Avocent® DSView™ 4.5 Management Software
Service Pack 5 (SP5) Release Notes
Version 4.5.0.305
May 20, 2016

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1. End of Life Announcement

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NOTE: Periodically, the support status of hardware products is refined depending on the respective life cycle. Any hardware product reaching End of Life (EoL) status receives support for a finite period of time, after which support ceases.

With this release of the Avocent® DSView™ 4.5 software, Service Pack 5 (SP5), integration support will cease for the following product lines:

- The full Avocent® DSR™ KVM over IP switch product family (DSR 10xx/20xx/40xx and 80xx switches)

- The full Cyclades™ CS console server product family (CCS xxx)

- The Avocent® ACS Classic advanced console server family (LSL 10xxA, AP 930x, ATP xxx, ACS 48/26K7649, ACS 48/26K7715)

For the products in the previous list, the security hardening of the Avocent® DSView™ 4.5 software for SP5 exceeds their designs in a way that prevents integration going forward. Sites that continue to rely on these hardware products can use Avocent® DSView™ 4.5 software version 4.5.0.247 for support until May 2017.

IMPORTANT NOTE: Prior to upgrading to the Avocent® DSView™ 4.5 software for SP5, you must validate that your hardware will have full integration software support with this release. The latest list of software downloads is available here:
http://www.emersonnetworkpower.com/en-US/Support/Software-Downloads/infrastructure-management/Pages/default.aspx

If your hardware integration software is unavailable, it is recommended that you defer implementation of Avocent® DSView™ software SP5 until your corresponding integration software is released.

For more information, contact your appropriate Avocent representative.

NOTE: Also prior to upgrading, it is highly recommended that you take a backup of the current Avocent®️ DSView™️ software product implementation as a safeguard against potential upgrade issues.

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2. Install/Update Instructions

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NOTE: This document is an addendum to the Avocent®️ DSView™️ 4.5 software user documentation and contains information regarding the patches applied to DSView™️ 4.5 software since the last full release.

This patch updates Avocent®️ DSView™️ software version 4.5.0.247 (January 5, 2016) to the latest version of DSView™️ software (listed at the beginning of these release notes). This patch is provided as a full installation package of the DSView™️ management software. In order to install Avocent®️ DSView™️ 4.5 software on the same server as DSView™️ 3 software, the DSView™️ 3 software must first be backed up and uninstalled before attempting to install the new software.

NOTE: Avocent®️ DSView™️ 4.5 software must be installed on a 64 bit server class machine. During the DSView™️ software installation, the user will have the option to install PostgreSQL or point to an existing instance of the database.

First Time Installation

NOTE: For the first time installation scenario, you must be logged in as a local administrator.

To install the DSView™️ 4.5 software for the first time:

1. Begin the DSView™️ software installation using one of the following methods:

    a. For installation on a supported Windows system:
        Run the setup.exe and then follow the on-screen instructions.

    b. For installation on a Linux system:
        From a command line, type **./install.bin**, **sh install.bin** or **bash install.bin**, then follow the on-screen instructions.

        i. For SUSE Linux users:
            Update "/etc/hosts" file with <Short-Hostname> of the server. Then, run "hostname <Short-Hostname>" from the command line before installing the DSView™️ 4.5 software.

    c. For installation on a Solaris system:
        From a command line, type **./solaris.bin**, **sh solaris.bin** or **bash solaris.bin**, then follow the on-screen instructions.

2. On the PostgreSQL Installation screen, select *Existing database* to connect to a remote installation of PostgreSQL or a pre-installed PostgreSQL, or the software will install a DSView™️ software pre-included version of the PostgreSQL database (version 9.4.4).

3. Modify the following PostgreSQL configuration files before using a remote installation of PostgreSQL or an existing PostgreSQL as a DSView™️ 4.5 software database:

    a. Under the PostgreSQL Install Folder/Data folder, append "custom_variable_classes = 'symmetric'" at the end of the postgresql.conf file. This is only required for PostgresSQL version 9.0, and not required on version 9.4.

b. Under the PostgreSQL Install Folder/Data folder, add "host all   all   <DSViewServerIP>/32   md5" to the pg_hba.conf file.

4. When the installation is complete, the DSView™ 4.5 software can be launched from the web browser by accessing the following URL: https://<DSViewServerIP>:<DSViewPort>/dsview.

