

# Dell EMC Integrated Data Protection Appliance

Version 2.3.1

## Product Guide

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# Revision history

**Table 1** IDPA Product Guide Revision History

<b>Revision</b>	<b>Date</b>	<b>Description</b>
01	November 2019	First release of this document for IDPA 2.3.1



# CHAPTER 1

## Introduction

This chapter provides a general overview of the Integrated Data Protection Appliance 2.3 features and hardware configurations.

Topics include:

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## Document scope and audience

The scope of this document is to describe the administrative details of the Integrated Data Protection Appliance (IDPA).

The target audience for this document includes field personnel, partners, and customers responsible for managing and operating the IDPA. This document is designed for people familiar with Dell EMC Data Protection solutions.

## Product features

IDPA provides a simplified configuration and integration of data protection components in a consolidated solution.

### Integrated solution

IDPA DP4400 model is a hyperconverged, 2U system that a user can install and configure onsite.

The DP4400 includes a virtual edition of Avamar server (AVE) as a Backup Server node with an optional NDMP Accelerator, a virtual edition of Data Domain system (DDVE) as the Protection Storage node, Cloud Disaster Recovery, IDPA System Manager as a centralized system management, an Appliance Configuration Manager (ACM) for simplified configuration and upgrades, Search, Reporting and Analytics, and a compute node that hosts the virtual components and the software.

The Search, Reporting and Analytics, and CDRA components are optional. Also, you can also perform the Search, Reporting and Analytics, and CDRA functions in a central corporate implementation.

If your organization enables communication through the Internet, as part of the initial configuration of the system, you can register the IDPA Appliance, Avamar, Data Domain and Reporting and Analytics components with Secure Remote Services (formerly ESRS). The Secure Remote Services is a secure, IP-based, distributed customer service support system that provides Dell EMC customers with command, control, and visibility of support-related activities.

### Centralized management

IDPA System Manager provides advanced monitoring and management capabilities of the IDPA from a single pane of glass and includes the following features.

- A comprehensive dashboard that includes information about Avamar, IDPA Appliance, Data Domain, Search, and Data Protection Advisor.
  - Backup activities
  - Replication activities
  - Assets
  - Capacity
  - Health
  - Alerts
- A comprehensive dashboard to manage Avamar, Data Domain, Data Protection Advisor, and Search components.
- Advanced search and recover operations through integration with Search.
- Comprehensive reporting capabilities
- Cloud backups.



## Appliance administration

The ACM provides a graphical, web-based interface for configuring, monitoring, and upgrading the appliance.

The ACM dashboard displays a summary of the configuration of the individual components. It also enables the administrators to monitor the appliance, change configuration details such as changing the Data Domain disk capacity, changing the common password for the appliance, change LDAP settings, update customer information, and change the values in the General Settings panel. The ACM dashboard enables you to upgrade the system and its components. It also displays the health information of the Appliance Server and VMware components.

## Backup administration

The IDPA uses Avamar Virtual Edition (AVE) servers to perform backup operations, with the data being stored in a Data Domain system. Generally, when using the Avamar Administrator Management Console, all Avamar servers look and behave the same. The main differences among the Avamar server configurations are the number of nodes and disk drives that are reported in the server monitor.

You can also add an Avamar NDMP Accelerator (one NDMP Accelerator node is supported in DP4400) to enable backup and recovery of NAS systems. The Avamar NDMP Accelerator uses the network data management protocol (NDMP) to enable backup and recovery of network-attached storage (NAS) systems. The accelerator performs NDMP processing and then sends the data directly to the Data Domain Server (DDVE Storage).

## Reporting and Analytics

The Reporting and Analytics feature offers a robust reporting functionality with dedicated sections for various features. These reports help you retrieve information about the Data Domain (DDVE) and Avamar (AVE). Using these reports, you can identify outages in the environment, diagnose problems, plan to mitigate risks, and forecast future trends. You can also run system and customized reports, dashboard templates, and schedule the reports generation as per your requirements.

## Search

The Search feature provides a powerful way to search backup data within the IDPA and then restore the backup data based on the results of the Search. Scheduled collection activities are used to gather and index the metadata (such as keyword, name, type, location, size, and backup server/client, or indexed content) of the backup, which is then stored within the IDPA.

## Disaster recovery

The CDRA is a solution, which enables disaster recovery of one or more on-premises virtual machines (VMs) to the cloud. CDRA integrates with the existing on-premises backup software and a Data Domain system to copy the VM backups to the cloud. It can then run a disaster recovery test or a failover, which converts a VM to an Amazon Web Services Elastic Compute Cloud (EC2) instance, and then runs this instance in the cloud.

### **Note:**

Installing CDRA components, Search, and Reporting and Analytics (based on Data Protection Advisor) is optional. Also, if these components are already configured in your environment, then the appliance can be configured to use the central implementation in your environment. You do not need to configure the optional components that are bundled in IDPA again.

However, the IDPA dashboard does not display any data that is associated with external CDRA, Search, and Data Protection Advisor. Moreover, you must manage and configure any such external instances. Also, IDPA does not support local Search and Analytics (not part of IDPA but are centrally implemented at the customer environment) when these functions are performed by external implementations.

## Scalability

The DP4400 is designed to be scalable so it can scale up with ever-changing needs. See the *Expanding storage capacity* section in the *Dell EMC Integrated Data Protection Appliance Product Guide* for more information about how to add storage capacity.

- For the DP4400 model with a capacity from 8 TB to 24 TB, you can expand the storage capacity in multiples of 4 TB increments up to 24 TB. You can now expand the capacity beyond 24 TB in 12 TB increments.
- For the DP4400 model with a capacity from 24 TB to 96 TB, you can expand the storage capacity in 12 TB increments, and you can expand the capacity up to a maximum of 96 TB.

The following table details the configuration for the DP4400 models.

**Table 2** Configuration for IDPA DP4400 Models

Model	Configuration Details
DP4400	From 8 TB up to 24 TB
	From 24 TB up to 96 TB

## Unified support

The same Customer Support team supports both the hardware and the software that is used in the appliance.

# System architecture and components

The IDPA integrates multiple data protection components into a single product.

## Detailed configuration

The IDPA is available in the following models:

**Table 3** Configuration options for each model

Model	Protection Storage model	Protection Storage configuration options (usable TB)	Backup Server	Avamar Accelerator Node for NDMP/NAS Backup (optional)
DP4400	Data Domain Virtual Edition	24, 36, 48, 60, 72, 84, or 96 TB	Avamar Virtual Edition 3 TB	NDMP Accelerator (1)
DP5300	Data Domain 6300	34, 82, or 130 TB	Avamar Virtual Edition 3 TB	NDMP Accelerator (1)
DP5800	Data Domain 6800	96, 144, 192, 240, or 288 TB	Avamar Virtual Edition 3 TB	NDMP Accelerator (1–3)
DP8300	Data Domain 9300	192, 240, 288, 336, 384, 432, 480, 528, 576, 624, 672, or 720 TB	Avamar Grid: <ul style="list-style-type: none"> <li>• One utility node</li> <li>• Three M1200 storage nodes (12 TB)</li> <li>• Two switches</li> </ul>	NDMP Accelerator (1–4)

**Table 3** Configuration options for each model (continued)

Model	Protection Storage model	Protection Storage configuration options (usable TB)	Backup Server	Avamar Accelerator Node for NDMP/NAS Backup (optional)
DP8800	Data Domain 9800	624, 672, 720 768, 816, 864, 912, 960, or 1008 TB	Avamar Grid: <ul style="list-style-type: none"> <li>• One utility node</li> <li>• Four M1200 storage nodes (16 TB)</li> <li>• Two switches</li> </ul>	NDMP Accelerator (1–4)

## Base hardware

The following hardware is included with the IDPA models, DP4400, DP5300, DP5800, DP8300, and DP8800:

- Supported shelf type: DS60 with 4 TB
- Titan-P rack
  - Single Phase
  - 3-Phase Delta
  - 3-Phase WYE
- Three Dell R640 servers
- Dell S4048 48-port switch
  - ⓘ **Note:** Ports Fo 1/13, Fo 1/14, Fo 1/51, Fo 1/52, Fo 1/53, and Fo 1/54 are reserved for uplinks to the network environment.
- Internal cabling

## Embedded software

After the initial configuration, the following applications are deployed and configured:

- Data Domain Virtual Edition
- VMware vCenter Server
- Avamar Virtual Edition
- IDPA System Manager
- Data Protection Advisor (optional)
  - Datastore Server
  - Application Server
- Search (optional)
  - Search Index Master
- Cloud Disaster Recovery Add-on (optional)
- Appliance Configuration Manager

## System self-protection

The IDPA is configured to protect itself from data loss with the backup and storage applications included in the system. The system is protected with self-defined and self-initiated

backup jobs that are scheduled daily and have a 30-day retention period. The system metadata is protected using checkpoint backup to the internal target storage.

The below table is applicable for DP5300, DP5800, DP8300, and DP8800 models only

**Table 4** Component VM backup jobs

Virtual machine	Backup job
ACM	Management_VM_Backup
vCenter	vCenter_Backup
DP Advisor	DataProtectionAdvisor_Backup
Search	DataProtectionSearch_Backup
IDPA System Manager	DataProtectionCentral_Backup
CDRA	DataDomainCloudDisasterRecovery_Backup

- Note:** (Applicable for DP5300, DP5800, DP8300, and DP8800 models only) If one of the servers in the IDPA vSAN cluster fails, you must immediately log in to the **Avamar Administrator** GUI and disable the backup jobs in *Component VM backup jobs* table. For disabling the Avamar backup jobs, refer to the *Avamar Administration Guide*. After disabling the backup jobs, refer to [#unique\\_10](#).
- Note:** Backup jobs are related to virtual machines hosted on the IDPA appliance. If one of the servers in the cluster fails, it may not be possible to take a snapshot of the VM, which leads to backup failure. Once all the three servers in the cluster are up and running, you must re-enable the backup jobs from the Avamar UI. For more information on re-enabling the backup jobs through the Avamar UI, refer to the *Avamar Administration Guide*.

## Network connectivity overview

The tables below detail the IP addresses required by IDPA for various components. These can be assigned either as a range of addresses or as individual, non-contiguous addresses. Using a range is the preferred method as it simplifies the assignment and reduces the chance for errors while entering the IP addresses. When a range of IP addresses is used during the IDPA configuration, the IP addresses are assigned in a standard order. Use the table below to determine which IP address is allocated to a component.

The first column in each table, IP Range Allocation, is the value to add to the first IP address in the range.

**Table 5** IP address range assignments for DP4400

IP Range Allocation	Example	Component	Assigned Field
+0	192 . 0 . 2 . 1	vCenter	VMware vCenter Server VM
+1	192 . 0 . 2 . 2	Protection storage	Management IP
+2	192 . 0 . 2 . 3	Protection storage	Backup IP 1
+3	192 . 0 . 2 . 4	Protection storage	Backup IP 2
+4	192 . 0 . 2 . 5	Backup application	Avamar Virtual Edition Server IP
+5	192 . 0 . 2 . 6	Backup application	Avamar Proxy VM
+6	192 . 0 . 2 . 7	IDPA System Manager	IDPA System Manager VM

**Table 5** IP address range assignments for DP4400 (continued)

IP Range Allocation	Example	Component	Assigned Field
+7	192.0.2.8	Reporting and Analytics (optional)	Application Server Host VM
+8	192.0.2.9	Reporting and Analytics (optional)	Datastore Server Host VM
+9	192.0.2.10	Search (optional)	Index Master Node Host VM
+10	192.0.2.11	DD Cloud DR CDRA (optional)	Data Domain Cloud Disaster Recovery (DD Cloud DR) Cloud DR Add-on (CDRA) virtual appliance

**Table 6** IP address range assignments for the DP5300 and DP5800

IP Range Allocation	Component	Assigned Field
+0	Data Domain	Management IP
+1	Data Domain	Backup IP 1
+2	Data Domain	Backup IP 2
+3	Data Domain	Backup IP 3
+4	Avamar	Avamar Virtual Edition Server IP
+5	Avamar	Avamar Proxy IP
+6	DP Advisor (optional)	Application Server IP
+7	DP Advisor (optional)	Data Store Server IP
+8	DP Advisor (optional)	Agent IP
+9	Search (optional)	Index Master Node
+10	IDPA System Manager	IDPA System Manager
+11	DD Cloud DR CDRA (optional)	Data Domain Cloud Disaster Recovery (DD Cloud DR) Cloud DR Add-on (CDRA) virtual appliance

**Table 7** IP address range assignments for the DP8300 and DP8800

IP Range Allocation	Component	Assigned Field
+0	Data Domain	Management IP
+1	Data Domain	Backup IP 1
+2	Data Domain	Backup IP 2
+3	Data Domain	Backup IP 3
+4	Data Domain	Backup IP 4
+5	Data Domain	Backup IP 5

**Table 7** IP address range assignments for the DP8300 and DP8800 (continued)

IP Range Allocation	Component	Assigned Field
+6	Data Domain	Backup IP 6 (For DP8800 )
+7	Avamar	Avamar Proxy IP
+8	DP Advisor (optional)	Application Server IP
+9	DP Advisor (optional)	Data Store Server IP
+10	DP Advisor (optional)	Agent IP
+11	Search (optional)	Index Master Node 1
+12	Search (optional)	Index Data Node 1
+13	Search (optional)	Index Data Node 2
+14	IDPA System Manager	IDPA System Manager
+15	DD Cloud DR CDRA (optional)	Data Domain Cloud Disaster Recovery (DD Cloud DR) Cloud DR Add-on (CDRA) virtual appliance

**i** **Note:** DP8300 requires a total of 13 IP addresses which includes one management IP and five backup IP addresses.

**i** **Note:** DP8800 requires a total of 14 IP addresses which includes one management IP and six backup IP addresses.

**Table 8** Management IP address range assignments for the DP8300 and DP8800 with Dedicated Backup Network

Management IP Range Allocation	Component	Assigned Field
+0	Avamar	Management IP
+1	DP Advisor	Application Server IP
+2	DP Advisor	Data Store Server IP
+3	DP Advisor	Agent IP
+4	IDPA System Manager	IDPA System Manager
+5	DD Cloud DR CDRA (optional)	Data Domain Cloud Disaster Recovery (DD Cloud DR) Cloud DR Add-on (CDRA) virtual appliance

**Table 9** Backup IP address range assignments for the DP8300 and DP8800 with Dedicated Backup Network

Backup IP Range Allocation	Component	Assigned Field
+0	Data Domain	Management IP
+1	Data Domain	Backup IP 1


**Table 9** Backup IP address range assignments for the DP8300 and DP8800 with Dedicated Backup Network (continued)

Backup IP Range Allocation	Component	Assigned Field
+2	Data Domain	Backup IP 2
+3	Data Domain	Backup IP 3
+4	Data Domain	Backup IP 4
+5	Data Domain	Backup IP 5
+6	Avamar	Avamar Proxy IP
+7	Search	Index Master Node
+8	Search	Index Data Node 1
+9	Search	Index Data Node 2
+10	Search	Index Data Node 3
+11	IDPA System Manager	IDPA System Manager

**Example 1** Sample configuration

For a DP5300 system with the specified range 192.0.2.1/13, the IP assignments are:

Assigned IP Address	Component	Assigned Field
192.0.2.1	Data Domain	Management IP
192.0.2.2	Data Domain	Backup IP 1
192.0.2.3	Data Domain	Backup IP 2
192.0.2.4	Data Domain	Backup IP 3
192.0.2.5	Avamar	Avamar Server IP
192.0.2.6	Avamar	Avamar Proxy IP
192.0.2.7	DP Advisor	Application Server IP
192.0.2.8	DP Advisor	Data Store Server IP
192.0.2.9	DP Advisor	Agent IP
192.0.2.11	Search	Index Master Node
192.0.2.13	IDPA System Manager	IDPA System Manager

 **Note:** IDPA is compatible with IPv4 enabled networks and does not support pure IPv6 or dual-stack networks.

## Customer Support tasks

This section describes IDPA components that require Customer Support for additional assistance.

