Hewlett Packard Enterprise

HPE Storage Optimizer

Software Version: 5.4

Installation Guide

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The title page of this document contains the following identifying information:

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Chapter 1: Introduction

This chapter provides an overview of HPE Storage Optimizer.

HPE Storage Optimizer product suite

HPE Storage Optimizer software is an effective storage optimization solution for IT departments looking to cut the cost and complexity of storing and managing vast volumes of unstructured data. As an analytics-driven solution, HPE Storage Optimizer combines file analytics with policy-based data storage tiering and information optimization. This unique combination of technology allows you to intelligently reduce the total volume of data storage, shrink the cost and complexity of managing unstructured data, and intelligently distribute information across multiple storage repositories, including the cloud.

- **Increased cost containment:** HPE Storage Optimizer analyzes files based on metadata so that you can identify data currently stored in tier 1 infrastructure and move it to tier 2 storage. This makes it possible to materially lower the cost of primary storage and backup-related storage. You can make more effective and intelligent use of tiered storage, including the cloud, for added cost savings.
- **Better infrastructure management:** With HPE Storage Optimizer, storage optimization is no longer blind. Now you can bring together the power of file analytics and prioritized data backup in one cost-effective solution. This allows you to get more value from your existing infrastructure and significantly reduces OPEX.
- **Faster, simpler backup:** With HPE Storage Optimizer, you can reduce backup times by up to 50 percent while increasing application performance—with no noticeable impact on end users.
- **A truly holistic information governance strategy:** The analytics capabilities of HPE Storage Optimizer also enable you to optimize your governance and purchasing strategies. For example, an audit trail provides total visibility into the data you have, making it possible to know what you can defensibly dispose of. You can bridge the gap between legal and compliance, validate purchases are made with long-term objectives in mind, and put your IT team in a strategic position within the enterprise.

HPE Storage Optimizer architecture

HPE Storage Optimizer has a web application user interface. Functionality is available through several Dashboards in the user interface.

Components

HPE Storage Optimizer includes the following components.

- HPE Storage Optimizer Dashboard
- HPE Storage Optimizer Engine
- HPE Storage Optimizer Data Analysis
- HPE Storage OptimizerConnectors

HPE Storage Optimizer Dashboard

The HPE Storage Optimizer Dashboard interface allows users to view repositories, establish and review allocation of policies, administer categories, and monitor system activity and health, depending on their roles.

The following serviceis included in the HPE Storage Optimizer.

- **HPE Storage Optimizer Web Interface** is an IIS Web application that serves as the HPE Storage Optimizer user interface

HPE Storage Optimizer Engine

The HPE Storage Optimizer Engine provides the central capability to manage policy content within an organization.

The following services are included in the HPE Storage Optimizer Engine.

- **HPE Storage Optimizer Engine service** is a Windows service that executes all scheduled tasks
- **CallbackHandler** is an IIS Web application that receives notifications from HPE IDOL connectors

HPE Storage Optimizer Data Analysis service

HPE Storage Optimizer Data Analysis allows your organization to analyze, understand, and deal with the unstructured data contained in legacy repositories.

HPE Storage Optimizer Connectors

The following connector types can be deployed from HPE Storage Optimizer IDOL Deploy Tool:

- The **HPE Storage Optimizer Exchange Connector** service scans and performs actions on items in Exchange repositories. This connector type has a connector framework deployed alongside.
- The **HPE Storage Optimizer FileSystem Connector** service scans and performs actions on items in file shares. This connector type has a connector framework deployed alongside.
- The **HPE Storage Optimizer Hadoop Connector** service scans and performs actions on items in Hadoop repositories. This connector type has a connector framework deployed alongside.
- The **HPE Storage Optimizer SharePoint 2007 Connector** service scans and performs actions on items in SharePoint 2007 sites. This connector type has a connector framework deployed alongside.

- The **HPE Storage Optimizer SharePoint 2010 Connector** service scans and performs actions on items in SharePoint 2010 sites. This connector type has a connector framework deployed alongside.
- The **HPE Storage Optimizer SharePoint 2013 Connector** service scans and performs actions on items in SharePoint 2013 sites. This connector type has a connector framework deployed alongside.
- The **HPE Storage Optimizer SharePoint Remote Connector** service scans and performs actions on items in SharePoint Remote sites. This connector type has a connector framework deployed alongside.
- The **HPE Storage Optimizer StoreAll Connector** service scans and performs actions on items in StoreAll repositories. This connector type has a connector framework deployed alongside.

Related documentation

The following documents provide more detail on HPE Storage Optimizer.

- *HPE Storage Optimizer Installation Guide*
- *HPE Storage Optimizer Best Practices Guide*
- *HPE Storage Optimizer Administration Guide*
- *HPE Storage Optimizer Remote Analysis Agent Technical Note*
- *HPE Storage Optimizer Support Matrix*

The following documents provide more detail on HPE IDOL connectors.

- *HPE IDOL Distributed Connector Administration Guide*
- *HPE IDOL Exchange Connector (CFS) Administration Guide*
- *HPE IDOL File System Connector (CFS) Administration Guide*
- *HPE IDOL Hadoop Connector (CFS) Administration Guide*
- *HPE IDOL SharePoint 2007 Connector (CFS) Administration Guide*
- *HPE IDOL SharePoint 2010 Connector (CFS) Administration Guide*
- *HPE IDOL SharePoint 2013 Connector (CFS) Administration Guide*
- *HPE IDOL SharePoint Remote Connector (CFS) Administration Guide*
- *HPE IDOL StoreAll Connector Administration Guide*

Chapter 2: Plan for a HPE Storage Optimizer installation

This section describes the prerequisites for a HPE Storage Optimizer installation and provides some deployment examples.

Introduction

When you install HPE Storage Optimizer, you must consider the Connectors that you will need for the repositories you wish to analyze and manage. Connectors are specific to the types of repository.

For example:

- To analyze and manage content held in a Windows file share, you must install one or more HPE Storage Optimizer Filesystem connectors.
- To run archive policies, you must install the HPE Storage Optimizer Edge Filesystem connector.

Installation Tasks

The high-level tasks to perform to install HPE Storage Optimizer are as follows:

1. Install SQL Server and then the databases, including the MetaStore database.

   For more information on installing the databases, see Install HPE Storage Optimizer databases, on page 21.

2. Identify and install the connectors.
   - For more information on installing HPE Storage Optimizer connectors using the included Deploy Tool package, see Install HPE Storage Optimizer connectors, on page 23.
   - For more information on installing the HPE Storage Optimizer Edge Filesystem connector, see Install HPE Storage Optimizer Edge Filesystem connector, on page 39.
3. Install HPE Storage Optimizer and the HPE Storage Optimizer Engine.

   For more information on installing HPE Storage Optimizer components, see Install HPE Storage Optimizer and the HPE Storage Optimizer Engine, on page 31.

Deployment examples

This section describes a few typical configurations for a distributed HPE Storage Optimizer installation. These are intended as examples, your ControlPointStorage Optimizer installation may be different based on your size and scale requirements.

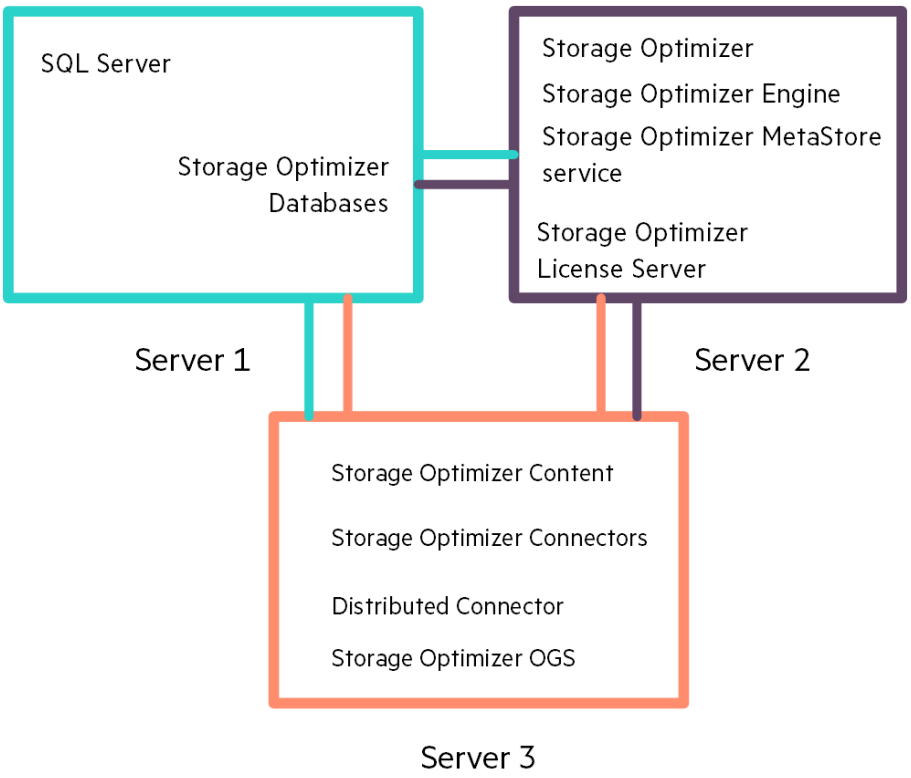
SQL Server deployment considerations

HPE recommends that you deploy the SQL Server in the HPE Storage Optimizer environment to a host containing no other HPE Storage Optimizer components. This allows the configuration of SQL Server and the HPE Storage Optimizer databases for the best performance.

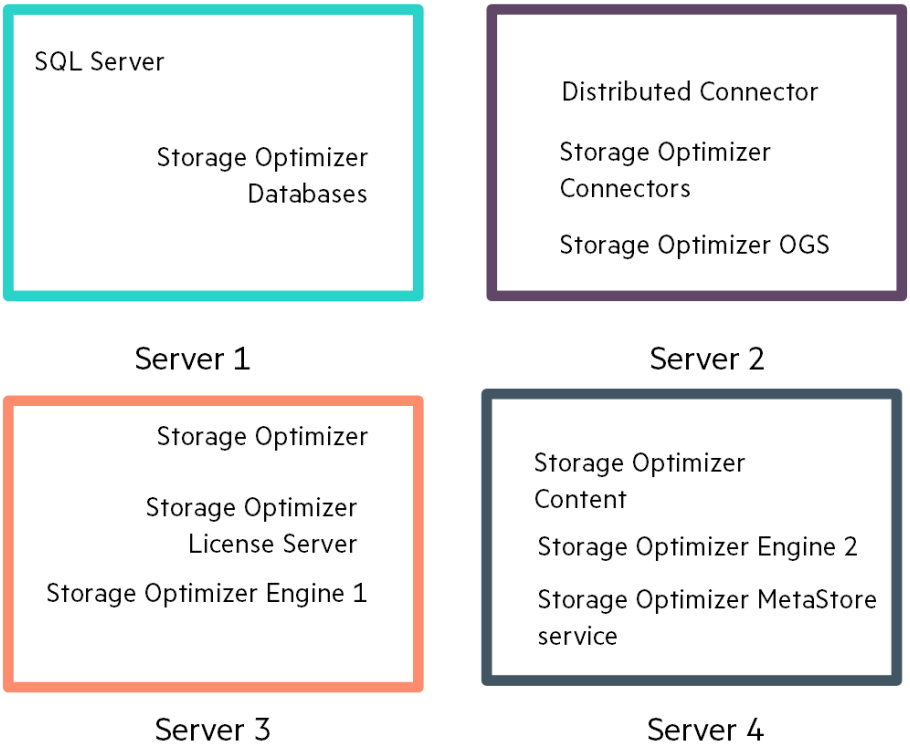
If you deploy the HPE Storage Optimizer databases to a server hosting other HPE Storage Optimizer components, such as connectors, configure SQL Server to limit the resources it consumes.