NOTE: If an older version of the Avocent® DSView™ software was uninstalled from this server, some folders from the old installation may be left behind. To prevent these folders from interfering with the current installation, delete the Emerson and PostgreSQL folder before proceeding with the installation. These folders are, by default, located in C:\Program Files (Windows®) or /usr/local (Linux).

NOTE: Also, ensure the following information is true on a Windows® platform. These suggestions do not apply to every environment, but failed DSView™ software installations have been resolved so far using these recommended steps.

- The Emerson and PostgreSQL folders are exempt from all antivirus software scanning

- Secondary Login Services are enabled and started

- Postgres users (or user group) have permissions to cmd.exe

- You've right-clicked in the cmd.exe shortcut (Start menu) and changed the log in to %windir%

Upgrading to the New Patch

NOTE: Since this patch is provided as a full installation package, you cannot manually remove this patch. You must be logged in as a local administrator, and the patch needs to be applied to each Avocent® DSView™ 4.5 server (hub and spoke).

To upgrade to this patch release:

1. Perform a replication on all spokes in the current system.

2. Back up the DSView™ 4.5 server.

3. Begin the DSView™ 4.5 software installation using one of the following methods:

   a. For installation on a supported Windows system:
      Run the setup.exe and then follow the on-screen instructions.

   b. For installation on a Linux system:
      From a command line, type **./install.bin**, **sh install.bin** or **bash install.bin**, then follow the on-screen instructions.

      i. For SUSE Linux users:
         Update "/etc/hosts" file with <Short-Hostname> of the server. Then, run "hostname <Short-Hostname>" from the command line before installing DSView™ 4.5 software.

   c. For installation on a Solaris™ system:
      NOTE: There is no officially supported PostgreSQL 9.4 version for Solaris, so the Avocent® DSView™ software will continue to use PostgreSQL 9.0.13 for Solaris installations.

      i. If you are freshly installing the DSView™ 4.5 software:
         From a command line type **./solaris.bin**, **sh solaris.bin** or **bash solaris.bin**, then follow the on-screen instructions.

      ii. If you are upgrading an existing version of DSView™ software lower than version 4.0.0.161 to version 4.5.0.305:

1. As this version of installer packages PostgreSQL version 9.0.13, an automatic upgrade of PostgreSQL version is not possible. You must manually backup the existing data in the database by executing a command such as: **./DSViewBackupRestore.sh -backup -archive /tmp/db_backup.zip –overwrite**

2. Uninstall the existing version of Avocent® DSView™ 4.5 software. For example, execute the following command: **/export/home/Emerson/DSView4/Uninstall/Uninstall_DSView4**

3. Install version 4.5.0.305 of the DSView™ software. For example, enter: **./solaris.bin**

4. Once version 4.5.0.305 of Avocent® DSView™ software is installed, the database backup of the old version that existed before needs to be restored. For example, execute the following command: **./DSViewBackupRestore.sh -restore -archive /tmp/db_backup.zip**

5. After these steps, DSView™ software would be upgraded to version 4.5.0.305, will use PostgreSQL version 9.0.13 and will also have all data that existed before in it.

Migrating from Legacy Avocent® DSView™ Software Versions

NOTE: If you are using legacy versions of the Avocent® DSView™ 3 software, you may need to migrate to DSView™ 4 software prior to upgrading to DSView™ 4.5 software. Please refer to the DSView™ 4 Management Software Transition Technical Bulletin for more detailed steps on migrating from DSView™ 3 software to DSView™ 4 software.

To migrate from DSView™ software version 3.7.2 to DSView™ 4 software:

1. Perform a data replication between hub and all spokes in the existing DSView™ 3 software.

2. Back up the existing DSView™ 3 software using the Backup Utility or the Backup Power Manager Database (if applicable). Be sure to place the backup file in a location outside of the DSView™ 3 software directories as they will be removed during uninstallation and the file will be needed later for the data migration.

3. If the DSView™ 4 software needs to be installed in the same system, uninstall the existing DSView™ 3 software.

4. After logging in as a local administrator, begin DSView™ 4 software installation using one of the following methods:
    a. For installation on a supported Windows system:
        Run the setup.exe and then follow the on-screen instructions.

    b. For installation on a Linux system:
        From a command line, type **./install.bin**, **sh install.bin** or **bash install.bin**, then follow the on-screen instructions.

        i. For SUSE Linux users:
            Update "/etc/hosts" file with <Short-Hostname> of the server. Then, run "hostname <Short-Hostname>" from the command line before installing Avocent® DSView™ 4 software.

    c. For installation on a Solaris system:
        From a command line type **./solaris.bin**, **sh solaris.bin** or **bash solaris.bin**, then follow the on-screen instructions.