**Table 10** Customer Support tasks

<b>Task</b>	<b>Description</b>	<b>Applicable IDPA models</b>
Licensing	<ul style="list-style-type: none"> <li>If you are unable to find the right license keys for any of the components.</li> <li>To obtain licensing for increased storage capacity.</li> </ul>	All models.
Secure Remote Services (SRS)	To register customer site IDs to the SRS gateway.	All models.
Physical NDMP server	During fresh installation, configuration, and upgrade.	All models.
Physical Avamar Server	During fresh installation and upgrade.	<ul style="list-style-type: none"> <li>DP8300</li> <li>DP8800</li> </ul>
Latest firmware, BIOS, and driver updates on all Dell Servers	For upgrading IDPA models on Generation 13 (Gen 13) servers.	<ul style="list-style-type: none"> <li>DP5300</li> <li>DP5800</li> <li>DP8300</li> <li>DP8800</li> </ul>
Gen 13 Dell Servers must have two additional drives added per server, amounting to 7 SAS drives per ESX Server	For upgrading IDPA models on Generation 13 (Gen 13) servers.	<ul style="list-style-type: none"> <li>DP5300</li> <li>DP5800</li> <li>DP8300</li> <li>DP8800</li> </ul>



# CHAPTER 2

## Monitor and manage the appliance

This chapter introduces the features and functionality of the ACM dashboard.


Topics include:

- [About the ACM dashboard](#)..... 18
- [Install the IDPA post-installation patch on DataProtection-ACM](#)..... 33
- [Start up the IDPA](#)..... 35
- [Access components with a browser](#)..... 36
- [User accounts for components](#)..... 37
- [Change passwords and synchronize components](#)..... 38
- [Configure IDPA to use specific interfaces for replication](#)..... 43

## About the ACM dashboard

The ACM dashboard enables you to manage settings for the appliance and individual components, update customer support information, and upgrade software for the appliance and its components. The ACM dashboard also performs system health monitoring for the appliance hardware.

To access the dashboard, type `https://<ACM IP address>:8543/` in a web browser and log in. The dashboard requires Google Chrome version 64 and later or Mozilla Firefox 47.2 and later.

 **Note:** The dashboard is enabled only after configuring IDPA.

The initial view displays the **Home** page and tabs for **Health** and **Upgrade**.

## Basic management tasks

The ACM Dashboard enables you to view system details, change the password of appliance components, and log out from the dashboard.

### Changing the appliance password

The appliance password is common for all IDPA components.


1. Click the **Change Password** icon.

2. Type the **Current Password**.

3. Type and confirm the **New Password**.

The password must contain 9 through 20 characters and include at least one of each type of supported character. The following types of characters are supported:

- Uppercase letters (A–Z)
- Lowercase letters (a–z)
- Numbers (0–9)
- Special characters: Period (.), hyphen (-), and underscore (\_)

 **Note:** A password with a period (.) as the last character (for example, `ldpa1234.`) is not accepted as a valid password.

- Must not start with a hyphen (-)
- The password must not include common names or user names such as `root` or `admin`.

4. Click **Change Password**.


The password change process for ACM and all the other IDPA components is initiated. The **Password change progress** shows the progress bar with status descriptions.

 **Note:** The password change process takes approximately 40 minutes to complete.

The password gets changed for the users in the following sequence:

1. ACM internal LDAP user `idpauser`
2. Storage (DDVE) `sysadmin` user
3. Backup Server (Avamar) users:
  - a. Operating system `admin` and operating system `root`
  - b. Avamar server users – `root`, `mcuser`, `repluser`, and `viewuser`
4. Backup server proxy operating system `root` user
5. IDPA System Manager(DPC) users: Operating system `admin` and operating system `root`

6. Reporting and analytics (DPA) users: Application Server operating system `root`, Datastore operating system `root`, Application server `administrator`
7. Search(DPS) operating system `root` and search default LDAP `root` and `admin`
8. Cloud disaster recovery(CDRA) `admin` password
9. VCenter and ESXi `idpauser` password.
10. ACM `root` password

 **Note:** Once the password is changed, ACM users will be logged out and they need to log in again using the updated password.

### Viewing version and build details

Click the **Information** (i) icon. The **About** page displays details about the IDPA software version, build number, and the hardware version.

### Logging out


Click the **Logout** button.

## Appliance Configuration Manager dashboard

The **Home** tab provides an overview of the status and settings for the IDPA components and also displays the general settings and customer information of the IDPA appliance.

On the dashboard **Home** tab, you can view the network configuration and product details, manage the password, time zone, SMTP, SNMP, and NTP settings, and modify customer support information.

You can also configure the LDAP settings, create and download log bundles, download the current appliance configuration, shutdown the appliance, register components with Secure Remote Services (formerly ESRS), and install optional components such as Reporting and Analytics, Search, Data Protection Advisor, and Cloud Disaster Recovery (CDRA) if not already installed.

 **Note:** The Secure Remote Services (SRS) is a separate application that can be installed and deployed. For more information on SRS such as overview, documentation, and so on, see [https://support.emc.com/products/31755?siteLocale=en\\_US](https://support.emc.com/products/31755?siteLocale=en_US).  
You can configure the Secure Remote Services present under the **General Settings** panel. If the Secure Remote Services is not configured, you can configure it by clicking the **Edit** icon.

### Downloading the configuration details


To download a PDF containing the current details of the IDPA configuration, click the Adobe PDF icon.

### Managing system components

The **Home** tab contains panels for each of the following:

- **IDPA System Manager**
- **Backup Server**
- **Protection Storage**
- **Reporting and Analytics**
- **Search**
- **Cloud Disaster Recovery**
- **Virtualization**
- **Customer Information**

- **General Settings**


 **Note:** If a component cannot be reached on the network or has an incorrect stored credential, the corresponding panel prompts the user to resolve the issue.

## IDPA System Manager panel

The **IDPA System Manager** panel displays the IDPA System Manager version and component IP address.

You can hover over the **Services** to view the status information for **IDPA System Manager** services.

To launch the web interface, click **IDPA System Manager Web UI** and log in.

 **Note:** If external LDAP has not been configured, then use the `idpouser` as the username. If external LDAP has been configured, then use the external LDAP username.

For more information about **IDPA System Manager** workflows and capabilities, refer to the *IDPA System Manager Administration Guide*.

## Backup Server panel

The **Backup Server** panel displays the component IP address, Avamar version, metadata of the total and available backup storage, number of NDMP servers, license status of the Backup Server node, and whether the installation of agents is in progress.

You can hover over the **Services** to view the status information for Avamar services.


Click **Backup Server Web UI** to launch the Avamar Web Interface and log in. You can download the Avamar agents from the web interface.

For more information about the role of backup agents and how to install them, refer to the *Avamar Administration Guide*.

## Protection Storage panel

The **Protection Storage** panel displays the DD OS version, component IP address, total and available backup storage, the file system and license status of the Protection Storage node, and any alerts that require your action.


To access additional functionality of the component, click the **Protection Storage System Manager** link.

 **Note:** Protection Storage (Data Domain) cannot be managed by the Data Domain Management Center (DDMC) instance.

### Expanding storage capacity

You can expand the storage capacity by obtaining the required additional licenses through ELMS (an electronic license management system).

#### Before you begin

 **Note:** Adding licenses to expand the storage directly from the Data Domain user interface is not recommended, as it may result in loss of critical functionality.

#### About this task

Once the system detects the hardware, the **Expand storage** option is available in the gear icon menu under the **Protection Storage** panel.

#### Procedure

1. In the **Protection Storage** panel, mouse over the gear icon on the top right and click the **Expand storage**.

The **Storage expansion and license upgrade** wizard appears.

2. Click **Browse** and select the required license files for the additional storage.
3. Click **Expand**.

### Results

After several minutes, the dashboard reflects the increased storage capacity.

## Configuring cloud long-term retention feature on IDPA

DD Cloud Tier is configured through ACM configuration. Follow the below procedures to create DD cloud units and configure Avamar backup policies for cloud long-term retention (LTR).

### Before you begin

**Note:** For detailed information on creating DD cloud units, refer *Data Domain Operating System Administration Guide*.

This process refers to the procedures in the following documents:

- *Data Domain Operating System Administration Guide* for DD OS 6.0 or higher
- *Avamar and Data Domain System Integration Guide* for Avamar 7.4 or higher

### Procedure

1. On the **ACM** home tab, click the **Protection Storage System Manager** link.

The **Data Domain System Manager** GUI is displayed.

2. Follow the "Importing CA certificates" procedure in the *Data Domain Operating System Administration Guide*.

After importing the certificate, close the **Data Domain System Manager**.

3. Connect to the Avamar user interface through IDPA System Manager.

The **Avamar Administrator** GUI is displayed.

4. Follow the "Adding or editing a Data Domain system with cloud tier support" procedure in the *Avamar and Data Domain System Integration Guide*.

**Note:** The ACM makes the step that refers to "Adding a Data Domain system" unnecessary. To learn how to access the **Edit Data Domain System** dialog box, refer to "Editing a Data Domain system."

5. Follow the "Creating a new tier group" procedure in the *Avamar and Data Domain System Integration Guide*.

6. To verify your configuration, click the **Activity** launcher button in **Avamar Administrator** and review the list of session on the **Activity Monitor** tab.

## Reporting and Analytics panel

The **Reporting and Analytics** panel displays the Data Protection Advisor (DPA) version, IP addresses for the Application Server and the Datastore Server, the license status of the Reporting and Analytics node, and any alerts that require your action.

You can hover over the **Services** to view the status information for Data Protection Advisor services.

To load the Reporting and Analytics console, click the **Reporting and Analytics Web UI** link.

If Reporting and Analytics is not configured during the initial configuration process, the panel displays a message indicating Reporting and Analytics is not configured. To configure the Reporting and Analytics node, click the message. The Reporting and Analytics Configuration

screen is displayed. On the **Reporting and Analytics Configuration** screen, provide the required license information and IP addresses and click **Configure**.

IDPA supports use of an external DPA implementation to analyze the system if you are running a corporate deployment of the DPA instance. However, IDPA dashboard (ACM) does not display any data that is associated with the external DPA separately. IDPA does not support local analytics and search functions when an external instance of DPA or Search is used. Moreover, if you are using an external DPA instance, you must configure and manage any such external DPA instances as external instances cannot be configured or managed through the ACM.

## Search panel

The **Search** panel displays the Search version, IP address for the Index Master node, and any alerts that require your action. To load the Search console, click the **Search** link.

Hover over **Services** to view the status information for Search services.

If Search is not configured during the initial configuration process, the panel displays a message indicating Search is not configured. To configure the Search node, click the message. The Search Configuration screen appears. On the **Search Configuration** screen, provide the required IP address and click **Configure**.

IDPA supports the use of an external Search node if you are running a corporate deployment of the Search instance. However, the Search panel on the IDPA dashboard (ACM) does not display any data that is associated with the external Search separately. IDPA does not support local analytics and search functions when external instances of Search are used. Moreover, if you are using an external Search instance, you must configure and manage any such external instances as external instances cannot be configured and managed through the ACM.

### Configuring clients in Search

To enable indexing for backup clients, additional configuration in Search is required.

Refer to the procedures in the "Collections" chapter of the *Data Protection Search Installation and Administration Guide*. In the **Sources** section of the **Collections** wizard, select the clients that are connected to the appliance.

All the domains under Avamar get indexed automatically. Only those client domains that are added post deployment of Search, are added manually.

## Cloud Disaster Recovery panel

The **Cloud Disaster Recovery** panel displays the CDRA version, and alerts that require any action. To load the Cloud Disaster Recovery console, click the **Cloud Disaster Recovery Web UI** link.

IDPA supports the use of an external CDRA if you are running a corporate deployment of the CDRA instance. However, the Cloud Disaster Recovery panel on the IDPA dashboard (ACM) does not display any events or data that is associated with the external CDRA separately. Moreover, if you are using an external CDRA instance, you must configure and manage any such external CDRA instances as external instances cannot be configured and managed through the ACM.

If CDRA is not configured during the initial configuration process, the panel displays **Click here to configure Cloud Disaster Recovery**, indicating that Cloud Disaster Recovery is not configured. To configure the Cloud Disaster Recovery node, click the message. The Cloud Disaster Recovery Configuration screen is displayed. On the **Cloud Disaster Recovery Configuration** screen, provide the IP address and click **Configure**.

#### **Note:**

- Do not change the Avamar root user password before configuring CDRA from the dashboard.

- Do not change the Data Domain boost user password before configuring CDRA from the Dashboard.
- If a cloud account and email address are not configured during the CDRA configuration, the CDRA Login page does not work. You must configure a cloud account and email address manually in CDRA.

## Connect to the cloud account and add Cloud DR targets

Connect the CDRA to the Amazon Web Services account and add targets to the account.

### Before you begin


- You have logged in to CDRA as administrator.
- You have an AWS account that is already configured before connecting to the cloud account.

 **Note:** IDPA does the CDRA configuration automatically.

### Procedure

1. Click **Cloud Account** on the menu bar.  
The **Connect to Cloud Account** page appears.
2. Click **Add Cloud Account**.
3. In the **Connecting to AWS Cloud account** dialog box, enter the access key and the secret key for the AWS account. [http://docs.aws.amazon.com/IAM/latest/UserGuide/id\\_credentials\\_access-keys.html](http://docs.aws.amazon.com/IAM/latest/UserGuide/id_credentials_access-keys.html) provides information about obtaining the access and secret keys.
4. To copy the IAM policy, click **Copy IAM Policy**.  
This action copies to the buffer a JSON version of the minimum AWS user account permissions that are required for Cloud DR implementation, which can then be applied to AWS to set the permissions policy for the AWS user.
5. To view the Identity and Access Management (IAM) policy that represents the minimum AWS user account permissions that are required for Cloud DR implementation, click **Show IAM Policy**.
6. To save the AWS cloud account, click **Verify & Save**.

The CDRA verifies that the account exists before saving the cloud account information and closing the **Connecting to AWS Cloud account** dialog box.

 **Note:** When you have provided credentials to an AWS account, you cannot change to another AWS account.

## Add cloud targets

You can add one or more cloud targets to the cloud account that includes selecting an Amazon S3 bucket and an encryption method.

### Procedure

1. Click **Cloud Account** on the menu bar.  
The **Connect to Cloud Account** page appears.
2. Click **Add Cloud DR Target** to set up one or more Cloud DR targets on the cloud account.  
The Cloud DR target is the S3 bucket on AWS where data is written when VMs are backed up to the cloud. The Cloud DR Server is deployed on one of the targets.

The **Add Cloud DR Target** dialog box opens.

3. Enter a name for the Cloud DR target.

The name entered here appears in the Avamar Administrator when creating a Cloud DR backup policy.

4. Select an Amazon S3 bucket for the Cloud DR target.
5. Click **Advance security option** and select an encryption method:

Option	Description
SSE-S3	Default encryption (no cost)
SSE-KMS	Key management service encryption (incurs a cost)

**Note:** If you select the SSE-KMS encryption method, only the default customer managed key is supported. Changing the encryption key might cause errors with the files in the Amazon S3 bucket.

For more information about these encryption methods, see:

- SSE-S3 - <https://docs.aws.amazon.com/AmazonS3/latest/dev/UsingServerSideEncryption.html>
- SSE-KMS - <https://docs.aws.amazon.com/AmazonS3/latest/dev/UsingKMSEncryption.html>

6. Click **Add**.

## Deploy the Cloud DR Server

Deploy the CDRS on a on a specific Cloud DR target.

### Before you begin

- Cloud DR targets are required in the AWS account before performing this task. [Connect to the cloud account and add Cloud DR targets](#) on page 23 contains information about adding Cloud DR targets to the AWS account.
- AWS Marketplace terms must be accepted before deploying the Cloud DR Server.

