the Initial Character list, select one option: CR (carriage return), CR+LF (carriage return and linefeed), ESC (Escape), CTRL+P (Control+P sequence, Ø x 10 in hex) or None (no initial transmission character).
5. In the Expect box, type the 1-32 alphanumeric character string that you expect from the device. Spaces are allowed.

6. In the Send box, type the Ø-32 alphanumeric character string that you wish to send in response to the Expect string. Spaces are allowed, and a blank field is valid. A CR or CR+LF is appended to the string, based on the New Line Mode - Outbound setting.
7. Repeat the Expect and Send entries as needed, to a maximum of four each.

Telnet history mode

The DSVIEW Telnet history mode enables you to view the history of a current DSVIEW Telnet session. You may navigate to various parts of the history buffer by clicking menu selections or tools, or by pressing **Arrow** keys. You may configure the maximum size of the history buffer, and customize the background and text colors of the history mode display.

While you are in history mode, new incoming data is buffered, but it will not be displayed until you exit history mode. You may not enter outgoing data. The status bar in the lower left area of the display will show *ESC to return to terminal mode*.

To enter DSVIEW Telnet history mode:

Select *View - History* from the menu bar.

- or -

Click the *History* icon in the toolbar.

To exit DSVIEW Telnet history mode:

Press the Esc key.

- or -

Click the *History* icon in the toolbar.

To go to the beginning of the DSVIEW Telnet history:

Select *View - Goto Beginning* from the menu bar.

- or -

Click the *double-left-arrow* icon in the toolbar.

To go to the end of the DSVIEW Telnet history:

Select *View - Goto End* from the menu bar.

- or -

Click the *double-right-arrow* icon in the toolbar.

To move up (back) one page in the DSView Telnet history:

Select *View - Previous Page* from the menu bar.

- or -

Click the *left-arrow-and-bar* icon in the toolbar.

To move down (forward) one page in the DSView Telnet history:

Select *View - Next Page* from the menu bar.

- or -

Click the *right-arrow-and-bar* icon in the toolbar.

To move back or forward one line in the DSView Telnet history:

Press the **Left Arrow** (for back) or **Right Arrow** (for forward) on your keyboard.

To change the maximum number of lines in the DSView Telnet history buffer:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Terminal* tab.
3. In the History Buffer Size box, type a value from 1-1000. The default value is 250.

To change the background color for DSView Telnet history mode:

1. Select *Options - Preferences* from the menu bar.
2. In the Colors panel, click the *Background/History Mode* box and select a color. The default color is dark cyan.

To change the text color for DSView Telnet history mode:

1. Select *Options - Preferences* from the menu bar.
2. In the Colors section, click the *Text/History Mode* box and select a color. The default color is white.

Macros

The DSView Telnet application has a macro function that allows you to create and use macros during Telnet sessions. A macro comprises a series of key-strokes that you define. Additionally, you may specify a hotkey in the macro's definition. When you define a macro and enable its inclusion in the Macros

menu, you may execute the macro during a Telnet session either by selecting it from the Macros menu or by pressing the defined hotkey on your keyboard.

You may also define one or more macro groups, then add macros to the groups. A macro may belong to more than one macro group; however, a macro does not have to belong to a macro group. The Session Properties - Terminal screen contains a list of defined macro groups from which you may select one group or all defined groups. The macros in the selected group(s) are then available for use during subsequent Telnet sessions with that device/port.

After defining a macro or a macro group, you may edit or delete it at any time. When you delete a macro or macro group, you are prompted for confirmation. When you change a macro group name, each macro belonging to the changed macro group is updated, but the change is not visible until the next Telnet session is established. When you delete a macro group, you delete only its name - the individual macros in the group are not affected.

To create a macro:

1. Select *Macros - Configure* from the menu bar. The Macros dialog box appears.
2. Click the *Create* button. The Create Macro/Edit Macro dialog box appears.
3. Type a 1-32 character name in the Name field.
4. To define a hotkey for the macro, choose one from the Key list. To add a modifier to the hotkey, check the *Control*, *Shift* or *Alt* boxes.
5. By default, the Include in Macro Menu box is checked, indicating the macro will appear in the Macros menu. If you do not wish to include the macro in the Macros menu, uncheck this box. In this case, if the macro definition includes a hotkey, you will still be able to use the hotkey to run the macro, even if the macro's name does not appear in the Macros menu.
6. Type the macro string in the Enter Keystrokes box. For non-printing and special character code sequences, use the following escape sequences:
Carriage return: \n
Tab: \t
Hexadecimal code sequence: \0x<NN>, where <NN> is the hexadecimal byte Delay character (500 ms): \d
7. To add the macro to an existing macro group, click the *Include Macro* checkbox next to the macro group name in the Macro Groups table. To create a new macro group, see *To create a macro group*.