5. On the PostgreSQL Installation screen, select *Existing database* to use a pre-installed version of the PostgreSQL database or to connect to a remote installation of PostgreSQL. Otherwise, leave the box unchecked. If you are using an existing database, you will have to modify the pg_hba.conf and postgresql.conf files with appropriate entries as specified in the next steps:

a. Under the <PostgresSQL Install Folder>/data folder, append the string "custom_variable_classes = 'symmetric'" at the end of the postgresql.conf file. This is only required for PostgresSQL version 9.0, and not required on version 9.4

b. Under the <PostgresSQL Install Folder>/data folder, append the "host all   all   <DSViewServerIP>/32   md5" to pg_hba.conf file.

6. After Avocent® DSView™ 4 software installation, stop the DSView™ 4 service and run the Data Migration Utility as a local administrator to migrate the Avocent® DSView™ 3 data, system properties, plug-ins, appliance templates and firmware into the new system.

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3.   Language Support Information

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The languages supported by this version of DSView™ software are English, Simplified Chinese and Japanese.

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4. Client Browser Support Information

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NOTE: Unless noted otherwise, both 32 bit and 64 bit browsers are supported.

- Microsoft Internet Explorer 9, 10 or 11

- Mozilla Firefox® version 45.0 ESR

- Google Chrome version 50

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5. Viewer Support and Version Information

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The following table lists browser/viewer combinations successfully tested with a representative selection of client operating systems.

Tested Browser and Viewer Combinations

Client Systems	Java Serial Viewer	Active X Serial Viewer	Legacy Java KVM Viewer	Legacy Active X KVM Viewer	Java KVM Viewer	Active X KVM Viewer	HTML 5 iDRAC Viewer**
IE9,10 and 11 32-bit	YES	YES	YES	YES	YES	YES	IE11 ONLY
IEI0 and 11 64-bit *	YES	YES	YES	YES	YES	YES	IE11 ONLY
Chrome 50 32-bit	YES	NO	YES	NO	YES	NO	YES
Chrome 50 64-bit	YES	NO	YES	NO	YES	NO	YES
Firefox 45 ESR 32-bit For Windows Client	YES	YES	YES	YES	YES	NO	YES
Firefox 45 ESR 32-bit For Linux Client	YES	NO	YES	NO	YES	NO	YES

Client Systems	Java Serial Viewer	Active X Serial Viewer	Legacy Java KVM Viewer	Legacy Active X KVM Viewer	Java KVM Viewer	Active X KVM Viewer	HTML 5 iDRAC Viewer**
Firefox 45 ESR 64-bit For Linux Client	YES	NO	YES	NO	YES	NO	YES
Firefox 45 ESR 32-bit For Mac OS Client	YES	NO	YES	NO	YES	NO	YES

NOTE: * For IE10 and IE11 64 bit version, IE Tabs still run as 32 bit. **Suitable for iDRAC 7 and 8 running firmware version 2.30.30.30 and higher.

Service Pack 5 (SP5) Viewer Versions

Viewer	JAR/EXE	Version	OS Platform
Video Viewer	AvctVideoViewer.exe	3.5.2.2	Win32
Virtual Media	AvctVirtualMedia.exe	3.5.1.7	Win32
VNC Viewer	avctVncViewer.exe	2.1.1.1	Win32
RDP	avctRdpViewer.exe	1.3.0.5	Win32
3rd Party/Serial	AvctSerialViewer.exe	3.7.0	Win32
Putty	AvctPuttyTel.exe	0.64	Win32
Java® Video Viewer	avctvideoviewer.jar	4.16.2.7	Linux/Solaris/Mac
Java Serial Viewer	avctsshtelnet.jar	4.6.1.18	Linux/Solaris/Mac
Java Virtual Media	avctVM.jar	1.8.0.91	Linux/Solaris/Mac
Java VNC Viewer	avctVncViewer.jar	4.6.2.12	Linux/Solaris/Mac
Java 3rd Party/Serial	serialconsoleviewer.jar	4.6.1.16	Linux/Solaris/Mac
New ActiveX KVM Viewer 32 bit	AvctInstall32.cab	5.04.04	Win32
New ActiveX KVM Viewer 64 bit	AvctInstall64.cab	5.04.04	Win64
New KVM Viewer	avctVideo.jar	5.04.04	Win/Linux/Mac