### Procedure

1. Click Cloud DR Server on the menu bar.
  - If no CDRS has been deployed, the **Deploy Cloud DR Server** page appears.
  - If the CDRS has already been deployed, the **Cloud DR Server** page appears. You cannot deploy additional CDRS instances.
2. In the **Cloud DR Server Configuration** section, select the Cloud DR target on which to deploy the **Cloud DR Server**.
3. To allocate IP addresses for the Cloud DR solution, provide the **IPv4 CIDR Range**.
4. In the **User Configuration** section, enter and confirm passwords for the CDRS Admin and CDRS Monitor users.

The passwords must:

- Be at least eight characters in length
- Contain characters of a minimum of three of the following types:
  - English uppercase: A-Z



- English lowercase: a-z
  - Numeric character: 0–9
  - Special (non-alphanumeric) characters
- a. Enter and confirm passwords for the CDRS Admin and CDRS Monitor users.
  - b. Enter an email address for DD Cloud DR password reset requests.
 

When the Cloud DR Server is successfully deployed, AWS sends an email to this address for verification. Follow the instructions in the email within 24 hours of deployment.
5. To confirm that you accept the marketplace terms, click the **I have accepted the AWS Marketplace terms** checkbox.
  6. Click **Deploy** Cloud DR Server.


The CDRA begins deployment of the CDRS to the Cloud DR target. If an error occurs during deployment, click **Cleanup** to delete the cloud resources that CDRS creates, and then retry deployment.

Deploying the CDRS may take up to 30 minutes.

If the deployment is successful, the Cloud DR Server page appears, listing the hostname of the CDRS host, and the region. Also deployed are:

- A Virtual Private Cloud (VPC).
- An Amazon Relational Database Services (RDS) catalog, to maintain persistent data.
- A private subnet for communication between the RDS and CDRS.
- A public subnet (Standard Mode) or private subnet (Professional Mode) with internet access to be used by CDRS.
- The CDRS EC2 instance.

The M4.Large instance type is used for the CDRS instance. To reduce deployment costs, you may want to purchase reserved instances from AWS; otherwise an on-demand instance is used. An elastic IP address is automatically assigned to the CDRS instance. You cannot change this IP address.

 **Note:** Multiple Cloud DR Add-on appliances can connect to a single Cloud DR Server instance. However, one Cloud DR Add-on appliance cannot connect to multiple Cloud DR Server instances.

## Results

When the CDRS is deployed, connect to the Cloud DR Server by clicking the CDRS hostname.

## Create rapid recovery images for protected VMs

You can accelerate the recovery process ahead of time by creating rapid recovery images for protected VMs.

### About this task

Creating a rapid recovery image starts the rehydration process and converts the VMDK files to an Amazon Machine Image (AMI). The recovery process then launches the recovered instance from the AMI.

Perform this procedure when a new backup copy is available in the Amazon S3 bucket.

### Procedure

1. In the CDRS user interface, select **Protection > VM Protection** in the navigation pane.

The existing protected VMs appear in the right pane. The **Rapid recovery image** column indicates whether the VM is enabled for rapid recovery.

2. Select one or more VMs and click **Create Rapid Recovery Image**.

### Results

- The CDRS creates the AMI and removes any previous AMI for an earlier copy.
- You can verify the results by reviewing the **Rapid recovery image** column.
- You can disable rapid recovery for a VM by selecting it and clicking **Disable Rapid Recovery Image**.
- You can monitor the protection status and its progress by reviewing the **Protection status** column.

**i** **Note:** Ensure that when you set up Disaster Recovery for client VMs that need to be restored on the cloud using CDRA, the OS version on the client VMs must be supported by AWS at the time of restore. While performing a recovery to AWS, if the kernel version of the OS on the client VMs is not an AWS supported kernel version, then the recovery activities fail with an error message.

## Perform a DR test or failover of a single VM

This procedure describes how to perform a DR test or failover on a single VM by using the Cloud DR Server interface.

### Before you begin

To perform a DR test or failover of a VM by using the Cloud DR Server interface, you must have instances of virtual machines that are backed up by the on-premises backup software and copied to the cloud.

### About this task

To ensure a successful failover, and better prepare for a disaster, best practices recommend testing various disaster recovery scenarios. After performing a DR test, you can promote the test to a failover.

When an operational error or disaster occurs on premises, you can fail over a VM to the public cloud. When the on-premise issue is resolved, you may fail the VM back to the on-premises environment.

**i** **Note:** When performing failovers, you must fail over VMs in the correct order to ensure the continued operation of servers and applications.

### Procedure

1. In the Cloud DR Server user interface, select **Recovery > VM Recovery**

You can also open the **VM Recovery** page from the dashboard by clicking **See All** in the **Recovery** pane.

The **VM Recovery** page appears.

2. Select the VM you want to recover and click **DR Test** or **Failover**.

If you click **Failover** and the VM has never been tested, a message prompts you about this condition. Running a DR test is recommended before implementing a failover. The message also recommends that you shut down the production VM to avoid a possible data loss that is caused by accidental user access.

Click **Select Copy** to continue.

3. On the **Copy and Network** window, select the VM copy and the network where you want to launch the EC2 instance.

The **Advanced Options** section at the bottom of the window indicates the auto-selected EC2 instance type and security group to use for the recovery process.

4. If you do not want to use the auto-selected EC2 instance type or security group, expand **Advanced Options** and select an alternate EC2 instance type and one or more security groups.
5. Click **Start DR Test** or **Start Failover**.

### Results

The recovery process begins and you can monitor progress on the **DR Activities** page. During the recovery process:

1. If the VM is not enabled for rapid recovery, a temporary Restore Service instance is launched in each region where recovery is needed. This instance performs hydration during recovery, and is automatically terminated after 10 minutes of idle time.
2. The Cloud DR Server then converts the VMDK to an AMI and launches an EC2 instance that is based on the AMI.
3. When the EC2 instance is running, the Cloud DR Server deletes the VMDK and AMI.

### Virtualization panel

The **Virtualization** panel displays information about the internal virtual environment on the appliance, including the IP address and version of the vCenter server and ESXi host.

### Customer information panel

The **Customer Information** panel displays the contact information of the administrator. It also displays the location or site information.

#### About this task

To view the full value of an item, hover over the item. Perform the following actions to change the customer information:

#### Procedure

1. In the **Customer Information** panel, click the corresponding **Edit** icon next to the value you want to modify.
2. Type a new value:
  - **Admin Name**—Type the name of the administrator and click **Save**.
  - **Admin Number**—Type the phone number of the administrator and click **Save**.
  - **Admin Email**—Type the email address of the administrator and click **Save**.
  - **Company Name**—Type the name of the company and click **Save**.
  - **Location**—Type the location of the IDPA and click **Save**.
  - **Site ID**—Type the Site ID of the IDPA and click **Save**.

You can verify your Site ID number on the Online Support website:

- a. Log in to the Online Support website with your credentials.
- b. Select **Service Center**.
- c. On the Service Center page, below the Sites and Contracts area, click **Administer a Site**.
- d. Ensure that the site where the storage system is installed is listed in the **My Sites** area.

- i **Note:** You can also search for a site and add it to the **My Sites** list. If a site ID is not available or the correct site ID is not listed, you must notify your local field representative to request one.

## General Settings panel

The **General Settings** panel displays basic settings including time and network configuration.

### About this task

To view the full value of an item, hover over the item. Perform the following actions to change the general settings information:

### Procedure

1. In the **General Settings** panel, click the corresponding **Edit** icon next to the value you want to change.
2. Select or type a new value:
  - **Time Zone**—Select the time zone from the list and click **Save**. The time zone is updated for the Avamar, Data Domain, DP Advisor nodes, and Search nodes, the ACM, and the vCenter host server.
    - i **NOTICE** If this setting is changed, the Data Domain node restarts automatically.
  - **SMTP**—Type the SMTP server IP address and click **Save**. The SMTP server IP address is updated for the Avamar and Data Domain nodes and the vCenter host server.
    - i **NOTICE** If this setting is changed, the Avamar MCS and Backup Scheduler services restart automatically. Ensure that there is no backup running on the Avamar node before changing this setting.
  - **SNMP**—Type the SNMP server IP address and click **Save**. The SNMP server IP address is updated for the Avamar and Data Domain nodes and the vCenter host server.
  - **NTP**—Type the NTP server IP address and click **Save**. The NTP server IP address is updated for the Avamar, Data Domain, DP Advisor, and Search nodes, the ACM, and the vCenter host server.
    - i **Note:** The NTP server must be specified by IP address. Do not use a server name in this field.
3. To change ACM DNS, perform the following step:
  - a. Edit the `etc/resolv.conf` file, and then specify the IP address of the customer DNS server and the domain name.

For example, when the customer environment has a public DNS server with an IP address of 10.254.66.23 and the domain name is mycompany.com, the `/etc/resolv.conf` file contains the following entries:

- i **Note:** The following output is an example, not the actual domain name and nameserver addresses. These values must be provided by the customer.

```
search mycompany.com
nameserver 10.254.66.23
nameserver 192.168.100.100
```

- i **Note:** Ensure that the entry for the public DNS server appears before the private DNS server. If the private DNS server appears first, the DPA integration with the Data Domain system will fail.

## Configure external LDAP environment

The **Configure LDAP settings** page on the ACM dashboard is used to configure the LDAP settings.

### About this task

By default, IDPA is set to use internal LDAP configuration. However, using the **Configure LDAP settings** page, you can change this default configuration to an external LDAP configuration.

The LDAP username and password configured using the **Configure LDAP settings** page are used to log in to IDPA System Manager and Search components only. To configure LDAP settings for other components of IDPA, such as Avamar, Data Domain, DPA, Compute node, and ESXi, see the respective component's documentation. You can also see the *Product and subsystem security* chapter in the *Dell EMC Integrated Data Protection Appliance Security Configuration Guide* for more information.

Also, you cannot view the existing LDAP settings from the **Configure LDAP settings** page. If you want to view the LDAP settings, click the **Download current configuration** icon that is next to the **Shutdown appliance** icon on the ACM dashboard. IDPA generates a PDF file (as part of the current configuration of the appliance), detailing all your current LDAP settings.

To configure the LDAP settings, perform the following actions:

### Procedure

1. Select **LDAP type**.
2. Check **Secure LDAP** to verify if the LDAP is secure.
3. Enter **Server hostname**.
4. Enter **Domain name**.
  - The domain to which the **Server hostname** belongs should be the same as the **Domain name** specified.
  - The domain name can be alphanumeric characters and special characters.

5. Enter **Query username**.

The query username can be alphanumeric characters and special characters (-, \_, ., ,, and =).

6. Enter **Query password**.

The query password should consist a minimum of 9 to 20 characters, contains at least one lower case alphabet, one upper case alphabet, one digit, and any of the supported special characters (-, \_, and .).

7. Enter **Admin group name**.

The **Admin group name** is case-sensitive and must be identical to the group name entered in the LDAP server. If there is a mismatch in the names, the configuration fails.

You must have already added the required users and provided the appropriate privileges to those users who need access to the IDPA System Manager (DPC) because IDPA System Manager is used to access or connect to the user interfaces of respective point products. For more information, see the *Configure LDAP or AD user access* section in the *Dell EMC IDPA System Manager Version 18.2 Getting Started Guide*, which is available on the Online Support website at <https://www.dell.com/support/home>.

8. Enter **Port number**.
9. Click **Validate** to check the validation of your LDAP details.

10. Click **Submit**, and then click **Close**.

The settings have been updated to external LDAP environment.

11. Click **Close**.

## Revert to internal LDAP environment

By default, IDPA uses the internal LDAP configuration. However, if you have changed this default configuration to an external LDAP configuration and if you need to revert it to internal LDAP configuration, perform the following steps:

### About this task

Consider a scenario where you have changed the common appliance password after configuring the external LDAP. In such cases, the internal LDAP account is still associated with the old common appliance password that was in use before the external LDAP was configured. To create or verify an internal LDAP password, see the [Troubleshoot LDAP](#) on page 67 section.

### Procedure

1. Update the LDAP settings from the ACM dashboard using the following values:
  - LDAP type: *OPENLDAP*
  - Secure LDAP: *Checked/selected*
  - Server hostname: *<ACM\_HOSTNAME\_FQDN>*
  - Domain name: *dc=idpa,dc=com*
  - Query username: *uid=idpauser,ou=People,dc=idpa,dc=com*
  - Query password: *<Internal LDAP user account password>*
  - Admin groupname: *dp\_admin*
  - Port number: *636*
2. Connect to the ACM by using an SSH client.
3. Modify the following settings in the `/usr/local/dataprotection/var/configmgr/server_data/config/commonconfig.xml` file:

```
<useExternalLdapSettings>true</useExternalLdapSettings> to  
<useExternalLdapSettings>false</useExternalLdapSettings>
```

## Shut down the IDPA

You can shut down the IDPA appliance from the ACM console.

### Before you begin

- Ensure that there are no backup jobs running on the Avamar Backup Server.
  - Note:**
    - If there are backup jobs running on Avamar Backup Server when the IDPA appliance shutdown operation is in progress, the shutdown operation waits for the Avamar jobs to complete with the status `Waiting for shutdown of Backup Server`.
    - It is recommended that you wait for the backup jobs to complete. However, if you must shut down the appliance immediately, and then you must log in to the Avamar UI and cancel the backup jobs that are in progress.
- Shutting down the IDPA appliance requires physical intervention, or use of IDPA, to restart the system. If you are remotely shutting down the IDPA appliances, ensure that either you have physical access to the system or have configured iDRAC on the system.

### About this task

To shut down IDPA, perform the following actions:

#### Procedure

1. On the ACM dashboard **Home** tab, click the **Shutdown Appliance** icon.
2. Enter the ACM root password, and click **Yes**.

The appliance shut down progress is displayed.

The IDPA appliance shuts down the components in the following order:

- Backup Server
- Search
- Reporting and Analytics
- System Manager
- Cloud Disaster Recovery Agent
- Protection Storage
- Appliance Configuration Manager
- vCenter Server
- Compute Node

If the ACM-initiated shutdown fails to shut down the **Backup Server** and the **Protection Storage** or both, then the ACM displays a message listing the component(s) that failed to shut down. The ACM then continues to shut down the other components.

If any components fail to shut down, you must manually shut down the components. For more information about manual shut down of IDPA components, see [Troubleshooting shut down](#).

## Advanced backup configuration

The **Advanced Backup Configuration** tab allows an administrator to add, delete, or edit a NAS system on the IDPA.

### Configuring NAS servers with NDMP Accelerators

#### Before you begin

Adding a NAS system requires at least one NDMP Accelerator.

#### About this task

From the **Advanced Backup Configuration** tab of the dashboard, an administrator can add the following supported NAS systems:


- EMC Celerra, EMC Unity, or EMC VNX
- EMC Isilon
- NetApp filer
- Oracle ZFS

This view also allows an administrator to edit or delete an existing connected NAS system.

#### Procedure

1. From **Advanced Backup Configuration > NAS** page, click **Add**.
2. Select the **NAS Type**, **Encoding Scheme**, and **NDMP Accelerator**.

3. Type the **NDMP Account Name**, **NDMP Account Password**, and **Avamar Account Name**.

 **Note:** Only the following characters may be used in the NDMP account name: a–z (lowercase), '.', '-', and '\_'.

A green check mark indicates that the **NDMP Account Password** and **Confirm Password** field match.

4. Click **Save**.

## Results

After adding a NAS system, you can create a protection job for the new system with the Avamar Administrator GUI.

## Health

The **Health** tab displays status information and alerts for the server hardware and the virtual infrastructure components of IDPA including vSphere alerts from ESXi servers.


The IDPA uses Secure Remote Services to automatically send critical and fatal events to Customer Support for troubleshooting (events are sent only for the IDPA Appliance, Avamar, Data Domain, and Data Protection Advisor). A support ticket is opened based on the events that are received. Critical and fatal events are sent to Customer Support either after 30 min have elapsed, or when 30 events have accumulated, whichever occurs first.

