



Get started

SANtricity 11.8

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Get started

SANtricity software overview

E-Series systems include SANtricity software for storage provisioning and other tasks.

This site describes how to use the following SANtricity management interfaces:

- System Manager — a web-based interface used for managing an individual storage array in your network.
- Unified Manager — a web-based interface used for viewing and managing all storage arrays in your network.











EF600 and EF300 storage arrays do not support synchronous mirroring or thin volumes.

SANtricity System Manager

System Manager is web-based management software embedded on each controller. To access the user interface, point a browser to the controller's IP address. A setup wizard helps you get started with system configuration.

System Manager offers a variety of management features, including:

 Performance	View up to 30 days of performance data, including I/O latency, IOPS, CPU utilization, and throughput.
 Storage	Provision storage using pools or volume groups, and create application workloads.
 Data protection	Perform backup and disaster recovery using snapshots, volume copy, and remote mirroring.
 Hardware	Check component status and perform some functions related to those components, such as assigning hot spare drives.
 Alerts	Notify administrators about important events occurring on the storage array. Alerts can be sent through email, SNMP traps, and syslog.





 Access Management	Configure user authentication that requires users to log in to the system with assigned credentials.
 System Settings	Configure other system performance features, such as SSD cache and autoload balancing.
 Support	View diagnostic data, manage upgrades, and configure AutoSupport, which monitors the health of a storage array and sends automatic dispatches to technical support.





SANtricity Unified Manager

Unified Manager is web-based software used for managing your entire domain. From a central view, you can see the status for all newer E-Series and EF-Series arrays, such as the E2800, EF280, EF300, E5700, EF570, and EF600. You can also perform batch operations on selected storage arrays.

Unified Manager is installed on a management server along with the Web Services Proxy. To access Unified Manager, you open a browser and enter the URL pointing to the server where the Web Services Proxy is installed.

Unified Manager offers a variety of management features, including:

 Discover storage arrays	Find and add the storage arrays you want to manage in your organization's network. You can then view the status of all storage arrays from a single page.
 Launch	Open an instance of System Manager to perform individual management operations on a particular storage array.
 Import Settings	Perform a batch import from one storage array to multiple arrays, including settings for alerts, AutoSupport, and directory services.
 Mirroring	Configure asynchronous or synchronous mirrored pairs between two storage arrays.

 Manage Groups	Organize storage arrays into groups for easier management.
 Upgrade Center	Upgrade the SANtricity OS software on multiple storage arrays.
 Certificates	Create certificate signing requests (CSRs), import certificates, and manage existing certificates for multiple storage arrays.
 Access Management	Configure user authentication that requires users to log in to Unified Manager with assigned credentials.

Supported browsers and operating systems

SANtricity software supports several types of browsers and operating systems.

Browsers

The following browsers and versions are supported.

Browser	Minimum version
Google Chrome	89
Mozilla Firefox	80
Safari	14
Microsoft Edge	90



For Unified Manager, the Web Services Proxy must be installed and available to the browser.
For more information, see [SANtricity Web Services Proxy overview](#)

Operating systems

The following operating systems and versions are supported.

Operating system	Minimum version/architecture
Red Hat Enterprise Linux (RHEL)	7.x, 8.x / 64-bit
SuSE Linux Enterprise Server (SLES)	12.x, 15.x / 64-bit
Oracle Linux (OL)	7.x, 8.x / 64-bit
Windows Server	2016, 2019, 2022 / 64-bit
Ubuntu	18.04, 20.04 / 64-bit

System Manager setup

Access System Manager

To access the System Manager user interface, you point a browser to the controller's IP address. A setup wizard helps you get started with system configuration.

Before you begin

- Install and configure your hardware, as described in one of the express configuration guides:
 - [Linux express configuration](#)
 - [VMware express configuration](#)
 - [Windows express configuration](#)
- Configure a management station that meets the following requirements:
 - Connected to a network that is 1 Gbps or faster.
 - Attached to the same subnet as the storage management ports.
 - Used as a separate station, rather than a host (I/O attached) used for data management.
 - Set up for out-of-band management, in which a storage management station sends commands to the storage system through the Ethernet connections to the controller.
 - Set up with a supported browser. See [Supported browsers and operating systems](#).

