Seagate® Enterprise Storage Manager Software

User Guide

NWD6203
NWD6301
XP6209
XP6210
XP6302
XP6500

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August 2015

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Seagate Technology Support Services

For Nytro Support, visit: http://www.seagate.com/products/solid-state-flash-storage/accelerator-cards/

For information regarding online support and services, visit: http://www.seagate.com/about/contact-us/technical-support/

Available services include:

- Presales & Technical support
- Global Support Services telephone numbers & business hours
- Authorized Service Centers

For information regarding Warranty Support, visit: http://www.seagate.com/support/warranty-and-replacements/

For information regarding data recovery services, visit: http://www.seagate.com/services-software/data-recovery-services/

For Seagate OEM and Distribution partner portal, visit: http://www.seagate.com/partners

For Seagate reseller portal, visit: http://www.seagate.com/partners/my-spp-dashboard/

Chapter 1: Enterprise Storage Manager Software Overview

The Seagate® Enterprise Storage Manager software is a web-based application that provides monitoring and management functions for the Seagate Nytro Application Acceleration products. This document describes how to configure, monitor, and maintain the Nytro controller by using the Enterprise Storage Manager™ application.
The Seagate Enterprise Storage Manager software helps you to perform the following tasks:

- Monitor the health of Nytro products. The Enterprise Storage Manager graphical user interface (GUI) makes it easy for you to monitor system performance and storage configuration.
- View the status of Nytro products on the server that you are monitoring through their corresponding status icons.
- Set up alerts for offline monitoring of your system.
- Create storage configurations on Nytro Flash cards (only on Flash cards that support configuration creation)

1.1 Supported Web Browsers and Nytro Products

The following table provides the web browsers and Nytro products supported for the Enterprise Storage Manager software.

Supported Web Browsers	■ Windows Internet Explorer® 9.0 and later ■ Mozilla® Firefox® version 9.0 and later ■ Google Chrome® version 16.0 and later ■ Safari® version 5.0 and later
Supported Devices	■ NWD6203 ■ NWD6301 ■ XP6209 (2 TB only) ■ XP6210 ■ XP6302 (1.5 TB, 2 TB, and 4 TB) ■ XP6500

1.2 Graphical User Interface Icons

The following table shows the GUI icons used in the Enterprise Storage Manager software.

ICONS	DESCRIPTION
	About Seagate Enterprise Storage Manager Software and Component Order information in the Settings menu
	Account Settings
	Administered Server Settings
	Backplane
	Battery Back Up (BBU)

ICONS	DESCRIPTION
	Configured Good Drive (Online)
	Unconfigured Bad Drive (Offline)
	Contributing Drives
	Controller
	Performance Drill Down Graph
	Drive Full Disk Encryption (FDE) Locked
	Drive FDE Unlocked
	Drive Foreign Configured
	Drive Foreign Hot Spare
	Drive Foreign Unconfigured
	Drive Group
	Drive Group Encrypted
	Drive Group Nonencrypted
	Drive Nonimportable
	Drive Nonimportable
	Drive Transition
	Drive Unsupported
	Email Server Settings
	Enclosure
	Enclosure Fan
	Enclosure Power Supply
	Enclosure Temperature
	Enclosure Voltage Sensors
	Foreign Unconfigured Good

ICONS	DESCRIPTION
	Events
	Global Alert Notification
	Logical View
	Logout
	Managed Server
	Nytro Virtual Drive
	Operation
	Physical View
	Server Deep Dive
	Server Summary
	Settings
	Span
	Spanned Drive Group
	Solid State Drive (SSD) Configured Good (Online)
	Solid State Drive (SSD) Configured Bad (Offline)
	SSD Unconfigured Good
	Unconfigured Good Drive
	Virtual Drive
	Virtual Drive Blocked
	Virtual Drive Free Capacity
	Virtual Drive Total Free Capacity

Chapter 2: Performing the Initial Setup

After you successfully log on to the Seagate Enterprise Storage Manager software, you must perform certain initial setup tasks before you start using the application. If you skip these tasks, the Seagate Enterprise Storage Manager software prompts you to perform the initial setup every time you log on.

2.1 Login Information

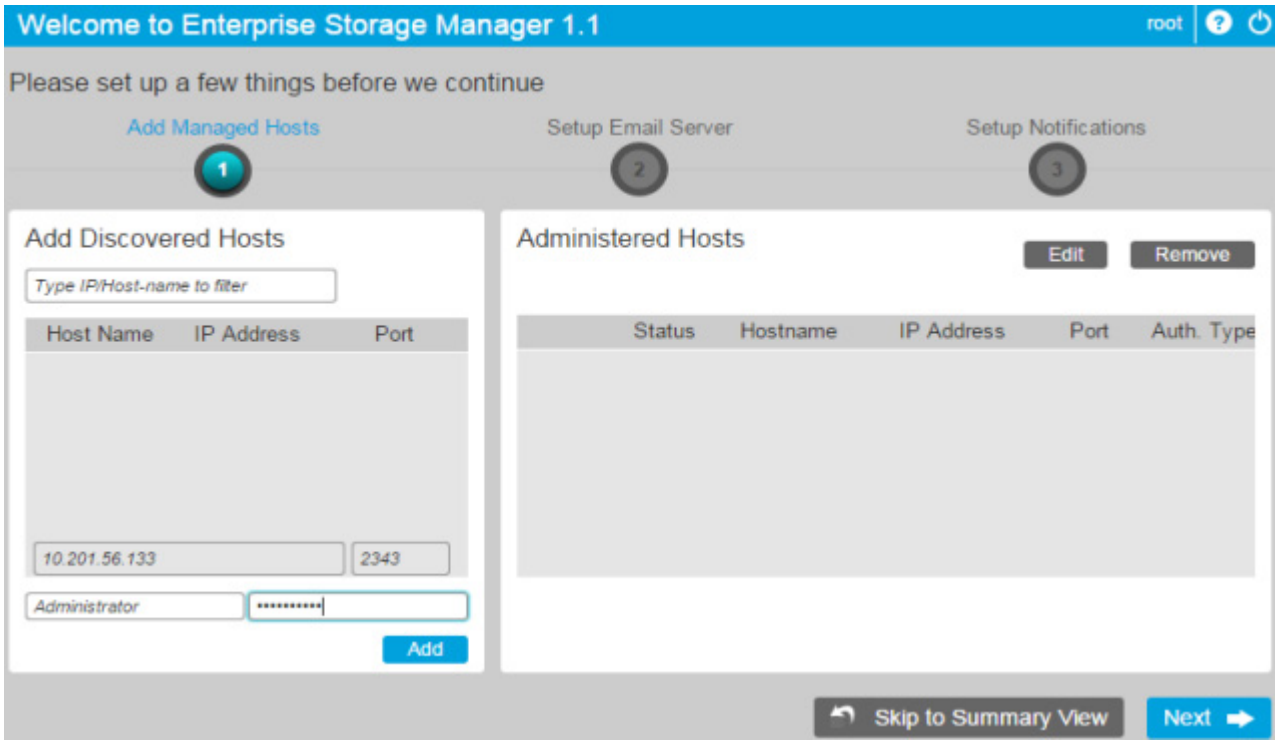
In case of host login, login ID is the user name and password of any of the user accounts that are configured in the system. In case of LDAP login, the login ID is the user name and password of any of the user accounts that are configured that are configured in the domain.

2.2 Adding Managed Hosts

The Enterprise Storage Manager software permits you to set up a list of hosts to monitor and manage. During installation, you can configure any one of the user accounts as a super user, which assigns special privileges to the account that includes configuring managed hosts, setting up email/SMTP configurations, and configuring alert notifications. If you have the super user privileges, perform the following steps to add the managed hosts.

1. Click **Setup** in the **Welcome** page.
   The **Add Managed Hosts** page appears.

Figure 1 Add Managed Hosts

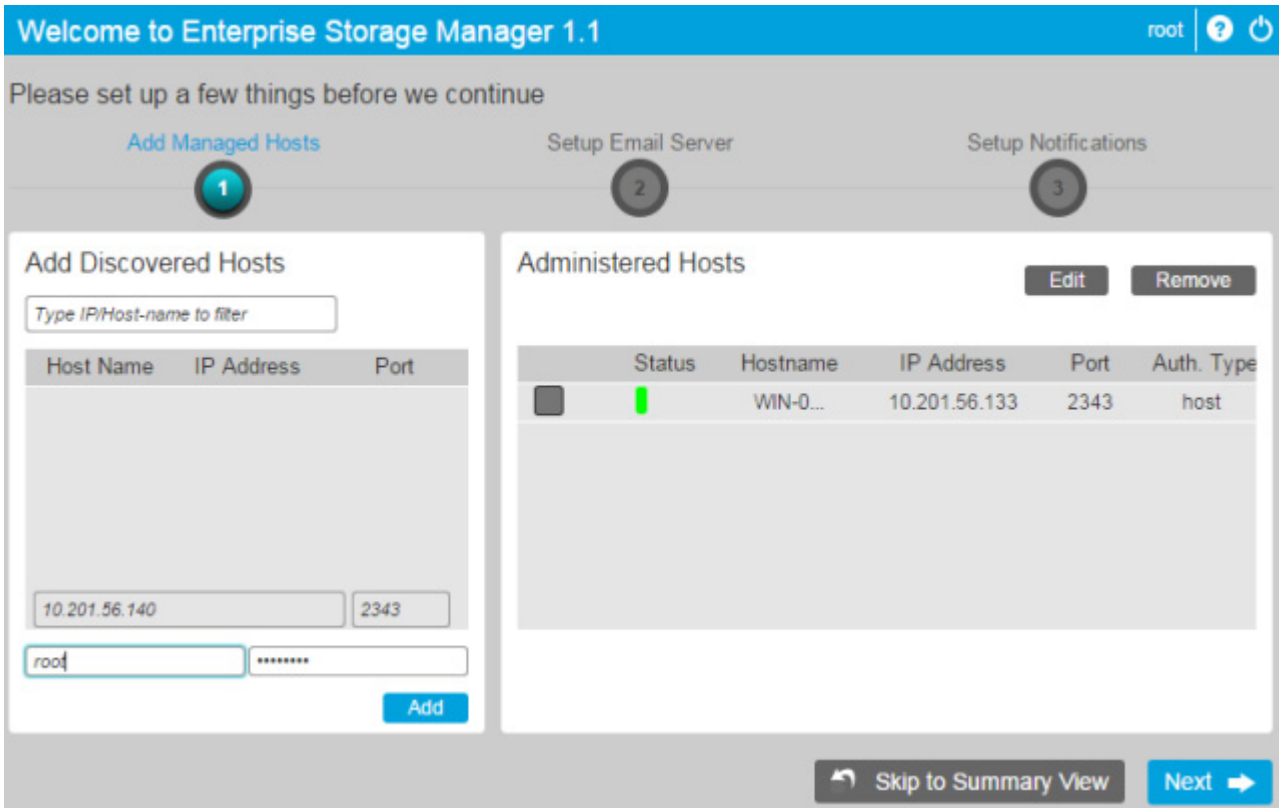


NOTE To perform the initial setup tasks at a later stage and access the **Server Summary** page directly, click **Skip to Summary View**.

2. In the **Add Discovered Hosts** panel, select a host from the list of discovered hosts, and click **Add**. Alternatively, you can manually enter the host IP address and the port details to add the host.

   The **Selected Hosts** panel lists the selected hosts.

Figure 2 Selected Hosts



NOTE The regular users can view only those hosts that the super user has added.

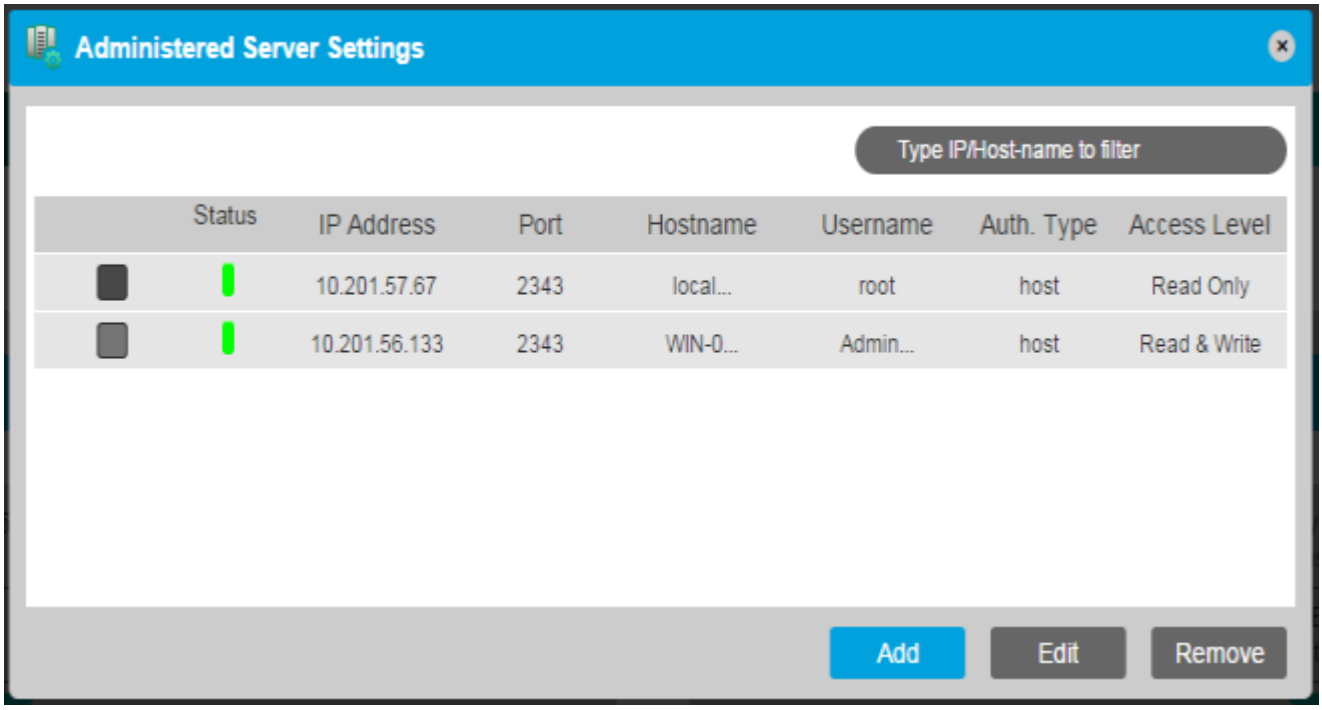
3. In the **Selected Hosts** panel, select a host, which you want to add.

NOTE You can add multiple hosts simultaneously only if the hosts have the same authentication details.

4. Type the user name and the password for the host in the **Username** and **Password** text boxes, respectively.
5. Click **Add Hosts**.

   A page showing the details of the added hosts, such as status, IP address, port, hostname, user name, authentication type, and access level, appears.

Figure 3 Added Host Status



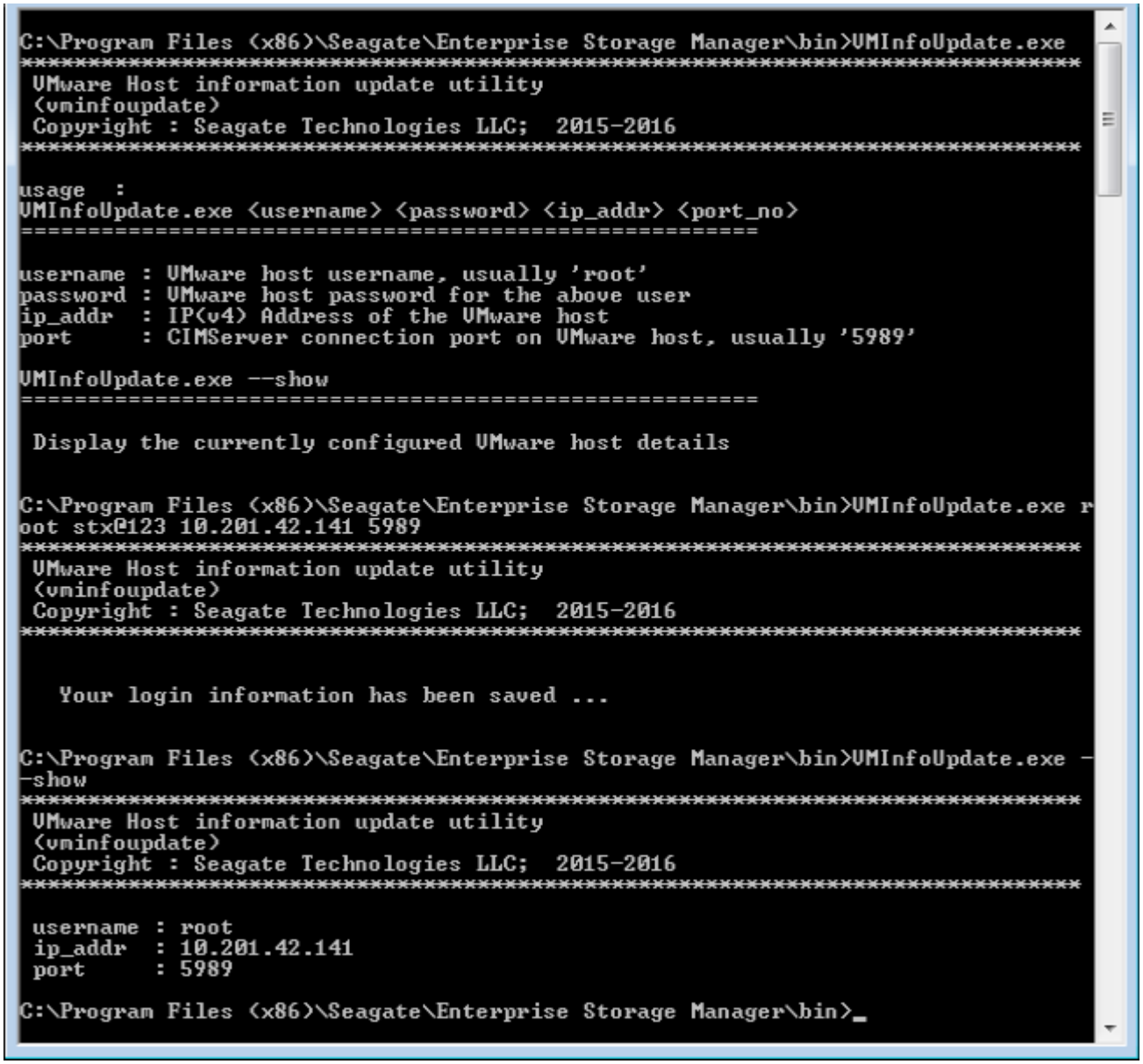
6. Click **Next** to set up the email server (see Section 2.3, Setting Up the Email Server).