The following examples assume that a separate SQL Server host is used.

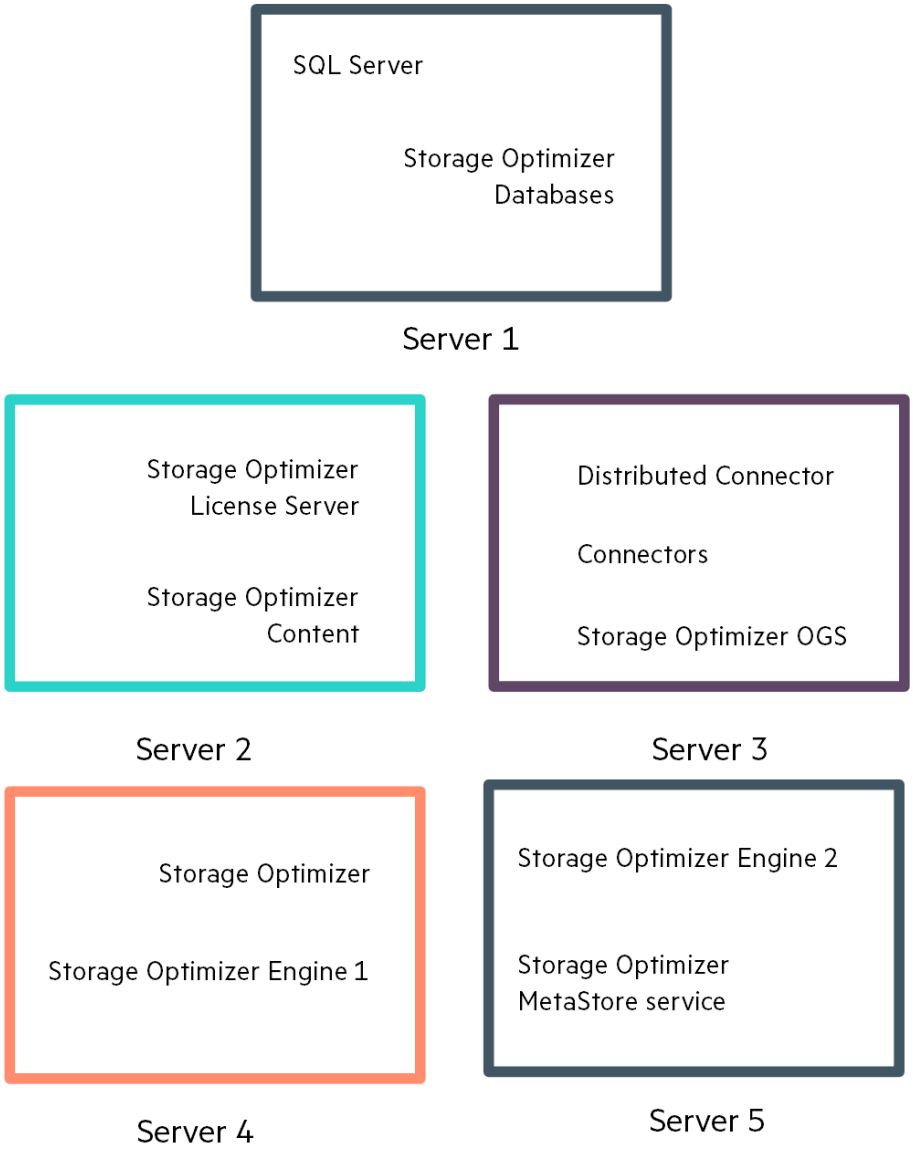
Small size deployment



Medium size deployment



Large size deployment



Prerequisites

This section lists the prerequisites for installing the various HPE Storage Optimizer components.

HPE Storage Optimizer

Minimum Hardware Requirements

Component	Requirement
Processors	• 64-bit environment ◦ Server class processors with 16 cores, with speeds of 2.5 GHz or more (minimum)
Memory	• 64-bit environment ◦ 32-GB RAM as a minimum, especially for the server hosting the HPE Storage Optimizer databases.
Network interface card	1 Gbps
Disk considerations	For the ControlPoint databases: Due to high disk usage of the ControlPoint **MetaStore** and **tempdb** databases, HPE recommends that you allocate these databases their own dedicated hard drive during installation. For improved read and write performance of the ControlPoint MetaStore database, HPE also recommends the use of an enterprise-level solid-state drive (SSD). For more information, see Install HPE Storage Optimizer databases, on page 21. **NOTE:** For assistance on sizing your HPE Storage Optimizer environment, contact HPE Support.

Software Requirements

Install HPE Storage Optimizer software on a server that has the following products installed:

Application	Requirements
Operating system	• Windows Server 2012 R2 **NOTE:** HPE Storage Optimizer versions 4.5 and later support Windows Server 2012 R2. • Windows Server 2012

Application	Requirements
	• Windows Server 2008 R2 For more information, see your Windows Server documentation.
Windows 2012	On Windows Server 2012, enable Windows Communication Foundation (WCF) Services HTTP Activation. For more information, see your Microsoft Windows Server 2012 documentation.
Internet Information Server (IIS)	• IIS 8.5 on Windows Server 2012 R2 • IIS 8.0 on Windows Server 2012 • IIS 7.5 on Windows Server 2008 R2 **NOTE:** On Microsoft Windows Server 2008 R2, add the Windows Authentication Role, which is not installed by default. For more information, see your Windows Server documentation.
Microsoft .NET Framework	Version 4.5
Internet Explorer	Version 9 or later, installed on servers with HPE Storage Optimizer Data Analysis and IIS.
SQL Server	SQL Server must be accessible from the HPE Storage Optimizer server. • SQL Server 2014 Standard or Enterprise • SQL Server 2012 Standard or Enterprise Ensure that SQL Server Native Client is installed. **NOTE:** To gain the best performance, HPE recommends that you do not install any other HPE Storage Optimizer components on the SQL Server. If you are deploying the HPE Storage Optimizer databases to a server hosting other HPE Storage Optimizer components, such as connectors, configure SQL Server to limit the resources it consumes. **NOTE:** For large-scale deployments, use Enterprise Edition of SQL Server, as it enables you to split the tables on different files and optimizes the performance.

Application	Requirements
	For Reporting Services, you can use the Standard or Enterprise edition of SQL Server. For more information, see Configure the HPE Storage Optimizer data source, on the next page.
SQL Permissions	The user account that deploys and installs the ControlPoint databases must have the following permissions configured in SQL Server: • **Dbcreator, public** — required to create the ControlPoint databases • **SecurityAdmin** — required to create users in the ControlPoint databases **NOTE:** DBO permissions are the minimum SQL permissions that can be used after the initial deployment.

Antivirus recommendations

For performance reasons, if you are running antivirus software on the HPE Storage Optimizer host machines, you must ensure that it does not monitor the Storage Optimizer directories and any fileshares that have been indexed.

Some advanced antivirus software can scan the network and might block some Storage Optimizer traffic, which can cause errors.

Where possible, exempt the Storage Optimizer and IDOL processes from this kind of network traffic analysis.

Install and configure SQL Server

To install SQL Server, follow the installation instructions provided by Microsoft.

NOTE:
To gain the best performance, HPE recommends that you do not install any other HPE Storage Optimizer components on the SQL Server.

If you are deploying the HPE Storage Optimizer databases to a server hosting other HPE Storage Optimizer components, such as connectors, configure SQL Server to limit the resources it consumes.

For additional performance and stability guidelines, see the *HPE Storage Optimizer Best Practices Guide.*

Configure the HPE Storage Optimizer data source

To run HPE Storage Optimizer reports, configure the HPE Storage Optimizer data source.

To configure the HPE Storage Optimizer data source

1. Open **Reporting Services Configuration Manager** and ensure that Report Server is started.
2. Click the **Report Manager URL** tab, where the URL to access Report Manager is defined.
3. Using a web browser, access the Report Manager URL.

   The startup page (containing the Home folder) of the Report Manager appears.
4. Navigate to the **HPE ControlPoint Reports > DataSource** folder.
5. Click the **ControlPointAudit** data source.
6. By default, the Properties tab of the ControlPointAudit data source appears.
7. Select one of the following connection options under the **Connect using** option:

Option	Description
Credentials supplied by the user running the report	User is prompted to specify credentials when the report is run.
Credentials stored securely in the report server	Credentials are used regardless of who requests a HPE Storage Optimizer Audit report.
Windows integrated security	Every user who requests a HPE Storage Optimizer Audit report must have an account in SQL Server with the Read permission to ControlPoint MetaStore and ControlPoint Audit databases.
Credentials are not required	The configured unattended execution account is used. This must be an account in SQL Server with the Read permission to ControlPointMetaStore and ControlPointAudit databases.

Compatibility matrix

HPE Storage Optimizer and HPE IDOL mapping

Component	Version	Operating System
Distributed Connector	10.8.1	Windows, Linux, Solaris

Edge FileSystem Connector	11.2	Windows, RHEL, Suse
Exchange Connector	10.11	Windows
File System Connector	11.2	Windows
Hadoop Connector	10.10	Windows, RHEL, Suse, Solaris
HPE IDOL Server	11.2	Windows, Linux, Solaris
Omni Group Server	10.8	Windows
MetaStore	11.2	Windows
Sharepoint Connector 2007	10.10	Windows
Sharepoint Connector 2010	10.10	Windows
Sharepoint Connector 2013	10.10	Windows
Sharepoint Connector Remote	11.1	Windows
Store All Connector	10.10.2	Windows, Linux, Solaris

Supported browsers

- Internet Explorer 9 or later
- Google Chrome 41 or later

Chapter 3: Install HPE Storage Optimizer databases

You can install HPE Storage Optimizer databases on the SQL Server versions listed in the Prerequisites section.

The following five databases are installed:

- ControlPoint
- ControlPoint Audit
- ControlPoint MetaStore
- ControlPoint MetaStore Tags
- ControlPoint Document Tracking

Minimum SQL permissions

The user account that deploys and installs the ControlPoint databases must have the following permissions configured in SQL Server:

• **Dbcreator, public** — required to create the ControlPoint databases

• **SecurityAdmin** — required to create users in the ControlPoint databases

> **NOTE:**
> DBO permissions are the minimum SQL permissions that can be used after the initial deployment.