8. Click the *OK* button. This returns you to the Macros dialog box, and the newly created macro appears in the Defined Macros table.
9. Click the *Close* button.

To edit an existing macro:

1. Select *Macros - Configure* from the menu bar. The Macros dialog box appears.
2. Select a macro. Click the *Edit* button. The Create Macro/Edit Macro dialog box appears.
3. Edit the macro properties as needed and then click the *OK* button.

To delete a macro:

1. Select *Macros - Configure* from the menu bar. The Macros dialog box appears.
2. Select the macro in the Defined Macros table and then click the *Delete* button. A dialog box appears, prompting you to confirm the deletion.

To execute a macro:

Select the macro from the Macros menu.

- or -

If the macro's definition includes a hotkey, press the hotkey or hotkey sequence.

- or -

Select *Macros - Configure* from the menu bar. The Macros dialog box appears. Then select the macro in the Defined Macros table and click the *Run* button.

To create a macro group:

1. Select *Macros - Configure* from the menu bar. The Macros dialog box appears.
2. Click the *Create* button. The Create Macro/Edit Macro dialog box appears.
3. Click the *Create* button in the Macro Groups tab. A new row in the Macro Groups list appears.
4. Position the cursor in the Group Name column of the new row and enter the new group name. Duplicate macro group names are not allowed. Press *Enter*.

To enable a macro group for use during Telnet sessions:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Terminal* tab.
3. Select a macro group name from the Macro Groups list, or select *All*, which will make all macros in all groups available for use.

To delete a macro group:

1. Select *Macros - Configure* from the menu bar. The Macros dialog box appears.
2. Click the *Create* button. The Create Macro/Edit Macro dialog box appears.
3. Select the macro group name. To select multiple macro group names, press the **Shift** key while clicking.
4. Click the *Delete* button in the Macro Groups tab. When the dialog box appears, confirm the deletion.

Logging

The DSView Telnet application has a logging function that saves the contents of a Telnet session to a file. You may enable automatic logging or dynamically start logging at any time. Additionally, you may pause, resume and stop logging, regardless of whether it was started automatically or dynamically.

While logging is occurring or when it is paused, a **Logging Status** label appears in the status panel at the bottom of the DSView Telnet window.

NOTE: When you enable or disable automatic logging, the logging will begin or end at the start of the next DSView Telnet session to that device. If you change the default log file directory used for automatic logging, the change does not take effect until the next session to that device.

Log files

The format of log filenames is shown below, where <mmddy> represents the month, day and year, and <hhmmss> represents the current hour, minute and second in military time:

```
avtelnet<mmddy>_<hhmmss>.log
```

The default log directory is session-specific, that is, each Telnet session may have its own location for storing logfiles. You may change the name of the file and the location of the directory that stores the logfiles. If you do not change the default directory, logfiles are stored in your home directory.

You may view a log file at any time, using a standard text editor. The screen buffer is written to the log file when the buffer is full, or when logging is paused or stopped. To ensure the log file is up-to-date, either pause or stop the logging.

To change the default log file directory:

1. Select *Options - Session Properties* from the menu bar.
- or -
Select the *Session Settings* icon in the toolbar.
2. Click the *Logging* tab. The Default Directory field displays the current default location for logfiles.
3. Click the *Browse* button. The Set Directory dialog box appears.
4. Select a directory from the Look in list.
- or -
Create a new directory:
 - a. Click the *Create New Folder* button. A new directory named New Folder appears in the directory list.
 - b. Click the *New Folder* entry in the directory list to highlight it. Then, click the entry again to edit its name. Type in a new name. Press **Enter**. The directory appears in alphabetical order in the directory list.
 - c. Select the newly-created directory in the directory list. The File name field will now contain the name of the new directory.
5. Click the *Set Directory* button to select the newly-created or selected directory as the default log file directory. The Set Directory dialog box will close.
6. The Default Directory field now contains the name of the newly-created or selected directory. Click *OK* to save the new information.
- or -
Click *Cancel* to exit the dialog box without saving any new information.

To enable automatic logging:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Logging* tab.

3. Enable the *Logging* checkbox.
4. The Default Directory field displays the current default location for logfiles. If that is the desired directory, click *OK*. If you wish to change the default log file directory, see *To change the default log file directory*.

Automatic logging will begin when you initiate the next DSView Telnet session to that device. At that time, the Logging Status label will indicate *Logging*.

To disable automatic logging:

1. Select *Options - Session Properties* from the menu bar.
- or -
Click the *Session Settings* icon in the toolbar.
2. Click the *Logging* tab.
3. Disable the *Logging* checkbox.
4. Click *OK*.

Automatic logging will stop when you initiate the next DSView Telnet session to that device. When logging stops, the Logging Status label disappears.