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6. Server Operation System Support Information

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- Microsoft® Windows Server 2008 (x64), 2008 R2 (x64), 2012 (x64) and 2012 R2 (x64)

- SuSe® Linux Enterprise Server 11(x64), OpenSuse 12.1 (x64)

- RedHat® Enterprise Server 6.4 (x64), 6.5 (x64), 7 (3.10.0-123.el7.x86_64)

- Sun™ Solaris SPARC® 10

- CentOS 6.5 (x64), CentOS 7 (x64)

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7. Change Log Information (Fixed Issues and New Features)

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NOTE: This section applies to the Avocent® DSView™ software version SP5, version 4.5.0.305.

New Features

- An operation to unmerge target devices to their original name was added

- You can now display the MAC address in the Appliance Unit View Screen

- Radius Failover Support added

- MPI PDU support added

- Liebert® GXT4™ UPS device support added

- You can now push an Avocent® DSView™ software event to the Avocent® Data Center Planner software and a third party application via the Web Service

- SSH PASSTHROUGH is allowed to be case insensitive by setting the parameter SSH_PASSTHROUGH_CASE_INSENSITIVE=true in System.properties file.

  NOTE: By default, however, it is still case sensitive.

- Dell iDRAC HTML5 viewer (servers with iDRAC firmware v2.30.30.30 and up only) support added

General Enhancements

- Postgres settings have been optimized to run faster based on the server environment.

- The Emerson Network Power® MPH2™ power distribution unit plug-in integration module received a significant technology refresh. See the release notes for that plug-in for more information.

Security Enhancements

- A new DSView Security Settings screen was added to provide centralized and runtime control of the SSL/TLS protocols and ciphers used between the Avocent® DSView™ software and the client/appliance. PCI mode has been removed.

- Added support for latest Mindterm to support higher level ciphers in the Avocent® ACS 6000 advanced console servers.

Fixed Issues

Issue #	Description
L3:487234-507701007	Previously, users were unable to launch the Java Viewer through IE11. This is fixed.
N/A	Because the Windows NT Authentication Server is EoL, the entry is removed from the external authentication support list.
L3:487234-490476880	Previously, when a user deletes an appliance along with its target devices, a prompt within the Avocent® DSView™ software issues a *This page contains errors* message, even though the deletion was successful. This is fixed.
L3: 487234-541791277	After upgrading from Avocent® DSView™ software version 4.1.0.124 to version 4.5.0.212, if a customer creates a user group under global root, assigns targets to the group, saves the changes, and then looks at the targets added to the group, the group shows up empty. This issue has been fixed in IE11.
L3: 487234-542156609	You are now able to export unit and rights reports in IE.
L3: 487234-545617359	The new 64 bit Java Viewer previously did not load in the Linux client. This is fixed.
L3: 487234-549529431	After upgrading the Avocent® DSView™ software from 4.5.0.212 to 4.5.0.247, the customer was no longer getting a prompt to enter the certificate. This is fixed.
L3: 487234-572726265	SSH Passthrough Port Sharing was not working with Active Directory users. This is fixed.
L3: 487234-549053611	When using an AD account, the Bulk-Edit issue is fixed.
487234-547642283	There was an issue when a user tried to merge an Emerson Network Power® MPH2™ receptacle with a target from the connections page. This is fixed.

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8. Known Issues

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This release contains the following known issues:

- The Java Viewers (Serial, Video and VNC) may not launch when using the Java Runtime Environment (JRE) versions less than1.8.0.72.

- Legacy viewers support 32 bit browsers only.

- The RDP Viewer will not work if client machine does not have Microsoft Visual C++ 2010 SP1 Redistributable Package (x86) installed.

- It will be necessary to download the VMware VSphere Client Version(s) 5.1 or above in order to launch the VMware Viewer. The VMware VSphere Client can be downloaded directly from VMware or from a VMware 5.1 Virtual Center/ESXi.

- The Avocent® DSView™ software dial-out from Linux requires root access.