To install HPE Storage Optimizer databases

1. Run `HPE Storage Optimizer Database Installer.exe` as the Administrator.

   The file is located in the `Storage Optimizer x64\` directory.

   The database installer opens.
2. Click **Next**.

   The Log Directory page opens.
3. Change the path of the setup log file, if necessary, and then click **Next**.

   The SQL Connection page opens.
4. Enter the required **SQL Server** and **instance** name, or select them from the list.
5. Select the required authentication method: either **Windows** or **SQL Server**.
   a. If you select SQL Server Authentication, enter a **Login ID** and **Password**.
6. Click **Test Connection** to verify the server details.
7. Click **Next**.

   The Database Configuration page opens.

8. The next several Database Configuration pages guide you through the configuration of the required databases: ControlPoint, ControlPoint Audit, ControlPoint MetaStore, ControlPoint MetaStore Tags, and ControlPoint Document Tracking.
   - For each database, accept the defaults, or customize the settings.

     Ensure that each database and transaction log is appropriately sized to reflect your needs.

     > **NOTE:**
     > Due to high disk usage of the ControlPoint **MetaStore** and **tempdb** databases, HPE recommends that you allocate these databases their own dedicated hard drive.
     >
     > For improved read and write performance of the ControlPointMetaStore database, HPE also recommends the use of an enterprise-level solid-state drive (SSD).

9. Click **Next**.

   The Storage Optimizer Audit Reports page opens.

10. Select **Upload Reports** to upload HPE Storage Optimizer audit reports to SQL Server, and click **Next**.

    If you select **Upload Reports**, the Reports Configuration page opens.

    Specify the installation folder and configure the details of your SQL Server Reporting Services Report Manager and web service. For more information, see Configure the HPE Storage Optimizer data source, on page 19.

11. Click **Next**.
12. Verify the details on the Installation Confirmation page, and click **Install**.
13. On the final page, review the installation log, and click **Finish**.

> **NOTE:** The last page provides a hyperlink that copies a sample connection string to your clipboard. HPE Storage Optimizer MetaStore service requires a connection string to access the MetaStore database.
>
> Save this connection string for configuring your HPE Storage Optimizer IDOL package in step 14 of Configure deployment packages, on page 23.

Chapter 4: Install HPE Storage Optimizer connectors

This section describes how to install HPE Storage Optimizer connectors using deployment packages.

Overview

To install HPE Storage Optimizer connectors

1. Create deployment packages for the target servers. See Create deployment packages, below.
2. Copy the deployment packages to the target servers and install them. See Install deployment packages, on page 28.

Create deployment packages

The HPE Storage Optimizer IDOL Deploy Tool automates the creation of deployment packages for HPE Storage Optimizer IDOL connectors. The Deploy Tool does not install the software directly; rather, it builds the deployment packages that you must copy to the target servers for subsequent installation.

The Deploy Tool configures the Deployment packages and the software requires no further configuration for use with HPE Storage Optimizer after the installation on target servers.

> **NOTE:**
> You can run the Deploy Tool on any server to create HPE Storage Optimizer deployment packages.

Use the Deploy Tool to configure, save, and build deployment packages.

Configure deployment packages

Use the information in this section to configure deployment packages.

To configure deployment packages

1. Start the HPE Storage Optimizer IDOL Deploy Tool by running `HPE Storage Optimizer IDOL Deploy Tool.exe`.

   The file is located in the `\HPE IDOL Deploy tool` directory.

   The HPE Storage Optimizer IDOL Deploy Tool is a self-extracting executable that extracts its needed files.

   The Deploy Tool package build dialog box displays with four tabs: **General**, **IDOL**, **Connectors**, and **Components**.

2. On the **General** tab, enter the following information.
   - **Host Package Build Location**. Specify the directory creating deployment packages when you run the Deploy Tool.

     The default location is:

     `C:\temp\HPE Storage Optimizer\`.

   - **Zip File**. This option outputs the deployment packages as compressed (zip) archives.

     This option is useful when the deployment packages are to be transferred to different servers. The package size can exceed 1 GB.

   - **Host Operating System**. Select either **32-bit** or **64-bit**, depending on the architecture of the host operating system.

   - **Default Deployment Host**. Enter the name of the server that the HPE Storage Optimizer Server software will be installed on. Define the names of servers to host other components on the **Components** tab.

3. On the **IDOL** tab, enter the following information.
   - **Default Language Type**. Enter the default language type to be used by the HPE Storage Optimizer IDOL Server.

     The default language is **englishUTF8**.

4. On the **Connectors** tab, select the connectors to deploy.
   - Exchange (the client is installed on the server hosting the connectors)
   - File System
   - Hadoop
   - Notes

     > **NOTE:**
     > The client is installed on the server hosting the connectors.

   - SharePoint 2007
   - SharePoint 2010
   - SharePoint 2013

- SharePoint Remote
- StoreAll

5. Click **Config** to configure each connector.

   The connector configuration dialog box opens. The information you must provide depends on the type of connector.

6. (*Optional*) Enter the following information for an Exchange Connector.
   - **Number of Connectors in Group**. Enter the number of connectors in the group. The maximum number is 9.
   - **Deployment Hosts**. Enter the server names to which to deploy the connectors. Each server hosts one connector, however, if the number of specified servers is less than the number of connectors, the final server in the list hosts all remaining connectors.
   - **LDAP and Exchange Web Service User Domain**. Enter the user domain to use when connecting to both LDAP and the Exchange web service.
   - **LDAP and Exchange Web Service Username**. Enter the user name to use when connecting to both LDAP and the Exchange web service.
   - **LDAP and Exchange Web Service Password**. Enter the password to use when connecting to both LDAP and the Exchange web service.
7. (*Optional*) Enter the following information for a File System Connector.
   - **Number of Connectors in Group**. Enter the number of connectors in the group. The maximum number is 9.
   - **Deployment Hosts**. Enter the server names to which to deploy the connectors. Each server hosts one connector, however, if the number of specified servers is less than the number of connectors, the final server in the list hosts all remaining connectors.
8. (*Optional*) Enter the following information for a Hadoop Connector.
   - **Number of Connectors in Group**. Enter the number of connectors in the group. The maximum number is 9.
   - **Deployment Hosts**. Enter the server names to which to deploy the connectors. Each server hosts one connector, however, if the number of specified servers is less than the number of connectors, the final server in the list hosts all remaining connectors.

- **Hadoop Root URI**. Enter the root URI of the file system to which to connect.
- **Hadoop Path**. Enter the path in the file system to process for files.

9. (*Optional*) Enter the following information for a Notes Connector.
   - **Number of Connectors in Group**. Enter the number of connectors in the group. The maximum number is 9.
   - **Deployment Hosts**. Enter the server names to which to deploy the connectors. Each server hosts one connector, however, if the number of specified servers is less than the number of connectors, the final server in the list hosts all remaining connectors.
10. (*Optional*) Enter the following information for a SharePoint 2007, 2010, or 2013 Connector.
    - **Number of Connectors in Group**. Enter the number of connectors in the group. The maximum number is 9.
    - **Deployment Hosts**. Enter the server names to which to deploy the connectors. Each server hosts one connector, however, if the number of specified servers is less than the number of connectors, the final server in the list hosts all remaining connectors.
    - **SharePoint Host**. Enter the name of the SharePoint server that hosts the connector web service.
    - **SharePoint Port**. Enter the port number of the connector web service.
    - **SharePoint Credentials Username**. Enter the name of the user to use when authenticating with the SharePoint server.
    - **SharePoint Credentials Password**. Enter the password for the user to use when authenticating with the SharePoint server.
11. (*Optional*) Enter the following information for a SharePoint Remote Connector.
    - **Number of Connectors in Group**. Enter the number of connectors in the group. The maximum number is 9.
    - **Deployment Hosts**. Enter the server names to which to deploy the connectors. Each server hosts one connector, however, if the number of specified servers is less than the number of connectors, the final server in the list hosts all remaining connectors.
    - **SharePoint Credentials Username**. Enter the name of the user to use when authenticating with the SharePoint server.

- **SharePoint Credentials Password**. Enter the password for the user to use when authenticating with the SharePoint server.
- **SharePoint Credentials Domain**. Enter the domain of the specified user.

12. (*Optional*) Enter the following information for a StoreAll Connector.
    - **Number of Connectors in Group**. Enter the number of connectors in the group. The maximum number is 9.
    - **Deployment Hosts**. Enter the server names to which to deploy the connectors. Each server hosts one connector, however, if the number of specified servers is less than the number of connectors, the final server in the list hosts all remaining connectors.
    - **StoreAll Credentials Username**. Enter the StoreAll system username.
    - **StoreAll Credentials Password**. Enter the StoreAll system password.
    - **StoreAll API URL**. Enter the URL to use to access the StoreAll API.
13. On the **Components** tab, click **Config** next to a component name to configure that component.

    You can configure the following items for each component.
    - **Host**. The name of the server to which to deploy this component.
    - **Path**. The installation location for this component.

    The HPE Storage OptimizerMetaStore component must be configured with an SQL connection string to use when connecting to the MetaStore database. The connection string has the following general structure when HPE Storage Optimizer databases are configured to use Windows authentication:

    ```
    Driver={SQL Server Native Client 11.0};App=HPE Storage
    Optimizer;Server=servername;Database=ControlPointMetaStore;Trusted_
    Connection=yes
    ```

    Enter the connection string offered by the HPE Storage Optimizer database installer and make any required adjustments. For more information, see Install HPE Storage Optimizer databases, on page 21.

Save deployment package configuration

To save all configuration settings to a file, select **Save** or **Save As** from the File menu.

Build deployment packages

To build deployment packages, click **Deploy**, or select **Deploy** from the Actions menu. The packages are built in the Host Package Build Location that you specified on the **General** tab of the Deploy Tool.

Install deployment packages

The Deploy Tool creates deployment packages in the location identified by the **Host Package Build Location** option.

At this location are directories or compressed (.ZIP) files for each target server. Move the directories or .ZIP files to the appropriate target servers for installation.

Prerequisites

Prerequisite software

The following products must be installed on the target servers:

- Microsoft Visual C++ 2005 Redistributable Package
- Microsoft Visual C++ 2010 Redistributable Package
- Microsoft Visual C++ 2013 Redistributable Package
- SQL Native Client

The required prerequisite packages are included in the `vcredist` and `sqlNativeClient` subdirectories under the deployment package location.

HPE IDOL license key

To use HPE IDOL, you must have a valid license key file for the products that you want to use. Contact HPE Support to request a license file for your installation.

The HPE IDOL license key file must be copied to the HPE IDOL License Server. For more information, see step 4 of Installation.

Installation

Perform the procedure in this section to install deployment packages.

To install a deployment package

1. Run the `_deploy_services.bat` Windows batch file as the Administrator.

   The batch script copies the components to the location defined in **Host Installation Directory**.