2.2.1 Adding a VMware Managed Host

You can add a VMware host during Enterprise Storage Manager software installation. If you have missed it, perform the following steps to add a VMware host.

1. Run the VMInfoUpdate utility at the command prompt.
   The following figure shows an example of the VMInfoUpdate utility on a Windows host.

Figure 4 VMInfoUpdate Utility



NOTE On the Windows operating system, make sure that you have installed the Microsoft Visual C++ 2008 Redistributable Package before you run the VMInfoUpdate utility. You can download this package from the Microsoft website.

NOTE This utility is in the `bin` folder of the Enterprise Storage Manager installation directory.

2. Enter the following VMware details:
   — IP Address
   — Port
   — User Name/Password

NOTE You can run the utility without passing any parameters. This shows the help page for the utility.

3. Open the `kirk.conf` in the `conf` folder of the installation directory.
4. Set the value of the `esx_mode` field to `1`.
5. Restart the Enterprise Storage Manager Service.
6. Start the Seagate Enterprise Storage Manager software to see the VMware-related information.

2.2.2 Interchanging Between Managing Native Hosts and VMware Host

At any point of time, the Enterprise Storage Manager software can manage either multiple native hosts or a single VMware host. The **esx_mode** field value in the `kirk.conf` file controls this behavior. If the **esx_mode** field is set to a value of 0, the native hosts are managed. If the **esx_mode** field is set to a value of 1, the VMware host is managed.

2.2.3 Adding Discovered Host Panel

For the other hosts to be discovered, you must install *OpenSLP* 2.0.0 in all of the hosts that are running the Enterprise Storage Manager software.

2.2.4 Adding Host Pane

For the other hosts to be discovered, you must install *OpenSLP* 2.0.0 in all of the hosts that are running the Enterprise Storage Manager software.

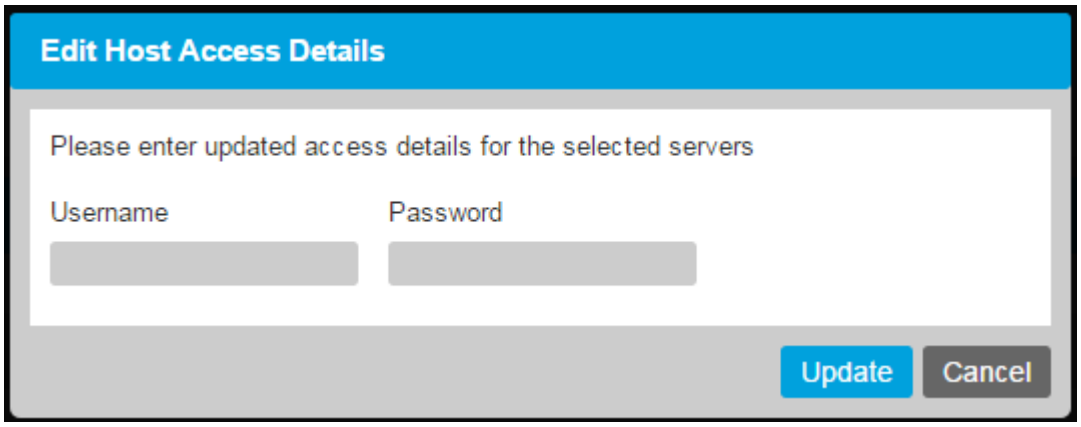
2.2.5 Editing Host Access Details

To edit the access details of a managed host, perform the following steps:

1. In the **Add Managed Hosts** page, select the managed host whose access details you want to edit.
2. Click **Edit**.

The **Edit Host Access Details** dialog appears.

Figure 5 Edit Host Details



3. Type the new user name and password in the **Username** and **Password** text boxes, respectively.
4. Click **Update**.

2.2.6 Removing Managed Hosts

To remove any of the managed hosts, perform the following steps.

1. In the **Add Managed Hosts** page, select the managed hosts that you want to remove.
   The **Confirm Deletion** dialog appears, which prompts you to confirm the deletion.
2. Click **Remove**.

2.3 Setting Up the Email Server

NOTE You can set up the SMTP server details only if you have super user privileges.

1. In the **Setup Email Server** page, type the SMTP host name and port number in the **SMTP Host** and the **Port** text boxes, respectively.
2. Select the **Use SSL Encryption** check box if you want to establish a secured connection between the web browser and the server.
3. If on your SMTP host, the authentication mechanism is working and if you want to allow this feature on the The Enterprise Storage Manager software, select the **Authentication** check box.
4. Type the user name and password in the **Username** and **Password** text boxes, respectively.

NOTE This step is applicable only if you have selected the **Authentication** check box.

5. Type an email address to send a test email from the specified server, and click **Send Test Mail**.

NOTE A pop-up message appears, which indicates that the test email was sent successfully. If the Enterprise Storage Manager software cannot send the test email to the specified email address, an error message appears.

6. Confirm whether you received the test email from the SMTP server.
7. Click **Next** to set up event notifications (see Section 2.4, Setting Up the Event Notifications).
8. If you do not want to receive any email server notifications, select **Disable Email Server Notifications**.

2.4 Setting Up the Event Notifications

The Enterprise Storage Manager software lets you add email addresses for whom you want receive the event notifications. It also provides you with an option to select the event severity for which you want to receive the email notifications. Each email notification has one of the following severity levels that indicates the severity of the event:

- **Information**: No user action is necessary.
- **Warning**: Some components might be close to a failure point.
- **Critical**: A component has failed, but the system has not lost data.
- **Fatal**: A component has failed, and data loss has occurred or might occur.

2.4.1 Setting Up the Email Notifications

Perform the following steps to set up the email addresses and event notifications.

1. In the **Setup Notifications** page, type the primary and secondary email addresses in the **Email Address** and **Email Address (Secondary)** text boxes, respectively.

NOTE The secondary email address is optional.

2. Select the severity levels for which you want to receive email notifications. For example, select **Warning** and **Critical**.
3. Set up the global alerts (see Section 2.4.2, Setting Up the Global Alert Notifications).

2.4.2 Setting Up the Global Alert Notifications

The Enterprise Storage Manager software reports server events for all of the hosts that are monitored. The  icon in the **Server Summary** page shows the consolidated number of critical alerts for all of the managed hosts. These alerts are known as global alerts. By default, the Enterprise Storage Manager software shows global alerts with **Critical** and **Fatal** severity levels. Perform the following steps to change this settings.

1. In the **Setup Notifications** page, select the severity levels for which you want to receive global alerts. For example, select **Warning** and **Critical**.

   The confirmation message in the following page indicates that the initial setup was successful.
2. Click **Next** to set up the configuration.
3. To access the **Server Summary** page, click **Go to Dashboard** on the **Initial SetUp Confirmation** dialog.

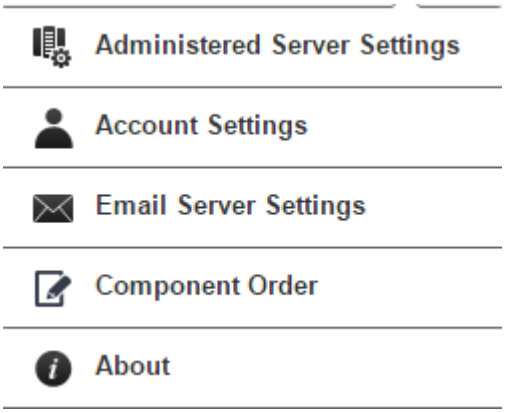
2.4.3 Using the Settings Option

You can also edit the host access details, set up the email notifications or event notifications, or remove the managed hosts by using the settings () option on the main window.

1. Click  icon on the Enterprise Storage Manager window.

The settings option list shows.

Figure 6 Settings Options



2. Select the operation that you want to perform.

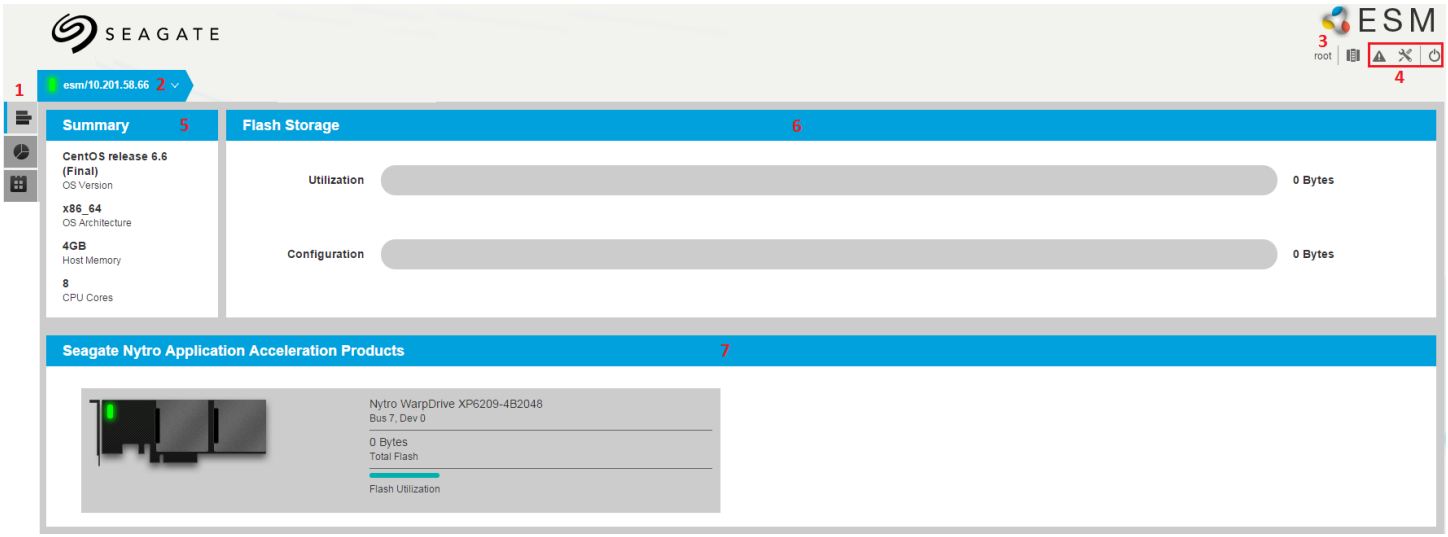
Chapter 3: Server View

The **Server** view provides an overview of the current hosts and the devices connected to the Enterprise Storage Manager software. The **Server Summary** page is the default landing page in the Enterprise Storage Manager software.

3.1 Server Summary Page

The **Server Summary** page shows the summary of the host and the devices attached to it. The following figure shows this page.

Figure 7 Server Summary Page



The following table describes the components in the **Server Summary** page.

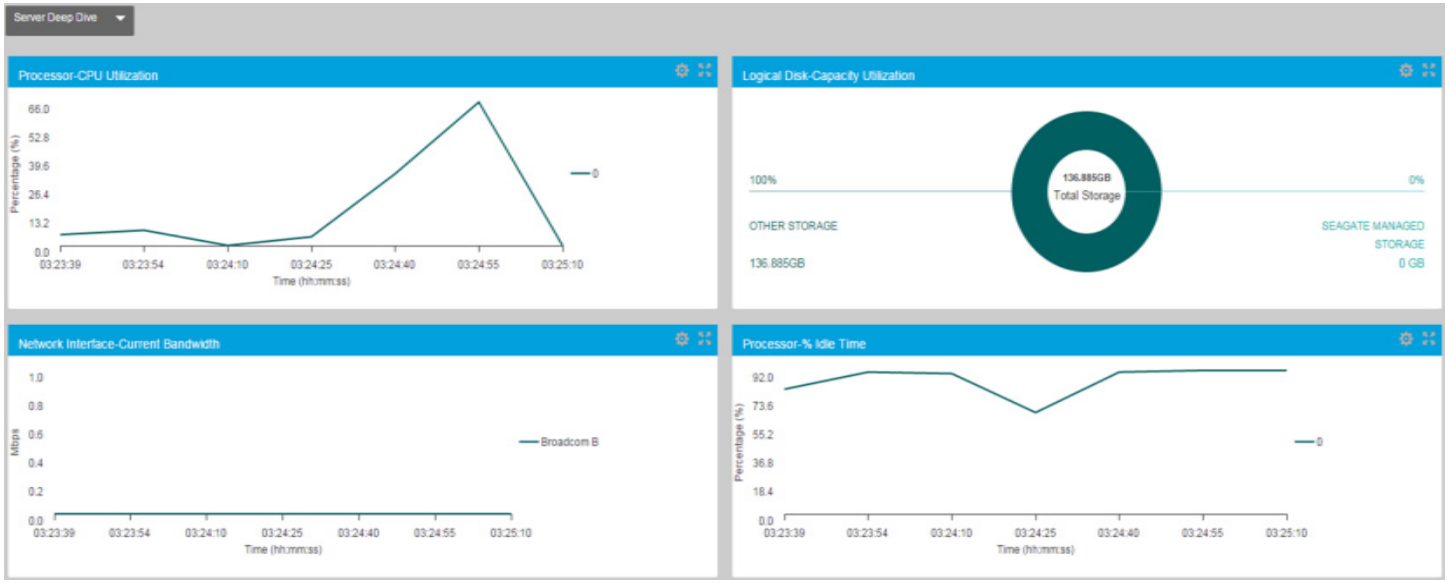
CALLOUT	DESCRIPTION
1	**Left tab panel**: Contains tabs that help you to navigate to the following pages in the **Server** view: ■ : **Server Summary** page (the current page, the default page). ■ : **Server Deep Dive** page, which lets you monitor the host performance. ■ : **Server Events**, which lets you monitor the device activities in the form of event messages. **NOTE** The Performance Collection Management page lets you enable or disable the performance collection on the Nytro cards.The **Performance Collection Management** tab appears only if the host has at least one Nytro card and if the Nytro card supports performance monitoring.
2	**Breadcrumb navigation** – Helps you to traverse between the various views. For example, you can traverse from the **Server** view to any of the Nytro products view. The breadcrumbs provide a trail for you to follow back to the starting point or the entry point. It also shows the title and the status icon for every device that you are viewing.
3	Displays the name of the user.
4	**Toolbar** – The description follows: ■ : Lists the managed servers that you are monitoring. The list lets you switch to any server. The color-coded icons (red and green) indicate the consolidated status of all the Seagate Nytro Application Accelerated products that are connected to the server. If one of the products is down, the consolidated status appears as red. ■ : Indicates the consolidated number of unread global alerts for all of the servers and devices that are monitored. Click the alert icon to view the servers that are monitored and the corresponding number of unread alerts for each server. You can select a server and navigate directly to the *Server Events* page to view the events that occurred on that server. ■ : Lets you perform the following tasks: — : Add managed hosts, edit managed host credentials, and remove the managed hosts. — : Set up email accounts and event notifications. — : Set up the email server. — : Get information about the Enterprise Storage Manager software. — : View all of the physical components that are attached to the cards and their firmware, driver, or library details. For more information about performing these tasks, see Section 2, Performing the Initial Setup. ■ : Enterprise Storage Manager software context-sensitive help. ■ : Exit from the Enterprise Storage Manager software.
5	**Server Summary**: Briefly summarizes all of the server configurations, such as the operating system version, operating system architecture, host memory size, and number of CPU cores that are connected to the host.
6	**Server Storage**: Shows the used and unused space information for all of the cache volumes and the virtual drives that the SSDs create. It also shows the configured and unconfigured storage capacity of the drives.
7	**Seagate Nytro Application Acceleration Products**: Shows the configuration details of all of the Seagate Nytro products that are connected to the server. **NOTE** Click any of the Seagate Nytro products to navigate to its specific view.