By default, all events are deleted after 30 days. If no events have occurred in the selected time period, the **Event Summary** and **Event Details** panel indicate that there is no data available.

### Event Summary

The **Event Summary** panel displays a summary of the status events on the appliance, which is grouped by **Device** and **Severity**.

To refresh the data displayed on the **Health** page, click the **Refresh** icon beside the **Event filter** list.

 **Note:** The application refreshes the data based on the filters that you have selected.

To change the time period for which events are displayed, select an option from the **Event filter** list. Selecting **Today** lists events that have occurred from midnight to the present.

To show only events for a specific device or of a specific severity in the **Event Details** panel, click the corresponding wedge in the chart.

### Event Details

The **Event Details** panel displays a list of the status events on the appliance. Use the **Component**, **Component Name**, and **Severity** lists and click **Search** to filter the events and display the details of each event. To read more detailed information about an event, click its table entry. To export the list as a .CSV file, click the **CSV** icon.

To clear the options selected in the filters, click **Reset**.

### Troubleshooting

If a critical component of the health monitoring function is not working, the panels indicate that the service is down and an error message is displayed at the top of the page. For more information about how to resolve issues with the **Health** tab, see [Troubleshooting health monitoring](#) on page 69.



## Upgrade

The **Upgrade** tab allows an administrator to update the IDPA software. Refer to [Upgrade the IDPA software \(DP4400\)](#) on page 53 for more information.

## Install the IDPA post-installation patch on DataProtection-ACM

Perform the following steps to install a postinstallation patch:

### Before you begin

You must go through the readme file available along with this postinstallation patch to verify if there are any preinstallation tasks that you must perform before applying this postinstallation patch.

### Procedure

1. Go to [https://support.emc.com/downloads/41849\\_Integrated-Data-Protection-Appliance](https://support.emc.com/downloads/41849_Integrated-Data-Protection-Appliance) website to verify if any postinstallation patches are available for your version of IDPA. If any postinstallation patch is available, download it to your local folder.

Information similar to the following is displayed when you go to the [https://support.emc.com/downloads/41849\\_Integrated-Data-Protection-Appliance](https://support.emc.com/downloads/41849_Integrated-Data-Protection-Appliance) website to download the postinstallation patch:

```
Idpa_post_update_N.N.N.nnnnnn.tar.gz
```

Where:

- *N.N.N* is the latest postinstallation patch version.
- *nnnnnn* is the build number.

2. Copy the `Idpa_post_update_N.N.N.nnnnnn.tar.gz` file to `/data01/upgrade` location on the ACM.

**i** **Note:** Ensure that only the postinstallation patch file exists in this folder and no other packages exist. If there are any other install files in this folder, you must delete them before installing the patch.

3. Ensure that you have the executable permission for the install package that you copied to the `/data01/upgrade` directory. If you do not have the executable permission, run the `chmod 644 Idpa_post_update_<version.build number>.tar.gz` command to obtain the permission.
4. Log in to the ACM and click the **Upgrade** tab.

The latest upgrade package file is automatically detected and is displayed in **Upgrade Binary Location**.

5. Click **Extract**.


The browser redirects to `https://<acm_configured_public_ip>:9443` with a changed port number.

**i** **Note:** The validation process takes approximately 15 minutes, and the ACM can time out while waiting. To resume the session, you must login in once again.

The system validates the following:

- VLAN status

- Validates if it can connect to all 3 ESXi servers (Applicable for DP5300, DP5800, DP8300, and DP8800 models only).
- Validates the number of vSAN clusters (Applicable for DP5300, DP5800, DP8300, and DP8800 models only).
- Validate if the vSAN datastore is greater than 16.2 TB (Applicable for DP5300, DP5800, DP8300, and DP8800 models only).
- Validates the connection to all components.
- Validates the license status.
- Validates if Avamar services are running.
- Validates to ensure that no backup jobs are running on Avamar.
- Validates if the DD capacity used is less than 85%.
- Avamar checkpoint validation
- vSAN requirements (Applicable for DP5300, DP5800, DP8300, and DP8800 models only):
  - Checks for inaccessible vSAN objects or virtual machines.
  - Checks if the vSAN cluster requires a disk data rebalance.
  - Checks if a component rebuilding task is currently in progress in the vSAN cluster.
  - Checks for sufficient disk space requirements (30%).
- ESX upgrade prerequisites:
  - Requires valid connection points to all the required ESXi servers.
  - Requires that the applicable ESXi servers are in maintenance mode.
  - Requires that the VCSA version is higher than ESXi version. In case, there is a major upgrade to VCSA, then the private IP address of the VCSA, 192.168.100.108 should not be in use.


 **Note:** The private IP address of the VCSA, *192.168.100.108*, is only required temporarily during the upgrade process.


A table displays the current version, new version, and type (for example, major, patch) of each component for which an upgrade is available.

If the validation is not successful, check the errors that are displayed when you hover over the exclamation mark. Resolve all the errors and then click **Extract**.

6. Click **Upgrade**, type the ACM password, and click **Authenticate**.
7. To start the upgrade, click **Yes**.

The upgrade process starts.

 **Note:** The upgrade process can take five to six hours, during which all activity on the IDPA must be quiesced. The system is not accessible during parts of the upgrade.

 **WARNING** If the upgrade process is still running, do not shut down/reboot the ACM or restart the *dataprotection\_webapp* service. For some reason, if you have shut down/rebooted the ACM or restarted the *dataprotection\_webapp* service while the upgrade process is still running, and if you are unable to see the progress of the upgrade after the ACM is rebooted, then contact a technical support professional.

The **Upgrade Progress** displays the following:

- The ACM upgrade progress bar with the progress percentage and description of the upgrade step in progress
  - Individual component upgrade progress bar with progress percentage and description of the upgrade step in progress
8. After all the components are upgraded successfully and the overall IDPA upgrade progress bar shows 100%, click **Finish**.
  9. Click **OK** on the **Upgrade Finish** window.

- Note:** After the upgrade is complete, there can be a scenario where Avamar is in maintenance mode and the jobs cannot be executed at that time. After Avamar comes out of the maintenance mode, the jobs are executed.
- Note:** After the upgrade is complete, acknowledge the notification `Event ConnectEMC notification failed on the Avamar Administrator`. This notification is generated during upgrade when the MC service is disconnected.
- Note:** After the upgrade is complete, there is a warning on vCenter about a potential vulnerable issue that is described in CVE-2018-3646. IDPA uses the ESXi version which has the fix for this vulnerability, however this fix is not enabled by default as it has severe performance impact. Refer to the *IDPA Security Configuration Guide* for more information.
- Note:** If you have NDMP Accelerator nodes added to IDPA, you must manually upgrade the NDMP accelerator nodes. To upgrade NDMP accelerator nodes, see the *Upgrading the accelerator software* section in the *Dell EMC Avamar NDMP Accelerator for Dell EMC NAS Systems User Guide*.

The dashboard with all the products and their upgraded versions are displayed along with the newly configured ACM. If the upgrade process does not complete as expected, see [Troubleshooting component software upgrades](#) on page 70.

If the upgrade for any component fails, then the upgrade process is stopped until you troubleshoot and resolve the failure. However, if there are any noncritical warnings, the upgrade process continues. These warnings must be resolved once the upgrade process is completed.

## Start up the IDPA

The following procedure is applicable only for DP5800, DP8300, and DP8800 models. IDPA DP4400 model has only one ESXi Server and powering that ESXi Server ensures powering of all IDPA point products in the required sequence.

### About this task

Powering on IDPA requires starting individual components in the correct order.

### Procedure

1. Power on Data Domain system.
2. Power on the NDMP accelerator or accelerators if they are included in the configuration.

- Note:** Do not continue until both Data Domain and all NDMP accelerators are fully initialized. To verify that the Data Domain system is fully initialized, log in to the Data Domain system using `sysadmin` as the *username*, and for *password*, use the IDPA common password. Check the file system status using the `filesys status`

command. The file system should be up and running. To verify that the NDMP accelerators are fully initialized, connect to the accelerator node using **SSH**.

3. For configurations with a physical Avamar implementation, power on the utility node and storage nodes.

This step is not necessary for configurations with AVE.

4. Login to the Avamar Admin GUI to ensure that the appliance is powered on and Avamar is fully initialized.
5. On IDPA DP5800, DP8300, and DP8800 models, power on each of the ESXi servers, moving from the bottom ESXi server to the top.

### Results

The remaining process finishes automatically. Once the ESXi servers are powered on, IDPA automatically starts all other components.

For issues during startup, see [Troubleshooting startup](#) on page 63.

**Note:** After IDPA starts successfully, you can connect to the ACM dashboard and monitor the progress of the startup. If there is a failure in the startup, the application displays an error message with an option to access the ACM dashboard page.

## Access components with a browser

In addition to clicking the links in the ACM panel, you can access the user interface for individual components by browsing to the corresponding network location and typing the username and password.

In each of the following sections, *<component\_ip>* refers to the IP address of the component. The credentials for Search and IDPA System Manager are determined by your LDAP setup. The IDPA System Manager is used to access or connect to the user interfaces of respective point products. The IDPA System Manager uses single sign-on when you are trying to access a particular point product's UI.

The LDAP references in the below table apply to IDPA System Manager and Search components only. The appliance and other components do not use the LDAP settings that are configured from the ACM.

**Note:** Ensure you are using Flash version 27.0.0.183 or later to access the vCenter web client.

**Table 11** Access Components

Component	Location	SSO from IDPA System Manager	Username
Avamar client manager	<a href="https://&lt;component_ip&gt;/aam">https://&lt;component_ip&gt;/aam</a>	Yes	MCUser
Avamar user interface	<a href="https://&lt;component_ip&gt;/mcui">https://&lt;component_ip&gt;/mcui</a>	Yes	MCUser
Data Domain user interface	<a href="https://&lt;component_ip&gt;">https://&lt;component_ip&gt;</a>	Yes	sysadmin

**Table 11** Access Components (continued)

Component	Location	SSO from IDPA System Manager	Username
IDPA System Manager user interface	https:// <component_ip>	Not applicable	<username>@<domain> <b>Note:</b> If external LDAP has not been configured, then the username is <code>idpauser</code> , by default.
DP Advisor user interface	https:// <component_ip>: 9002/ dpai/jsp	Yes	administrator
Search user interface	https:// <component_ip> /admin/#/login	Yes	<username>@<domain> <b>Note:</b> If external LDAP has not been configured, then the username is <code>idpauser</code> , by default.
vCenter web client	https:// <component_ip>	No	idpauser
Cloud Disaster Recovery	https:// <component_ip>	No	User name is admin

## User accounts for components

The IDPA configuration uses the user accounts in [Table 12](#) on page 37. By default, these accounts use the common IDPA password that is set from the **General settings** page of the ACM UI.

The LDAP references in the below table apply to IDPA System Manager and Search components only. The appliance and other components do not use LDAP.

For information about how to change component passwords, see [Change passwords and synchronize components](#) on page 38.

**Table 12** Component and user account mapping

Component	Username	Password
ACM	root	Common password provided during IDPA Appliance configuration.


**Table 12** Component and user account mapping (continued)

Component	Username	Password
IDPA System Manager (If external LDAP is not configured)	idpauser	Common password provided during IDPA Appliance configuration.
IDPA System Manager (If external LDAP is configured)	Respective LDAP credentials	External LDAP password as applicable.
Avamar	admin	Common password provided during the IDPA Appliance configuration
Data Domain	sysadmin	Common password provided during the IDPA Appliance configuration.
Data Protection Advisor	administrator	Common password provided during IDPA Appliance configuration.
Search	Respective LDAP credentials. If external LDAP is not configured, then idpauser	Common password provided during IDPA Appliance configuration.
CDRA	admin	Common password provided during IDPA Appliance configuration.
CDRS	admin or monitor	Password set during CDRS deployment.
vCenter	idpauser	Common password provided during IDPA Appliance configuration.
ESXi	idpauser	Common password provided during IDPA Appliance configuration.

## Change passwords and synchronize components

Single-click user password change is one of the features, which simplifies the password maintenance of IDPA.


It is recommended that you use this feature for changing the password as it changes passwords for all the components in IDPA.

 **WARNING** Changing passwords of individual components is not recommended. Due to any unforeseen circumstances, if you have to change passwords of individual components, see the following section.

### Changing passwords for individual components

Some changes to component passwords and settings require updating the settings of other components.

Changing a password for an IDPA component causes the ACM UI to display the `password out of sync` error message. To enable the ACM to gather health information for the component, you must update the stored password (old password) in the ACM UI with the respective component's updated password. To update an unsynchronized password, click the error text.

 **Note:** All passwords for the individual components must adhere to the IDPA requirements, even when they are changed on individual components.

**Note:** If you modify the password manually on the Avamar server and do not use the change password option on the IDPA Appliance the system displays an error message when you try to update the password using the ACM dashboard. For more information about resolving the Avamar password being out of sync, see the [Credential mismatch](#) section.

## Data Domain settings

### Updating the Data Domain password

For information about how to change the Data Domain `sysadmin` account password, refer to the *Data Domain Operating System Administration Guide*. After changing the password for the `sysadmin` account, log in to DP Advisor and update the Data Domain SSH credentials to match.

**NOTICE** Update the Data Domain SSH credentials in DP Advisor immediately. Failure to do so can cause account lockout as DP Advisor repeatedly tries to connect with the old password.

After updating the password in DP Advisor, log in to the ACM and update the **Protection Storage** password to match.

**Note:** Do not change DD boost user password before configuring CDRA from Dashboard.

## Avamar settings

### Updating Avamar passwords

Avamar uses multiple user accounts, including `MCUser`, `viewuser`, `server root`, `OS admin`, and `OS root`. The IDPA requires that the `OS admin` and `OS root` accounts use the same password. The `MCUser`, `viewuser`, and `server root` accounts must also share a password, which can be different than the `OS admin` and `OS root` password. For more information about how to change an Avamar password, refer to the *Avamar Administration Guide*.

After changing the password for any Avamar account, log in to the ACM and update the **Backup Server** password to match.

If you change the `MCUser` account password, update it in the Search Admin UI. For more information about how to change the Avamar password for Search, refer to the *Data Protection Search Installation and Administration Guide*.

If you change the `viewuser` account password, update it in the DP Advisor UI. For more information about how to change the Avamar password in DP Advisor, refer to the *Data Protection Advisor Installation and Administration Guide*.

### Updating the DD Boost user password

After changing the password for the Data Domain `DDBoostUser` account, log in to the **Avamar Administrator** GUI. Edit the Data Domain system settings and update the DD Boost user password to match. For more information, refer to the "Editing a Data Domain system" procedure in the *Avamar Administration Guide*.

**Note:** Do not change DD boost user password before configuring CDRA from Dashboard.

## DP Advisor settings

### Updating DP Advisor passwords

To change the DP Advisor `administrator` account password or `root` password, you must log in and change that password for each DP Advisor node. For more information about how to change a password in DP Advisor, refer to the *Data Protection Advisor Installation and Administration Guide*.

After changing the password on all nodes, log in to the ACM and update the **Reporting and Analytics** password to match.

### Updating the Data Domain SNMP community string

If the community string is changed from its default value of *public*, DP Advisor must be updated to reflect the change.

1. Log in to Data Domain and change the community string with the following command, where *<community\_string>* is the new string and *<Dpa\_DC\_Agent\_IP>* is the IP address of the Data Collection Agent VM.

```
snmp add rw-community  
<community_string> hosts  
<Dpa_DC_Agent_IP>
```

2. In the **Reporting and Analytics** panel of the ACM, click the **Reporting and Analytics Web UI** link.
3. Click **Manage Credentials** on the **Admin > System** page.
4. Select the **EMC Data Domain Credential** and update the community string to match.