To start dynamic logging:

1. Select *Options - Logging - Start* from the menu bar. The Log dialog box appears.
2. The Look in list contains the default log file directory and the File name field contains the default log filename. Using this filename format is recommended; however, you may change it for the duration of this DSView Telnet session. If you choose to use the default log filename, skip to step 4.
3. To change the default log filename for the duration of the dynamic logging session, you may select a directory from the Look in list. The directory list may contain directories and files. To create a new directory:
 - a. Click the *Create New Folder* button. A new directory named New Folder appears in the directory list.
 - b. Click the *New Folder* entry in the directory list to highlight it. Then click the entry again to edit its name. Type in a new name. Press *Enter*. The directory appears in alphabetical order in the directory list.
 - c. Double-click the newly-created directory in the directory list. The File name field will now contain the name of the new directory.
 - d. Type a new filename in the File name field. If you enter a filename that already exists, the new file will overwrite the old file.

4. Click *Log* to confirm the directory selection and begin logging.
- or -
Click *Cancel* to exit the dialog box and cancel the request to start logging.

When logging begins, the Logging Status label will indicate *Logging*.

To pause logging:

Select *Options - Logging - Pause* from the menu bar. The Logging Status label will change to *Logging Paused*.

To resume logging:

Select *Options - Logging - Resume* from the menu bar. The Logging Status label will change to *Logging*.

To stop logging:

Select *Options - Logging - Stop* from the menu bar. The Logging Status label will disappear.

Copying, pasting and printing session data

In DSView Telnet you may:

- Copy a screen of DSView Telnet session data to the system clipboard
- Copy the DSView Telnet history buffer contents to the system clipboard
- Paste the contents of the system clipboard into a DSView Telnet session
- Print a screen of DSView Telnet session data
- Print a screen of DSView Telnet session history data

Information that is copied from a DSView Telnet session may be pasted in other applications. Similarly, information copied from other applications may be pasted into a DSView Telnet session.

NOTE: Only textual data may be copied and pasted in the DSView Telnet.

To copy a DSView Telnet screen:

Select *Options - Copy Screen* from the menu bar.

- or -

Click the *Copy Screen* icon in the toolbar.

The screen contents are saved to the system clipboard. You may then paste the clipboard contents into this or another application.

To copy DSVIEW Telnet session history data:

1. Select *View - History* from the menu bar.
- or -
Click the *History* icon in the toolbar.
2. Select *Options - Copy Screen* from the menu bar.
- or -
Click the *Copy Screen* icon in the toolbar.

The entire contents of the history buffer are copied to the system clipboard. You may then paste the clipboard contents into this or another application.

NOTE: The entire history buffer is copied to the system clipboard, regardless of the amount of data in it.

To paste system clipboard contents:

1. Place textual data on the system clipboard, using a text editor or other application.
2. Initiate a DSVIEW Telnet session.
3. At the point where you wish to paste the clipboard contents, select *Options - Paste* from the menu bar.
- or -
Click the *Paste* icon in the toolbar.

To print a DSVIEW Telnet screen:

1. Select *Options - Print Screen* from the menu bar.
- or -
Click the *Print Screen* icon in the toolbar.
2. The operating system's print dialog box appears. Make the appropriate settings. The screen contents will then be sent to the printer.

To print a screen of DSVIEW Telnet session history data:

1. Select *View - History* from the menu bar.
- or -
Click the *History* icon in the toolbar.
2. Select *Options - Print Screen* from the menu bar.
- or -
Click the *Print Screen* icon in the toolbar.
3. The operating system's print dialog box appears. Make the appropriate settings. The screen contents will then be sent to the printer.

Appendix D: Terminal Emulation

This appendix contains information about the keys, sequences, encoding and decoding for the DS Management Software terminal emulation modes. Encode refers to how the Client application processes typed keys. Decode refers to how the Client application processes data coming from the target device.

VT terminal emulation

The following table lists the VT key and keypad numeric codes. Avocent encodes all applicable keys as numeric; decoding is not supported.

VT Key and Keypad Numeric Codes

Key	Keypad Numeric Code
Ø	Ø
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
- (dash)	- (dash)
, (comma)	, (comma)
. (period)	. (period)
Enter	Same as Return key

VT100+ terminal emulation

The VT100+ emulation mode provides compatibility with the Microsoft headless server EMS serial port interface. DSVIEW Telnet VT100+ terminal emulation works identically to VT100, with the exception of support for the function keys listed in the following table.