3.2 Server Deep Dive Page

The **Server Deep Dive** page lets you monitor the server performance. It provides real-time performance information in a graphical format. The Enterprise Storage Manager software updates these graphs every 10 seconds.
The **Server Deep Dive** page displays the following graphs:

- **Processor-CPU Utilization** – Shows the percentage of time during the sample interval that the processor was idle.
- **Logical Disk-Capacity Utilization** – Shows the unallocated space on the disk drive in megabytes.
- **Network Interface-Current Bandwidth** – Shows the bandwidth capacity of the network adapter.
- **Processor-% Idle Time** – Shows the percentage of time during the sample interval that the processor was idle.

Figure 8 Server Deep Dive Page



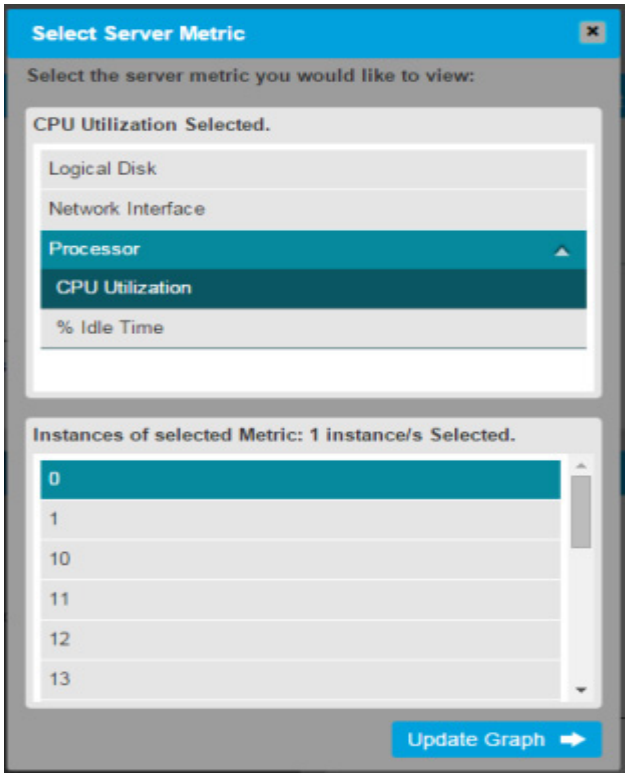
NOTE Click the icon to zoom in and the icon to zoom out the graphs.
Alternatively, double-click a graph to zoom in and zoom out. When you zoom in the graph, it opens in a new window.

3.2.1 Creating a Custom View

You can customize the graphs in the **Server Deep Dive** page and save them as custom views. Perform the following steps to create custom views.

1. Click the icon in the graph. For example, click the icon in the **Processor-% Idle Time** graph.
   The **Select Server Metric** dialog opens as shown in the following figure.
2. Select a server metric to monitor. For example, in the **Processor** category, select the **% Idle Time** metric.
3. Select the logical processor instance. For example, select **1** to monitor the logical processor 1.

Figure 9 Select Server Metric



4. Click **Update Graph**.
   The graph is updated.
5. Click **Save Custom View**.
   The **Save Custom View** dialog appears.
6. Enter a name for the custom view, and click **Save**.
   The Seagate Enterprise Storage Manager software creates the custom view and lists it in the drop-down list in the **Server Deep Dive** page.

3.2.2 Deleting a Custom View

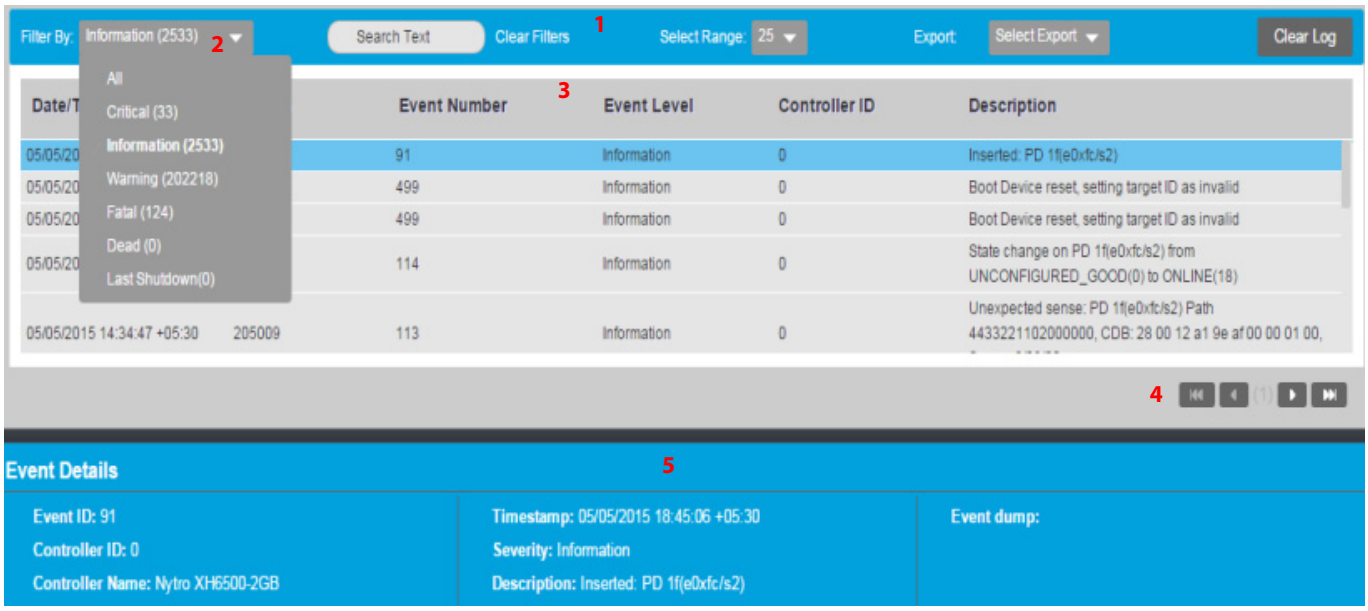
Perform the following steps to delete a custom view.

1. From the drop-down list in the **Server Deep Dive** page, select the custom view that you want to delete.
2. Click **Remove Custom View**.
   The **Confirm Deletion** dialog appears.
3. Click **Delete**.

3.3 Server Events

The Seagate Enterprise Storage Manager software monitors the activity and performance of the host and all of the Seagate Application Acceleration products attached to it. The following figure shows the **Server Events** page, and the following table describes the components in the page.

Figure 10 Server Events Page



Callout	Description
1	Performs the following tasks: ■ Filter By event logs ■ Search event logs ■ Select the number of events to be displayed in a page ■ Export event logs ■ Select Export into a desired format ■ Clear the old event logs
2	Filters the event logs based on the following categories: ■ All the event logs ■ Critical event logs ■ Information event logs ■ Warning event logs ■ Fatal ■ Dead ■ Last Shutdown
3	Lists the event logs. Each entry has the following categories: ■ A sequence number ■ An event number ■ An event level that indicates the severity of the event ■ A date/time ■ A controller ID ■ A brief description of the event
4	Navigates through the event log pages.
5	Provides additional information about the selected event.

3.3.1 Filtering Event Logs

Perform the following step to filter the events.

1. Select a severity level in the **Filter By** list. For example, select **Warning**.
   The page displays all the events matching the **Warning** severity level.

NOTE Click **Clear Filters** to clear the filter criterion.

3.3.2 Searching Event Logs

Perform the following step to search the event logs.

1. Enter the search text in the search text field. For example, enter *Power State*.
   The page shows all of the events whose description contains the keyword, *Power State*.

3.3.3 Sorting Event Logs

You can sort the event logs based on the sequence number, event number, event level, or date/time (excluding the event log description). By default, the event logs are sorted by date/time in chronological order. Perform the following step to sort the event logs.

1. In the **Event Logs** page, click the appropriate header name. For example, click **Event Number** to sort the event logs by the event number.

   A sort indicator icon appears next to the header name. The  icon indicates that sort order is ascending, and the  icon indicates that the sort order is descending.

3.3.4 Exporting Event Logs

You can export events from the **Event Logs** page to an `XML` file. Perform the following steps to export the event logs.

1. Click **Select Export**.

   A list with export options appears.
2. Select an option from the following list:
   - **All** – Exports all of the event logs.
   - **Current page** – Exports the event logs that are currently visible on the page.
   - **Current filter** – Exports the event logs with the current filter criterion applied.

   The event logs are saved in an `XML` file. The browser prompts for confirmation before downloading the `XML` file.
3. Click **OK** to save the `XML` file on the disk.

3.3.5 Clearing Events Logs

Perform the following steps to clear the event logs.

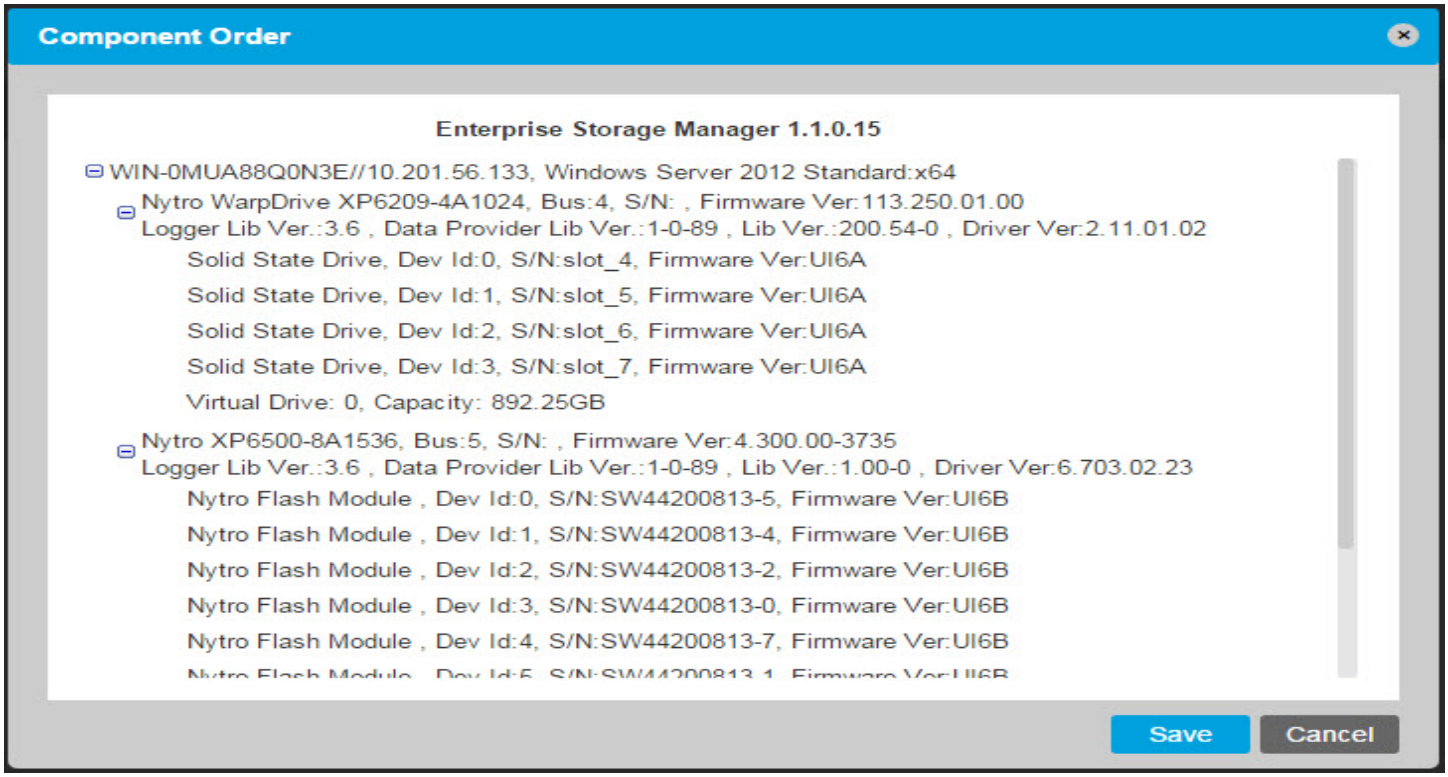
1. Click **Clear Log**.

   The **Warning** dialog appears with three options: **Export and Clear Log**, **Clear Log**, and **Cancel**.
2. Click **Export and Clear Log** if you want to export the logs prior to clearing them, or click **Clear Log** if you want to clear the event logs without exporting the logs.

3.3.6 Viewing and Saving Component Order

Under the **Settings** option, select **Component Order**, to view all of the physical components that are attached to the cards and their firmware, driver, or library details as shown in the following figure. This helps the engineering team debug the current configuration if any issue occurs on a setup. The **Save** operation on the window saves it to a `.csv` file that you can open offline and review.

Figure 11 Component Order



NOTE The `.csv` file contains the browser information in addition to the contents that are shown on the **Component Order** dialog.

3.4 Controller Views

There are two views available for the Controller:

Physical View: Shows the hierarchy of physical devices of the system, for example, the Controller and the attached Physical Drives.

Logical View: Shows the hierarchy of logical elements, for example, the Drive Groups and Virtual Drives in the system and their relationship with the physical devices present.

3.5 Monitoring the Drives

The Seagate Enterprise Storage Manager software lets you monitor the status of the drives.

3.5.1 Monitoring Drive Groups

You can monitor the status of the drive group, the virtual drive created using the entire drive group, and the contributing SSDs/Nytro Flash modules in the Nytro WarpDrive/Nytro XP6500 **Logical** view.
The color-coded icons indicate the status of the drive group. You can view information, such as the RAID level of the drive group.