Steps

1. From your browser, enter the following URL: `https://<IPAddress>`

`IPAddress` is the address for one of the storage array controllers.

The first time System Manager is opened on an array that has not been configured, the Set Administrator Password prompt appears.

2. Enter the System Manager password for the admin role in the Set Administrator Password and Confirm Password fields, and then click **Set Password**.

The Setup wizard launches on first-time login.

3. Use the Setup wizard to perform the following tasks:

- **Verify hardware (controllers and drives)** — Verify the number of controllers and drives in the storage array. Assign a name to the array.
- **Verify hosts and operating systems** — Verify the host and operating system types that the storage array can access.
- **Accept pools** — Accept the recommended pool configuration for the express installation method. A pool is a logical group of drives.
- **Configure alerts** — Allow System Manager to receive automatic notifications when a problem occurs with the storage array.
- **Enable AutoSupport** — Automatically monitor the health of your storage array and have dispatches sent to technical support.

For more information on the Setup Wizard, see [Setup Wizard overview](#).

Setup wizard overview

Use the Setup wizard to configure your storage array, including hardware, hosts, applications, workloads, pools, alerts, and AutoSupport.

First-time setup

When you open System Manager for the first time, the Setup wizard launches. The Setup wizard prompts you to perform basic configuration tasks, such as naming your storage array, configuring your hosts, selecting applications, and creating pools of storage.



Before continuing with the initial setup, go to the Upgrade Center (**Support > Upgrade Center**) and make sure your SANtricity OS software is up-to-date. If needed, upgrade to the latest version and refresh your browser to continue the setup. For more information, see [Upgrade Center overview](#).

If you cancel the wizard, you cannot manually relaunch it. The wizard automatically relaunches when you open System Manager or refresh your browser and *at least one* of the following conditions is met:

- No pools and volume groups are detected.
- No workloads are detected.
- No notifications are configured.

Terminology

The Setup wizard uses the following terms.

Term	Description
Application	An application is a software program, such as Microsoft SQL Server or Microsoft Exchange.
Alert	Alerts notify administrators about important events that occur on the storage arrays. Alerts can be sent via email, SNMP traps, or syslog.

Term	Description
AutoSupport	The AutoSupport feature monitors the health of a storage array and sends automatic dispatches to technical support.
Hardware	The storage system hardware includes storage arrays, controllers, and drives.
Host	A host is a server that sends I/O to a volume on a storage array.
Object	An object is any logical or physical storage component. Logical objects include volume groups, pools, and volumes. Physical objects include the storage array, array controllers, hosts, and drives.
Pool	A pool is a set of drives that is logically grouped. You can use a pool to create one or more volumes accessible to a host. (You create volumes from either a pool or a volume group.)
Volume	<p>A volume is a container in which applications, databases, and file systems store data. It is the logical component created for the host to access storage on the storage array.</p> <p>A volume is created from the capacity available in a pool or a volume group. A volume has a defined capacity. Although a volume might consist of more than one drive, a volume appears as one logical component to the host.</p>
Volume group	A volume group is a container for volumes with shared characteristics. A volume group has a defined capacity and RAID level. You can use a volume group to create one or more volumes accessible to a host. (You create volumes from either a volume group or a pool.)
Workload	A workload is a storage object that supports an application. You can define one or more workloads, or instances, per application. For some applications, the system configures the workload to contain volumes with similar underlying volume characteristics. These volume characteristics are optimized based on the type of application the workload supports. For example, if you create a workload that supports a Microsoft SQL Server application and then subsequently create volumes for that workload, the underlying volume characteristics are optimized to support Microsoft SQL Server.

FAQs

What if I don't see all of my hardware components?

If you do not see all your hardware components on the Verify Hardware dialog box, it could mean that a drive shelf is not connected correctly, or that an incompatible shelf is installed in the storage array.

Verify that all drive shelves are connected correctly. If you are uncertain about which drive shelves are compatible, contact technical support.

What if I don't see all of my hosts?

If you do not see your connected hosts, then automatic detection has failed, the hosts are improperly connected, or no hosts are currently connected.