- If Windows UAC is enabled on the server, you must run the batch file manually from the command line.
  a. Open a command prompt as an Administrator.
  b. Change the directory to the temporary location that contains the batch file.
  c. Run `_deploy_services.bat`.

2. Run the `_install_services.bat` Windows batch file to install the Windows services.
3. When prompted, enter the credentials for the first connector in the deployment package.

   Enter the credentials in the following format.

   ```
   Please enter username: domain\username
   Please enter password: password
   ```

   Ensure that you include the domain or host name when entering the user name.
4. When prompted, decide whether to use the same credentials for all other connectors.

   If you use different credentials for other connectors, enter them in the same format.
5. When prompted, enter the credentials to use for your HPE Storage Optimizer MetaStore service.

   Enter the required username and password.
6. Copy the HPE IDOL license file to the HPE IDOL License Server directory after installation and before services start.
   a. Rename the HPE IDOL license key to `licensekey.dat` and place it into the `LicenseServer` directory at the following location:

   ```
   Program Files\Hewlett Packard Enterprise\Storage Optimizer\LicenseServer
   ```

Start Windows services

To start all of the Windows services, run the `_start_services.bat` Windows batch file.

> **NOTE:**
> If HPE IDOL content engines are on a different server than the HPE IDOL connectors, HPE recommends that you start and verify the HPE IDOL services before the connectors start.
>
> Starting the connectors starts the analysis process for the locations identified when the connectors were configured in the Deploy Tool.

Stop Windows services

To stop all Windows services, run the `_stop_services.bat` Windows batch file.

To stop individual components in isolation, run `_stop_service.bat` in the component directory.

Uninstall deployment packages

To manually uninstall deployment packages, run the `_uninstall_services.bat` script.

To uninstall individual components, run `_uninstall_service.bat` in the component directory.

Chapter 5: Install HPE Storage Optimizer components

This chapter describes how to install HPE Storage Optimizer components.

- Federal Information Processing Standards (FIPS) security mode
- Install HPE Storage Optimizer and the HPE Storage Optimizer Engine
- Configure HPE Storage Optimizer

Federal Information Processing Standards (FIPS) security mode

The Federal Information Processing Standard (FIPS) is a United States government standard specify best practices for implementing cryptographic algorithms, handling key material and data buffers, and working with the operating system. HPE Storage Optimizer uses the SHA-1 encryption algorithm in a FIPS compliant library.

Before you begin

> **NOTE:**
> If you do not use FIPS in your HPE Storage Optimizer environment, ignore this section.

If you want to install HPE Storage Optimizer on FIPS-enabled Windows servers, enable FIPS on the servers before you install and deploy HPE Storage Optimizer.

For more information, see your Windows documentation on enabling FIPS encryption.

You use the HPE Storage Optimizer Configuration Manager to enable the use of FIPS in your HPE Storage Optimizer environment. For more information on the configuration process, see Step 10 of Configure HPE Storage Optimizer, on the next page

Limitations

HPE Storage Optimizer has the following limitations when interacting with FIPS:

- HPE Storage Optimizer does not support changing the FIPS security mode after HPE Storage Optimizer has been deployed to the environment. After the selection has been made in Configuration Manager, it cannot be changed by redeploying HPE Storage Optimizer.
- The Remote Analysis Agent (RAA) utility does not support running with the FIPS security mode.

Install HPE Storage Optimizer and the HPE Storage Optimizer Engine

Before you install HPE Storage Optimizer and the HPE Storage Optimizer Engine, verify that the HPE Storage Optimizer prerequisites listed in Prerequisites have been met.

To install HPE Storage Optimizer Console and Engine

1. Run `setup.exe` as the Administrator.

   The file is located in the `Storage Optimizer x64\` directory.

   The Welcome page opens.
2. Click **Next**.

   The License Agreement page opens.
3. Select **I accept the terms** in the license agreement, and then click **Next**.

   The Customer Information dialog box appears.
4. Enter your User Name and Organization, and then click **Next**.

   The Setup Type page opens.
5. Select the setup type that meets your requirements.
   - **Typical** installs HPE Storage Optimizer and the HPE Storage Optimizer Engine.
   - **Complete** installs HPE Storage Optimizer, Engine, and Web Services.
   - **Custom** allows the selection of individual components, as required.
6. Click **Next**.

   The Destination Folder dialog box appears.
7. *(Optional)* Click **Change** to change the default installation location.
8. Click **Next**.
9. Review the installation settings that you provided, and then click **Install**.
10. Click **Finish** to exit the installer.

    If you select **Launch HPE Storage Optimizer Configuration Manager**, the Configuration Manager starts.

Configure HPE Storage Optimizer

The HPE Storage Optimizer Configuration Manager allows you to configure the HPE Storage Optimizer system centrally.

You can launch the Configuration Manager from the HPE Storage Optimizer program group.

To configure HPE Storage Optimizer

> **NOTE:**
> Settings in Configuration Manager are grouped by configuration area. Use the left panel navigation tabs to configure each group of settings.

> You must complete all mandatory settings before you can deploy the HPE Storage Optimizer components by clicking **Deploy**.

1. Launch the HPE Storage Optimizer Configuration Manager.

   The Configuration Manager opens.
2. Enter the **SQL Server** and **instance**, or select it from the list.
3. Specify the connection method: **Windows Authentication** or **SQL Server Authentication**.

   If you select **SQL Server Authentication**, enter a Login ID and a Password.
4. Click **Connect**.

   The HPE Storage Optimizer Configuration Manager opens to the Database Settings tab.
5. The **Database Settings** tab displays the connection settings entered during the database installation.

   > **NOTE:**
   > If you use **SQL Server Authentication**, you can provide alternate login and password credentials. The login credentials must exist in SQL Server.
6. On the **IIS Settings** tab, specify the following settings:
   a. Specify the web site to deploy the HPE Storage Optimizer web applications to.

      > **NOTE:**
      > The deployed web applications can subsequently be retracted by selecting **Not Deployed** from the list.

   b. Specify the **User Account settings** for the IIS Application Pool to use. Each of the HPE Storage Optimizer web applications use the IIS Application Pool.

      Enter the **Domain**, **Username** and **Password** in the appropriate boxes.
7. On the **Engine** tab, specify the following settings:
   a. To update the account used as the identity for the HPE Storage Optimizer Engine service, select **Update Engine Service Account**, and then enter the appropriate account information.

      > **NOTE:**
      > The Engine Service account identity will be used for user impersonations in HPE Storage Optimizer, regardless of the account set for the Application Pool.

   b. Enter the number of threads for the Engine to use.

      The recommended number of threads is the number of processors in the HPE Storage Optimizer Engine server.

   c. Policy execution requires a temporary location that is accessible by all HPE Storage Optimizer connectors. The Configuration Manager can create and use a default network share

named `HPE Storage OptimizerTempLocation` on the local server or you can chose an alternate network share that you created.

8. On the **Data Analysis** settings tab, specify the following settings:
   a. Select **Make this system the active Data Analysis Controller**.

      This setting determines whether the current system should be the active Data Analysis Controller or not.

      If you clear the setting, the current system acts as a subordinate node.

      The SQL server name is the **Data Analysis Controller Host**.
   b. Enter a port number in the **Data Analysis Controller Port** box.
   c. In the IDOL Statistics Server Settings section, specify the **Statistics Host, Port**, and **Index Port** for the statistics server.
9. On the **IDOL** settings tab, enter the settings:
   a. Enter the name of the **IDOL Host**, **Port** and **Index Port** numbers.
   b. Enter the **Distributed Connector Host** and its **Port** number.
   c. Enter the **DAH Host** name and **Port** number your HPE IDOL DAH component.
   d. In the MetaStore Service Settings section, enter the **MetaStore Host** name and **Port** number.
   e. In the **Target Location Insert Configuration** section, specify whether to use the local configuration by selecting **Use Local Configuration**.

      HPE Storage Optimizer policy execution requires configuration files to supply information for insert operations to target locations. These files can either be installed in a local directory or in a specific network share. Use a network share if you intend to install multiple HPE Storage Optimizer Engines so that all engines can access the configuration files.

      If you clear the **Use Local Configuration** option, enter an alternate location in the **Insert Configuration Location** box.
   f. In the **Date Format** section, select the **Date Format** that matches the date format used by your HPE Storage Optimizer IDOL Server.

      Select **Default** unless you connect to an Enterprise HPE IDOL server that is configured to use a date format other than `yyyyMMddHHmmss`.
10. On the **Security** settings tab, specify options for enabling security:
    - Specify whether to enable HPE Storage Optimizer security by clicking **Enable Security**.

      If enabled, specify the system administrator account, the Active Directory server, and a distinguished name.
    - To enable Federal Information Processing Standards (FIPS) security mode, select **Enable FIPS**.

> **NOTE:**
> When FIPS security is used in combination with the **Make this system the active Data Analysis Controller** option on the Data Analysis tab, the active controller is the master, and FIPS security works seamlessly.
>
> If the **Make this system the active Data Analysis Controller** option is cleared, this server acts as a subordinate node. The host name of a master controller is extracted from the database and displayed in Configuration Manager and the **Enable FIPS** option is disabled.

> **NOTE:**
> After FIPS is enabled as the security mode and the HPE Storage Optimizer environment is deployed, the FIPS security mode cannot be changed. For more information, see Federal Information Processing Standards (FIPS) security mode

11. On the **Mail Server** settings tab, specify the following settings:
    - To enable email notification, enter the name of the mail server in the **Server** box and the mail address from which messages will be sent in the **From** box.
12. Click **Deploy**.

    The HPE Storage Optimizer components are deployed.

> **NOTE:**
> If you uninstall and reinstall the Storage Optimizer software for any reason, the Add/Remove Programs dialog displays an option to retain or remove the FIPS security mode. Click **Yes** to retain the FIPS security mode, or **No** to remove it.

Deploy HPE Storage Optimizer by enabling HTTPS

This section provides the information required to deploy HPE Storage Optimizer by enabling HTTPS in the environment.

- Enable HTTPS
- Redeploy HPE Storage Optimizer when HTTPS is enabled

Enable HTTPS

To enable HTTPS in the environment, you must perform the following tasks.

1. Create a Certificate Authority to sign the server and client certificates. These certificates must be added to the certificate stores. See Create certificates.
2. Configure applications in IIS to require the certificates. See Configure certificates in IIS Manager.
3. Update the required Web configuration files. See Update the configuration files.

Create certificates

You must create a certificate authority to sign the server and client certificates. These certificates are required for authentication.

> **NOTE:**
> When generating the certificates, do not use the SHA-1 algorithm as it has been deprecated.

Complete the following tasks:

1. Import the `pfx` file for the Certificate Authority to the Local Computer's Trusted Root Certification Authorities.
2. Import the `pfx` file for the Server certificate to the Local Computer's Personal certificate store.
3. Import the `pfx` file for the Client certificate to the Current User Personal certificate store and into the browser's certificate store.

Configure certificates in IIS Manager

Add the certificates to IIS Manager and configure bindings and app settings.