## Search settings

To change the Search OS `root` password, you must log in and change the OS `root` password for each Search node.

### Updating the Search password

For more information about how to change the OS `root` password, refer to the *Data Protection Search Installation and Administration Guide*.

After changing the password for the Search OS `root` account, log in to the ACM and update the **Search** password with the same password that you used for Search OS `root` account.


 **Note:** #, ?, /, and \ are illegal characters for new passwords.

## vCenter settings

For information about how to change the vCenter `root` password, refer to the documentation on the vCenter Support website.

### Updating the vCenter password for the ACM

After changing the password:

 **Note:** If you are manually changing the password for the vCenter Server, the password you set for the `vsphere.local\Administrator` and the `root` user accounts must be the same.

1. Log in to the ACM with SSH.
2. Change directory to `/usr/local/dataprotection/customscripts/tools`
3. Run the script `sync_vcenter_password.sh`
4. Modify the permissions on the script by running the command `chmod +x sync_vcenter_password.sh`

For more information about the `sync_vcenter_passwords.sh` script, run `sync_vcenter_passwords.sh -h`

If you need to log in to vCenter to troubleshoot an issue encountered during installation, use the user `idpauser@localos` and the common password for the IDPA. This user account has limited privileges, but has access to information that can help identify and address problems.



### Updating the vCenter password for Avamar

1. Connect to the Avamar user interface with an SSH client as a user with the Administrator role. The **Avamar Administrator** GUI is displayed.
2. Locate the vCenter client in the vCenter domain.
3. Edit the vCenter client and update the `root` password with the same password that you used for the root account.

### Updating the `vsphere.local\Administrator` password

For information about how to change the `vsphere.local\Administrator` password, refer to the documentation on the vCenter Support website. The domain is `vsphere.local`.

## Configure the root password expiry policy

While the vCenter root password is still valid/has not expired, and if you want that the vCenter root password should never expire for the vCenter root user, perform the following steps:

### Procedure

1. Log in to the **VMware vSphere Appliance Management UI** by going to `https://<VCSA hostname or IP>:5480` using the credentials as `root/<common IDPA password>`.
2. In the **vCenter Server Appliance Management UI**, click **Administration**.
3. In the **Password Expiration Settings** pane, select **No** for the **Root password expires** field.
4. Click **Submit**.


## Change the expired root password

If your vCenter root password has already expired for the vCenter root user, perform the following steps to change the password:

### Procedure

1. Log in to the **VMware vSphere Appliance Management UI** by going to `https://<VCSA hostname or IP>:5480` using the credentials as `root/<common IDPA password>`.
2. In the **vCenter Server Appliance Management UI**, click **Administration**.
3. In the **Change root password** pane, specify all the required fields and click **Submit**.

The new password that you are specifying must contain at least six characters and it should not be the same as your previous five passwords.

 **Note:** To ensure that you are never logged out of the vCenter server, configure the password expiration settings for the root user account to never expire.

4. Synchronize the changed password with the ACM. For more information about changing passwords and synchronizing components, see [Change passwords and synchronize components](#) on page 38.

## Change expired password of administrator@vsphere.local user account

This topic details on how to change the expired password for administrator@vsphere.local user account when the upgrade is not initiated or if the upgrade fails.

### When the upgrade is not initiated

When the upgrade is still not initiated, you must perform the following steps to change the expired password of the administrator@vsphere.local user account:

#### Procedure

1. Log in to the **VMware vSphere Appliance Management UI** by going to `https://<VCSA hostname or IP>:5480` using the credentials as `administrator@vsphere.local/<common IDPA password>`.
2. In the vCenter Client UI, click **Administrator@VSPHERE.LOCAL**.
3. From the drop-down menu, select **Change Password**.
4. Specify the required fields.
5. Synchronize the changed password with the ACM.

For more information about changing passwords and synchronizing components, see [Change passwords and synchronize components](#) on page 38.

### If the upgrade fails

If the upgrade fails, you must perform the following steps to change the expired password of the administrator@vsphere.local user account:

#### Procedure

1. Log in to the **VMware vSphere Appliance Management UI** by going to `https://<VCSA hostname or IP>:5480` using the credentials as `administrator@vsphere.local/<common IDPA password>`.
2. In the vCenter Client UI, click **Administrator@VSPHERE.LOCAL**.
3. From the drop-down menu, select **Change Password**.
4. Specify the required fields.
5. Cycle through a new password five times to clear the restriction and reset to the same password that was set before the password expiry.
6. Initiate the IDPA Upgrade process once again using the **RETRY** option.

## Change expired password of root user account

If the upgrade fails, you must perform the following steps to change the expired password of the root user account:

#### Procedure

1. Log in to the **VMware vSphere Appliance Management UI** by going to `https://<VCSA hostname or IP>:5480` using the credentials as `root/<common IDPA password>`.
2. In the **vCenter Server Appliance Management UI**, click **Administration**.
3. In the **Change root password** pane, specify all the required fields and click **Submit**.
4. Cycle through a new password five times to clear the restriction and reset to the same password that was set before the password expiry.
5. Initiate the upgrade process using the **RETRY** option.

## ESXi settings

### Updating the ESXi password

For information about how to change the ESXi password, refer to the documentation on the ESXi Support website. After changing the password:

1. Log in to the ACM with SSH.
2. Change directory to `/usr/local/dataprotection/customscripts/tools`
3. Run the script `sync_Switch_Server_ESX_Passwords.sh`
4. Modify the permissions on the script by running the command `chmod +x sync_Switch_Server_ESX_Passwords.sh`

For more information about the `sync_Switch_Server_ESX_Passwords.sh` script, run `sync_Switch_Server_ESX_Passwords.sh -h`

**Note:** The script `sync_Switch_Server_ESX_Passwords.sh` is named as `sync_ESX_Passwords.sh` for IDPA systems that shipped with version 2.0, although they have been updated to a newer version of the software.

## Configure IDPA to use specific interfaces for replication

A replication job copies the client backup data from the source IDPA to another IDPA, for example, a Data Domain system. The purpose of replication is to protect against data loss if the source IDPA system fails.

### About this task

Perform the following steps to configure replication of the backup data:

After performing the following steps, you must continue to follow the steps mentioned in the:

- *Replication* section of the *Dell EMC Avamar Administration Guide* to configure replication.
- For more information about ifgroups for replication traffic, see the *Dell EMC Data Domain Boost for Partner Integration Administration Guide*.

**Note:** The need for additional steps listed below are to configure the IDPA appliance to use 10G connections instead of the default 1G connection for the replication.

### Procedure

1. Log in to the Data Domain system using SSH.
2. Run the following command to list the available *mtree* (Avamar mtree) on the Data Domain system:

```
sysadmin@ddhostname # mtree list
```

Output similar to the following is displayed:

Name	Pre-Comp (GiB)	Status
/data/col1/avamar-1542004352	3999.3	RW
/data/col1/backup	0.0	RW
/data/col1/esx1-logs	0.0	RW/Q

Note down the Avamar mtree details.

- Run the following command to assign Avamar mtree to the *ifgroup*, and also to add the destination Data Domain server:

```
ifgroup replication assign <IFGROUP_NAME> mtree <MTREE_PATH> remote
<TARGET_DD_MANAGEMENT_HOSTNAME>
```

Output similar to the following is displayed:

```
ifgroup replication assign vlan280 mtree /data/col1/avamar-1542004352
remote vdppunvm126.vdp.emc.com
```

- Run the following command to see the summary of the *ifgroup*:

```
sysadmin@ddhostname # ifgroup show config <IFGROUP_NAME> all
```

Output similar to the following is displayed:

```

Group-name      Status      Interface    Clients      Replication
-----
vlan280         enabled    2            1            1
-----

Group-name      Status      Interfaces
-----
vlan280         enabled    10.118.136.110
vlan280         enabled    10.118.136.111
-----

Group-name      Status      DD Boost Clients
-----
vlan280         enabled    10.118.136.0/22
-----

Group-name      Status      Replication Mtree      Replication
Remote Host
-----
vlan280         enabled    /data/col1/avamar-1542004352
vdppunvm126.vdp.emc.com
-----

File replication is allowed on ifgroup.
Client may use any interface.
```

5. Similarly, create the *ifgroup* on the destination Data Domain system, and add the interfaces, clients, and the Avamar *mtree* path as mentioned in the above steps.

Once you have successfully created the *ifgroup*, output similar to the following is displayed:

```
ifgroup replication assign <IFGROUP_NAME> mtree <MTREE_PATH> remote  
<SOURCE_DD_MANAGEMENT_HOSTNAME>
```

6. Execute the replication from the Avamar UI, and from the Data Domain system, verify if the replication traffic is using the interfaces in the replication *ifgroup*, by running the following command:

```
ifgroup show connections.
```

7. Once the above steps are successfully executed, you can continue to configure the replication policies. For more information, see the *Dell EMC Avamar Administration Guide*.

Monitor and manage the appliance

# CHAPTER 3

## Update the IDPA Firmware (DP4400)

This chapter describes how to update the IDPA firmware on DP4400 models.

Topics include:

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## Overview

Before upgrading the IDPA software, the IDPA system must have its firmware updated to *DP4400\_Firmware\_Update\_June2019\_Package*.

The topics below describe how to update the IDPA firmware on DP4400 models for all the required IDPA hardware components, so that you can seamlessly upgrade from IDPA version 2.3 to IDPA version 2.3.1.

The DP4400 firmware update is three-stage process, which consists of the following:

- Updating the Integrated Dell Remote Access Controller (iDRAC) firmware and iDRAC Service Module (ISM).
- Performing the required checks on the IDPA point products to ensure that all activity on the IDPA is quiesced, all the services on ACM have green checkmarks, and so on.
- Updating the firmware.

 **Note:** The firmware update process takes more than two and a half hours to complete, it is recommended that you keep a four hour window to complete the process.

## Prerequisites

The following are required to successfully complete the firmware update procedure, so that you can upgrade to the latest versions of IDPA:

- Obtain the latest upgrade package - Download the *DP4400\_Firmware\_Update\_June2019\_Package* zip file from the Online Support website ([https://support.emc.com/downloads/41849\\_Integrated-Data-Protection-Appliance](https://support.emc.com/downloads/41849_Integrated-Data-Protection-Appliance)) to your local folder, use the sha256 checksum validation process to verify its integrity, and keep it ready.
- iDRAC - Ensure that you are connected and have configured iDRAC. For information about how to connect and configure iDRAC, see the latest *Integrated Data Protection Appliance DP4400 Installation Guide* available on the Online Support website.
- ACM – Ensure that the ACM is up and running.
- ESXi server – Ensure that you have valid connection points to the required ESXi server.

## Prepare the Environment

### Before you begin

- Ensure that you have full administrator privileges or be a root user to perform these tasks.
- To connect to Appliance Configuration Manager (ACM) and other components, you must have an SSH client.

### Procedure

1. Using an SSH client, connect to the ACM as a root user.
2. Under root, create a new directory and name the directory as *Firmware Update*.
3. From the *IDPA DP4400DP4400\_Firmware\_Update\_June2019\_Package* update package that you downloaded from the Online Support website, copy the latest `dpatools-2.0.0-<xx>.rpm` file to the newly created directory (*Firmware Update*).
4. Run the following command:



```
dpatools-2.0.0-<xx>.rpm
```

5. Go to the newly created directory `/usr/local/dpatools/bin/payload`, and extract the firmware package with `tar -xvzf IDPA-2.303-2.303.tar.gz`.
6. Copy the `/usr/local/dpatools/bin/payload/VIBS/cross_oem-dell-dcism-esxi_3.4.0.1.ESX6i-live.vib` to a temporary directory on the ESXi host using root credentials and the required IP address.

For example, `scp cross_oem-dell-dcism-esxi_3.4.0.1.ESX6i-live.vib root@192.168.100.101:/tmp`.

## Update the iDRAC Firmware

You must complete updating the iDRAC Firmware and ISM on all the three iDRACs and their associated ESXi hosts.

### Before you begin

Ensure that you are connected to iDRAC and it is configured.

### Procedure

1. In a supported web browser, type `https://[iDRAC-IP-address]` and press **Enter** to login to iDRAC.  
To obtain the iDRAC IP address, connect to the ESXi host by using an SSH client and run the `enum_instances OMC_IPMIIPProtocolEndpoint root/cimv2 | grep IPv4Address` command.  
The iDRAC homepage is displayed.
2. On the iDRAC **Dashboard**, verify if the latest firmware update (version 3.34.34.34) is applied. If not, you must update the iDRAC to the latest firmware version.
3. To update the iDRAC to the latest firmware version, select **Maintenance > System Update**. The **Firmware Update** page is displayed.
4. On the **Manual Update** tab, select **Local** as the file location as you will be uploading the firmware file from your local system.
5. Click **Browse** and select the **iDRAC-with-Lifecycle Controller\_Firmware\_3HT97\_WN64\_3.34.34.34\_A00.EXE** file from the latest update package that you downloaded from Online Support website.
6. Click **Upload**.  
After the upload is complete, the **Update Details** section displays the firmware file uploaded to iDRAC and its status.
7. Select the uploaded firmware file and click **Install** to successfully update the iDRAC firmware.

## Update the iDRAC Service Module (ISM)

The latest ISM required for IDPA is 3.4.0.1.

### About this task

This section provides information on how to verify and update the iDRAC Service Module. To verify and update the ISM, perform the following:

- On the ESXi host, run the following command to get the installed version of ISM.  
`esxcli software version vib | grep dci`

- If the ISM is not on version 3.4.0.1, run the following command to update the ISM:  

```
esxcli software vib update -v /tmp/cross_oem-dell-dcism-esxi_3.4.0.1.ESX6i-live.vib
```
- To verify that you have successfully updated the ISM and it is up and running, go to **iDRAC homepage > iDRAC Settings > Settings > iDRAC Service Module Setup**.

If the iDRAC reports that the ISM is not up and running, perform the following steps to reinstall the ISM:

#### Procedure

1. Stop the ISM service by running the following command:

```
/etc/init.d/dcism-netmon-watchdog stop
```

2. Wait for 30 seconds to a minute for this command to execute successfully.
3. Reinstall the ISM by running the following command.

```
/etc/init.d/dcism-netmon-watchdog start install
```

4. Verify the status of the ISM by running the following command:

```
/etc/init.d/dcism-netmon-watchdog status
```

Refresh the iDRAC settings and wait for up to 20 minutes for a successful communication between iDRAC and ISM to take place.

5. After 20 minutes, if the iDRAC reports that the ISM is not running, you must uninstall and reinstall the ISM.
  - a. To uninstall the ISM, run the `esxcli software vib -n remove dcism` command.
  - b. To re-install the ISM, run the `esxcli software vib install -v /tmp/cross_oem-dell-dcism-esxi_3.4.0.1.ESX6i-live.vib` command.
6. After you have verified that the required ISM is installed on the system and it is up and running, on the ESXi host, check if `/scratch/dell/appliance` directory exists. If it does, delete the folder by running following command:

```
cd /scratch/dell/ && rm -rf appliance
```

**Note:** Be careful while deleting the `/scratch/dell/appliance` folder. If you are uncertain, delete this folder manually or contact Technical Support.

7. Restart the PTAgent by running the following command:

```
/etc/init.d/DellPTAgent restart.
```

## Perform the Required Checks on IDPA Point Products

Perform the following checks:

- Ensure that all activity on IDPA is quiesced including the VMs.
- Make sure that all the services on ACM have green checkmarks indicating that they are all healthy, up and running, and properly configured. If any of the services are not in green, you must log on to that particular service and restart it.

## Checks on Avamar Virtual Edition (AVE)

You must perform these required checks on Avamar Virtual Edition (AVE) by running the commands that are listed here.