VT100+ Function Key Support

Function	Sequence	Function	Sequence
Home	<Esc> h	F4 **	<Esc> 4
End	<Esc> k	F5	<Esc> 5
Insert	<Esc> +	F6	<Esc> 6
Delete *	<Esc> -	F7	<Esc> 7
Page Up	<Esc> ?	F8	<Esc> 8
Page Down	<Esc> /	F9	<Esc> 9
F1 **	<Esc> 1	F10	<Esc> Ø
F2 **	<Esc> 2	F11	<Esc> !
F3 **	<Esc> 3	F12	<Esc> @

* ASCII, VT100 and VT102 modes send hex 7F when the Delete key is pressed.

** VT100 and VT102 modes map the F1 through F4 keys to the PF1 through PF4 keys.

VT102 terminal emulation

VT102 terminal emulation works identically to VT100 with additional support for decoding receive codes as described in the following table.

VT102 Receive Codes

VT102 Receive Code	Action
Delete Character (DHC)	Deletes <i>n</i> characters starting with the character at the current cursor position, and moves all remaining characters left <i>n</i> positions. <i>n</i> spaces are inserted at the right margin.
Insert Line (IL)	Inserts <i>n</i> lines at the line where the cursor is currently positioned. Lines displayed below the cursor position move down. Lines moved past the bottom margin are lost.
Delete Line (DL)	Deletes <i>n</i> lines starting with the line where the cursor is currently positioned. As lines are deleted, lines below the cursor position move up.

VT100 terminal emulation

The following table lists the VT100 special key and control (Ctrl) key combinations and indicates Avocent encoding/decoding support, where Yes = supported and No = not supported.

VT100 Special Keys and Control Keys

Keys	Hex Code	Function Mnemonic	Encode/Decode
Return	0D	CR	Yes/Yes
Linefeed	0A	LF	Yes/Yes
Backspace	08	BS	Yes/Yes
Tab	09	HT	Yes/Yes
Spacebar	20	(SP)	Yes/Yes
Esc	1B	ESC	Yes/No
Ctrl+Spacebar	00	NUL	Yes/No
Ctrl+A	01	SOH	Yes/No
Ctrl+B	02	STX	Yes/No
Ctrl+C	03	ETX	Yes/No
Ctrl+D	04	EOT	Yes/No
Ctrl+E	05	ENQ	Yes/No
Ctrl+F	06	ACK	Yes/No
Ctrl+G	07	BELL	Yes/Yes
Ctrl+H	08	BS	Yes/Yes
Ctrl+I	09	HT	Yes/Yes
Ctrl+J	0A	LF	Yes/Yes
Ctrl+K	0B	VT	Yes/No
Ctrl+L	0C	FF	Yes/No
Ctrl+M	0D	CR	Yes/No
Ctrl+N	0E	SO	Yes/No
Ctrl+O	0F	SI	Yes/No
Ctrl+P	10	DLE	Yes/No
Ctrl+Q	11	DC1 or XON	Yes/No
Ctrl+R	12	DC2	Yes/No
Ctrl+S	13	DC3 or XOFF	Yes/No
Ctrl+T	14	DC4	Yes/No

Keys	Hex Code	Function Mnemonic	Encode/Decode
Ctrl+U	15	NAK	Yes/No
Ctrl+V	16	SYN	Yes/No
Ctrl+W	17	ETB	Yes/No
Ctrl+X	18	CAN	Yes/No
Ctrl+Y	19	EM	Yes/No
Ctrl+Z	1A	SUB	Yes/No
Ctrl+[1B	ESC	Yes/No
Ctrl+\	1C	FS	Yes/No
Ctrl+]	1D	GS	Yes/No
Ctrl+~	1E	RS	Yes/No
Ctrl+?	1F	US	Yes/No

The following table lists the VT100 ANSI mode and cursor keys for set and reset modes. Encoding and decoding is supported for all the cursor keys listed.

VT100 ANSI Set and Reset Mode Cursor Keys

Cursor Key	Mode Reset	Mode Set
Up	Esc [A	Esc O A
Down	Esc [B	Esc O B
Right	Esc [C	Esc O C
Left	Esc [D	Esc O D

The following table lists the VT100 PF1 through PF4 key definitions. Encoding of each listed key is supported; decoding is not applicable.

VT100 PF1 through PF4 Key Definitions

Key	Code Sequence
F1	Esc [O P
F2	Esc [O Q
F3	Esc [O R
F4	Esc [O S

The following table lists the ANSI mode control sequences for VT100 terminal emulation and indicates Avocent encoding/decoding support, where Yes = supported and No = not supported.