To import certificates to IIS

1. In the IIS Manager, from the navigation pane on the left, select the server and select the Server Certificates.
2. Select **Import** and locate the `.pfx` file. This is the Personal Information Exchange file generated as part of the certificate making process.
3. Enter the file **Password**.

To update the bindings

1. In the IIS Manager, from the navigation pane on the left, select the web site.
2. In the right pane, from Edit Site, select **Bindings**.
3. Click **Add** and in the Edit Site Binding window, set **Type** to HTTPS.
4. Enter the host name.
5. Select **Require Server Name Indication** and select your certificate.
6. Click **OK**.

To configure IIS to require certificates

Configure the HPE Storage Optimizer, DataAnalysisService and CPWS apps in IIS Manager to require certificates.

HPE Storage Optimizer app

1. Click **SSL Settings**.
2. Select **Require SSL**.
3. Under **Client Certificates**, select **Require**.

Data AnalysisService app

1. Click **SSL Settings**.
2. Select **Require SSL**.
3. Under **Client Certificates**, select **Require**.

CPWS app

1. Click **SSL Settings**.
2. Select **Require SSL**.
3. Under **Client Certificates**, select either **Ignore** or **Accept**.

Update the configuration files

Configure the Storage Optimizer Administration Console to communicate with the Dashboard and Data Analysis Services using HTTPS and to require user authentication.

To update the Dashboard - Web.config file

1. Navigate to: `\Program Files\Hewlett Packard Enterprise\Storage Optimizer\Dashboard\Web.config` in the production environment.
2. Comment out the `system.serviceModel` tag located below the `Begin HTTP Service Model` comment.
3. Uncomment the `system.serviceModel` tag located below the `Begin HTTPS Service Model` comment.
4. Update the host in the endpoint addresses if necessary.
5. In the `clientCertificate` tag, change `findValue` to be the thumbprint of your client certificate.

   Locate your client certificate thumbprint by opening your client certificate and navigating to the details.

   > **CAUTION:** Enter this value manually. Do not copy and paste this value from the certificate, as the encoding adds hidden characters that will cause issues.

   > **TIP:** Other methods of finding the certificate can also be used. For more information, see https://msdn.microsoft.com/en-us/library/ms731323(v=vs.110).aspx

To update the DataAnalysis Service - Web.config file

1. Navigate to: `\Program Files\Hewlett Packard Enterprise\Storage Optimizer\DataAnalysis\Service\Web.config` in the production environment.
2. Comment out the `system.serviceModel` tag located below the `Begin HTTP Service Model` comment.
3. Uncomment the `system.serviceModel` tag located below the `Begin HTTPS Service Model` comment.

To update HPE Storage Optimizer Timer - `app.config` file

1. Navigate to: `\Program Files\Hewlett Packard Enterprise\Storage Optimizer\Engine\Scheduler\ControlPointTimer.exe.config` in the production environment.
2. Comment out the `system.serviceModel` tag located below the `Begin HTTP Service Model` comment.
3. Uncomment the `system.serviceModel` tag located below the `Begin HTTPS Service Model` comment.
4. Update the host in the endpoint addresses, if necessary.
5. In the `clientCertificate` tag, change `findValue` to be the thumbprint of your client certificate.

To update WebService - Web.config file

1. Navigate to: `\Program Files\Hewlett Packard Enterprise\Storage Optimizer\WebService\Web.config` in the production environment.
2. Comment out the `system.serviceModel` tag located below the `Begin HTTP Service Model` comment.
3. Uncomment the `system.serviceModel` tag located below the `Begin HTTPS Service Model` comment.
4. Update the host in the endpoint addresses if necessary.
5. In the `clientCertificate` tag, change `findValue` to be the thumbprint of your client certificate.

   After you reset IIS, HPE Storage Optimizer requests and is accessible using the created certificates.

Redeploy HPE Storage Optimizer when HTTPS is enabled

If you need to redeploy HPE Storage Optimizer, then you must change HTTP to HTTPS in the configuration files.

You must change HTTP back to HTTPS in the Dashboard, Timer, and WebService `web.config` file in the **https** service section.

Chapter 6: Install HPE Storage Optimizer Edge Filesystem connector

This section provides information on installing the HPE Storage Optimizer Edge Filesystem connector. The Edge Filesystem connector is used to run Archive policies on documents and files held in Windows and Linux file shares.

Prerequisites

Component	Description
Platform	**Windows:** • Windows 2012 R2 Server or later. **Linux:** • RHEL 7.1 • SUSE 12
HPE Storage Optimizer	Installed and ready to use.

Install the Edge Filesystem connector

To run archive policies, you need to install the HPE Storage Optimizer Edge Filesystem Connector.

To install the HPE Storage Optimizer Edge Filesystem Connector on Windows

1. Run the HPE Storage Optimizer Edge Filesystem Connector installer, `HPE Storage Optimizer File System Agent Installer.exe`.

   You can find the installer at `Storage Optimizer x64\HPE Storage Optimizer Utilities\HPE Storage Optimizer File System Agent\Windows`.

   The setup wizard appears.
2. Click **Next**.

   The Log Directory page opens.
3. Select a directory for the installation setup log files, and click **Next**.

   The Installation Location page opens.

4. Specify a location to install the Edge Filesystem Connector software.

   The default installation location is `C:\Program Files\Hewlett Packard Enterprise\Storage Optimizer\Edge`.

5. Click **Next**.

   The Server page opens.

6. Specify the name of the HPE Storage Optimizer server.

   The HPE Storage Optimizer Edge Filesystem Connector service needs to connect to this HPE Storage Optimizer server to execute the archive policies.

7. For Storage Optimizer environments running with HTTPS, click **HTTPS Enabled.**
8. Click **Next**.

   The Service User page opens.

9. Specify the credentials that will be used to run the HPE Storage Optimizer Edge Filesystem Connector services and to connect to the HPE Storage Optimizer server.
10. Click **Next**.

    The Installation Confirmation page opens.

11. Click **Install**.

    After the connector is installed, you are prompted to restart the system to complete the installation.

To install the HPE Storage Optimizer Edge Filesystem Connector on Linux

1. Open the Edge Filesystem Connector ports: 7210 and 7212.
2. Run the HPE Storage Optimizer Edge Filesystem Connector, `SORHELInstall.tar.gz`.

   You can find the installer at `Storage Optimizer x64\HPE Storage Optimizer Utilities\HPE Storage Optimizer File System Agent\Red Hat Linux`

   or

   `Storage Optimizer x64\HPE Storage Optimizer Utilities\HPE Storage Optimizer File System Agent\SUSE Linux`.

3. Extract and install the tarball as follows:
   a. `tar -xvzf SORHELInstall.tar.gz`
   b. `cd SORHELInstall`
   c. `sh sosetup.sh install`
4. Create a mount directory using the following command:

   `mkdir /opt/mount`

5. Run the configuration scripts that configure and start the services as follows:

a. `sh /opt/Hewlett Packard Enterprise/Edge/Agent/resources/deployLoggedFS.sh`
When prompted, enter the mount location created in Step 3.

b. `sh /opt/Hewlett Packard Enterprise/Edge/EdgeFSConnector/deployFSConnector.sh`
   i. When prompted, enter the HPE Storage Optimizer server, domain, username, and password.
   ii. When prompted, specify whether or not to use enable HTTPS:
   - Enter **y** for Storage Optimizer environments running with HTTPS.
   - Enter **n** for environments running with HTTP.

Uninstall the Edge Filesystem connector

To uninstall the HPE Storage Optimizer Edge Filesystem Connector on Windows

1. Uninstall the Edge Filesystem Connector and then the archive service from the Windows **Add/Remove** Programs option.
2. Restart the system.

To uninstall the HPE Storage Optimizer Edge Filesystem Connector on Linux

1. Change the directory to the `SORHELInstall` directory and run the following command: `sh sosetup.sh remove`
2. Stop the `EdgeConnectorFramework.exe` process or reboot the system.

Chapter 7: Upgrade HPE Storage Optimizer

This chapter describes how to upgrade from a previous version of HPE Storage Optimizer to version 5.4.

The upgrade process consists of the following phases:

1. Verify that the environment is suitable for upgrade. See Before you begin.
2. Prepare the HPE Storage Optimizer environment for upgrade. See Prepare HPE Storage Optimizer for upgrade.
3. Uninstall the current HPE Storage Optimizer software. See Uninstall the HPE Storage Optimizer software.
4. Upgrade HPE Storage Optimizer to version 5.4. See Upgrade to HPE Storage Optimizer 5.4.
5. For environments with Edge Filesystem connectors, upgrade the Edge Filesystem Connectors to 5.4. See Upgrade the Edge Filesystem Connector .
6. Upgrade Storage Optimizer to ControlPoint. See Upgrade from HPE Storage Optimizer to HPE ControlPoint .

Before you begin

Ensure that your environment meets all hardware, software, and third-party component requirements as described in the Prerequisites section.

Run the Upgrade Verification utility

HPE Storage Optimizer 5.4 includes a utility that scans your existing HPE IDOL deployment and verifies suitability for upgrade.

To run the upgrade verification utility

1. Copy the `HPE Storage Optimizer Pre Upgrade Checker` folder from the release media to your existing HPE Storage Optimizer IDOL server.
   - For environments where HPE IDOL is enabled with HTTPS, in the `PreUpgradeVerifier.exe.config` file, set the <appSettings> value "`SecurePorts`" to be `true`.

     For example:

     ```
     <appSettings>
       <add key="SecurePorts" value="true"/>
     </appSettings>
     ```

2. Run the utility `PreUpgradeVerifier.exe`.

   The utility runs, listing the status of the system before upgrade. The report displays the repositories, connectors and connector information.

> **NOTE:**
> If the report identifies any problems, contact your HPE Storage Optimizer support team before you proceed with your upgrade.

Prepare HPE Storage Optimizer for upgrade

Prepare the HPE Storage Optimizer environment for the upgrade by disabling any scheduled tasks, stopping services, uninstalling software and removing Web sites.

To prepare the environment

1. Allow any executing policy phases to complete.
2. In the HPE Storage Optimizer Administration dashboard, disable the Assign Policies and Execute Policies tasks using the Scheduled Tasks, to prevent new policies from being assigned to documents.

   > **NOTE:**
   > Be sure to disable all of the tasks: Normal, Low and High priority.

3. Check the Distributed Connector queue by issuing the command:

   `http://`
   `distributedconnectorhost``:`*`port`*`/a=queueinfo&queuename=fetch&queueaction=getstatus`

   If the Distributed Connector is working with HTTPS, check the queue by issuing the command:

   `https`
   `://distributedconnectorhost`
   `:`*`port`*`/a=queueinfo&queuename=fetch&queueaction=getstatus`

   The default port number is 7000.

   All actions should be `Finished`.
4. When all connector actions and executing policy phases have completed, stop the following services:
   a. HPE Storage Optimizer Engines
   b. Distributed Connector
   c. Individual connectors and Connector Framework Services.

      The services are stopped.

Uninstall the HPE Storage Optimizer software

After the environment is prepared, you can uninstall the current HPE Storage Optimizer software and remove Storage Optimizer web sites.