- There is a known issue when upgrading from Avocent® DSView™ software version 4.5.0.190 or lower to DSView™ software version 4.5.0.247 or higher on CentOS 7 and RedHat 7 OS. The work-around for this issue is to perform a backup, do a fresh install of the DSView™ software and restore the earlier version of the database. For a spoke, delete the spoke from the hub, do a fresh install on the spoke server and re-register to the hub.

- An open Java-based viewer session will not automatically be closed by the Avocent® DSView™ software if the user logs out of the software. This is a side effect of removing Java support from the browsers.

- You should not use hostnames (DNS defined names) for addressing appliances. Use the IP address only.

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9. Devices Supported

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Avocent® Devices

- Avocent® ACS 6000 advanced console servers

- Avocent® AutoView 2108 and 2216 switches

- Avocent® MergePoint Unity™ 1016, MergePoint Unity™ 1016DAC, MergePoint Unity™ 104E, MergePoint Unity™ 108E, MergePoint Unity™ 108EDAC, MergePoint Unity™ 2016, MergePoint Unity™ 2016DAC, MergePoint Unity™ 2032, MergePoint Unity™ 2032DAC, MergePoint Unity™ 4032, MergePoint Unity™ 4032DAC, MergePoint Unity™ 8032 and MergePoint Unity™ 8032DAC KVM over IP and serial console switches

- Avocent® Power Management Distribution Unit (PM PDU) PM 1000/2000/3000 PDUs

- Avocent® SPC power control devices

- Avocent® Universal Management Gateway 2000, 4000 and 6000 appliances

Emerson Network Power® Devices

- Emerson® Rack PDUs(MPH2™/MPX™ PDUs with RPC-2000 cards)

Liebert® Devices

- Liebert® GXT4™ UPS devices

- Liebert® MPH™, MPX™ PDUs (with RPC-1000 cards)

Other Devices

- APC AP78xx, AP79xx, AP8881, AP8661 and AP8941 PDUs

- Blade, Dell DRAC MC, Dell M1000e, FSC BX600, Generic Blade Chassis, HP BladeSystem, HP BladeSystem c-Class, HP BladeSystem p-Class, IBM BladeCenter, IBM BladeCenter H, IBM BladeCenter HT, IBM BladeCenter T

- Citrix XenServer 6.5 Standard

- Dell 2161DS-2, Dell 2321DS, Dell 4161DS and Dell 8321DS appliances

- Dell Remote Console Switch (1082DS/2162DS/4322DS) product family

- FCL Plug-in to support FW Digital KVM Switch product line FW-D1008NP, FW-D2016NP, FW-D2032NP, FW-D4016NP, FW-D8032NP

- Fujitsu KVM s4 Appliance product family KVM s4-0812, KVM s4-1622, KVM s4-3242

- HP Console Switch G2 product family Server Console Switch G2 0x2x16, Server Console Switch G2 0x2x32, IP Console Switch G2 1x1Ex8, IP Console Switch G2 2x1Ex16, IP Console Switch G2 4x1Ex32

- HP G3 KVM Console Switch 0x1x8 G3 KVM Console Switch, 0x2x16 G3 KVM Console Switch

- IBM Console Switch GCM16/32 product family

- KVM Switch product family: 1x1x8 switch, 2x1x16 switch, 8x1x32 switch

- Lenovo GCM 16/32 console switch product family

- Lenovo LCM 8/16 switch product family

- Microsoft Hyper-V2 on Windows 2008 R2

- Microsoft Hyper- V3 on Windows 2012 and 2012 R2

- MPI Intelligent PDU family

- Server Technologies Sentry Switched CDU CW-8H1[*], CW-8H2[*], CW-16V1[*], CW-16V2[*], CW-24V2[*], CW-24V3[*], CW-32VD1[*], CW-32VD2[*], CW-48V5Z454-A1P, CW-24VY-L30M, CWG-24V4Z423A9/QR, CW-8H1A413,CW-24V4K425A9, STV-4501C,STV-6502M and STV-4501C (supported models may change; contact Avocent Technical Support for current information)
  NOTE: Models with an asterisk (*) must be attached to a managed appliance such as the Avocent® MergePoint Unity™ KVM over IP and serial console switch.

- VMware 5.5, VMware 5.5u2 and VMWare 6.0
  NOTE: If using VMware 6.0, the VI Client link under the Virtual Center no longer points to a location where the VMWare Client can be downloaded. VMWare has removed this link, so customers must manually download the VMWare Client executable from VMWare or ESXi.