### Procedure

1. Using an SSH client, connect to the AVE.
2. Extend SSH session timeout and allow commands to survive beyond the SSH session closure, by running the following command:

```
unset TMOU
```

3. Ensure that AVE services are up and running, by running the following command:

```
status.dpn
```

4. Ensure that no maintenance, backup, or replication activities are occurring on AVE, by running the following command:

```
mccli activity show -active
```

**Note:** If there are any maintenance, backup, or replication activities running on AVE, then you must log in to the Avamar UI and cancel them.

5. Verify if all the AVE services are up and running by running the following command:

```
dpnctl status
```

Once this command successfully executes, an output similar to the following is displayed:

```
Identity added: /home/admin/.ssh/admin_key (/home/admin/.ssh/admin_key)
dpnctl: INFO: gsan status: up
dpnctl: INFO: MCS status: up.
dpnctl: INFO: emt status: up.
dpnctl: INFO: Backup scheduler status: up.
dpnctl: INFO: Maintenance windows scheduler status: enabled.
dpnctl: INFO: Unattended startup status: disabled.
dpnctl: INFO: avinstaller status: up.
dpnctl: INFO: ConnectEMC status: up.
dpnctl: INFO: ddrmaint-service status: up.
```

## Other Recommended Checks on AVE

The following are some of the recommended checks that you can perform on AVE:

### About this task

- `ddrmaint cplist` - Displays a list of checkpoints.
- `cplist -lscp` - Queries the checkpoint information from the running gsan processes on the data nodes.
- `mccli dd show-prot` - View the Data Domain system information, such as hostname, capacity, usage, stream limits, DDOS version, monitor status, cloud tier settings, and so on.
- `mccli dd show-prop` - Displays information such as, hostname, total capacity, server utilization, user name, and so on.
- `dpnctl start sched` - Starts the MCS and the scheduler.

## Checks on Data Domain Virtual Edition (DDVE)

You must perform the following checks on DDVE by running the commands that are listed here.

### Procedure

1. Using an SSH client, connect to DDVE.
2. Ensure that the file system is up and running, file system cleaning is not happening, and there are no critical alerts by running the following commands respectively:
  - `filesys status`
  - `filesys clean status`
  - `alerts show current`

## Set the VMs to enter Service Mode through ACM

You must make the virtual machines enter the service mode through ACM before proceeding with the firmware update.

### Procedure

1. Using an SSH client, connect to the ACM.
2. Set the IDPA DP4400 model into service mode through the ACM, by running the following command:

```
dpaccli -servicemode
```

**Note:** Once you have successfully set the VMs to enter the service mode, ensure that all the VMs are in the Service Mode by logging in to vSphere and verifying them. All the VMs except the ESXi host and the ACM will be powered off.

## Update the Firmware

### Procedure

1. Using an SSH client, connect to the ACM.
2. Tail the `dpaccli` log file by running the following command:

```
tail -f /usr/local/dpatools/logs/dpaccli.log
```
3. Start the firmware update process, by running the following command:

```
dpaccli -fwupdate /usr/local/dpatools/bin/payload/  
IDPA-2.300-2.300.tar.gz
```

### Results

- After a system restart, you lose connectivity to the ACM.
- The firmware update packages will be scheduled and will start getting installed once the reboot is complete.
- After some time, ACM displays the services coming back online and vSphere displays all the VMs coming back online.

# CHAPTER 4

## Upgrade the IDPA software (DP4400)

This chapter describes how to upgrade the IDPA software on DP4400 models.

Topics include:

- [Supported Upgrade Paths](#)..... 54
- [Upgrade components](#)..... 54
- [Upgrade Prerequisites \(DP4400\)](#)..... 55
- [Upgrade the appliance software \(DP4400\)](#)..... 56
- [Upgrade Postrequisites](#) ..... 58

## Supported Upgrade Paths

The following table details the supported upgrade paths for IDPA on DP4400 models.

**Table 13** Supported upgrade paths

Current Version of IDPA	Supported Version of IDPA for Upgrade	Additional Information
IDPA version 2.2	IDPA version 2.3.1	You can directly upgrade to IDPA version 2.3.1 through the upgrade binary available on the Online Support site.
IDPA version 2.3	IDPA version 2.3.1	You can upgrade to IDPA version 2.3.1 through the postinstallation patch. For information on how to install this patch, see <a href="#">Install the IDPA post-installation patch on DataProtection-ACM</a> on page 33.

## Upgrade components

This topic describes the list of core components that are required for the upgrade process.

Upgrade of the software for various core components of IDPA happens in this sequence:


1. Backup Server (Avamar), IDPA System Manager, Reporting and Analytics (Data Protection Advisor), Search , CDRA, and ACM.
2. Protection Storage (Data Domain).
3. VCSA (vCenter Server Appliance) and Compute node (ESXi).

Upgrade components:

- Backup Server (Avamar).
- IDPA System Manager.
- Reporting and Analytics (Data Protection Advisor).
- Search.
- Protection Storage (Data Domain).
- CDRA.
- ACM.
- vCSA.
- Compute node (ESXi).

## Upgrade Prerequisites (DP4400)

This section provides you information about the prerequisites that you need to complete before you begin the upgrade procedure.

 **Note:** All the existing Avamar packages and the snapshots are deleted before the upgrade.

- Review the *Integrated Data Protection Appliance Release Notes* for information specific to the current release.
- If you have NDMP Accelerator nodes added to IDPA, you must manually upgrade the NDMP accelerator nodes. To upgrade NDMP accelerator nodes, see the *Upgrading the accelerator software* section in the *Dell EMC Avamar NDMP Accelerator for Dell EMC NAS Systems User Guide*.
- An upgrade should be started only during a software upgrade maintenance window. Ensure that no other maintenance or backup activity is occurring on Avamar or Avamar Virtual Edition during the upgrade process (Avamar jobs should not be running and Avamar Server status should be idle). You can check the server status by running the following command on the Avamar server:
 

```
admin@vdppunvm140:~/>: opstatus.dpn
```
- Ensure that you note down the Search settings before starting the upgrade procedure because as part of the upgrade, Search is also upgraded. Search upgrade comprises of deleting the old Search VM and adding the new Search VM, which will delete all the Search settings such as the custom user permissions and email notifications after the upgrade. Similarly, the LDAP settings are stored on ACM, and ACM restores the previous LDAP settings on the new Search VM after the upgrade.
- Ensure that all the ESXi passwords are synchronized with ACM. If you have changed the ESXi passwords, see *ESXi settings* under *Change passwords and synchronize components* section in the *IDPA Product Guide* to synchronize them.
- Make sure that the ACM Dashboard is not displaying any `Password out of sync` for any of the components.
- Ensure that the vCenter passwords are synchronized with ACM. If you have changed the vCenter password, see under *Change passwords and synchronize components* section in the *IDPA Product Guide*.
- Ensure that the ESXi server is up and running, by verifying on the vCenter UI.
- Ensure that Avamar and Data Domain storage consumption is less than 85 percent. Refer to *Monitoring the system with the Avamar Administrator Dashboard* and *Monitoring Data Domain system capacity* sections in the *Dell EMC Avamar Data Domain System Integration Guide* for more information.
- Disable all the backup policies through the Avamar UI. Refer to the section *Enabling and disabling a backup policy* in the *Dell EMC Avamar Administration Guide*.
- Restart MCS on Avamar before starting the upgrade process to ensure Avamar is quiesced, so that the upgrade does not fail due to Avamar being busy. To restart MCS on Avamar, login to the Avamar Utility node with SSH (ssh login credential is `admin` and the password is the common appliance password that you would have provided) by using the Avamar IP address and run the `dpnctl stop mcs` command to stop and then run the `dpnctl start mcs` command to restart the Avamar server.
- Make sure that you check the health of the vCenter before the upgrade procedure. To check the health of the vCenter, login to the vCenter Web interface. If there are any critical alerts

requiring user action, you must first fix those critical alerts before starting the IDPA upgrade procedure.

## Upgrade the appliance software (DP4400)

Upgrade the software for the components of IDPA from the **Upgrade** tab of the ACM.

### Procedure

1. Download the upgrade package file from Online Support and use the md5sum validation process to verify its integrity.

The name of the file is in the format `IDPA_Upgrade_<version>.tar.gz`.

2. Copy the file to `/data01/upgrade` on the ACM.

**Note:** Ensure that only the upgrade file exists in this folder and no other post or prepatch packages exist.

3. Ensure that you have the executable permission for the upgrade package that you copied to the `/data01/upgrade` directory. If you do not have the executable permission, type the `chmod 644 Idpa_Upgrade_<version>.tar.gz` command to obtain the permission.

4. Log in to the ACM and click the **Upgrade** tab.

The latest upgrade package file is automatically detected and is displayed in **Upgrade Binary Location**.

5. Click **Extract**.

The tar.gz file is extracted and the validations are performed.

**Note:** The validation process takes approximately 15 minutes, and the ACM can time out while waiting. To resume the session, you must log in once again.

The system validates the following:

- VLAN status
- Validates the connection to all components.
- Validates the license status.
- Validates if Avamar services are running.
- Validates to ensure that no backup jobs are running on Avamar.
- Validates if the DD capacity used is less than 85%.
- Avamar Checkpoint validation
- Validates if the vCSA root account password is expired.
- Validates if the vCSA administrator and root user account passwords are synchronized.
- ESX upgrade prerequisites:
  - Requires valid connection points to the required ESXi servers.
  - Verify that the ESXi Server can enter and exit maintenance mode successfully before the upgrade.
  - Requires that the VCSA version is higher than ESXi version.
  - In case, there is a major upgrade to VCSA, then the private IP address of the VCSA, `192.168.100.108` should not be in use in the customer environment as it will be temporarily used by IDPA.



- Note:** The private IP address of the VCSA, *192.168.100.108*, is only required temporarily during the upgrade process.

A table displays the current version, new version, and type (for example, major, patch) of each component for which an upgrade is available.

If the validation is not successful, check the errors that are displayed when you hover on the exclamation mark. Resolve all the errors and then click **Revalidate**. If you want to cancel the upgrade and return to the ACM dashboard, click **Cancel**.

6. Click **Upgrade**, type the ACM password, and click **Authenticate**.
7. To start the upgrade, click **Yes**. To cancel the upgrade, click **No**.

The upgrade process starts. The ACM also undergoes an upgrade which results in users getting logged out of ACM.

- Note:** The upgrade process can take five to six hours, during which all jobs on the IDPA must be quiesced. The system is not accessible during parts of the upgrade.

- Note:** If the upgrade process is still running, do not shut down/reboot the ACM or restart the *dataprotection\_webapp* service. For some reason, if you have shut down/rebooted the ACM or restarted the *dataprotection\_webapp* service while the upgrade process is still running, and if you are unable to see the progress of the upgrade after the ACM is rebooted, then contact Customer Support.

8. Relogin to the ACM.

The **Upgrade Progress** displays the following:

- The ACM upgrade progress bar with the progress percentage and description of the upgrade step in progress.
- Individual component upgrade progress bar with progress percentage and description of the upgrade step in progress.

9. After all the components are upgraded successfully and the overall IDPA upgrade progress bar shows 100%, click **Finish**.
10. Click **OK** on the **Upgrade Finish** window to reboot the IDPA system.

- Note:** After the upgrade is complete, there can be a scenario where Avamar is in maintenance mode and the jobs cannot be executed at that time. After Avamar comes out of the maintenance mode, the jobs are executed.

- Note:** After the upgrade is complete, acknowledge the notification `Event ConnectEMC notification failed` on the Avamar Administrator GUI. This notification is generated during upgrade when the Avamar service is disconnected.

- Note:** After the upgrade is complete, there is a warning on vCenter about a potential vulnerability issue that is described in CVE-2018-3646. See <https://kb.vmware.com/s/article/57374> and <https://kb.vmware.com/s/article/55806> for more information. IDPA uses the ESXi version which has the fix for this vulnerability, however this fix is not enabled by default as it has severe performance impact. See the *Security updates and patching* section on the *IDPA Security Configuration Guide* for more information.

## Results

The following components are updated:

- Backup Server (Avamar)


- IDPA System Manager (Data Protection Central)
- Reporting and Analytics (Data Protection Advisor)
- Search
- Protection Storage (Data Domain)
- ACM
- VCSA (vCenter Server Appliance)
- Compute nodes (ESXi)

The dashboard with all the products and their upgraded versions are displayed along with the newly configured ACM. If the upgrade process does not complete as expected, see *Troubleshooting component software upgrades* in the *IDPA Product Guide*.

If the upgrade for any component fails, then the upgrade process is stopped until you troubleshoot and resolve the failure. However, if there are any noncritical warnings, the upgrade process continues. These warnings must be resolved once the upgrade process is completed to ensure a trouble-free operation of IDPA.

## Upgrade Postrequisites

After you have successfully completed the upgrade procedure, ensure that you are aware/perform the following:

- To save the log files from the upgrade process, click **Download logs** when the upgrade is complete. When you have finished, click **Finish**.
- After the upgrade process is complete, you must close the browser and start a new browser session before you relogin to ACM.
- The *Upgrading proxies* section of the *Avamar for VMware User Guide* provides instructions for upgrading the Avamar proxies. The upgrade must be performed on each Avamar proxy in the environment.
  -  **Note:** Verify if the old Avamar proxy VMs still exist in your vCenter, and if they do, delete them from your vCenter after they are successfully replaced by the upgraded Avamar proxy VMs. To completely delete the old Avamar proxy VMs, click the **Delete from disk** option.

# CHAPTER 5

## Troubleshooting

This chapter contains basic troubleshooting information to help resolve possible issues.

Topics include:

• <a href="#">System log files</a> .....	60
• <a href="#">Troubleshoot shutdown</a> .....	60
• <a href="#">Troubleshooting startup</a> .....	63
• <a href="#">Adding a CA-signed certificate</a> .....	65
• <a href="#">Enabling certificate verification</a> .....	66
• <a href="#">Configure secure AD having self-signed Certificates on IDPA</a> .....	66
• <a href="#">Troubleshoot LDAP</a> .....	67
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• <a href="#">Troubleshooting health monitoring</a> .....	69
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## System log files

To help troubleshoot issues, download bundled log files for the IDPA from the **Home** tab page directly. Select the **Download log bundle** option from the log bundle icon available on the **Home** tab page to download the log files. The log files for the specified components are saved in the folder `/Downloads/` on the system in a compressed format.

During an upgrade, additional log files are generated in a different location. For more information, refer to [Upgrade log files](#) on page 73.

**Note:** The user should not create or copy their logs in `/data01/log_bundle` folder as this functionality deletes all existing log while creating log bundle.

## Troubleshoot shutdown

During the shut down process, if the appliance or any of the components fail to shut down automatically, you can manually shut down the IDPA appliance and its individual components.

If the Avamar or Data Domain systems fail to shut down, aside from performing a manual shut down of these components, you must also shut down the infrastructure components, which include vCenter and ESX servers.

## Avamar shutdown validation errors

The following is a comprehensive list of Avamar shutdown validation errors that you might encounter before shutting down the Avamar Server.

If you encounter any of these errors, you must take the suggested action for the error you encounter. After you take the suggestion action on the validation error, you can initiate the appliance shutdown once again.

**Table 14** Avamar shutdown validation errors

Validation error message	Suggested action
One of the Avamar OS user is out of sync	On the ACM dashboard, click the error message pop-up window and enter the password for that particular Avamar user which is out of sync.
Avamar MC user is out of sync	On the ACM dashboard, click the error message pop-up window and enter the password for that particular Avamar user which is out of sync.
Accelerators found to be out of sync	On the ACM dashboard, click the error message pop-up window and enter the password for the Accelerator node that is out of sync.
Failed to stop scheduler service of Avamar	To manually stop the scheduler services on Avamar: <ol style="list-style-type: none"> <li>1. Login to Avamar Utility node.</li> <li>2. Run the <code>dpnctl stop scheduler</code> command.</li> </ol>

**Table 14** Avamar shutdown validation errors (continued)

Validation error message	Suggested action
	3. Shut down the appliance.
One or more of the services are down/disabled so cannot shutdown	Ensure that <i>Avamar server</i> , <i>MCS</i> , and <i>EMT</i> services on Avamar are up and running.  To check the status of the services, log in to Avamar Utility node and run the <code>dpnctl status all</code> command.
Found running jobs on Avamar, will not proceed for appliance shutdown	Ensure that there are no backup jobs running on Avamar Server. See <a href="#">Shut down the IDPA</a> on page 30 for more information.  Also see <i>Enabling and disabling a backup policy</i> section in the <i>Dell EMC Avamar Administration Guide</i> for disabling all the backup policies through the Avamar UI.
Backup Server MCS flush not done within last 12 hours	1. Log in to the Avamar Utility node. 2. Backup the MCS data by running the <code>mcservers.sh -flush</code> command. 3. Shut down the appliance.