1. Uninstall the HPE Storage Optimizer software using the Windows **Add/Remove Programs** option.

   The software uninstalls.

2. Remove the HPE Storage Optimizer Web sites.

   Identify all applications in the `StorageOptimizerAppPool40` application pool running on your Internet Information Services (IIS) and delete them.

   These may include some or all of the following:

   - HPE Storage Optimizer
   - Classifier
   - CPWS
   - Callback Handler
   - Category
   - Data Analysis Service
   - StorageOptimizerAppPool40

   The environment is ready for upgrade.

Upgrade to HPE Storage Optimizer 5.4

The Storage Optimizer upgrade process consists of several steps.

The installers for the HPE Storage Optimizer database and software are located in the HPE Storage Optimizer installation package.

1. Upgrade the ControlPoint databases. See Upgrade the ControlPoint databases.
2. Install the HPE Storage Optimizer software, including optionally enabling HTTPS. See Install the HPE Storage Optimizer software.
3. Verify the HPE IDOL databases before upgrading the IDOL software. See Verify the databases in HPE IDOL.
4. Upgrade HPE IDOL data and software. See Upgrade HPE IDOL data and software.
5. Upgrade the HPE IDOL software manually. See Upgrade the HPE IDOL software manually.
6. Update the connector and connector framework configuration files with settings from previous environment. See Update Connector configuration files.
7. Perform additional post-upgrade tasks. See Post-upgrade steps.

Upgrade the ControlPoint databases

To upgrade the ControlPoint databases

1. Navigate to the `\Storage Optimizer x64` directory and run `HPE Storage Optimizer Database Installer.exe`.
2. Follow the instructions in the wizard.

   > **NOTE:**
   > Take note of the SQL connection string on the last screen of the HPE Storage Optimizer database installer. It will be used in a later step to configure the new HPE IDOL deployment package.

   The database is upgraded.

Install the HPE Storage Optimizer software

To install the software

1. From the `\Storage Optimizer x64` directory, run `Setup.exe`as the Administrator, and then follow the instructions in the installer.
2. While the old HPE IDOL software is still running, run the **Configuration Manager** and deploy HPE Storage Optimizer.
   a. For environments where HPE IDOL is enabled with HTTPS, in the `ControlPointConfiguration.exe.config` file, set the `<appSettings>` "`SecurePorts`" value to be `true`.

      For example:

      ```
      <appSettings>
        <add key="SecurePorts" value="true"/>
      </appSettings>
      ```

   b. Save the `ControlPointConfiguration.exe.config` file.
   c. Run **Configuration Manager**.

   The HPE Storage Optimizer software installs.

Verify the databases in HPE IDOL

Before upgrading the HPE IDOL software, take note of the databases present, so that you can verify them after the upgrade.

To verify the databases

Issue a GETSTATUS command:

For HTTP: `http://IDOLServerName:9000/a=getstatus`

For HTTPS: `https://IDOLServername:9000/a=getstatus`

The IDOL databases are displayed.

Upgrade HPE IDOL data and software

To upgrade the HPE IDOL data and software

1. Back up any HPE IDOL and connector configuration files that you modified manually or through the use of the HPE Storage Optimizer software. This ensures that you can reapply the changes after the upgrade completes.

   Ensure that you copy all `*.cfg` files from your installation directory to another location. All HPE IDOL files are already modified when new databases are added.

   > **NOTE:**
   > Any configuration file marked by a modification date later than the date of deployment indicates that it was modified manually or through the use of HPE Storage Optimizer software.

2. Run the **ControlPoint IDOL Upgrade** program, which is available at the following location:

   ```
   C:\Program Files\Hewlett Packard Enterprise\Storage
   Optimizer\Engine\Scheduler\ControlPoint IDOL Upgrade.exe..
   ```

   Follow the instructions in the wizard.

   For environments where HPE IDOL is enabled with HTTPS, in the `ControlPointIDOL Upgrade.exe.config` file, set the `<appSettings>` "`SecurePorts`" value to be `true`.

   For example:

   ```
   <appSettings>
     <add key="SecurePorts" value="true"/>
   </appSettings>
   ```

   The file is located in the `\Install\Program Files\Hewlett Packard Enterprise\Storage Optimizer\Engine\Scheduler` directory.

3. Depending on the version of Storage Optimizer you are upgrading from, the upgrade may include one or more of the following steps:

   a. Back up HPE IDOL.

      > **NOTE:**
      > If you have an existing backup strategy, skip this step.

   b. Upgrade the HPE IDOL content (required fields).

   c. Upgrade the HPE IDOL software.

After you start the upgrade process, you can save progress so you can resume the process from the same step in the future.

> **NOTE:**
> The program automates much of the upgrade process, but you must update the HPE IDOL software manually when prompted.

Upgrade the HPE IDOL software manually

When prompted, you must update the HPE IDOL MetaStoresoftware manually. This step also deploys an additional service, HPE Storage OptimizerMetaStore.

To manually update the HPE IDOL and MetaStoresoftware

1. Ensure that you have a backup of all HPE IDOL content and categories.

   If you are creating a new installation directory, then you must back up the `category` directory from the previously installed version of HPE Storage Optimizer (`category, cluster, imex` and `taxonomy` directories).

   The files are located in the following locations:

   - **HPE Storage Optimizer 5.0** — `Program Files\Hewlett-Packard\HP ControlPoint\Indexer\IDOL\category`
   - **HPE Storage Optimizer 5.1** — `Program Files\Hewlett Packard Enterprise\HPE Storage Optimizer\Indexer\IDOL\category`

2. Stop the IDOL services by running the `_stop_services.bat` batch file generated by the IDOL deploy tool.

   This batch file is available at `C:\temp\HPE Storage Optimizer\`*`host_servername`*.

   You may need to run it from the command line with administrator permissions.

   > **NOTE:**
   > If HPE IDOL is running with HTTPS, stop IDOL services from Services and Processes manually.

3. Uninstall existing services using `_uninstall_services.bat`.

   Executing the file that was built for your current deployment will ensure spurious errors are not reported.

4. Prepare a new HPE IDOL deployment using the **HPE Storage Optimizer IDOL Deploy Tool** from the release media.

   > **NOTE:**
   > Use the same Host Installation Directory as your current deployment. It ensures that your

> HPE IDOL data migrates correctly.

- For versions of HPE Storage Optimizer 5.0 or earlier, the Host Installation Directory is `C:\Program Files\Hewlett-Packard\Storage Optimizer`.
- For HPE Storage Optimizer 5.1 or later, the Host Installation Directory is `C:\Program Files\Hewlett Packard Enterprise\Storage Optimizer`.

The deployment is prepared.

5. Run the `_deploy_services.bat` file and choose to overwrite all files.

> **NOTE:**
> HPE Storage Optimizer5.4 installation requires Microsoft Visual C++ 2013 Runtime. This is provided with your HPE Storage Optimizer software in the `vcredist` directory of your HPE IDOL deployment package.
>
> Install it before running the `_install_services.bat` file, if you have not already done so.

6. Run the `_install_services.bat` batch file using the **As Administrator** option.

   The new services are installed.

Update Connector configuration files

Update the Connector and Connector framework configuration files, so that they match the configurations used in the previous deployment.

1. Perform the following key changes to the new configuration files after deployment:
   - **Each connector:** Copy over every `Task` section.

     For example:

     ```
     [TaskFS]
     DirectoryRecursive=True
     ExtractOwner=True
     PathRegEx=.*
     DirectoryFileAttributeFilter=-1
     IngestActions=META:ENFORCESECURITY=false,META:CPREPOSITORYTYPEID=3,LUA:lua\Ex
     tractFileData.lua,META:AUTN_CATEGORIZE=false,META:AUTN_EDUCTION=false
     DirectoryPathCSVs=\\v-cptrim\FS
     ScheduleStartTime=now
     ScheduleCycles=1
     ScheduleRepeatSecs=3600
     IndexDatabase=FS
     ```

   - **For some connector types (such as SharePoint)**, additionally copy over all `Groups` task

sections.

For example:

```
[Groups_TaskSPS]
FetchMode=0
IncludeEmptyFields=True
ExtractSubfiles=True
MappedWebApplicationPolicies=True
IgnorePublishingPagesAspx=True
SecurityType=SharePointSecurity
IngestActions=META:CPREPOSITORYTYPEID=2,META:AUTN_NO_FILTER=true
StartURL=http://v-cptrim:8081
ScheduleStartTime=now
ScheduleCycles=1
ScheduleRepeatSecs=3600
IndexDatabase=SPS
```

By default, HPE Storage Optimizer 5.4 takes care of index synchronization. Therefore, you do not need to include entries for each task section in the `[FetchTasks]` section:

```
[FetchTasks]
Number=0
```

> **NOTE:**
> Ensure that the task configuration of each connector matches the configuration used in the previous deployment to prevent re-scanning of previously analyzed content.
>
> In version 4.2, the default task name changed from **MyTask** to **MyTask0**, so if you use default tasks and upgrade from a version earlier than 4.2, you must change the new connector configuration files accordingly.

2. **Connector Framework.** Copy over any custom LUA added after installation, along with any corresponding `[ImportTasks]` section entries.

> **NOTE:**
> If you install a new version of HPE Storage Optimizer in an installation directory which is different from the previous installation directory, then ensure you place the backed up `categories` directory in the new path.

Post-upgrade steps

1. Start the following non-connector services, in the specified order:
   - HPE Storage Optimizer License Server
   - HPE Storage Optimizer Content Engines

- HPE Storage Optimizer DataAnalysis Store
- HPE Storage Optimizer OGS
- HPE Storage Optimizer IDOL
- HPE Storage Optimizer MetaStore

2. If you are installing HPE Storage Optimizer5.4 in a different directory than your previous installation directory, copy all `connector_repositoryname_datastore.db` files to the new installation directory.
3. When HPE IDOL successfully starts, issue a **GETSTATUS** command to verify that all services are running and that all HPE IDOL databases that were available before the upgrade are present.

   For HTTP: `http://IDOLServerName:9000/a=getstatus`

   For HTTPS: `https://IDOLServerName:9000/a=getstatus`

   > **NOTE:**
   > If one or more expected HPE IDOL databases are not present, do not proceed to the next step.

4. When the MetaStore service successfully starts, issue a **GETSTATUS** command to verify that all services are running and that all MetaStore databases (which were available before the upgrade) are present.

   `http:// MetaStoreServerName:4500/a=getstatus`

   > **NOTE:**
   > If one or more expected MetaStore databases are not present, do not proceed to the next step.

5. Return to the upgrade program and continue to follow the instructions.

   The program prompts you to start your connectors when the process completes.
6. Start the connectors in the following order:
   a. Distributed Connector
   b. Connector Framework Services
   c. Connectors

   > **CAUTION:**
   > Do not start the HPE Storage Optimizer Engine until the full upgrade process completes.

7. Enable scheduled tasks.
8. To view previously updated repositories in the HPE Storage Optimizer Dashboard, clear your

browser cache, restart the browser and navigate to the repositories.