Figure 12 Drive Group - Nytro WarpDrive

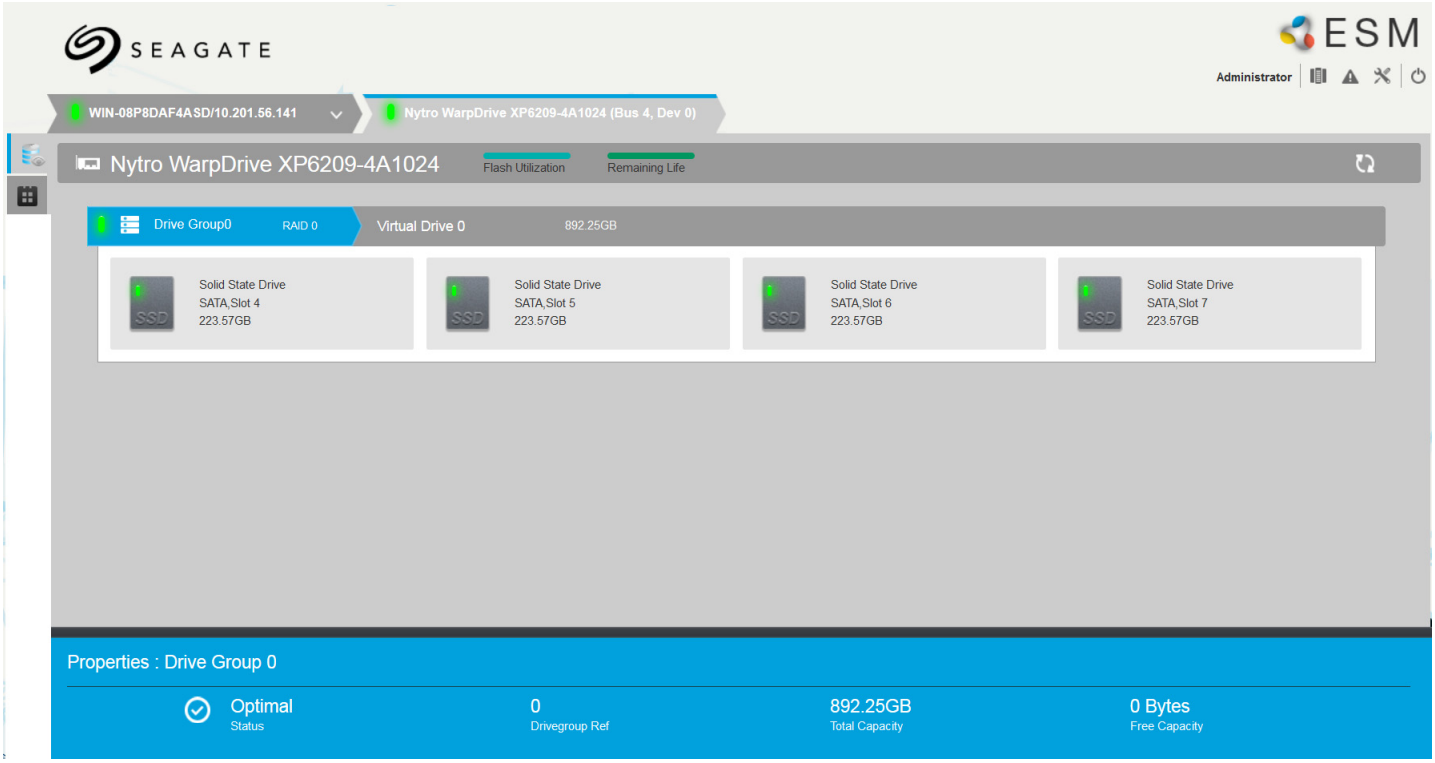
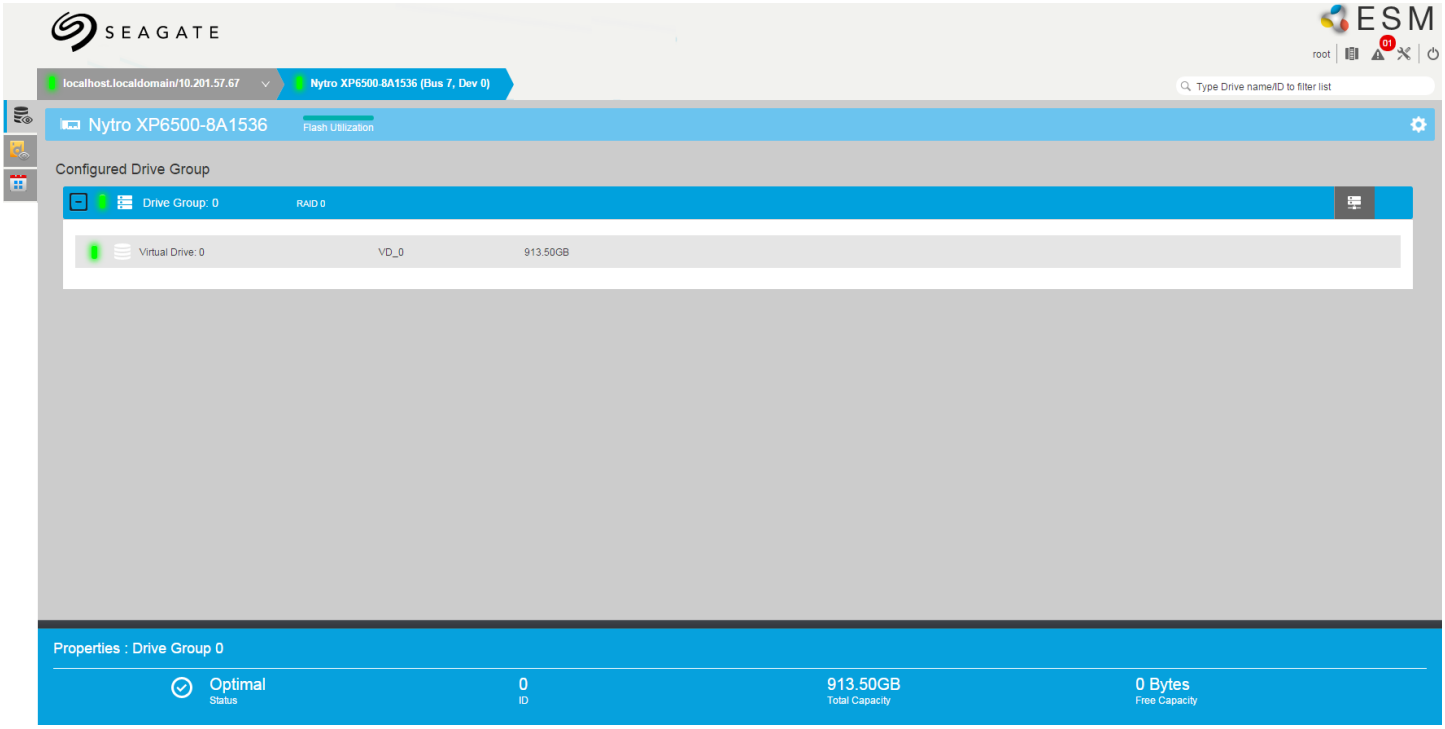


Figure 13 Drive Group-Nytro Flash Cards



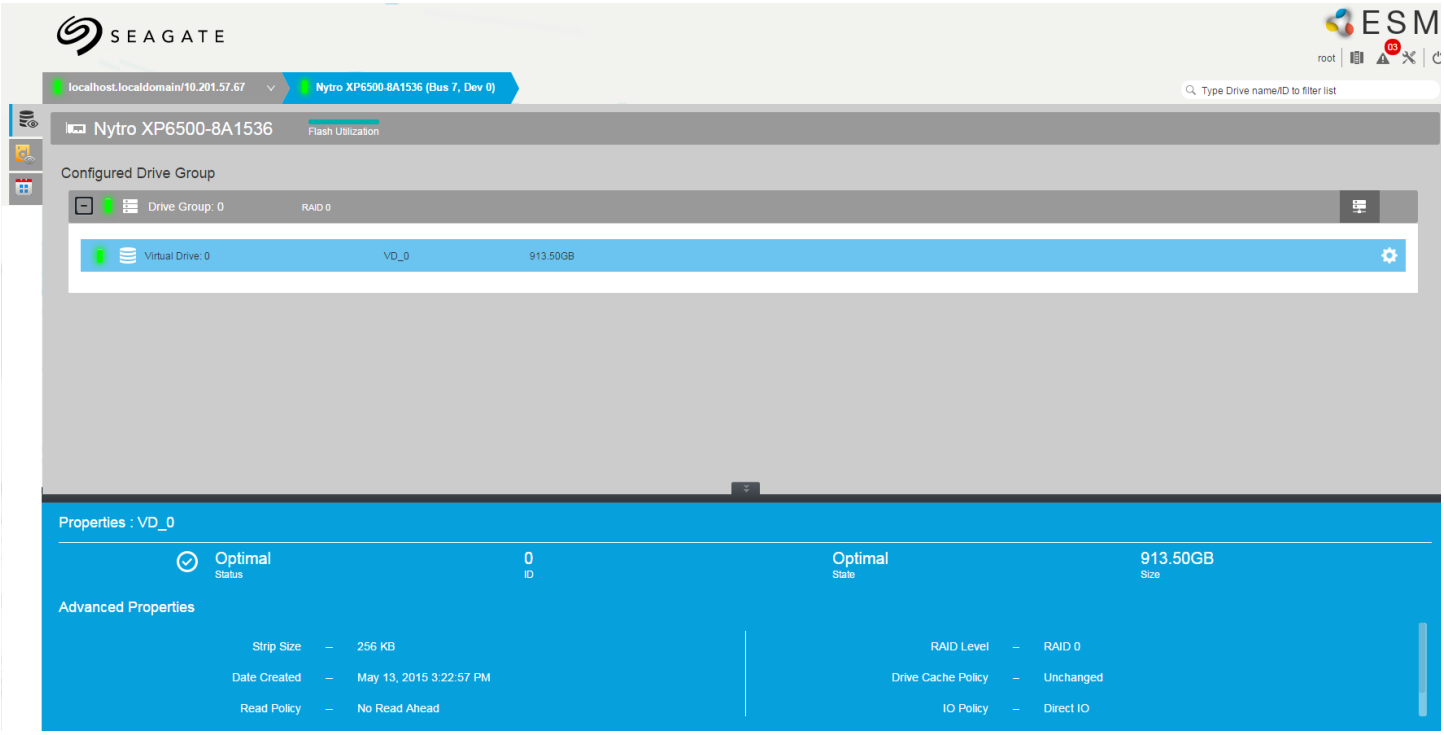
If you select a drive group, you can view the basic properties, such as the status, device ID, total capacity, and free capacity in the **Properties** panel. Click the icon in the **Properties** panel to view the advanced properties, such as the serial number, subvendor ID, host interface, and so on.

3.5.2 Monitoring Virtual Drives

You can monitor the status of the virtual drives in the Nytro WarpDrive\Nytro XP6500 **Logical** or **Physical** view.

If you select a virtual drive, you can view the basic properties, such as the status, device ID, state, and power status in the **Properties** panel. Click the icon in the **Properties** panel to view the advanced properties, such as the usage, drive group reference, and so on.

Figure 14 Virtual Drives

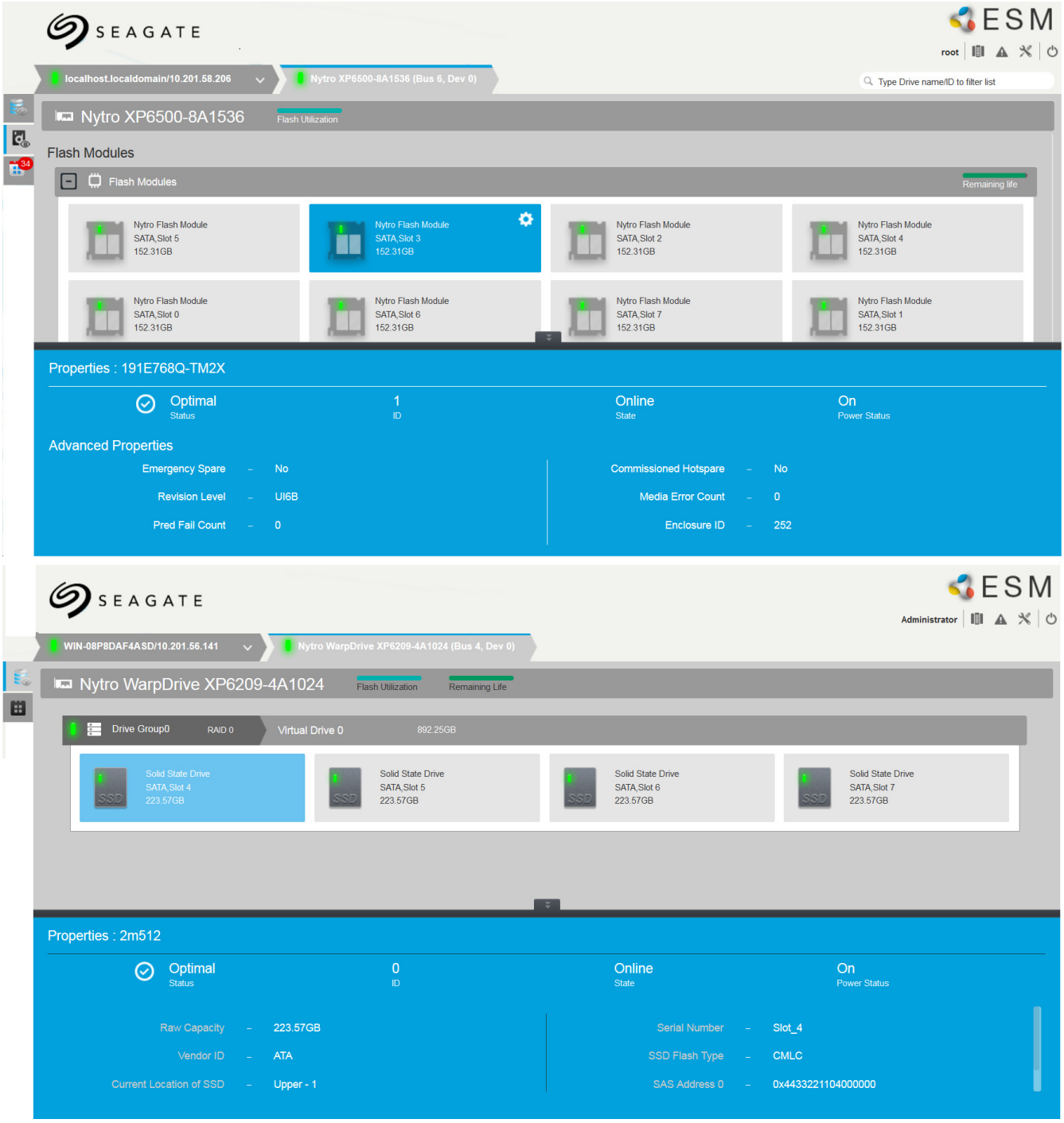


If you select a virtual drive, you can view the basic properties, such as the status, device ID, state, and power status in the **Properties** panel. Click the icon in the **Properties** panel to view the advanced properties, such as the usage, drive group reference, and so on.

3.5.3 Monitoring The Solid State Drives and Nytro Flash Modules

You can view the status of the solid state drives (SSDs) and Nytro Flash modules in the Nytro card **Logical** or **Physical** view. The color-coded icon indicates the status of the SSDs and Nytro Flash modules.

Figure 15 Status of SSDs and Nytro Flash Modules



If you select an Nytro Flash module, you can view the basic properties, such as the status, device ID, state, and power status in the **Properties** panel. Click the icon in the **Properties** panel to view the advanced properties.

Chapter 4: Nytro WarpDrive Card View

4.1 Nytro WarpDrive Overview

The **Nytro WarpDrive** view helps you perform the following operations:

- Monitor the status of the Nytro WarpDrive card
- Monitor the logical components of the Nytro WarpDrive card, such as the device groups and virtual drives
- Monitor the Nytro WarpDrive card event logs
- Monitor the drives attached to the Nytro WarpDrive card
- Update Firmware Package
- Formatting a Physical Drive
- Formatting the virtual drives

The Nytro WarpDrive **Logical** view is the default view.