## Shut down Avamar manually

You can shut down the Avamar component manually for the various IDPA Appliances.

### DP5300, DP5800, and DP4400

This section provides you information about how to shut down the Avamar component manually in the DP5300, DP5800, and DP4400 appliances.

#### About this task

To manually shut down the Avamar virtual edition component, perform the following actions.

#### Procedure

1. Login to the Avamar Virtual Edition (AVE) server with SSH by using the Avamar IP address.
  - a. Create a checkpoint by running the following command.
 

```
mccli checkpoint create --override_maintenance_scheduler
```
  - b. Backup the MCS data by running the following command:
 

```
mcservers.sh --flush
```
  - c. Stop all Avamar services by running the following command.
 

```
dpnctl stop all
```
  - d. Power off the AVE from vCenter.

**Note:** If you have the DP4400 appliance, then you must shutdown ESX. For more information about manual shut down of ESX, see [Shut down ESX manually](#).

## Shut down Data Domain manually

This section provides you information about how to shut down the Data Domain component manually.

### About this task

To manually shut down the Data Domain component or the DDVE, perform the following actions.

**Note:** The manual shut down for Data Domain system is applicable for the DP5300, DP5800, DP8300, and DP8800 appliances.

**Note:** The manual shut down for DDVE is applicable for the DP4400 appliance.

### Procedure

1. Open a new SSH session to login to the Data Domain system and DDVE.
2. Shut down the Data Domain or DDVE system by running the following command.

```
system poweroff
```

**Note:** If you have the DP4400 appliance, then you must shutdown ESX. For more information about manual shut down of ESX, see [Shut down ESX manually](#).

## Shut down vCenter manually

This section provides you information about how to shut down the vCenter manually.

### About this task

This procedure to shut down vCenter manually is applicable for all models of IDPA. To manually shut down the vCenter, perform the following actions.

### Procedure

1. Open a browser and enter the IP address to access vCenter.  
The login page is displayed.
2. Enter your username and password on the vCenter login page.
3. Shut down the Data Protection virtual application.

**Note:** All virtual machines and virtual applications under Data Protection virtual application are automatically shut down.

4. Shut down the IDPA Virtual Machine Guest operating system and the virtual machine.

## Shut down ESX manually

This section provides you information about how to shut down the ESX manually.

### About this task

This procedure to shut down ESX manually is applicable for all models of IDPA. To manually shut down the ESX, perform the following actions.

### Procedure

1. Login to the ESXi server on which the vCenter is installed.

2. Login to each ESXi host.
3. Set all ESXi hosts into maintenance mode by running the following command on each host
 

```
esxcli system maintenanceMode set -e true -m noAction
```
4. Shut down all ESXi host using the vSphere client or the ESXi host.

## Troubleshooting startup

If one part of the startup process fails to complete automatically, the problem can be resolved manually to enable startup to continue.

### Avamar does not start

If Avamar does not complete startup, connect to the Avamar server. If Avamar reports that Avamar server did not shut down cleanly, select the option to roll back to the last checkpoint.

### The ACM does not start

If the ACM Service does not start within 2 hours and 15 minutes of powering on the appliance, one or more of the following components are not powered on or are not accessible on the network:

- Data Domain
  - AVE
1. Verify that the components that are required for the configuration are powered on.
  2. Verify that the required components are accessible on the network. Resolve any connectivity issues that are encountered.
    - If the ACM loads successfully, skip the rest of this procedure. The Search nodes, DP Advisor nodes, IDPA System Manager, AVE, and Avamar Proxy start automatically.
    - If all required components are powered on and accessible, but the ACM does not load, restart the ACM Service:
  3. Stop the `dataprotection_webapp` service:
 


```
service dataprotection_webapp stop
```
  4. Start the `dataprotection_webapp` service:
 

```
service dataprotection_webapp start
```

The Search nodes, DP Advisor nodes, IDPA System Manager, AVE, and Avamar Proxy start automatically.

### The VMs do not start

Switch on the power button present on the Dell Server. The ACM internally starts `local.sh (/etc/init.d/local.sh)` and the VMs start automatically. To start the VMs manually:

1. Move ESXi out of maintenance mode manually.
  -  **Note:** To do this, log in to ESX using `idpouser` and select **Exit maintenance mode**.
2. Start the DataProtection-VCSA by running the `/etc/init.d/local.sh` script on ESXi or power on the VM from the ESXi.  
DataProtection-ACM VM starts five minutes after the VCSA VM starts.
3. If DDVE VM is not up, click the **Power on** button to start the DDVE VM.  
Code waits file system status to show up and running.
4. If AVE is not started, start AVE VM from ESX UI.
5. Log in to AVE using admin credentials.

ACM runs `dpnctl status all,dpnctl start all,` and `dpnctl start maint` commands.

6. If something goes wrong, run the following in sequence and click the **Power on** button:

- DataProtectionSearch Vapp
- DPADatastoreServer VM
- DPAApplicationServer VM
- DataDomainCloudDR VApp
- DataProtectionCentral VApp
- AVProxy VM

7. If DPS vApp does not get started, start the vApp.

8. Start the services of Search by logging in to index master IP using operating system root credentials and run the following commands:

- a. `service elasticsearch start`
- b. `service search-cis-core start`
- c. `service search-cis-schedule start`
- d. `service search-networker-worker start`
- e. `service search-networker-action start`
- f. `service search-avamar-worker start`
- g. `service search-avamar-action start`
- h. `service search-worker start`
- i. `service search-adminapi start`
- j. `service search-api start`

9. Log in to the DPA Application Server VM using SSH.

10. Stop all DPA Application Services by running the following command:

```
/opt/emc/dpa/services/bin/dpa.sh service stop
```

If there are any errors, you may continue to ignore them.

11. Log in to the DPA Application Server VM using SSH.

12. Stop all DPA Datastore Server services by running the following command:

```
/opt/emc/dpa/services/bin/dpa.sh service stop
```

13. Verify if all the services are stopped on the DPA Application Server and on the DPA Datastore Server by running the following command:

```
/opt/emc/dpa/services/bin/dpa.sh service status
```

14. Once all the services on both the DPA Application and the DPA Datastore servers are stopped, restart the services on the DPA Datastore Server by running the following command:

```
/opt/emc/dpa/services/bin/dpa.sh service start
```

15. Once all the services on the DPA Datastore servers are started, restart the services on the DPA Application Server by running the following command:

```
/opt/emc/dpa/services/bin/dpa.sh service start
```

16. You must wait for sometime until all the services are started on DPA Datastore Server. You can verify the status by running the following command:

```
/opt/emc/dpa/services/bin/dpa.sh service status
```



17. You must wait for sometime until all the services are started on DPA Application Server. You can verify the status by running the following command:

```
/opt/emc/dpa/services/bin/dpa.sh service status
```

18. Log in to VCSA using `idpauser` credentials, select **AVProxy VM** and click the **Power on** button.
19. After IDPA starts, start two services of Avamar using `dpnctl start emt`.

## Adding a CA-signed certificate

The ACM includes a self-signed certificate, which may cause the browser to report an unsecured connection. To resolve this issue, replace the default certificate with a CA-signed certificate.

### Before you begin

- Access the IDPA command line using one of the following procedures:
  - Log in to vCenter, right-click the DataProtection-ACM VM, and select **Open Console**. Specify the ACM credentials.  
OR
  - Connect to the ACM by using an SSH client to access the ACM's IP address. Specify the ACM credentials.
- Change the directory to `/home/idpauser`

### Procedure

1. Stop the Tomcat server.

```
service dataprotection_webapp stop
```

2. Back up the existing keystore file.

```
cp /home/idpauser/.keystore /home/idpauser/.keystore.bkp
```

Use the backup if you encounter any errors in this process.

3. Delete the existing self-signed certificate from the keystore.

```
/usr/java/latest/bin/keytool -delete -alias tomcat -storepass changeit
```

4. Create a new certificate.

```
/usr/java/latest/bin/keytool -genkeypair -v -alias tomcat -keyalg RSA -sigalg SHA256withRSA -keystore /home/idpauser/.keystore -storepass changeit -keypass changeit -validity 3650 -dname "CN=idpa.companyname, OU=Idpa, O=CompanyName, L=Hopkinton, S=Massachusetts, C=US"
```

5. Generate a CSR file for the keystore.

```
/usr/java/latest/bin/keytool -certreq -alias tomcat -keyalg RSA -file /home/idpauser/ACM_Host.csr -keystore /home/idpauser/.keystore
```

6. Get the CA-signed certificate in the `.p7b` format by using the CSR content and save the certificate.

7. Import the new certificate into the keystore.

```
/usr/java/latest/bin/keytool -import -alias tomcat -file /home/idpauser/certnew.p7b -keystore /home/idpauser/.keystore
```

8. To ensure that the `/usr/local/dataprotection/tomcat/conf/server.xml` is using the `/home/idpauser/.keystore` file, check the value of the `keystoreFile` attribute for the HTTP Connector.

9. Verify the certificates in the keystore.

```
/usr/java/latest/bin/keytool -list -keystore /home/idpauser/.keystore -
alias tomcat
```

10. Start the Tomcat server.

```
service dataprotection_webapp start
```

## Enabling certificate verification

By default, vCenter certificate checking is disabled on the IDPA.

### About this task

The IDPA uses a modified version of the Avamar `MCServer.xml` file. During configuration, this modification causes vCenter certificates to be ignored when adding vCenter servers. To enable certificate checking:

1. In the `MCServer.xml` file, change the `ignore_vc_cert` value to `false`.  
The `MCServer.xml` file is located in `/space/avamar/var/mc/server_data/prefs/mcserver.xml`.
2. Restart the MC service using `dpnctl`,
3. Stop `mcs` and `dpctl`, and
4. Start `mcs` commands on Avamar server.

## Configure secure AD having self-signed Certificates on IDPA

If you are using secure AD with self-signed certificates, search fails to configure if the self-signed certificate is not present on search VM.

### Procedure

1. Export root CA certificate.  
Refer <https://support.microsoft.com/en-us/help/555252> to know how to export the root CA certificate.
2. Log into the Root Certification Authority server or Active Directory Server with administrator account.
3. Go to **Start > Run**, type `cmd`, and press **Enter**.
4. To export the Root Certification Authority server into a new file name `ca_name.cer`, run `certutil -ca.cert ca_name.cer`.
5. Convert certificate as PEM format as follows:
  - a. Cy `ca_name.cer` to Search Master.
  - b. Run `openssl x509 -in ca_name.cer -inform der -out ca_name.pem -outform pem`.
  - c. Copy this `ca_name.pem` to `/etc/pki/trust/anchors/` on Search Node.
6. Do LDAP Configuration from Dashboard.

## Troubleshoot LDAP

This topic provides you information about how to troubleshoot LDAP configurations.

### Troubleshoot secure LDAP configuration

While configuring secure LDAP, an error message `Unable to connect to secure LDAP/AD`. Please verify whether the LDAP/AD Server provided is present as alternate name in LDAPS Certificate may be displayed.

#### About this task

The recent changes to *Java SE Development Kit 8, Update 181* is causing this issue related to LDAP Endpoint Identification. For more information on this issue, see the *Java SE Development Kit 8, Update 181 Release Notes*.

Perform the following steps to disable the LDAP Endpoint Identification to work around this issue.

#### Procedure

1. Connect to the ACM by using an SSH client.
2. Using a text editor, open the `catalina.sh` file that is located in the `/usr/local/dataprotection/tomcat/bin/` directory.
3. In the `catalina.sh` file, locate the following line:

```
JAVA_OPTS="$JAVA_OPTS -
Dorg.apache.catalina.security.SecurityListener.UMASK=`umask`"
```

4. Modify this line as per the values provided below:

```
JAVA_OPTS="$JAVA_OPTS -
Dcom.sun.jndi.ldap.object.disableEndpointIdentification=true -
Dorg.apache.catalina.security.SecurityListener.UMASK=`umask`"
```

5. Save the changes you made to the `catalina.sh` file.
6. Restart the data protection service on ACM using the below command:

```
service dataprotection_webapp restart
```

### Verify Internal LDAP password

If you already know internal LDAP password, then perform the following steps to verify the password:

#### Before you begin

If you know your internal LDAP password, note it down and keep it ready.

#### Procedure

1. Connect to the ACM by using an SSH client.

2. To validate your existing password, run the `ldapsearch` command with your password. An example is given below.

```
# ldapsearch -h ldaps://<ACM_IP> -p 636 -D
uid=idpauser,ou=People,dc=idpa,dc=com -b dc=idpa,dc=com -w
<IDPAUSER_PWD>
```

## Create internal LDAP password

If you do not remember the internal LDAP password, you must first set the internal LDAP password, by performing the following steps:

### Procedure

1. Connect to the ACM by using an SSH client.
2. Generate a hash for the new password. An example input is given below.

```
vdppunvm340:/etc/openldap # slappasswd -s <NEW_PASSWORD>
```

3. Create a file with the modified hash file. An example is given below.

```
# vi /etc/openldap/update_idpauserpwd.ldif

dn: uid=idpauser,ou=People,dc=idpa,dc=com
changetype: modify
replace: userPassword
userPassword: <COMMAND_OUPUT_IN_FIRSTSTEP>
```

4. Execute the following command to update the password using the LDAP root password.

```
# ldapmodify -x -D cn=Manager,dc=idpa,dc=com -w "<LDAP_ROOT_PASSWORD>" -
f /etc/openldap/update_idpauserpwd.ldif
```

Where the `<LDAP_ROOT_PASSWORD>` is the same as the common appliance password.

5. Execute the `ldapsearch` command on the ACM with the new password to validate. An example is given below.

```
# ldapsearch -h ldaps://<ACM_IP> -p 636 -D
uid=idpauser,ou=People,dc=idpa,dc=com -b dc=idpa,dc=com -w
<NEW_IDPAUSER_PWD>
```

## Troubleshoot Avamar

there is a problem with Avamar, the **Backup Server** panel in the ACM dashboard displays the following status:

```
Backup Agents Installation in progress...
```

Possible causes for this issue include:

- The Avamar service, Avamar, or AVE is down.
- Avamar cannot be pinged.
- There is a mismatch between the Avamar administrator password and the password stored in the ACM.

### The Avamar service is down

To start the Avamar service:

1. Using an SSH client, connect to the Avamar Utility node as the admin user.
2. Type the command `dpnctl start all`

### Avamar or AVE is down

Power on the Avamar or AVE server.

### Avamar cannot be pinged

If Avamar cannot be pinged, find and resolve the source of the issue. Possible causes include:

- The Avamar server is down.
- There is a network connectivity issue.
- The Avamar server has a hardware issue.

## Credential mismatch

This section provides information about how to resolve the password mismatch scenario for the IDPA point products. If you manually modify the password on the point products and do not use the change password option on IDPA Appliance the system displays an error message when you try to update the password using the ACM dashboard.

### About this task

To resolve a password mismatch, perform the following actions.

### Procedure

1. Click the warning message in the point products panel and enter a new password.
2. Click **Update Password** in the point products panel and enter a new password.
3. Click the **Refresh** button on the ACM dashboard.

The system updates the new password for all the relevant accounts.

## Troubleshooting health monitoring

If there is an issue with SNMP or one of the health monitor processes, the **Health** tab cannot display data.