You can configure hosts later, once you are done with the setup. You can create hosts either automatically or manually as follows:

- If you installed the Host Context Agent (HCA) on your hosts, the HCA pushes the host configuration information to the storage array. System Manager automatically configures these hosts and displays them in the Initial Setup wizard. (HCA does not apply to NVMe over Fabrics hosts.)
- You can manually create hosts and associate the appropriate host port identifiers by going to **Storage > Hosts**. Hosts that have been created manually also display in the **Initial Setup** wizard.
- The target and host must be configured for the host port type (for example, iSCSI or NVMe over RoCE), and a session to the storage established before automatic detection will work.

How does identifying applications help me manage my storage array?

When you identify applications, System Manager automatically recommends a volume configuration that optimizes storage based on application type.

Optimizing volumes by application can make data storage operations more efficient. Characteristics such as I/O type, segment size, controller ownership, and read and write cache are included in the volume configuration. In addition, you can view performance data by application and by workload to assess the latency, IOPS, and MiB/s of applications and their associated workloads.

What is a workload?

For some applications in your network, such as SQL Server or Exchange, you can define a workload that optimizes storage for that application.

A workload is a storage object that supports an application. You can define one or more workloads, or instances, per application. For some applications, the system configures the workload to contain volumes with similar underlying volume characteristics. These volume characteristics are optimized based on the type of application the workload supports. For example, if you create a workload that supports a Microsoft SQL Server application and then subsequently create volumes for that workload, the underlying volume characteristics are optimized to support Microsoft SQL Server.

During volume creation, the system prompts you to answer questions about a workload's use. For example, if you are creating volumes for Microsoft Exchange, you are asked how many mailboxes you need, what your average mailbox capacity requirements are, and how many copies of the database you want. The system uses this information to create an optimal volume configuration for you, which can be edited as needed.

How do I configure the delivery method for AutoSupport?

To access configuration tasks for AutoSupport delivery methods, go to **Support > Support Center**, and then click the **AutoSupport** tab.

The following protocols are supported: HTTPS, HTTP, and SMTP.

How do I know if I should accept the recommended pool configuration?

Whether you accept the recommended pool configuration depends on a few factors.

Determine the type of storage that is best for your requirements by answering the following questions:

- Do you prefer multiple pools of smaller capacities, rather than the largest pools possible?
- Do you prefer RAID volume groups over pools?
- Do you prefer to manually provision your drives, rather than having a configuration recommended for you?

If you answered Yes to any of these questions, consider rejecting the recommended pool configuration.

System Manager has not detected any hosts. What do I do?

If you do not see your connected hosts, then automatic detection has failed, the hosts are improperly connected, or no hosts are currently connected.

You can configure hosts later, once you are done with the setup. You can create hosts either automatically or manually as follows:

- If you installed the Host Context Agent (HCA) on your hosts, the HCA pushes the host configuration information to the storage array. System Manager automatically configures these hosts and displays them in the **Initial Setup** wizard. (HCA does not apply to NVMe over Fabrics hosts.)
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- The target and host must be configured for the host port type (for example, iSCSI or NVMe over RoCE), and a session to the storage established before automatic detection will work.

Unified Manager setup

Install Unified Manager

Unified Manager is included with the Web Services Proxy, which is a RESTful API server installed separately on a host system to manage NetApp E-Series storage systems.

To install the Web Services Proxy and Unified Manager, see the following instructions in the E-Series and SANtricity documentation center:

1. [Review installation and upgrade requirements](#)
2. [Download and install Web Services Proxy file](#)

Access Unified Manager

After you install the Web Services Proxy, you can access Unified Manager to manage multiple storage systems in a web-based interface.



For supported browsers, see [Supported browsers and operating systems](#).

Steps

1. Open a browser and enter the following URL:

```
http[s]://<server>:<port>/um
```

In this URL, <server> represents the IP address or FQDN of the server where the Web Services Proxy is installed, and <port> represents the listening port number (defaults to 8080 for HTTP or 8443 for HTTPS).

The Unified Manager login page opens.

2. For first-time login, enter `admin` for the user name, and then set and confirm a password for the admin user.

The password can include up to 30 characters.

For further information about users and passwords, see [How Access Management works](#).

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