Figure 16 Nytro WarpDrive Card View - Integrated RAID (IR) Mode

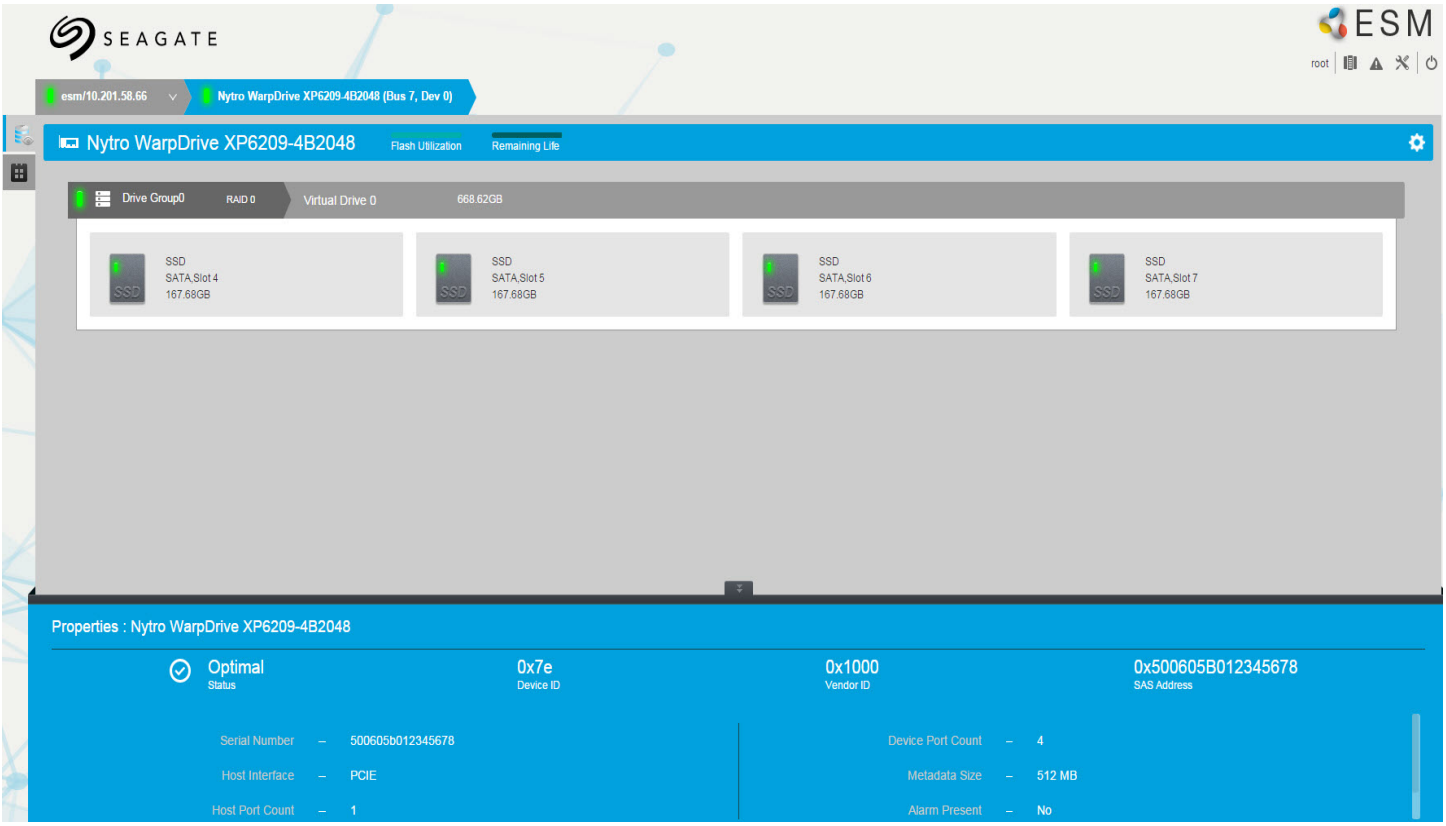
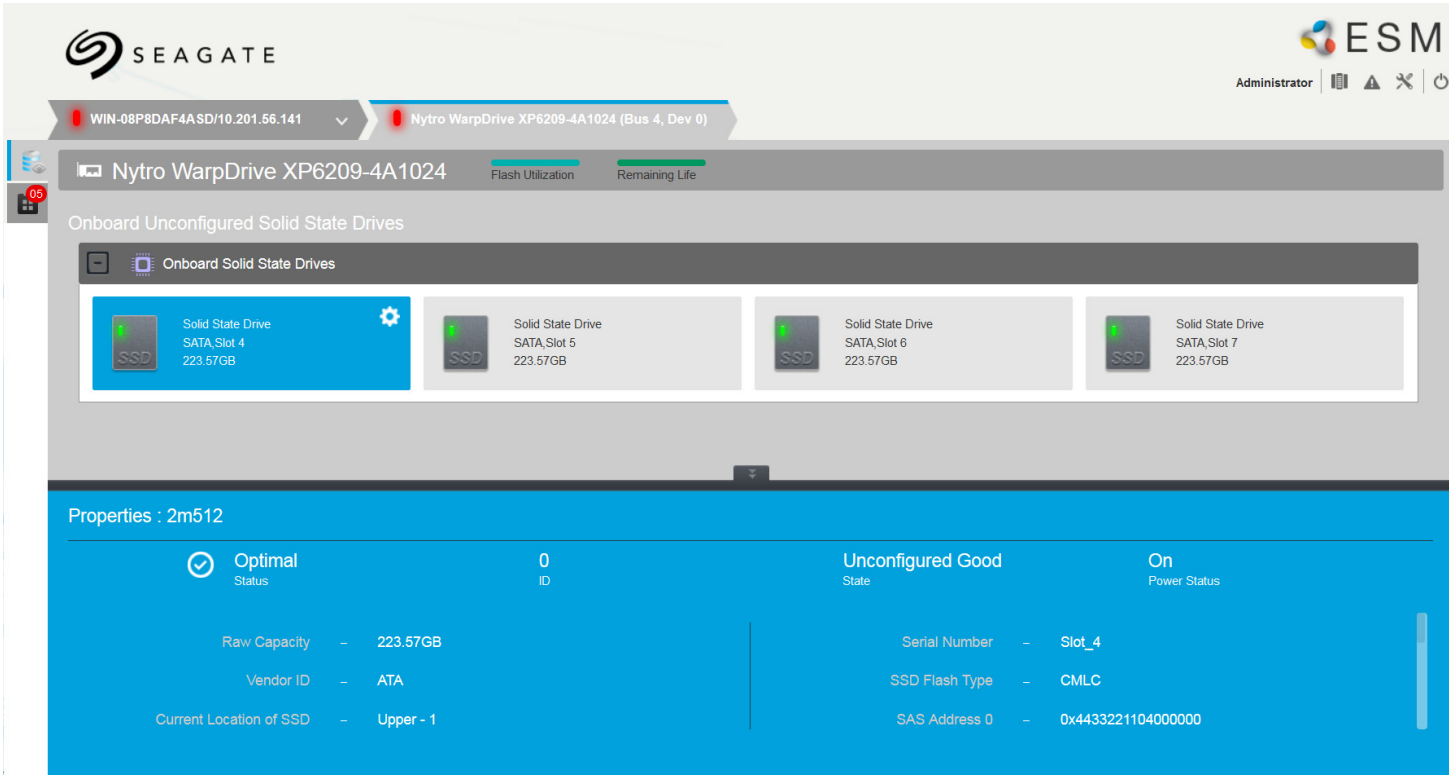


Figure 17 Nytro WarpDrive Card View - Initiator and Target (IT) Mode



4.2 Nytro WarpDrive Operations

The Enterprise Storage Manager software lets you perform the following operations:

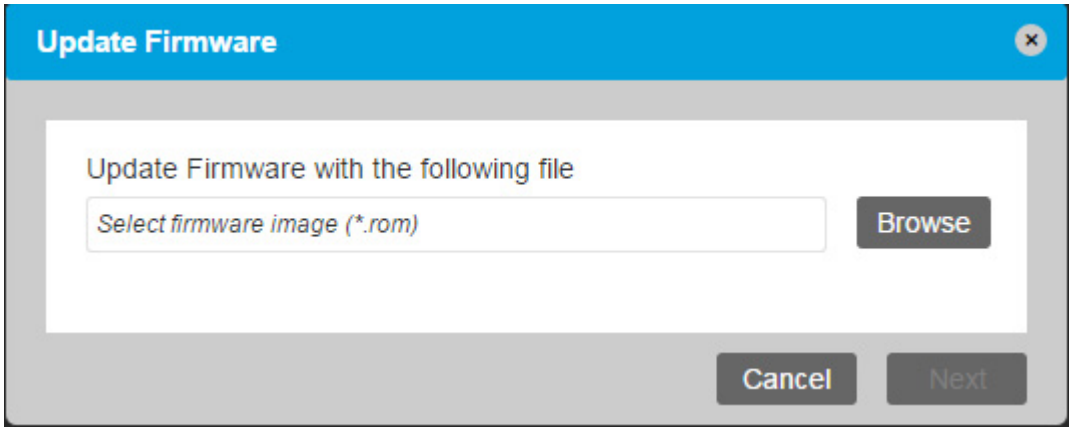
- Update firmware package
- Format a virtual drive
- Format a physical drive
- Monitor event logs

4.2.1 Updating Firmware Package

Perform the following steps to update the Nytro WarpDrive firmware package.

1. Click the icon in the Nytro WarpDrive **Logical** view, and select **Update Firmware**. The Update Firmware dialog appears.

Figure 18 Update Firmware

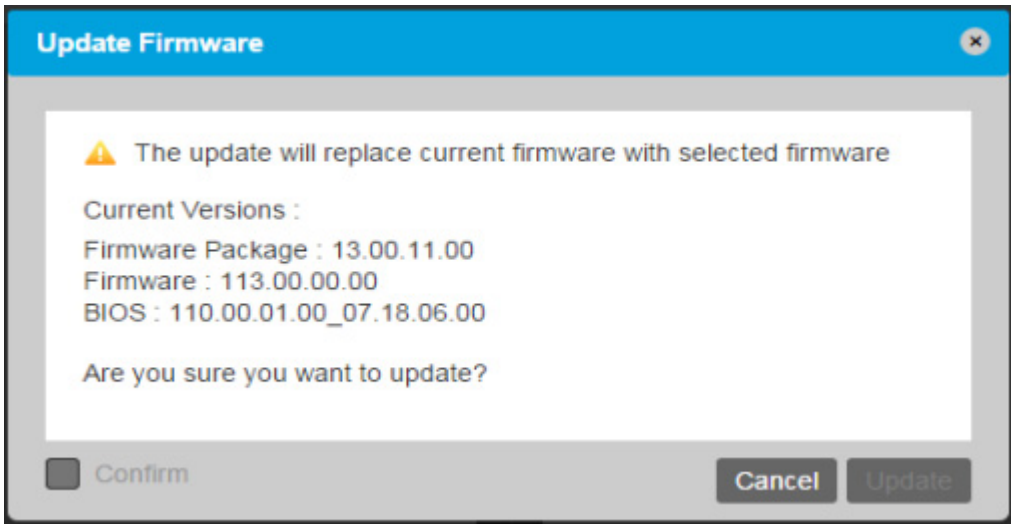


2. Click **Browse**, and select the firmware file.

NOTE The Nytro WarpDrive firmware package could also be a `binary` (`*.bin`) file type.

3. Click **Next**.
   The Update Firmware confirmation dialog appears.

Figure 19 Update Firmware – Confirm



4. Select **Confirm**, and then click **Update**.

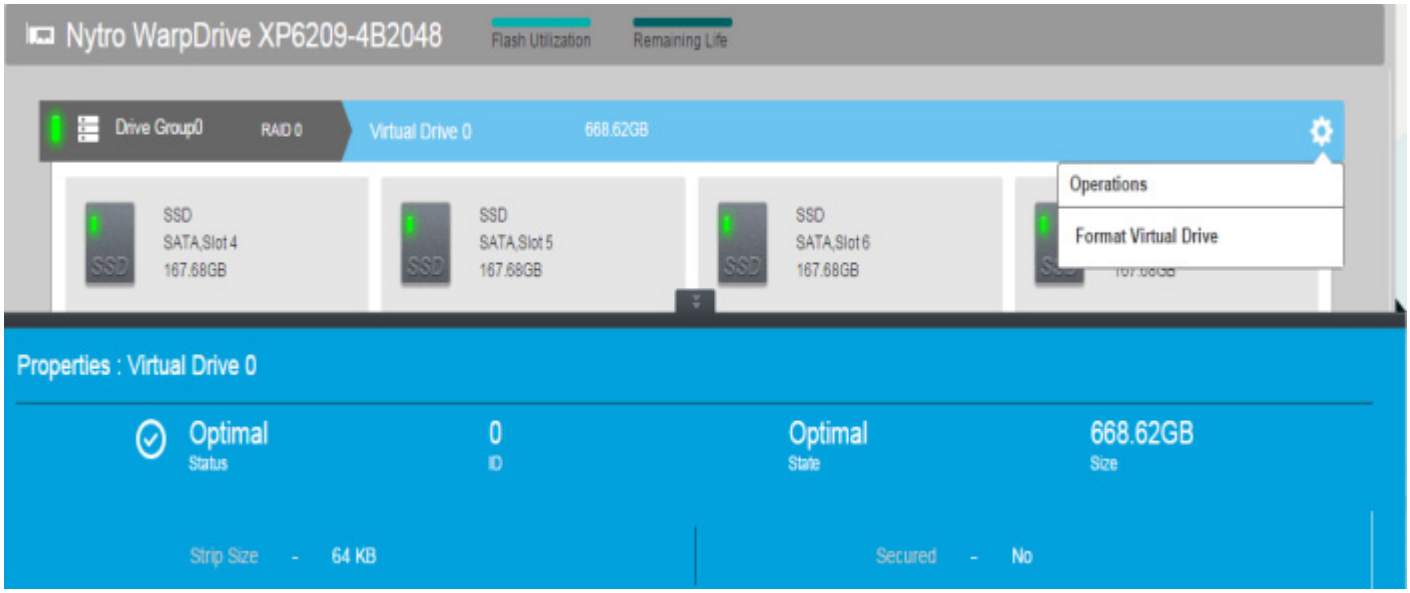
4.2.2 Formatting a Virtual Drive

NOTE This operation is supported only in the IR mode.

Perform the following steps to format a virtual drive.

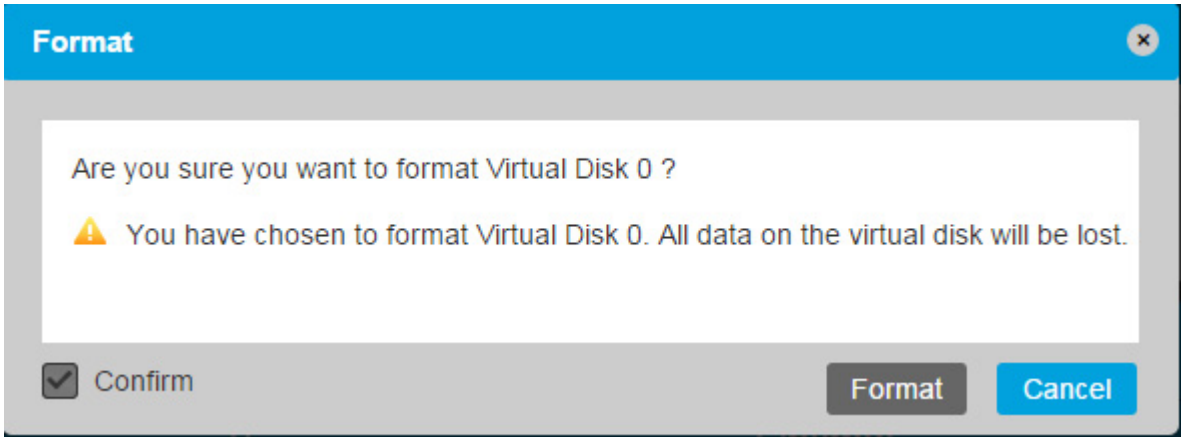
1. Click the icon on a virtual drive in the Nytro WarpDrive **Logical** view, and select **Format Virtual Drive** as shown in the following figure.

Figure 20 Virtual Drive Format



The **Format Virtual Drive** dialog appears.

Figure 21 Format Virtual Drive



2. Select **Confirm**, and click **Format**.

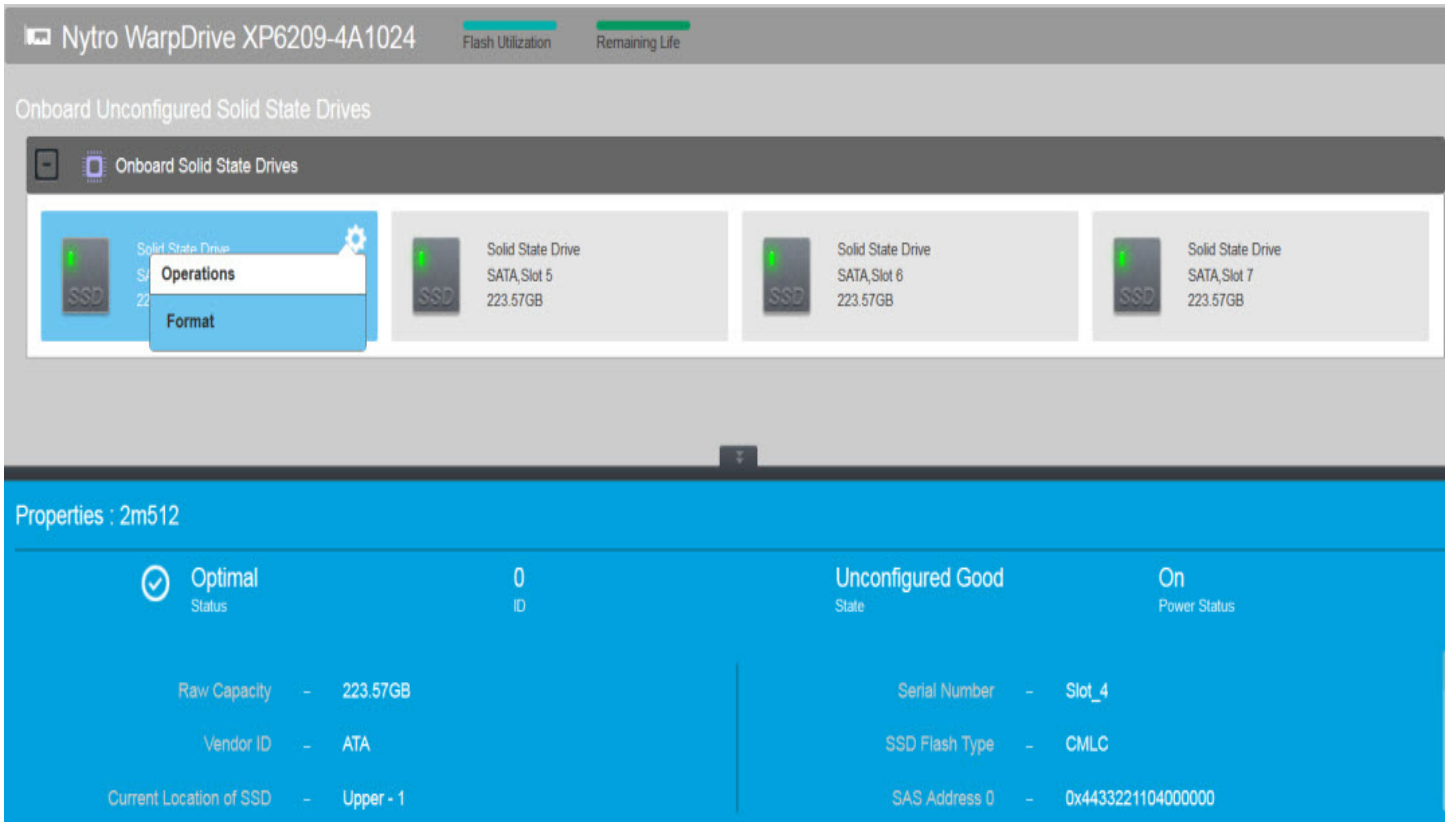
4.2.3 Formatting a Physical Drive

NOTE This operation is supported only in the IT mode.

Perform the following steps to format a physical drive.

1. Click the icon on an SSD in the Nytro WarpDrive **Logical** view, and select **Format Physical Drive** as shown in the following figure.