VT100 ANSI Mode Control Sequences

Control Sequence	Definition	Encode/Decode
Esc [Pn; Pn R	Cursor Position Report	No/No
Esc [Pn D	Cursor Backward	No/Yes
Esc [Pn B	Cursor Down	No/Yes
Esc [Pn C	Cursor Forward	No/Yes
Esc [Pn; Pn H	Cursor Position	No/Yes
Esc [Pn A	Cursor Up	No/Yes
Esc [Pn c	Device Attributes	No/No
Esc # 8	Screen Alignment Display	No/Yes
Esc # 3	Double Height Line - Top Half	No/No
Esc # 4	Double Height Line - Bottom Half	No/No
Esc # 6	Double Width Line	No/No
Esc Z	Identify Terminal	No/No
Esc =	Keypad Application Mode	No/No
Esc >	Keypad Numeric Mode	No/No
Esc [Ps q	Load LEDs	No/No
Esc 8	Restore Cursor	No/Yes
Esc [<sol>; <par>;	Report Terminal Parameters <nbits>; <xspeed>; <rspeed>; <clkmul>; <flags>x	No/No
Esc [<sol> x	Request Terminal Parameters	No/No
Esc 7	Save Cursor	No/Yes
Esc [Pn; Pn r	Set Top and Bottom Margins	No/No
Esc # 5	Single Width Line	No/No
Esc [2; Ps y	Invoke Confidence Test	No/No
Esc [Ps n	Device Status Report	No/Yes
Esc [Ps J	Erase in Display	No/Yes
Esc [Ps K	Erase in Line	No/Yes
Esc H	Horizontal Tabulation Set	No/No
Esc [Pn; Pn f	Horizontal and Vertical Position	No/Yes

Control Sequence	Definition	Encode/Decode
Esc D	Index	No/Yes
Esc E	Next Line	No/Yes
Esc M	Reverse Index	No/Yes
Esc c	Reset to Initial State	No/No
Esc [Ps; Ps;...;Ps 1	Reset Mode	No/No
Esc (A	Select Character Set GØ U.K.	No/No
Esc) A	Select Character Set G1 U.K.	No/No
Esc (B	Select Character Set GØ ASCII	No/No
Esc) B	Select Character Set G1 ASCII	No/No
Esc (Ø	Select Character Set GØ Spec. Graphics	No/No
Esc) Ø	Select Character Set G1 Spec. Graphics	No/No
Esc (1	Select Character Set GØ Alt. Character ROM Standard Character Set	No/No
Esc) 1	Select Character Set G1 Alt. Character ROM Standard Character Set	No/No
Esc (2	Select Character Set GØ Alt. Character ROM Special Graphics	No/No
Esc) 2	Select Character Set G1 Alt. Character ROM Special Graphics	No/No
Esc [Ps;...; Ps m	Select Graphic Rendition	No/No
Esc Ps;...;Ps h	Set Mode	No/No
Esc [Ps g	Tabulation Clear	No/No
Esc [Ps;Ps;...; Ps m	Character Attributes 7 - Reverse Video On	No/Reverse Video only
Esc [K or Esc [Ø K	Erase from cursor to end of line	No/Yes
Esc [1 K	Erase from beginning of line to cursor	No/No
Esc [2 K	Erase entire line containing cursor	No/No
Esc [J or Esc [Ø J	Erase from cursor to end of screen	No/Yes
Esc [1 J	Erase from beginning of screen to cursor	No/No
Esc [2 J	Erase entire screen	No/No
Esc [Ps;Ps;...Ps q	Programmable LEDs	No/No
Esc [Pt; Pb r	Scrolling Region	No/No
Esc H	Set tab at current column	No/No
Esc [g or Esc [Ø g	Clear tab at current column	No/No
Esc [3 g	Clear all tabs	No/No

Control Sequence	Definition	Encode/Decode
Esc [2 Ø h	Modes to Set - New Line Only supports linefeed/new line column mode wraparound	No/Yes ->
Esc [2 Ø l	Modes to Reset - Linefeed Only supports linefeed/new line column mode wraparound	No/Yes ->
Esc [? 1 h	Modes to Set - Cursor Key Mode Appl.	No/No
Esc [? 1 l	Modes to Reset - Cursor Key Mode Cursor	No/No
Esc [? 2 l	Modes to Reset VT52	No/No
Esc [? 3 h	Modes to Set - 132 columns	No/No
Esc [? 3 l	Modes to Reset - 8Ø columns	No/No
Esc [? 4 h	Modes to Set - Smooth Scroll	No/No
Esc [? 4 l	Modes to Reset - Jump Scroll	No/No
Esc [? 5 h	Modes to Set - Reverse Screen Mode	No/No
Esc [? 5 l	Modes to Reset - Normal Screen Mode	No/No
Esc [? 6 h	Modes to Set - Relative Origin Mode	No/No
Esc [? 6 l	Modes to Reset - Absolute Origin Mode	No/No
Esc [? 7 h	Modes to Set - Wraparound On	No/No
Esc [? 7 l	Modes to Reset - Wraparound Off	No/No
Esc [? 8 h	Modes to Set - Auto Repeat On	No/No
Esc [? 8 l	Modes to Reset - Auto Repeat Off	No/No
Esc [? 9 h	Modes to Set - Interlace On	No/No
Esc [? 9 l	Modes to Reset - Interlace Off	No/No
Esc [6 n	Report Cursor Position - Invoked by	No/No
Esc [P1; Pc R	Report Cursor Position - Response is	No/No
Esc [5 n	Status Report - Invoked by	No/No
Esc [Ø n	Status Report - Response is terminal OK	No/No
Esc [3 n	Status Rpt - Response is terminal not OK	No/No
Esc [x or Esc [Ø c	What are you? Invoked by	No/No
Esc [? 1; Ps c	What are you? Response is	No/No
Esc c	Reset	No/No
Esc # 8	Fill screen with Es	No/Yes
Esc [2; Ps y	Invoke Test(s)	No/No