For specific details on clearing the cache for your browser, see your browser's documentation.

Rescan repositories with custom properties after the upgrade

If your HPE Storage Optimizer environment has been configured with custom properties in repositories, additional steps are required after upgrading to 5.4.

For more reference material on configuring MetaStore for metadata ingestion, see Configure HPE Storage Optimizer MetaStore for metadata ingestion, on page 62 or the *HPE Storage Optimizer Administration Guide* and HPE Storage Optimizer Console Help system.

To deal with custom property mapping after upgrade

1. In SQL Server, configure data mapping using the `MetaStore.MapField` stored procedure:

   In this example, `AU_DOCUMENT_EDITOR_STRING` is the custom field that requires configuration.

   ```
   USE ControlPointMetaStore
   GO
   EXEC MetaStore.MapField
   @SourceName            = 'AU_DOCUMENT_EDITOR_STRING',
   @TargetTable           = 'ControlPointMetadata.Additional',
   @TargetColumn          = 'LastEditedBy',
   @TargetTransform       = 'ToString'
   GO
   ```

2. Refresh document ingest, import and update sequences to support the mapped field in MetaStore.

   ```
   USE ControlPointMetaStore
   GO
   EXEC MetaStore.ConfigureAddDocument
   EXEC MetaStore.ConfigureUpdateDocument
   EXEC ControlPointMetadata.ConfigureImportDocument
   GO
   ```

3. Restart the MetaStore service to utilize the refreshed sequences.
4. Rescan the repositories using the HPE Storage Optimizer Dashboard.

Upgrade the Edge Filesystem Connector

> **NOTE:**
> Skip this step if you do not have HPE Storage Optimizer Edge Filesystem connectors in your environment.

To upgrade the Edge Filesystem connector

1. Back up the Edge Filesystem Connector `.config` and `.db` files.
2. Uninstall the Edge Filesystem Connector and then the archive service:
   - **For Windows:** Uninstall the connector from the Windows **Add/Remove** Programs option.
   - **For Linux:** Change the directory to the `SORHELInstall` directory and run the following command:

     ```
     sudo sh sosetup.sh remove
     ```
3. Restart the system.
4. Install the new version of the Edge Filesystem Connector and archive service, then restart the system.

   For more information, see Install the Edge Filesystem connector, on page 39.
5. After the system restarts, stop the Edge Filesystem Connector and copy the `task` section and any other manual modifications from the backed up `.config` file to the new version of the `config` file. Also copy the `.db` files into the connector directory.
6. Start the Edge Filesystem Connector.

Upgrade from HPE Storage Optimizer to HPE ControlPoint

The upgrade process consists of several steps. However, the steps to upgrade are exactly the same as when you upgrade from an earlier version of HPE Storage Optimizer to HPE Storage Optimizer 5.4.

Follow the steps provided in the section and use the HPE ControlPoint installation programs.

Chapter 8: Troubleshooting

This section provides troubleshooting information on the following:

Edge Filesystem Connectors

Unable to connect an Edge Filesystem Connector to HPE Verity Information Archiving

Problem

After creating a repository in HPE Verity Information Archiving Administration UI, and downloading and installing the license key, the Edge Filesystem Connector fails to connect to the HPE Verity Information Archiving cloud.

Solution

Download and install the certificates from the HPE Verity Information Archiving API site.

To download the certificates

1. Contact the HPE Support team for assistance with obtaining the HPE Verity Information Archiving API URL information.
2. In a browser, navigate to https://<*verityInfoArchivingURL*>:<*gateway*>/v1/cert/download. Use the URL and gateway supplied by HPE Support.
3. The certificates are downloaded in a ZIP file.
4. Open the ZIP file and copy the `.pem` files to your Edge Filesystem Connector.
5. Run the script to install the certificates.

   Linux:`/opt/Hewlett Packard Enterprise/Edge/Agent/Resources/installCert.sh`

   Windows:`\Program Files\Hewlett Packard Enterprise\Storage Optimizer\Archive Service\installCert.bat`
6. At the prompt, enter the Java trusted keystore file password.

   The default password is **`changeit`**.

If you changed the password for the Java default trusted keystore file, enter your password.

7. The script prompts for one `.pem` file at a time.
8. Stop and restart the Archive service.

   Linux: Stop and restart the `hploggedfs` process.

   Windows: Stop and restart the HPArchiveService in Services.

Linux Edge Filesystem Connector in a distributed connector system does not belong to the same domain as HPE Storage Optimizer

Problem

The Edge Filesystem Connector is installed on a Linux environment in a distributed connector system that does not belong to the same domain as HPE Storage Optimizer.

Solution

1. Stop the Edge Filesystem Connector.
2. On the Distributed Connector system, edit the `hosts` file to add the Edge Filesystem Connector.
3. On the Distributed Connector system, ensure that ports 7210 and 7212 are enabled with the Edge Filesystem Connector machine, or turn off the firewall.
4. On the Edge Filesystem Connector system, ensure that ports 7210 and 7212 are enabled, or turn off the firewall.
5. Start the Edge Filesystem Connector.

SharePoint Connectors

`EncryptACLEntries=False` does not work if it is in the `[Connector]` section.

Problem

`EncryptACLEntries=False` does not work if it is in the `[Connector]` section.

Affects

All SharePoint connectors including SP2007, SP2010, SP2013, and the SP Remote Connector.

Solution

The `EncryptACLEntries` parameter must be set in the `[TaskName]` section for the Sharepoint Connectors. If the parameter is in the `[Connector]`section, it will not work as expected.

Connectors

CPCategory field is missing from the Advanced Properties during rescan of Connectors configured in SSL environments

Problem

When HPE Storage Optimizer is enabled with SSL, you do not see CPCATEGORYTAG under the Advanced Properties of a document. Instead, you see CPDEFAULTCATEGORYTAG under IDOL Properties section in the Advanced Properties with the name of the parent category.

Scenario

The following scenario can exhibit the problem:

1. Create two content repositories with text (`.txt`) files.
2. Create a category, which is treated as the parent category.
3. Create another category under the parent with criteria for the file type .txt and use Repository 1 for training.
4. Edit Repository 2 and CP adds the Default category for the repository, as seen on the Analysis page, as the parent repository name.

Expected behavior

When a repository is assigned a category and a document satisfies a category criteria, the category name should be displayed for the CPCATEGORYTAG field in Advanced Properties.

Solution

The Category LUA file on the Connector Framework must be edited to include extra parameters for SSL communications in the environment.

To edit the LUA file on each Connector Framework

1. Navigate to the file location:

   ```
   \Program Files\Hewlett Packard Enterprise\Storage
   Optimizer\Indexer\<connectorFramework>\lua\Category.lua
   ```

   For example:

   ```
   \Program Files\Hewlett Packard Enterprise\Storage Optimizer\Indexer\FileSystem
   Connector Framework\lua\Category.lua
   ```

2. Search for the line:

   ```
   local categorize = document:getFieldValue("AUTN_CATEGORIZE",false)
   ```

3. Insert a new statement after the statement in step 2:

```
local sslParameters =
 {
       SSLMethod = "SSLV23",
 }
```

4. Edit the line:

   ```
   local xmlString = send_aci_action(hostName, port, "CategorySuggestFromText",
   {querytext = content, NumResults = maxCategories, textparse = "true",
   agentBoolean = "true", anylanguage = "true", FieldText = "NOT EXISTS
   {}:CONTAINERCAT AND NOT EXISTS{}:SHADOWCATEGORYOF"}, timeout, retries )
   ```

   to

   ```
   local xmlString = send_aci_action(hostName, port, "CategorySuggestFromText",
   {querytext = content, NumResults = maxCategories, textparse = "true",
   agentBoolean = "true", anylanguage = "true", FieldText = "NOT EXISTS
   {}:CONTAINERCAT AND NOT EXISTS{}:SHADOWCATEGORYOF"}, timeout, retries,
   sslParameters )
   ```

5. Save the file.

Stop and start the Connector services, in order:

1. Stop the Filesystem Connector service.
2. Stop and start the Filesystem Connector Framework service.
3. Start the Filesystem Connector service.

Temporary files accumulate in different locations when indexing repositories

Problem

When indexing repositories, temporary files can accumulate in different locations. This may impact performance, create out-of-disk conditions, or cause corruption in HPE IDOL.

Symptoms

The following symptoms may occur:

- On Connectors, temporary files may accumulate in the Connector's `\Temp` directory.

  For example, on a File System connector:

  ```
  C:\Program Files\Hewlett Packard Enterprise\Storage Optimizer\Indexer\FileSystem
  Connector\Temp
  ```

- In the operating system temporary files location, usually set in the environment variables, HPE Storage Optimizer temporary files may accumulate.

  For example, in Windows:

  ```
  C:\Users\%serviceaccount%\AppData\Local\Temp
  ```

Solutions

For Connectors:

- Ensure that the Connector Framework service and the Connector are configured to use the same service account.
- Ensure that the service account for the Connector and Connector Framework service has full rights to the Connector's `\Temp` location.

For the operating system temporary location:

- Utilize all of the following parameters in all CFG framework files

```
[ImportService]
KeyviewTemporaryPath=<full path to CFS folder+specific folder>
KeyviewDirectory=<full path to CFS folder+specific folder>
WorkingDirectory=<full path to CFS folder+specific folder>
ExtractDirectory=<full path to CFS folder+specific folder>
```

  where

  - `KeyviewTemporaryPath` is the path HPE KeyView uses for extraction.
  - `WorkingDirectory` is the path where temporary files are extracted and then copied to the extracted directory when finished.
  - `ExtractDirectory` is the path used for the extracted files, for example, email attachments or zip files.

> **NOTE:**
> Temporary files are not deleted for particular HPE KeyView processes if filtering fails. It may be related to particular files which need to be identified and analyzed in more detail.
>
> To proceed with further investigations, set the following parameters and ensure that you have enough space, because the original files will be kept.
>
> ```
> [ImportService]
> KeepExtractedFiles=true
> [Logging]
> LogLevel=full
> ```
>
> This test should be processed with clean temporary folders and logs. When the fetch cycle is complete, attach all logs and temporary folders for analysis.

Proxy server interactions

Proxy server blocks traffic of Data Analysis service

Problem

The system was routing all calls to the Data Analysis service through a proxy server, which was blocking certain calls.

Solution

1. Open the `\Program Files\Hewlett Packard Enterprise\Storage Optimizer\DataAnalysis\Service\web.config` file.
2. Add the following section between the `</system.web>` and `<system.ServiceModel>` sections:

```
<system.net>
 <defaultProxy>
  <bypasslist>
   <add address="1.2.3.4"/>
   <add address="5.6.7.8"/>
  </bypasslist>
 </defaultProxy>
</system.net>
```

3. Save the file.
4. Reset IIS to allow the environment to load the changes.

Policy Execution Logs

As part of investigation and diagnostics of policy execution issues, you can change the logging level of the HPE Storage Optimizer Engine. Logging levels can be changed with the Configuration Manager or by editing the configuration file.