Figure 22 Physical Drive Format



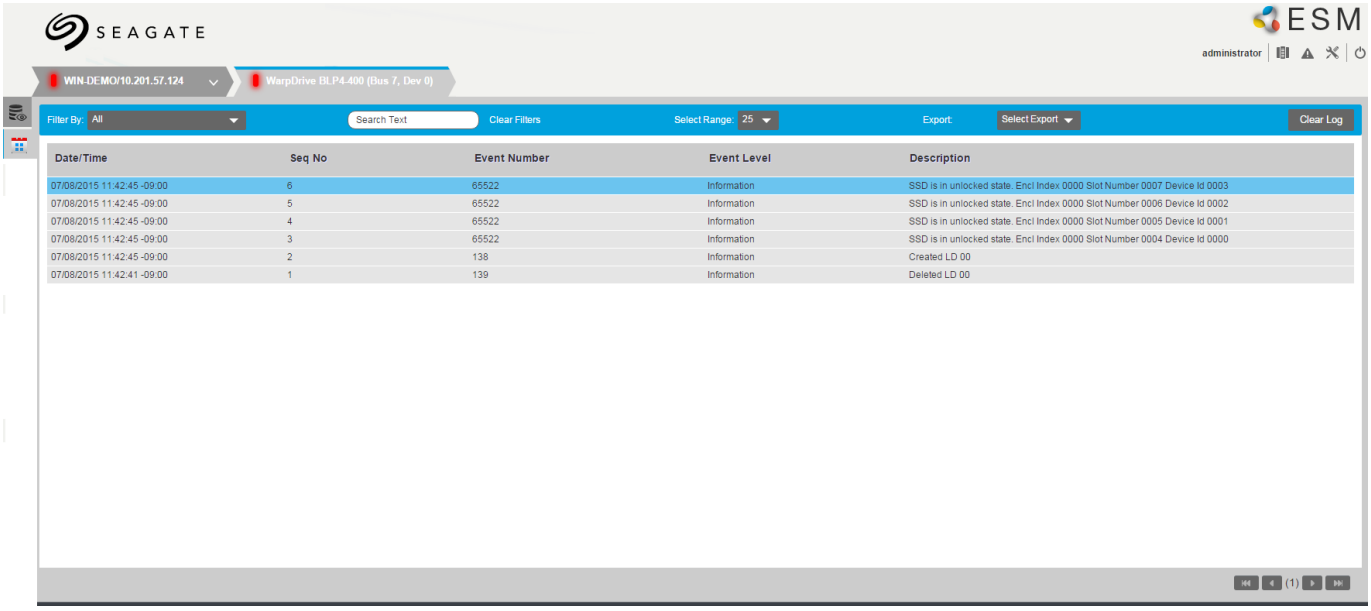
The **Format Physical Drive** dialog appears.

2. Select **Confirm**, and click **Format**.

4.2.4 Monitoring the Nytro WarpDrive Card Event Logs

The Nytro WarpDrive **Events** page shows the event logs of the Nytro WarpDrive card. The following figure shows the Nytro WarpDrive **Events** page. For more information, see Section 3.3, Server Events.

Figure 23 Server Events Page

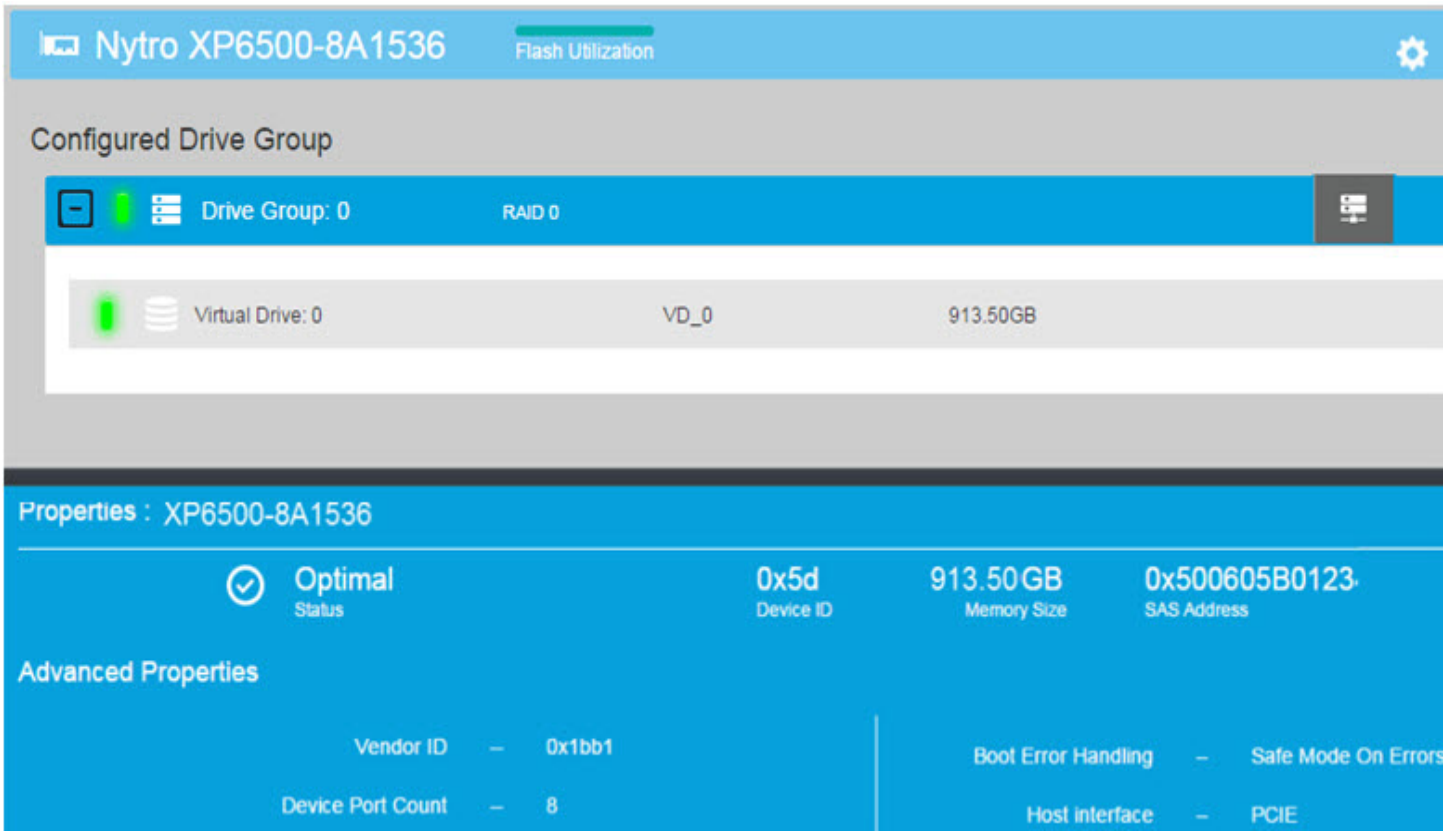


Chapter 5: Nytro XP6500 Flash Card View

5.1 Nytro XP6500 Logical View

The Nytro XP6500 **Logical** view is the default view. The **Logical** view shows the hierarchy of controllers, virtual drives, and the drives and drive groups that make up the virtual drives. The properties for these components appear in the properties panel.

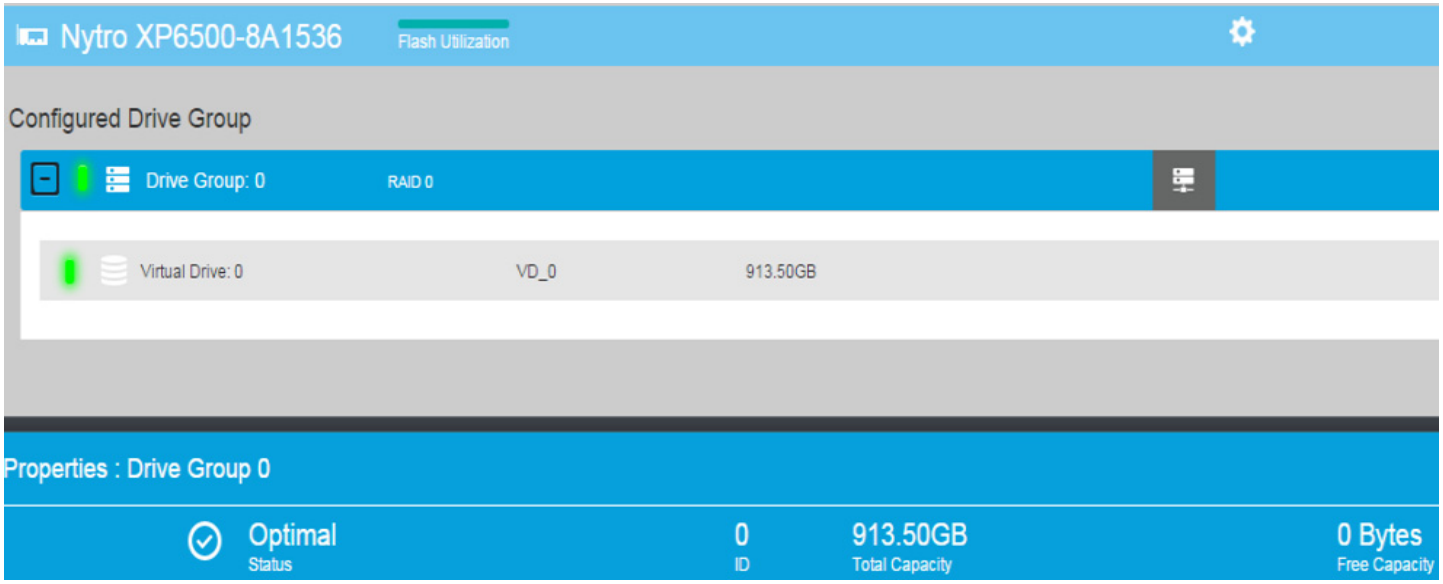
Figure 24 XP6500 Card Logical View



5.2 Viewing the Drive Group Properties

Click the drive group to view the properties of the drive group in the bottom of the window as shown in the following figure.

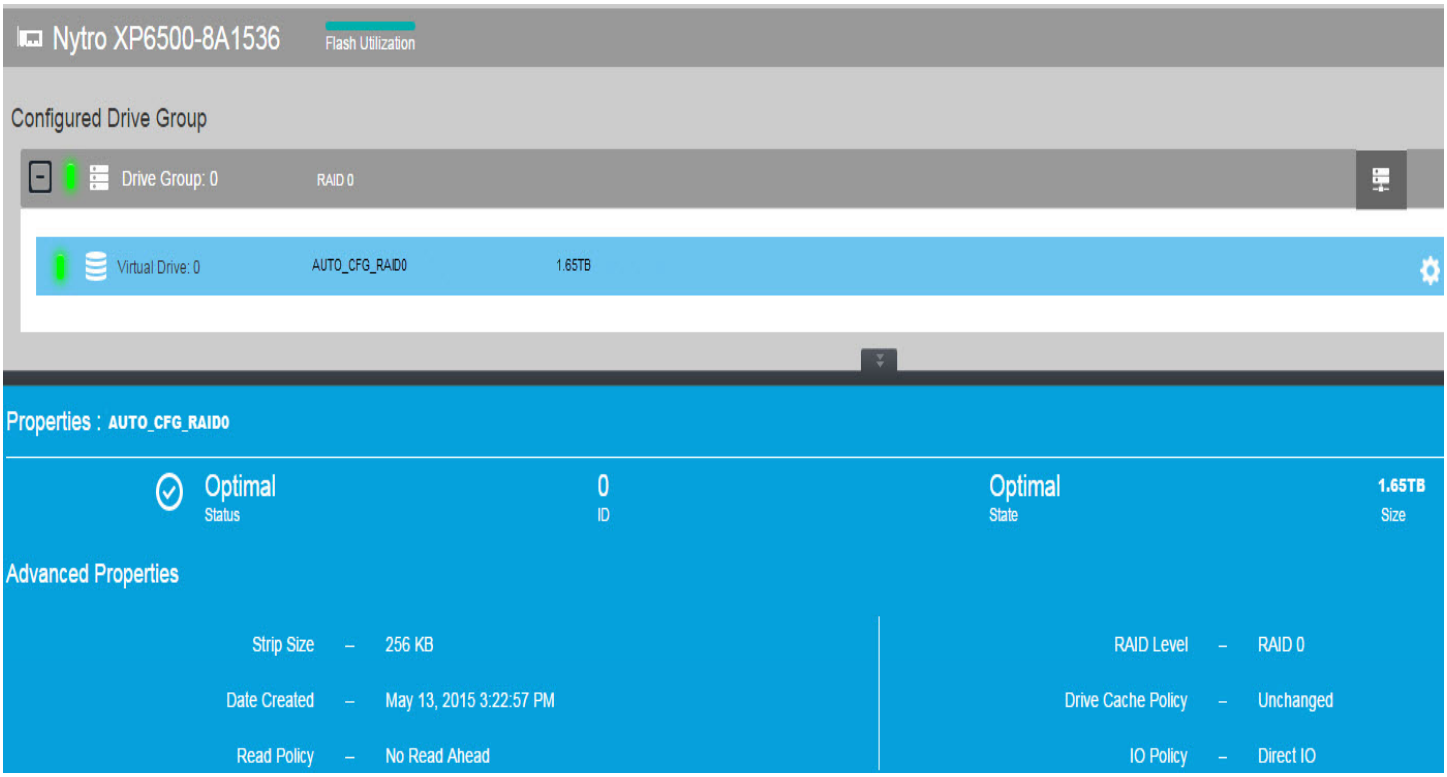
Figure 25 Configured Drive Group



5.3 Viewing the Virtual Drive Properties

To view the virtual drive properties of a particular virtual drive, click the virtual drive. The virtual drive properties appear in the bottom of the screen. Use the collapsible arrow and the scroll-down bar to view the complete virtual drive properties.

Figure 26 Virtual Drive Properties



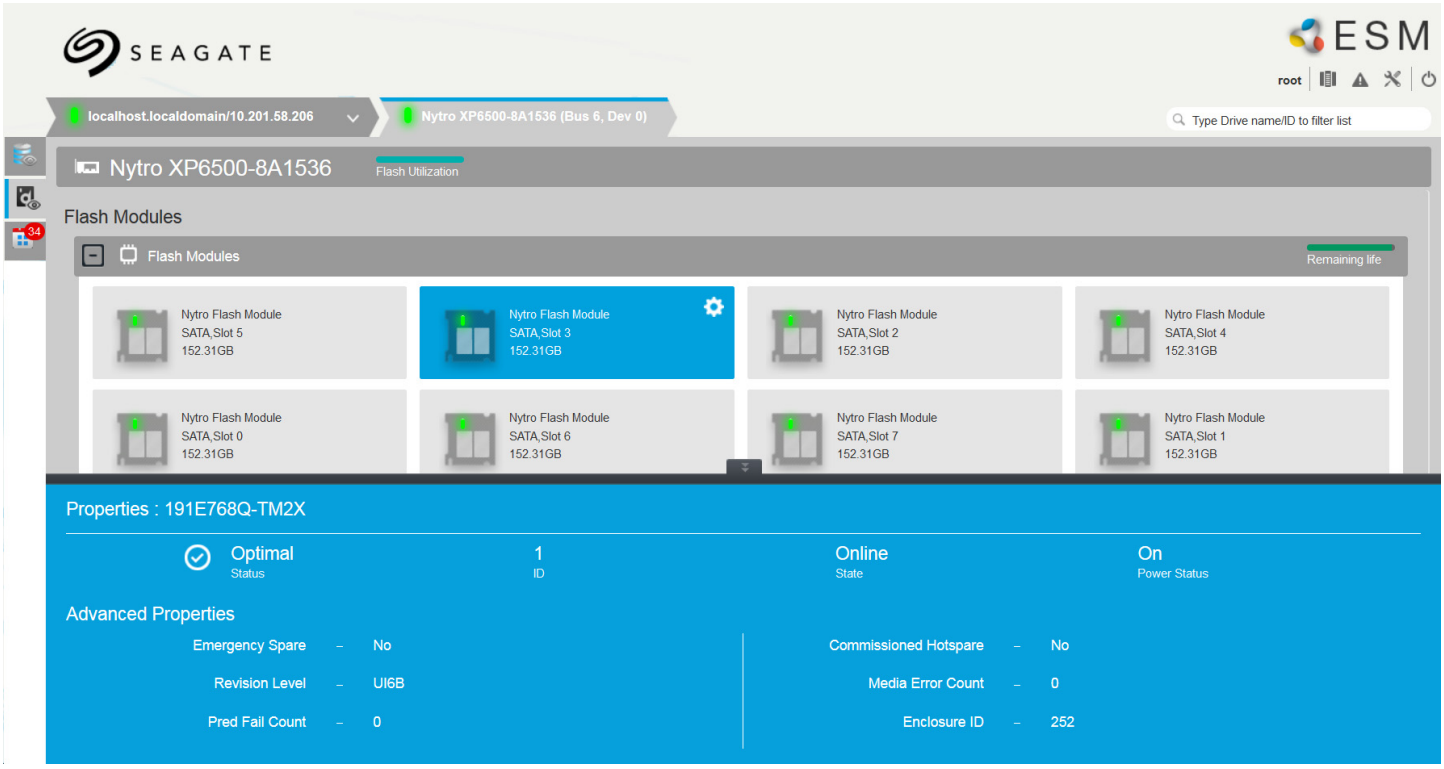
5.4 Viewing the Physical Drive Properties

To see the properties of a PD:

1. Go to the **Physical** view.
2. Click and select the required PD.

   The properties of the selected PD is displayed at the bottom in a blue colored pane. Figure 27 shows an example PD properties.