VT220 terminal emulation

The following table lists the keystroke mapping (encoding) for VT220 emulation.

VT220 Encoding

VT220 Keyboard	PC Keyboard	VT220 Keyboard Byte Sequence
Delete	Delete	Øx7F
Left Arrow	Left Arrow	Esc [D
Right Arrow	Right Arrow	Esc [C
Up Arrow	Up Arrow	Esc [A
Down Arrow	Down Arrow	Esc [B
Keypad /	Keypad /	/
Keypad *	Keypad *	*
Keypad -	Keypad -	-
Keypad +	Keypad +	+
Keypad .	Keypad .	.
Keypad Ø.9	Keypad Ø.9	Ø.9
F1	F1	Esc O P
F2	F2	Esc O Q
F3	F3	Esc O R
F4	F4	Esc O S
F6	F6	Esc [1 7 ~
F7	F7	Esc [1 8 ~
F8	F8	Esc [1 9 ~
F9	F9	Esc [2 Ø ~
F10	F10	Esc [2 1 ~
F11	F11	Esc [2 3 ~
F12	F12	Esc [2 4 ~
F13	Ctrl - F5	Esc [2 5 ~
F14	Ctrl - F6	Esc [2 6 ~
F15	Ctrl - F7	Esc [2 8 ~
F16	Ctrl - F8	Esc [2 9 ~
F17	Ctrl - F9	Esc [3 1 ~
F18	Ctrl - F10	Esc [3 2 ~
F19	Ctrl - F11	Esc [3 3 ~
F20	Ctrl - F12	Esc [3 4 ~

The following table lists the DSView decoding for VT220 terminal emulation.

VT220 Decoding

VT220 Keyboard Function	VT220 Keyboard Byte Sequence
Index	Esc D
New Line	Esc E
Reverse Index	Esc M
Escape O	Esc O
Save cursor and attributes	Esc 7
Restore cursor and attributes	Esc 8
Up Arrow	Esc [A
Down Arrow	Esc [B
Right Arrow	Esc [C
Left Arrow	Esc [D
Set cursor to home position	Esc [H
Set cursor to home position	Esc [f
Character attributes	Esc [m
Erase from cursor to end of line	Esc [K
Erase from cursor to end of screen	Esc [J
Programmable LEDs	Esc [q
What are You?	Esc [c
Set Mode	Esc [?
Delete 1 Character	Esc [P
Insert 1 Line	Esc [L
Delete 1 Line	Esc [M
Up Arrow	Esc O A
Down Arrow	Esc O B
Right Arrow	Esc O C
Left Arrow	Esc O D
Fill Screen with Es	Esc # 8
Up Arrow amount specified by Pn	Esc [Pn A
Down Arrow amount specified by Pn	Esc [Pn B
Right Arrow amount specified by Pn	Esc [Pn C
Left Arrow amount specified by Pn	Esc [Pn D

VT220 Keyboard Function	VT220 Keyboard Byte Sequence
Erase parts of current line	Esc [Pn K
Erase parts of current screen	Esc [Pn J
Direct Cursor Addressing	Esc [Pn H
Direct Cursor Addressing	Esc [Pn f
Programmable LEDs	Esc [Pn q
Scrolling Region	Esc [Pn r
Clear tabs	Esc [Pn g
Device status report	Esc [Pn n
What are you?	Esc [Pn c
Set Mode	Esc [Pn h
Delete Pn Characters	Esc [Pn P
Insert Pn Lines	Esc [Pn L
Delete Pn Lines	Esc [Pn M
Insert Character	Esc [Pn @
Erase Pn Characters	Esc [Pn X

VT52 terminal emulation

The following table lists the DSVIEW keystroke mapping (encoding) for VT52 terminal emulation.