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10. Plug-in Information and Versions

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NOTE: The minimum recommended plug-in versions to be used with this software version are listed in the table that follows.

- Please see the Avocent® Universal Management Gateway appliance plug-in release notes for features affecting this plug-in in this release of Avocent® DSView™ software. The release notes can be found on the Avocent® web site.

- Please use the recommended Virtualization plug-in version with the Avocent® DSView™ software for support for VMotion and Microsoft VMM. This version of the software supports SCVMM 2008 installed on Windows 2008 R2 and SCVMM 2012 installed on Windows 2012 R2.

Plug-in	Version	Pre-installed/*Optional*
Avocent® ACS 6000 console server	3.3.0.7	Pre-installed
Avocent® MergePoint Unity™ KVM over IP and serial console switch	1.32.0.24542	Pre-installed
Avocent® Power Management Distribution Unit (PM PDU)	2.0.1.7	Pre-installed

Plug-in	Version	Pre-installed/*Optional*
Avocent® Universal Management Gateway appliance	3.2.0.24	Pre-installed
Blade Chassis Support	1.2.0.55	Pre-installed
Emerson Network Power® RPC-2000	1.1.1.2	Pre-installed
Infrastructure	2.0.0.12	Pre-installed
Liebert® Rack PDU Support	1.1.0.16	Pre-installed
Virtualization	3.0.0.667	Pre-installed
APC MasterSwitch RPDU Support	4.0.0.12	*Optional*
Avocent® AutoView™ Switch	1.20.1.4043	*Optional*
Avocent® AutoView™ Switch for Dell	1.20.1.4043	*Optional*
Avocent® MergePoint Unity™ KVM over IP and serial console switch for Dell (DMPU1080E/DMPU2016/DMPU4032)	1.32.0.24542	*Optional*
Dell® Remote Console Switch (1082DS/2162DS/4322DS)	1.32.0.24542	*Optional*
Fujitsu KVM s4 Appliance	1.32.0.24542	*Optional*
HP G2 Console Switch	1.32.0.24542	*Optional*
HP G3 KVM Console Switch	1.20.1.4043	*Optional*
IBM® Console Switch GCM16/32	1.32.0.24542	*Optional*
Lenovo GCM 16/32 Console Switch	1.32.0.24542	*Optional*
Lenovo Switch	1.20.1.4043	*Optional*
Liebert® GXT4™ UPS device	1.0.0.444	*Optional*
MPI PDU	1.0.0.22	*Optional*
Server Tech Sentry 3 PDU	1.0.0.42	*Optional*
Server Tech Sentry 4 PDU	1.0.0.9	*Optional*

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11. Using a Virtual Machine

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You can set up the Avocent® DSView™ management software to run on a Virtual Machine (VM). The following specifications are recommended as baseline resources for installing the DSView™ software. Depending on the size of the DSView™ software database, these specifications may need to be increased to improve software performance.

NOTE: VMWare administrators should monitor the performance of the VM to ensure that the appropriate resources are provided to support the software system.

Recommended VM Requirements for running the Avocent® DSView™ Software

NOTE: It is recommended that vMotion and Ballooning be disabled for this VM scenario.

The minimum required specifications for setting up a VM to run the DSView™ software are as follows:

- 6 GB RAM (Reserved)

- 1-2 vCPUs (1 core)

- 40+ GB HDD (<7000 target devices)/ 80+ GB HDD (>7000 target devices)

- 1 NIC dedicated 100% (VMXNET3- 1 GB or 10 GB suggested)

The following best practices are recommended for improved performance on VMs in a VMWare environment:

- Verify that the Avocent® DSView™ VMs sharing a vSwitch connected via an NIC are not connected to an oversubscribed network switch.

- Verify that the Avocent® DSView™ VMs are not connected to an oversubscribed storage LUN.

- Verify that the Avocent® DSView™ VMs are not placed on oversubscribed server hardware.

- Ensure there are no issues with switches or ports that are oversubscribed due to too many VMs sharing a single port or VLAN.

- Ensure there is available spare capacity in datastores and ensure you are not queuing during peak business hours.
  NOTE: Queuing is when there is not enough IO being processed by your storage unit and reads/writes are backing up (or queuing).

- Monitor all resource thresholds to ensure more hardware resources are added before your warning thresholds are breached. Allowing an ESXi host to be oversubscribed puts its VMs at a risk of poor performance.