Figure 27 Physical Drive Properties



5.5 Viewing the Flash Card Event Logs

You can view the system event logs. New event logs appear during the session. Each entry has an ID, an error level indicating the severity of the event, the timestamp and date, and a brief description of the event.

Perform these steps to view the Flash card event logs:

1. Click the  icon in the Enterprise Storage Manager window.

   The Events list appears as shown in Figure 10.

   You can filter the event logs by their states.

2. To filter the event logs based on their states, click the drop-down selector as shown in the preceding figure, and select the required state, for example, Critical, warning, Information, and so on.

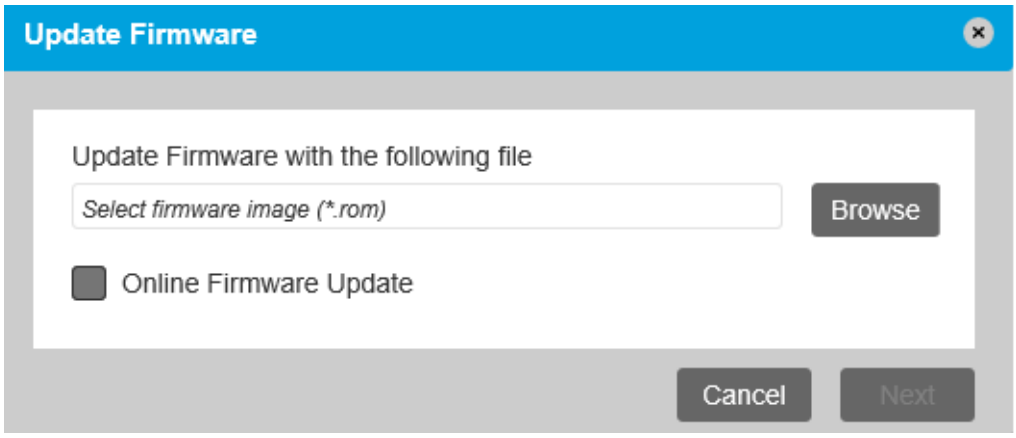
Callout	Description
1	Performs the following tasks: ■ Filter event logs ■ Search event logs ■ Export event logs ■ Select the number of events to be displayed in a page ■ Clear the old event logs
2	Lists the event logs. Each entry has a sequence number, an event number, an event level that indicates the severity of the event, a date/time, and a brief description of the event. The event logs are sortable based on the sequence number, event number, event level, or date/time (excluding the event log description). By default, the event logs are sorted by date/time in the chronological order.
3	**Left tab panel**: Contains tabs that let you navigate between the following views in the Nytro card view. ■ Nytro card **Logical** view (current page, the default view) ■ Nytro card **Events** page
4	Navigates through the event log pages.
5	Provides an additional description about the selected event.

5.6 Updating Firmware Package

Perform the following steps to update the Nytro XP6500 firmware package.

1. Click the icon in the Nytro XP6500 **Logical** view, and select **Update Firmware**.
   The Update Firmware dialog appears.

Figure 28 Update Firmware

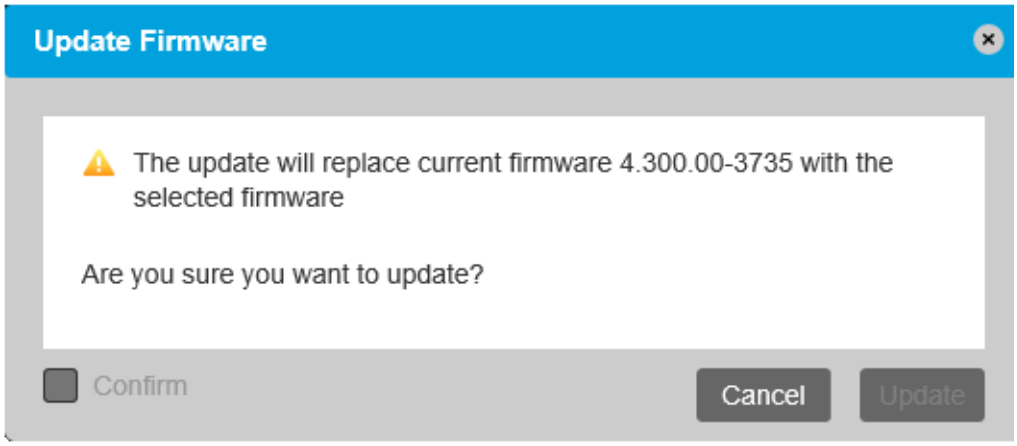


2. Click **Browse**, and select the firmware file.

NOTE You can upgrade the firmware either using a .rom file that contains only the controller firmware or using a larger .rom file that contains both the controller and Nytro Flash Module firmware. When you use the latter .rom file to update, it is called as single push firmware update.

3. Select **Online Firmware Update**.if you do not want the system to be rebooted after the firmware upgrade. See Figure 28.
4. Click **Next**.
   The Update Firmware confirmation dialog appears.

Figure 29 Update Firmware – Confirm



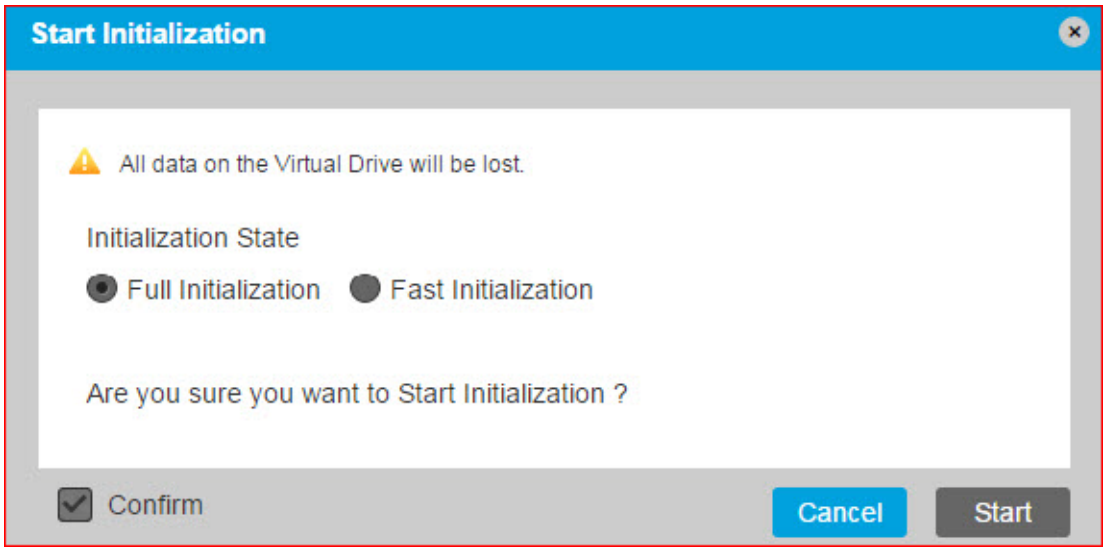
5. Select **Confirm**, and then click **Update**.

5.7 Starting the VD Initialization

After you create a virtual drive, you can initialize it by using the VD initialization option.To initialize a VD:

1. Click the icon on the selected virtual drive.
2. Select **Start Initialization**.
   The **Start Initialization** dialog appears. See Figure 30.

Figure 30 Start Initialization



ATTENTION Initialization erases all data on the virtual drive. Make sure to back up any data you want to keep before you initialize a virtual drive. Make sure the operating system is not installed on the virtual drive you are initializing.

Fast Initialization: When you perform a Fast Initialization, the firmware deletes the VD and performs a secure erase operation on all of the drives, and then creates a new VD.

Full Initialization: A complete initialization is performed on the virtual drive. You cannot write data into the virtual drive until initialization is complete. Time taken for the operation is proportionate to the size of the virtual drive.

3. Click **Start** to begin the initialization.

5.8 Stopping the VD Initialization

On the drive, where initialization is in progress, click the icon on the selected virtual drive, and select **Stop Initialization**.

5.9 Managing Link Speed

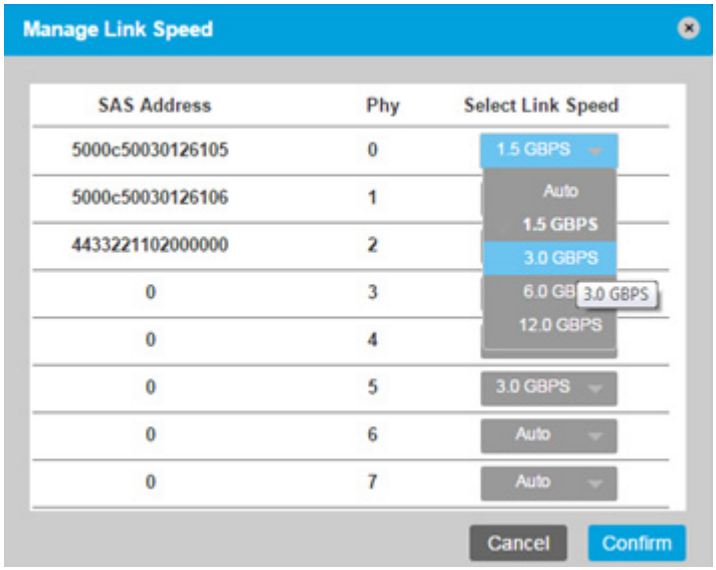
The **Managing Link Speed** feature allows you to change the link speed between the controller and a drive that is directly connected to the controller.

All phys in a SAS port can have different link speeds or can have the same link speed.

Perform these steps to change the link speed between a controller and a drive:

1. Click the icon in the Enterprise Storage Manager window and select **Manage Link Speed**.
   The Manage Link Speed screen appears.

Figure 31 Manage Link Speed



— The **SAS Address** column shows the SAS address that uniquely identifies a device in the SAS domain.

— The **Physical** column displays the system-supported physical link values.
The physical link values are from 0 through 7.

— The **Select Link Speed** column displays the physical link speeds.

2. Select the desired link speed from the **Select Link Speed** field using the drop-down selector.

   The link speed values are Auto,1.5Gb/s, 3Gb/s or 6Gb/s.

   NOTE By default, the link speed in the controller is **Auto** or the value last saved by you.

   The link speed value is now reset. The **System Restart Required** message appears. The change takes place only after you restart the system.

5.10 Saving the TTY Log

The Enterprise Storage Manager application allows you to save the firmware's terminal entry logs (TTY logs) for the card that enables you to troubleshoot firmware issues. The **Save TTY Log** option saves the system log into a text file in the specified location.

To save the TTY log into a text file:

- Click the icon in the Enterprise Storage Manager window and select **Save TTY Log** to save the log file in the desired location.

5.11 Saving the Configuration

You can save the values of the current configuration file into a back-up file.

To save the controller configuration:

- Click the icon in the Enterprise Storage Manager window, and select **Save Configuration** to save the configuration file that has a `.config` extension, into your desired location.

Appendix A: Impact of Changing the Enterprise Storage Manager Software Service and NGINX Web Server Port Numbers

The following list shows the convention of usage of important terms:

- **Enterprise Storage Manager software**: Refers to the complete product.
- **ESM Application**: Refers to a Fast Common Gateway Interface (FCGI) application.
- **ESM Service**: Refers to the Enterprise Storage Manager software, which runs as a service.
- **ESM Application Port**: Refers to the port that the Enterprise Storage Manager software uses to communicate with the *NGINX* web server using the FCGI protocol.
- ***NGINX* Service**: Enterprise Storage Manager software runs the *NGINX* web server as a service, which is referred to as the *NGINX* Service.
- ***NGINX* Web Server Port**: Refers to the port used by the *NGINX* web server to listen to the Enterprise Storage Manager software requests coming from the browser.
- **<>**: An angular bracket specifies a value, if a value is required for this field or command.

This appendix outlines the procedures to change the *NGINX* web server and Enterprise Storage Manager application port numbers and several use cases and steps to follow when the port numbers are changed.

A.1 Changing the Enterprise Storage Manager Application Port Numbers

Perform the following steps to change the Enterprise Storage Manager application port numbers. These instructions are applicable to both Windows and Linux operating systems.

1. Open the `kirk.conf` file in the `Enterprise Storage Manager/conf` directory.
2. Enter the new port number in the `listening_port` field.
3. Save the `kirk.conf` file.
4. Open the `nginx.conf` file in the `Enterprise Storage Manager/server/conf` directory.
5. Replace all of the `fastcgi_pass 127.0.0.1:9009` instances with `fastcgi_pass 127.0.0.1:<new port number>` (Specifies a value, if a value is required for this field or command.).
6. Save the `nginx.conf` file.
7. Restart the *NGINX* Service and the Enterprise Storage Manager service.

A.2 Changing the NGINX Web Server Port Numbers

Perform the following steps to change the *NGINX* web server port numbers.

1. Open the `kirk.conf` file in the `Enterprise Storage Manager/conf` directory.
2. Enter the new port number in the `server_port` field.
3. Save the `kirk.conf` file.
4. Open the `nginx.conf` file in the `Enterprise Storage Manager/server/conf` directory.
5. Replace all of the listen `2342 default_server ssl` instances with listen *<new port number>* (Specifies a value, if a value is required for this field or command.) `default_server ssl`.
6. Save the `nginx.conf` file.
7. Restart the *NGINX* Service and the Enterprise Storage Manager service.

A.3 Impact of Changing the Port Numbers

Changing the *NGINX* web server, the Enterprise Storage Manager application port numbers, or both affect the functioning of the Enterprise Storage Manager software. In addition, if this change of port numbers occurs after the managed hosts are configured, the super user and the regular user must perform the following tasks to address this impact.

Scenario 1: The *NGINX* web server port number is changed for a managed server.

Solution: If the port number of a managed server is changed, the management server cannot communicate with the Enterprise Storage Manager software (because communication is based on `ip:port` tuple). To restore the communication, perform the following step.

Super User

- Add the managed host with the changed port.

Regular User

- Add the new host that you want to monitor into the configuration and delete the older host.

Scenario 2: The *NGINX* web server port number is changed for a management server.

Solution: If the port number of a management server is changed, no impact occurs on the functioning of the Enterprise Storage Manager software. However, you must use this new port from the browser. Because the management server port has changed, the managed servers cannot broadcast events to the management server. To restore this communication, perform the following step.

Super User

- Add all of the hosts again to facilitate the handshake.

Regular User

- Delete all of the current hosts in the configuration, and add them again.