VT52 Encoding

VT52 Keyboard	PC Character Sequence	VT52 Keyboard Byte Sequence
Delete	Delete	Øx7F
Up Arrow	Up Arrow	Esc A
Down Arrow	Down Arrow	Esc B
Right Arrow	Right Arrow	Esc C
Left Arrow	Left Arrow	Esc D
Shift-F1	PF1	Esc P
Shift-F2	PF2	Esc Q
Shift-F3	PF3	Esc R
Shift-F4	PF4	Esc S

The following table lists the DS Management Software decoding for VT52 terminal emulation.

VT52 Decoding

VT52 Keyboard Function	VT52 Keyboard Byte Sequence
Cursor Up	Esc A
Cursor Down	Esc B
Cursor Right	Esc C
Cursor Left	Esc D
Cursor Home	Esc H
Reverse Linefeed	Esc I
Erase to end of screen	Esc J
Erase to end of line	Esc K

VT320 terminal emulation

The following table lists the DS Management Software keystroke mapping (encoding) for VT320 terminal emulation.

VT320 Encoding

VT320 Keyboard	PC Character Sequence	VT320 Keyboard Byte Sequence
Escape key (ESC)	Esc	Øx1B
F1	F1	Esc O P
F2	F2	Esc O Q
F3	F3	Esc O R
F4	F4	Esc O S
F5	F5	Esc O T
F6	F6	Esc [1 7 ~
F7	F7	Esc [1 8 ~
F8	F8	Esc [1 9 ~
F9	F9	Esc [2 Ø ~
F10	F10	Esc [2 1 ~
F11	F11	Esc [2 3 ~
F12	F12	Esc [2 4 ~
F13	Ctrl - F5	Esc [2 5 ~

VT320 Keyboard	PC Character Sequence	VT320 Keyboard Byte Sequence
F14	Ctrl - F6	Esc [2 6 ~
F15	Ctrl - F7	Esc [2 8 ~
F16	Ctrl - F8	Esc [2 9 ~
F17	Ctrl - F9	Esc [3 1 ~
F18	Ctrl - F10	Esc [3 2 ~
F19	Ctrl - F11	Esc [3 3 ~
F20	Ctrl - F12	Esc [3 4 ~
Insert	Insert	Esc [1 ~
Home	Home	Esc [2 ~
Delete	Delete	Esc [4 ~
End	End	Esc [5 ~
Up Arrow	Up Arrow	Esc [A
Down Arrow	Down Arrow	Esc [B
Left Arrow	Left Arrow	Esc [D
Right Arrow	Right Arrow	Esc [C

The following table lists the DS Management Software decoding for VT320 terminal emulation.

VT320 Decoding

VT320 Keyboard Function	VT320 Keyboard Byte Sequence
Index	Esc D
New Line	Esc E
Reverse Index	Esc M
Escape O	Esc O
Save cursor and attributes	Esc 7
Restore cursor and attributes	Esc 8
Up Arrow	Esc [A
Down Arrow	Esc [B
Right Arrow	Esc [C
Left Arrow	Esc [D
Set cursor to home position	Esc [H
Set cursor to home position	Esc [f

VT320 Keyboard Function	VT320 Keyboard Byte Sequence
Character Attributes	Esc [m
Erase from cursor to end of line	Esc [K
Erase from cursor to end of screen	Esc [J
Programmable LEDs	Esc [q
What are You?	Esc [c
Set Mode	Esc [?
Delete 1 Character	Esc [P
Insert 1 Line	Esc [L
Delete 1 Line	Esc [M
Up Arrow	Esc O A
Down Arrow	Esc O B
Right Arrow	Esc O C
Left Arrow	Esc O D
Fill Screen with Es	Esc # 8
Up Arrow amount specified by Pn	Esc [Pn A
Down Arrow amount specified by Pn	Esc [Pn B
Right Arrow amount specified by Pn	Esc [Pn C
Left Arrow amount specified by Pn	Esc [Pn D
Erase parts of current line	Esc [Pn K
Erase parts of current screen	Esc [Pn J
Direct Cursor Addressing	Esc [Pn H
Direct Cursor Addressing	Esc [Pn f
Programmable LEDs	Esc [Pn q
Scrolling Region	Esc [Pn r
Clear tabs	Esc [Pn g
Device status report	Esc [Pn n
What are you?	Esc [Pn c
Set Mode	Esc [Pn h
Delete Pn Characters	Esc [Pn P
Insert Pn Lines	Esc [Pn L
Delete Pn Lines	Esc [Pn M
Insert Character	Esc [Pn @
Erase Pn Characters	Esc [Pn X

Appendix E: Setting SNMP Traps (Windows NT/2000/XP Only)

An SNMP (Simple Network Management Protocol) trap is a notification sent by a DS appliance to a host system indicating that an event has occurred in the DS appliance that may require further attention.