### SNMP validation errors

By default, the ACM validates the SNMP configuration of the switch and Dell servers every 4 hours. If the ACM detects that the SNMP configuration for a component is disabled or missing, it automatically corrects the configuration.

If the ACM cannot reach one of the components on its internal IP, the following message is displayed on the **Health** tab: `Failed to validate SNMP configuration on component(s) <unreachable-component>`

To resolve this issue:

1. Verify that the internal IP addresses of IDPA Appliance server is reachable on the network.
2. If the component is reachable on the network, verify SSH connectivity by attempting to connect with the default SSH password. If an SSH connection cannot be established, revert the SSH password on the component to the default password.

**Note:** Refer [Changing passwords and synchronizing components](#) to know how to change passwords and synchronize components.

### Health monitor processes errors

If the SNMP Receiver port, Message Broker service, or Database service is down, the following message is displayed on the **Health** tab: Health monitor processes are down :

*<process>*

To resolve this issue, connect to the ACM using SSH and follow the procedure that corresponds to the error message:

- If the SNMP Receiver port is down, verify that port 161 is enabled. If the port is enabled and the problem persists, restart the Tomcat service with the following command:

```
service dataprotection_webapp restart
```

- If the Message Broker service is down, verify that the RabbitMQ service is running with the following command:

```
service rabbitmq-server status
```

If the service is not running, start it with the following command:

```
service rabbitmq-server start
```

- If the Database service is down, verify that the PostgreSQL service is running with the following command:

```
service dataprotection_database status
```

If the service is not running, start it with the following command:

```
service dataprotection_database start
```

## Troubleshooting component software upgrades

You can troubleshoot the upgrade failures using the different options available.

### Retry upgrade process

When there is an upgrade failure for a component, the progress bar is displayed in red and you can see the **RETRY** and **DOWNLOAD LOGS** buttons. To retry the upgrade again, click the **RETRY** button.

Alternatively, you can click **DOWNLOAD LOGS** to download the logfiles.

#### Avamar

If the Avamar upgrade fails while upgrading the IDPA appliance software, and if you are retrying the Avamar upgrade even after 24 hours of failure, then you must manually upgrade the Avamar server.

If the Avamar upgrade fails during the **RETRY** operation, with a message `Validated checkpoint not found`, you must manually resolve this issue by creating a checkpoint on the Avamar Server. To create a checkpoint on the Avamar Server, see the Upgrade prerequisites

section. Once a valid checkpoint is created, you can go to Avamar UI and click the **Sync** button which is displayed for the failed component.

### vCenter

In case if the vCenter is rebooted when any of the component product upgrade is in progress, then the upgrade process stops. You must wait until the services on the vCenter server are up and running, and then attempt a retry of the upgrade for that component.


To verify that the vCenter server services are up and running, try logging into the vSphere client console. A successful login indicates that the services on the vCenter server are started.

## Advanced troubleshooting (support only)

When there is an upgrade failure even after using the Retry option, the technical support professional can use the Rollback and Sync options to troubleshoot the upgrade failure.

### Using rollback

The Rollback option reverts the component to its previous state using the snapshots taken. The upgrade process uses vSphere snapshot technology to preserve the preupgrade configuration of the IDPA. Before a component is upgraded, a snapshot of the component VM is created. When the upgrade is completed successfully, the snapshots are deleted. If the upgrade fails, the snapshots are used to revert the components to their previous state. If the upgrade fails and any of the VMs are not restored, review the information in [Upgrade log files](#) on page 73 and contact Customer Support.

 **Note:** If upgrading DD OS is not successful, contact Customer Support.

1. In the **Upgrade progress** window, select **Troubleshooting (Support only)** checkbox at the top.  
The **ROLLBACK** button is displayed for the component with upgrade failure.
2. Click **ROLLBACK**.  
The component reverts to the previous version. Refer to the section [Rollback is Successful](#) on page 72.  
If rollback is unsuccessful, see the section [Rollback Failed](#) on page 72.

### Using Sync

If there is a mismatch between the versions of the upgraded component, for example, instead of upgrading to Avamar version 18.2.0-134, the component gets upgraded to Avamar version 7.5.1-101, this results in upgrade failure of that particular point product. Although the Support personnel can manually update the failed component/point product in the background using the **SYNC** functionality, the **SYNC** functionality does not verify the operating system version of the point product. The customer or Support personnel performing the manual upgrade must ensure that the appropriate operating system rollup is applied to the point product before manually upgrading it.

If there is no mismatch between the versions of the upgraded component, the **SYNC** operation is successful. Once the **SYNC** operation is completed successfully, the **ROLLBACK**, **RETRY**, and **SYNC** buttons are disabled.

For more information about the operating system rollup versions and their associated patches if applicable, see the *Integrated Data Protection Appliance Software Compatibility Guide*.

After the manual update, follow these steps:

1. In the **Upgrade progress** window, select **Troubleshooting (Support only)** checkbox at the top.  
The **SYNC** and **ROLLBACK** buttons get enabled for the components that failed to upgrade.

2. Click **SYNC**. The **SYNC** validates the manually upgraded component version and reflects the upgrade progress bar in green and status to completed.

## Rollback is Successful

IDPA is rolled back to its previous state.

No manual action is required from your side. You can login to dashboard to ensure that all the services are up and running.

Optionally, after analyzing the logs, if you find any issues with the upgrade, you can go to upgrade once again.

You can download the logs from the upgrade progress user interface. Alternatively, you can also retrieve the logs from `/data01/upgradeLogs` directory on the **Appliance Configuration Manager**.

## Rollback Failed

If the IDPA rollback fails during the upgrade procedure, you need to perform the following manual steps.

### About this task

Many of these steps are most likely completed by the IDPA upgrade workflow as IDPA upgrade does not stop operations if an error is encountered.

### Procedure

1. Check for all the products in VMware vCenter to ensure that there is no snapshot by the name *BeforeUpgrade*. If the *BeforeUpgrade* snapshot exists, you must delete that snapshot. To delete the *BeforeUpgrade* VMware vCenter snapshots from all the components, perform the following steps on each of the component where *BeforeUpgrade* snapshot exists:
  - Avamar Proxy:
    - a. Revert to the snapshot and then delete the snapshot.
  - AVE Server:
    - a. Shut down the AVE VM.
    - b. Revert to the snapshot and delete the snapshot.
    - c. Change all the data disks to independent-persistent.
    - d. Power on the AVE VM to verify if all the AVE services are up and running.
  - DPA VMs:
    - a. Revert to snapshots of all DPA VMs such as DPA Datastore Server, DPA Application Server, DPA Agent, DPA DD Processor Tool, and so on.
    - b. Delete the snapshots.
    - c. Log in using putty to the DPA Datastore Server and note down the datastore directory in `/data01` with the name *datastore-xxxx*
    - d. Execute following command:
 

```
/opt/emc/dpa/services/bin/dpa.sh datastore import /data01/  
datastore-*/
```
    - e. Log in to the DPA Application Server using putty and run the following command:
 

```
/opt/emc/dpa/services/bin/dpa.sh service start
```



- f. Verify that the services are correctly starting by going to `https://dpaAppServerIp:9002`
  - DPS VMs:
    - a. Stop the DPS Services.
    - b. Shutdown or power off the DPS Vapp.
    - c. Revert to the snapshot *BeforeUpgrade*.
    - d. Delete the snapshot *BeforeUpgrade* from all DPS VMs.
    - e. Change hard disk 3 mode to independent-persistent for all the DPS VMs.
    - f. Power on the DPS VApp.
    - g. Ensure that all DPS Services are up and running.
  - DPS Index Master Node Services:
    - a. Log in to DPS Master Index Node using putty.
    - b. Execute the following commands:
      - `service dpworker status`
      - `service unicorn status`
      - `service elasticsearch status`
  - Data Domain: If there is a failure in the Data Domain upgrade, contact Customer Support.
2. Start the Avamar scheduler service by logging in to Avamar using putty and running the `dpnctl start scheduler` command:
  3. Uninstall the `dataprotection-upgrade` RPM from ACM
 

To uninstall the `dataprotection-upgrade` RPM, on ACM, run the `rpm -qa | grep dataprotection-upgrade` command to check if any `dataprotection-upgrade` RPM is present. If it is present, note down its name and uninstall it by using the `-e dataprotection-upgrade-rpm-name` command.
  4. Use `create tar` command to create a tarball of `/data01/tmp/patch/logs` folder and save it to the `/data01/upgradeLogs` folder.
  5. Restart the tomcat service on ACM using following commands:
    - `service dataprotection_webapp stop`
    - `service dataprotection_webapp start`

## Upgrade log files

If both the upgrade process and the snapshot recovery fails, you can collect the log files in the following locations and contact Customer Support:

- Log files for the most recent upgrade process are located in `/data01/tmp/patch/logs` and include the following:
  - ACM—`acm_upgrade.log`
  - Data Domain—`dd_precheck.log`, `dd_upgrade.log`
  - DP Advisor—`dpa_upgrade.log`
  - Search—`dps_upgrade.log`
  - AVE—`AvamarServerUpgrade.log`, `av_upgrade.log`

- **IDPA System Manager**—dpc\_deploy\_config.log
- **Common logs for all components**—appLevelUpgrade.log, detailed\_upgrade\_logs.log
- **Internal service call logs** — Upgrade-utility.log
- **Validation logs** — Validate.log
- **Log files for past upgrades are archived in /data01/upgradeLogs, in the format idpa\_upgradeLogs<date>\_<time>.tgz.**
- **The logs of user interface messages for individual components are available in /data01/tmp/patch/log/status/.**

### Log file details

The following log file content is extraneous and can be ignored:

In the log file /data01/tmp/patch/logs/appLevelUpgrade.log

```
RUNNING,26,Please Contact Dell/EMC Support to upgrade Physical Backup server
and NDMP
RUNNING,74,Performing post upgrade operations
RUNNING,74,Please login again to Appliance Management deployment and
configuration page
```

In the log file /data01/tmp/patch/logs/detailed\_upgrade\_logs.log

```
ERROR : Couldn't upgrade avi-cli to 0.2.1-44.
Performing post upgrade operations
Check if the dataprotection-upgrade package deployed successfully on tomcat.
Dataprotection-upgrade package deployed successfully.

Old Version , New Version
Updateing Appliance status for Old Version .., New Version ..
Input oldVersion .., newVersion ..
No implementation for given version ..
Appliance status updated Failed.
```

In the log file /data01/tmp/patch/logs/acm\_upgrade.log

```
Error: Could not open input file: /usr/java/jdk1.8.0_131/lib/tools.pack
plugin.jar...
Error: Could not open input file: /usr/java/jdk1.8.0_131/jre/lib/plugin.pack
javaws.jar...
Error: Could not open input file: /usr/java/jdk1.8.0_131/jre/lib/javaws.pack
deploy.jar...
Error: Could not open input file: /usr/java/jdk1.8.0_131/jre/lib/deploy.pack
rt.jar...
Error: Could not open input file: /usr/java/jdk1.8.0_131/jre/lib/rt.pack
jsse.jar...
Error: Could not open input file: /usr/java/jdk1.8.0_131/jre/lib/jsse.pack
charsets.jar...
Error: Could not open input file: /usr/java/jdk1.8.0_131/jre/lib/charsets.pack
localedata.jar...
Error: Could not open input file: /usr/java/jdk1.8.0_131/jre/lib/ext/
localedata.pack

warning: file /usr/local/dataprotection/var/configmgr/server_data/config/
InfrastructureComponents_Template.xml: remove failed: No such file or
directory
```

# CHAPTER 6

## Additional resources

This chapter provides references to other materials related to the IDPA and individual components.

Topics include:

- [Document references for IDPA](#).....76
- [Document references for individual components](#).....76
- [IDPA training resources](#).....77

## Document references for IDPA

The IDPA documentation set includes the following publications:

- *Integrated Data Protection Appliance DP4400 Installation Guide*  
Instruction for installing the IDPA DP4400 hardware.
- *Integrated Data Protection Appliance Getting Started Guide*  
Explains how to perform initial IDPA configuration tasks and how to get started with basic functionality like backup and restore.
- *Integrated Data Protection Appliance Product Guide*  
Provides the overview and administration information about the IDPA system.
- *Integrated Data Protection Appliance Release Notes*  
Product information about the current IDPA release.
- *Integrated Data Protection Appliance DP4400 Service Procedure Guide*  
Procedures for replacing or upgrading hardware components of the IDPA.
- *Integrated Data Protection Appliance Security Configuration Guide*  
Information about the security features that are used to control user and network access, monitor system access and use, and support the transmission of storage data.
- *Integrated Data Protection Appliance Software Compatibility Guide*  
Information about software components and versions that are used in the IDPA product.

## Document references for individual components

The documentation for these components can be obtained from Online Support at <https://support.emc.com>.

### Protection Storage node

The following document contains information that is related to Data Domain:

- *Data Domain Operating System Administration Guide*  
This publication explains how to manage Data Domain systems with an emphasis on procedures using the Data Domain System Manager.

### Backup Server node

The following documents contain information that is related to Avamar:

- *Avamar Administration Guide*  
This publication describes how to configure, administer, monitor, and maintain an Avamar server.
- *Avamar and Data Domain System Integration Guide*  
This guide includes procedures for configuring the Avamar server to perform cloud tier operations on the Data Domain system.
- *Avamar for VMware User Guide*  
This publication describes various methods and strategies for protecting VMware virtual machines.
- *Avamar NDMP Accelerator for Oracle ZFS User Guide*  
This publication describes how to install, configure, administer, and use the Avamar NDMP Accelerator (accelerator) to back up and restore supported Oracle ZFS storage appliances.
- *Avamar NDMP Accelerator for NetApp Filers User Guide*  
This publication describes how to install, configure, administer, and use the Avamar NDMP Accelerator (accelerator) to back up and restore supported NetApp filers.

- *Avamar NDMP Accelerator for EMC NAS Systems User Guide*  
This publication describes how to install, configure, administer, and use the Avamar NDMP Accelerator (accelerator) to back up and restore supported EMC Isilon, Unity, VNX, VNXe, and Celerra systems.
- *Avamar for VMware User Guide*  
This publication describes various methods and strategies for protecting VMware virtual machines.

### IDPA System Manager node

The following documents contain information that is related to Integrated Data Protection Appliance System Manager:

- *IDPA System Manager Release Notes*  
Contains the most up-to-date information about the current release.
- *IDPA System Manager Getting Started Guide*  
This document includes information about how to deploy Integrated Data Protection Appliance System Manager, and then get started with Integrated Data Protection Appliance System Manager administration.
- *IDPA System Manager Administration Guide*  
This document includes information about how to administer Integrated Data Protection Appliance System Manager.
- *IDPA System Manager Security Configuration Guide*  
This document includes information about security features and capabilities of Integrated Data Protection Appliance System Manager.

### Reporting and Analytics node

The following documents contain information that is related to Data Protection Advisor:

- *Data Protection Advisor Installation and Administration Guide*  
This publication describes how to install, maintain and configure DP Advisor.
- *Data Protection Advisor Product Guide*  
This document provides information on how to use the DP Advisor web console to run and create reports, view alerts, and view the status of replication operations.

### Search Storage

The following document contains information that is related to Data Protection Search:

- *Data Protection Search Installation and Administration Guide*  
This publication describes how to install, maintain and configure Search.

### Cloud Disaster Recovery

The following documents contain information that is related to DD Cloud DR and CDRA.

- *Data Domain Cloud Disaster Recovery Release Notes*  
Contains supplemental information about DD Cloud DR and the most up-to-date information about the current release.
- *Data Domain Cloud Disaster Recovery Installation and Administration Guide*  
This document describes how to install, deploy, and use the DD Cloud DR product.

## IDPA training resources

Video walkthroughs, demonstrations, and explanations of product features are available online.

You can obtain additional IDPA training and information at <https://education.emc.com>.

Additional resources

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