Appendix B: Status of Enterprise Storage Manager and Starting and Stopping of the Services

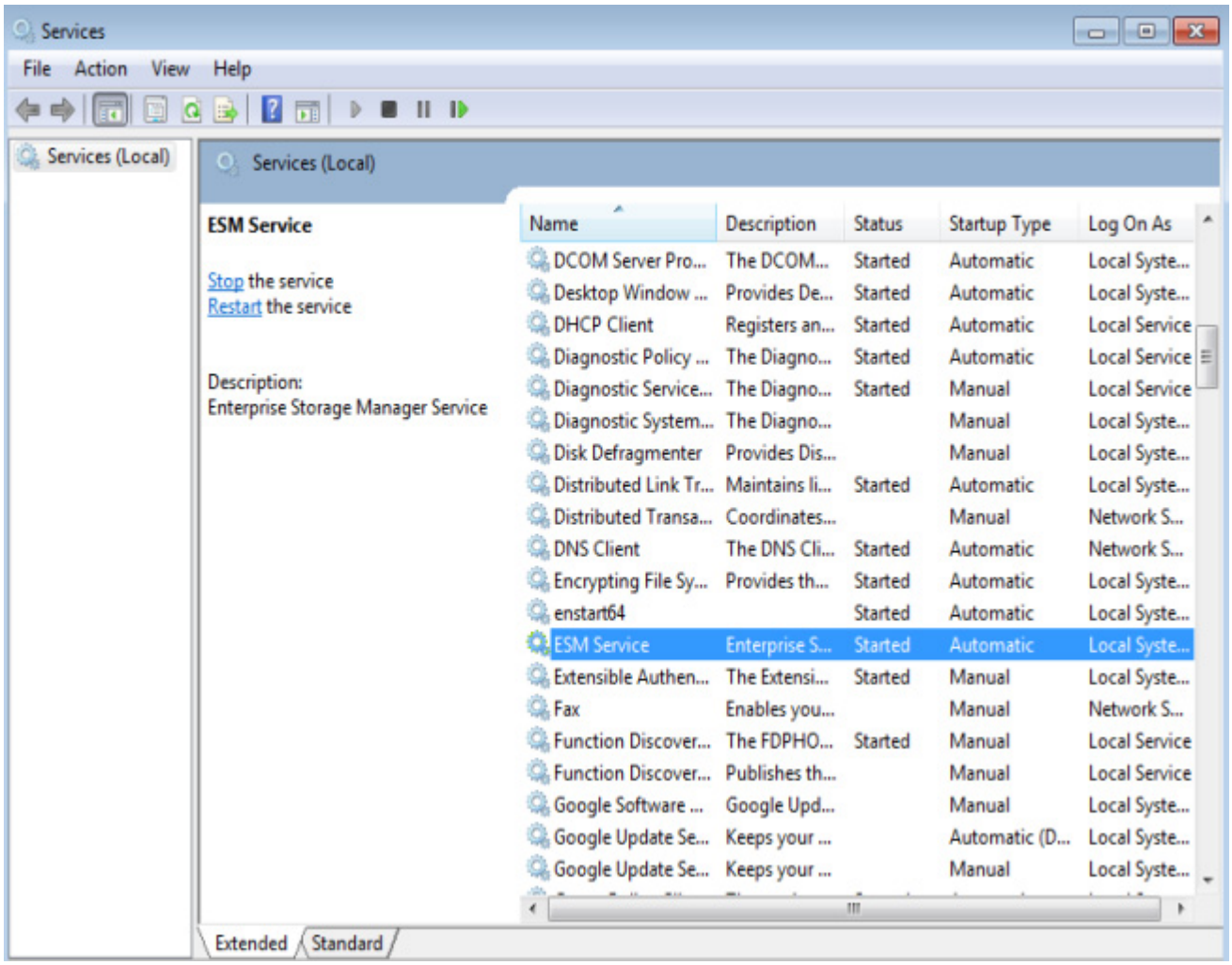
This chapter discusses about starting and stopping the Enterprise Storage Manager software services.

B.1 Viewing the Enterprise Storage Manager Service On the Windows Platform

On the Windows platform, the Enterprise Storage Manager software runs as a service. To view the status of the Enterprise Storage Manager service after it is installed, perform the following steps:

1. Go to **Control Panel > Administrative Tools > Services**.
   Or
   Go to **Start > Run**, enter *services.msc* to open Windows Service Control Manager.
2. Stop or start the Enterprise Storage Manager application service.
3. Stop or start the *NGINX* service.

Figure 32 Enterprise Storage Manager Software Service Status on Windows



B.2 Starting or Stopping the Enterprise Storage Manager Service

To start or stop the Enterprise Storage Manager software services, perform the following steps:

1. Right-click the Enterprise Storage Manager service, and select **Start** or **Stop**.

Figure 33 Start Enterprise Storage Manager

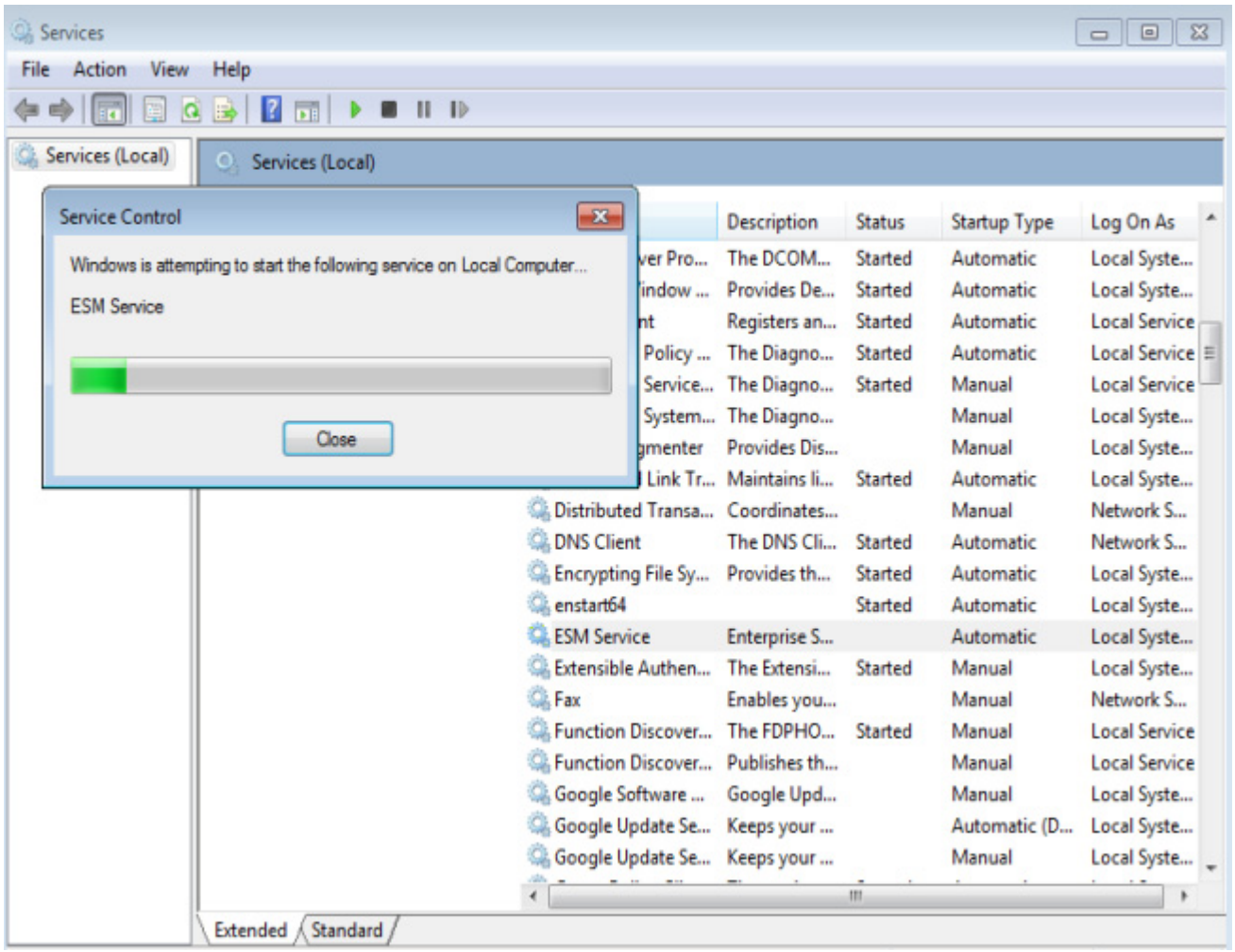
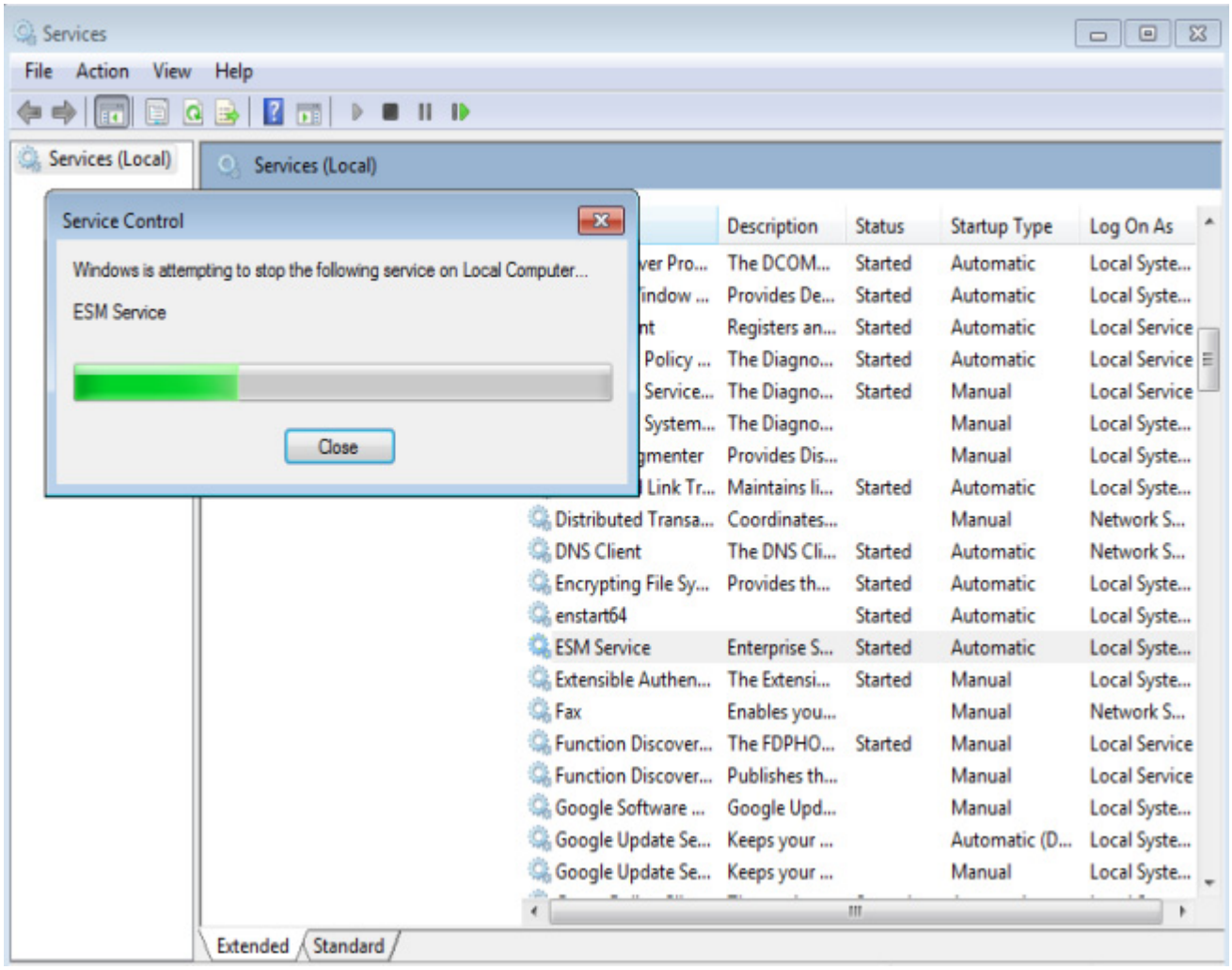


Figure 34 Stop Enterprise Storage Manager

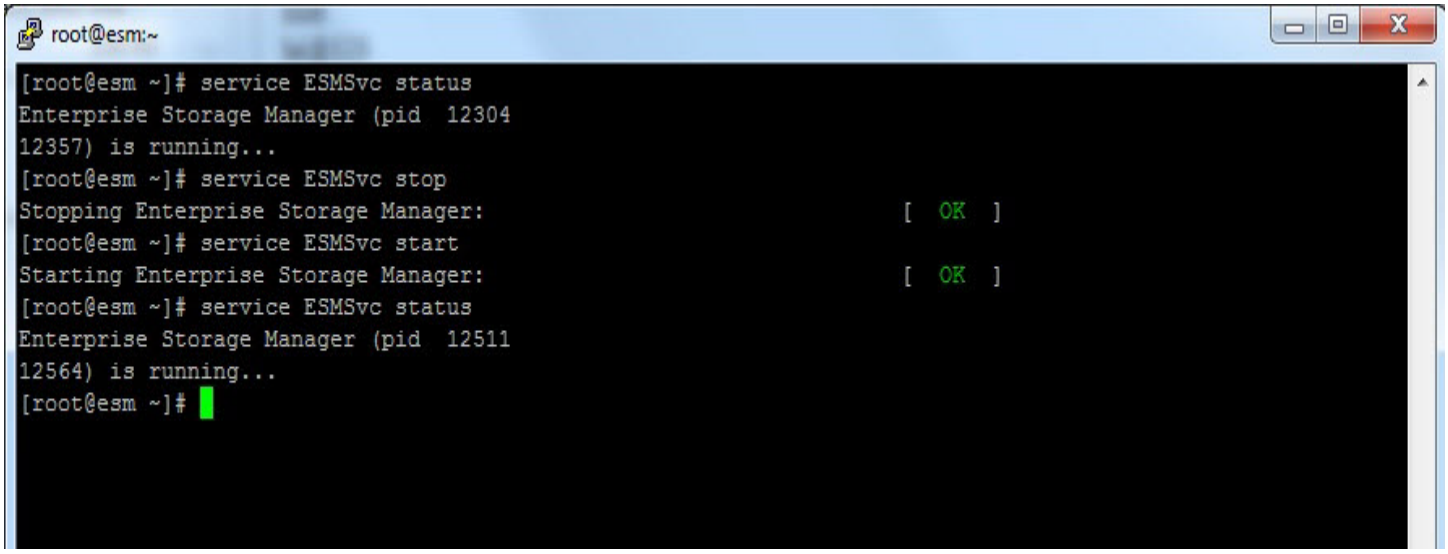


B.3 Viewing the Enterprise Storage Manager Service On the Linux Platform

On the Linux platform, the Enterprise Storage Manager software runs as a service. To view the status of the Enterprise Storage Manager service after it is installed, perform the following steps:

- To find the status of the Enterprise Storage Manager software service, use the `service ESMSvc status` command.
- To stop the Enterprise Storage Manager software service, use the `service ESMSvc stop` command.
- To start the Enterprise Storage Manager software service, use the `service ESMSvc start` command.

Figure 35 Enterprise Storage Manager Software Service Status on Linux



Appendix C: Deployment Modes

You can deploy the Enterprise Storage Manager application as either a single-server (Standalone mode) application or as a multi-server (Enterprise mode) application.

As a single server application, the Enterprise Storage Manager software simply installs and permits access to the local server on which it is running.

As a multi-server application, the Enterprise Storage Manager software manages and shows data from multiple servers that are added into the configuration.

For more information, see Chapter 2, Performing the Initial Setup.

C.1 Standalone Mode of Installation

As a standalone application on a single server, the Enterprise Storage Manager software serves data for controllers on server 1. To access the standalone server, use your Enterprise Storage Manager login credentials as shown in the following figure.

Figure 36 Enterprise Storage Manager Software Standalone Mode

C.2 Enterprise Mode of Installation

You can use the Enterprise Storage Manager application to provide the required information to any servers that is requesting it.

For example,

- User A installs Enterprise Storage Manager software in the Enterprise mode on three servers Server 1, Server 2, and Server 3.
- User A logs in to Server 1 and adds Server 2 and Server 3 into Server 1 configuration by providing credentials for these servers.
- Thereafter, the user needs only to log in to Server 1 to manage all of the three servers.
- In addition, user can also individually log in to Server 2 and Server 3 (as a Standalone server).

Figure 37 Enterprise Storage Manager Software Enterprise Mode

C.3 Discovery of the Enterprise Storage Manager Servers in the Subnet

When the Enterprise Storage Manager software is installed in the Enterprise mode, the software can discover other servers on which the Enterprise Storage Manager software is running. This will be possible only if OpenSLP 2.0 is installed in all of the servers and if the OpenSLP service is running on all of the servers. OpenSLP is not included with the operating system installation. To downloaded OpenSLP, visit: http://www.openslp.org/download.html.

By using this discovery mechanism, the management server can add the managed server. You can also add the managed server by manually adding the IP address, port, user name, and password. See Section 2.2, Adding Managed Hosts.

C.4 VMware Mode of Deployment

In VMware mode of deployment, the Enterprise Storage Manager is installed in a machine that does not have an ESXi server. Instead, during installation, the Enterprise Storage Manager application is coupled with an ESXi server.

During installation, the ESXi server details are obtained (IP address, user name, and password), and this information is used from the Management server to communicate with ESXi host. The following figure depicts the VMware mode of deployment.

Figure 38 VMware Mode of Deployment

Throughout the life cycle of the Enterprise Storage Manager server, this pairing of the Enterprise Storage Manager server and ESXi server is maintained. If the management host chooses to change management host (that is, the ESXi server); VMInfoUpdate utility is provided to change the details of ESXi host, that is, the IP address, user name, and password. Stop the Enterprise Storage Manager service, change the ESXi host details, and then start the service to manage a different ESXi server.

Appendix D: Server Discovery

Server discovery attempts to discover other hosts running the Enterprise Storage Manager service in the Enterprise or Standalone mode with the discovery parameters enabled in the `kirk.conf` file. (See Appendix A: Impact of Changing the Enterprise Storage Manager Software Service and NGINX Web Server Port Numbers)

This works within a single subnet, and depends upon multicasting to be enabled in the network. You can add the servers if the server is not automatically discovered. For example, if the multicasting is disabled in the network or remote server, the firewall prevents the SLP service from running.

NOTE Disable firewall to allow the discovery of servers on the network.

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