SNMP is a protocol used to communicate management information between network management applications and DS appliances using TCP/IP and IPX protocols. Other SNMP managers (such as Tivoli and HP OpenView) may communicate with your DS appliance by accessing MIB-II (Management Information Base) and the public portion of the enterprise MIB. MIB-II is a standard MIB that many SNMP target devices support. When you access a DS appliance for the first time, DSAuth will retrieve the SNMP parameters from the DS appliance.

DS appliances are defined on the host by criteria such as system information, which stations may manage the DS appliance, which stations may receive SNMP traps from the switch and the community to which they belong. If you select *Options - System Settings* from the DSAuth window and then check *Enable SNMP trap log* in the System Settings dialog box, the appliance will log SNMP received messages over UDP (User Datagram Protocol) port 162.

The traps must be configured on each DS appliance using the CLI interface. The address of the server running DSAuth must be configured as a trap recipient, the proper community must be set, and each desired trap must be enabled.

To use SNMP trap logging:

1. Install and configure TCP/IP on the DSAuth Server.
2. Install the SNMP service on the DSAuth Server, configure the host as trap recipient and enable the traps.
3. Enable the SNMP service on the DSAuth Server.

Appendix F: Menus and Commands

Pulldown menus

The DSAAuth, DSView Client and remote session windows each contain a number of commands that may be accessed using the pulldown menus located along the top of the windows.

Shortcut menus and commands

You may access shortcut menus within the DSAdmin and DSView Client windows by selecting a DS appliance, target device or port and right-clicking to display a shortcut menu.

DSAdmin Shortcut menus and commands

In the DS topology view, you may right-click on any DS appliance's name or IP address in the DSAdmin window to display a shortcut menu containing six commands:

- Collapse - Clicking on this command will hide the port information associated with the selected name or IP address.
- Expand - Clicking on this command will display the port information associated with the selected name or IP address.
- Properties
- Rename
- Delete
- Permissions
- Reboot

In the DS topology view, you may right-click on any port to display a shortcut menu containing four commands:

- Properties
- Rename
- Permissions
- Disconnect

DSView Client shortcut menus and commands

In the DS topology view, you may right-click on any DS appliance's name or IP address in the DSView Client window to display a shortcut menu containing three commands:

- Reboot
- Collapse
- Expand

In the DS topology view, you may right-click on any port to display a shortcut menu containing three commands:

- Connect
- Privacy Mode Connect
- View Connected Users

Telnet window menus and commands

Serial DS appliances and target devices are operated through a Telnet window. When you are operating a DS appliance or target device using the DS/DSR appliance, you will be provided with several optional commands.

Telnet menu

Exit

This command will exit the Telnet Client and return users to the DSView Client menu. If the option to Prompt on Exit (see the *Preferences* section of this appendix) is enabled and a connection is active, the DS user will be prompted to confirm the exit. If no connection is active, the Client will exit without a prompt.

View menu

History

When this menu option is checked, the DS user will be switched to history mode. Here the DS user may scroll through a history of the Telnet session up to the current point. While the DS user is in history mode, all new data is buffered and may be viewed by scrolling to the end of the history. DS users may exit history mode at any time by pressing the Esc key.

Go to Beginning

This command moves the cursor to the beginning of the history file.

Previous Page

This command moves the cursor back one page in the history file.

Next Page

This command moves the cursor forward one page in the history file.

Go to End

This command moves the cursor to the end of the history file.

Options menu**Preferences**

When this menu option is selected, a dialog box that displays application preferences will appear. Here DS users may change options that pertain to the appearance of the Telnet application.

Session Properties

This option activates the Property Sheet dialog box where node session properties for the port that is currently active. The dialog box has two tabs, Terminal and Login Scripts.

Terminal

This tab allows you to alter the settings that determine how text in the Telnet Client is formatted.

Login Scripts

This tab allows you to create scripts that answer simple login questions. These scripts allow DS users to completely automate the login process.

View commands are also accessible through menu icons in the Terminal window.

Appendix G: Glossary

DS appliance

A network appliance, such as DSR, DS1800 or CPS which is managed by DS Management Software.

Target device

A server, router or other device that is attached to a DS appliance.

DS topology

A hierarchy of DS appliances, cascade devices and target devices.

DSAuth

A central repository for DS topology information, DS user permissions and centralized services such as authentication, access control, audit, appliance monitoring and Client/appliance updates. DS users may define a primary and backup DSAuth Server.

DS permissions

Defines the set of DS appliances and target devices to which a DS user has access within the DS topology.

DSAdmin

A graphical application used to create and alter DS topology and permission information that is stored on a DSAuth Server.

DSView Client

A Win32 application that allows DS users to manage target devices through DS appliances. The Client allows for IP-based video, serial and power management sessions.

DS user

An authenticated user of the DSView Client or DSAdmin software.

Local user

A user of a DS appliance local port.



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