To change the logging level with Configuration Manager

1. Open the HPE Storage Optimizer Configuration Manager.
2. In the **Engine** section, click **Logging**.

   The Logging tab opens.
3. Click **Execute Policies** and select a logging level setting from the **Log Level** list. The default level is Information. The available logging levels are:
   - All

     > **NOTE:**
     > HPE recommends to set the logging level to **All** when your HPE Storage Optimizer

> environment is encountering issues with policy execution. This level gathers the most diagnostic information.

- Verbose
- Information
- Warning
- Error
- Off

4. Click **Deploy.**

   HPE Storage Optimizer redeploys.

To change the logging level in the configuration file

1. Navigate to `\Program Files\Hewlett Packard Enterprise\Storage Optimizer\Engine\Scheduler\ControlPointTimer.exe.config` in the production environment.
2. Edit one of the following settings in the `<categorySources>` section of the configuration file to the desired logging level:
   - `<add switchValue="Information" name="Execute Policies">`

     > **NOTE:** This setting applies the logging level across all policy execution schedules.

     For example:

     `<add switchValue="All" name="Execute Policies">`
   - `<add switchValue="Information" name="Execute Policies (High)">`
   - `<add switchValue="Information" name="Execute Policies (Normal)">`
   - `<add switchValue="Information" name="Execute Policies (Low)">`

     The above three settings apply the logging level to each schedule frequency level individually.
3. Save the file.
4. Restart the **HPE Storage Optimizer Engine** service.

   The configuration changes take effect.

Data Analysis logs

Data Analysis Service and Data Analysis Controller logs have been improved so you can use them as part of investigation and diagnostics of Data Analysis issues.

Data Analysis service logs

Logs for the Data Analysis service can be found at the following location:

```
\Program Files\Hewlett Packard Enterprise\Storage
Optimizer\DataAnalysis\Service\Logs\Logs.log
```

> **NOTE:**
> The Data Analysis service logs contain only errors.

Data Analysis Controller logs

Logs for the Data Analysis Controller have been improved for events for Analysis jobs.

- Error messages - for events such as OnFailed or OnIssues.
- Informational messages - for events such as OnProgressUpdate, OnJobComplete, OnJobCancelled, and so on.

Logs for the Data Analysis Controller can be found at the following location:

```
\Program Files\Hewlett Packard Enterprise\Storage
Optimizer\DataAnalysis\Controller\Logs\controller_<GUID>.log
```

Statistics Export utility trace logs

As part of investigation and diagnostics of Statistics Export issues, you can enable a System.Diagnostics trace log in the Statistics Export utility.

To enable trace logs

1. Edit the Statistics Export utility configuration file, which is available at the following location:

   ```
   Storage Optimizer x64\HPE Storage Optimizer Utilities\Statistics Export
   Utility\ControlPointStatisticsUtility.exe.config
   ```

2. In the `<Configuration>` section, add the following parameters:

   ```
   <!--
   System.diagnostics-- to be removed once problem is resolved
   -->
     <system.diagnostics>
      <trace autoflush="false" indentsize="4">
        <listeners>
           <add name="myListener"
   ```

```
type="System.Diagnostics.TextWriterTraceListener"
initializeData="TextWriterOutput.log" />
        <remove name="Default" />
     </listeners>
   </trace>
  </system.diagnostics>
```

3. Save the file.
4. Run the Statistics Export utility.

   The utility runs with an increased level of logging.

Appendix A: Configure HPE Storage Optimizer MetaStore for metadata ingestion

This section provides an overview of the steps necessary for configuring HPE Storage Optimizer MetaStore to capture additional data during document ingestion. A set of examples will be used to show where and how this data can be captured.

Data Mapping

Document metadata is captured by a list of instructions dynamically generated based on information held in the **MetaStore.MapTable** and **MetaStore.MapColumn** tables.

A stored procedure named **MetaStore.MapField** handles the complexity of these mapping tables. Run this stored procedure to register data mappings for any additional document metadata to be captured into HPE Storage Optimizer MetaStore.

MetaStore.MapColumn

Field	Description
GroupNumber	Used when a source field is mapped to multiple times the same target table. For example, use GroupNumber for a complex field such as “ADDRESS” with a value {CITY=”BFS”, NUMBER=10, STREET=”Queens”}. The inclusion of the same GroupNumber for the separate address parts keeps the information together within the one row in the target table.

Field	Description
	Default: 1
SourceName	The field to be extracted from the source document.
ExtractPath	The value of this field is typically null, except when a value is to be parsed from the source field.
TargetColumn	The name of the column where the captured value is to be stored.
TargetTransform	The type of transformation to be used before storing the captured value.
TargetTransformParams	When a transformation requires additional configuration, the configuration can be placed in the TargetTransformParams field. The value of this field is typically null.
SupportingTable	The name of the target hash table, if any. This field should be populated when the extracted data is to be hashed into a separate hash table.
CanUpdate	Indicates whether the information captured to the target column can be modified after creation.
Inherit	Indicates whether the information captured to the target column, when modified, should be captured to child documents. Examples of such inheritance would be security.
AlternativeFieldSource	The alternate field to be extracted from the source document when SourceName cannot be extracted.
AlternativeFieldSourceTransform	The alternate transform to be used when AlternativeFieldSource is specified.

MetaStore.MapTable

Field	Description
GroupNumber	See GroupNumber
SourceName	See SourceName
TargetType	The TargetType values are as follows:

Field	Description
	• "MVF" if the table can capture multiple values for the same document. For example, more than one row can exist for a given document. • "SVF" if the table can capture single values for the same document. For example, a maximum of one row can exist per document.
TargetTable	The name of the table to populate.
TargetMVPSuffix	Supports the extraction of a suffix from the source field name to further populate a column in the target table. For example, assuming data exists in the source document like: CPPATH1=\\c\ CPPATH2=\\c\test\ CPPATH3=\\c\test\folder\ Then it is possible to map CPPATH* as the SourceName and indicate that the value extract from * should be placed in the field configured by TargetMVPSuffix, for example "Level".
TargetMVPSuffixTransform	Specifies the transform to use when extracting a suffix. See TargetMVPSuffix.

MetaStore.MapField

The stored procedure **MetaStore.MapField** handles the complexity of the mapping tables by defaulting a number of optional parameters to typical values.

Parameter Name	Required	Default Value
@GroupNumber	No	(1), defaults to a single field mapping
@SourceName	Yes	
@TargetType	No	('SVF') , defaulting Single-valued Field(SVF)
@TargetTable	Yes	
@TargetMVPSuffix	No	(NULL), defaults to not specified
@TargetMVPSuffixTransform	No	(NULL), defaults to not specified

Parameter Name	Required	Default Value
@ExtractPath	No	(NULL), defaults to not specified
@TargetColumn	Yes	
@TargetTransform	Yes	
@TargetTransformParams	No	(NULL), defaults to not specified
@SupportingTable	No	(NULL), defaults to not specified
@CanUpdate	No	(1) , defaults to TRUE
@Inherit	No	(0), defaults to FALSE
@AlternativeFieldSource	No	(NULL), defaults to not specified
@AlternativeFieldSourceTransform	No	(NULL) , defaulting to not specified

Additional data capture

HPE Storage Optimizer MetaStore includes the database schemas, **Metadata** and **ControlPointMetadata**.

Metadata and the corresponding tables (for example, **Metadata.Document**) are used for the default set of captured properties only. Extensions to this default set must be captured into the **ControlPointMetadata** schema instead.

- If the additional data to be captured is a single value field (SVF), then it must be captured in the **ControlPointMetadata.Additional table**.
- If the additional data to be captured is a multivalue field (MVF) instead, then a new table must be created within the **ControlPointMetadata** schema to accommodate the multiple values for each document.

All multivalue tables should also include a repository identifier and a MD5 hash of the document DREREFERENCE. **ControlPointMetadata** also comprise of hash table types. These tables are utilized to reduce the storage footprint for information that is readily repeated. Each hash table has the same basic format comprising a repository identifier, a raw value and a MD5 hash of the raw value.

Examples

This section documents the steps required to capture additional metadata into HPE Storage Optimizer MetaStore. It uses a number of examples to do so and includes corresponding SQL statements that needs to be loaded and executed.

The examples make use of metadata fields AU_DOCUMENT_EDITOR_STRING and AU_DOCUMENT_AUTHOR_STRING to illustrate the differences between SVF and MVF table setup.

> **NOTE:**
> AU_DOCUMENT_AUTHOR_STRING is already captured in HPE Storage Optimizer MetaStore by default.

Example 1 – single value for the same document

Documents comprise a single AU_DOCUMENT_EDITOR_STRING value.

This will be recorded in the **ControlPointMetadata.Additional** table in a new field named **LastEditedBy**. Data mappings must be configured to instruct the MetaStore service on how to capture and record this field value during document ingestion.

To map data

1. In SQL Server, add a new column to the **ControlPointMetadata.Additional** table to support the capture of the AU_DOCUMENT_EDITOR_STRING string value:

   ```
   USE ControlPointMetaStore
   GO
   ALTER TABLE ControlPointMetadata.Additional
   ADD LastEditedBy NVARCHAR(255) NULL
   GO
   ```

2. Configure AU_DOCUMENT_EDITOR_STRING data mapping using the MetaStore.MapField stored procedure:

   ```
   USE ControlPointMetaStore
   GO
   EXEC MetaStore.MapField
   @SourceName            = 'AU_DOCUMENT_EDITOR_STRING',
   @TargetTable           = 'ControlPointMetadata.Additional',
   @TargetColumn          = 'LastEditedBy',
   @TargetTransform       = 'ToString'
   GO
   ```

3. Refresh document ingest, import and update sequences to support the newly captured AU_DOCUMENT_EDITOR_STRING field in MetaStore.

   ```
   USE ControlPointMetaStore
   GO
   EXEC MetaStore.ConfigureAddDocument
   EXEC MetaStore.ConfigureUpdateDocument
   EXEC ControlPointMetadata.ConfigureImportDocument
   GO
   ```

4. Restart the ControlPoint MetaStore service to utilize the refreshed sequences.

5. If you add custom fields in Insert Configuration, you must restart the HPE Storage Optimizer Engine.

Example 2 – single value hash for the same document

Documents comprise a single AU_DOCUMENT_EDITOR_STRING value. This example assumes that this string value is readily repeated throughout.

A new hash table, **ControlPointMetadata.EditorHash**, will be created to help reduce storage footprint.

A MD5 hash of AU_DOCUMENT_EDITOR_STRING will be recorded in the **ControlPointMetadata.Additional** table in a new field named **LastEditedByHash**. Data mappings must be configured to instruct the MetaStore service on how to capture and record this field value during document ingestion

To map data

1. Create a new hash table, **ControlPointMetadata.EditorHash**, to support the AU_DOCUMENT_EDITOR_STRING string value and MD5 hash value mappings.

```
USE ControlPointMetaStore
GO
IF OBJECT_ID(N'ControlPointMetadata.EditorHash', N'U') IS NULL
BEGIN
CREATE TABLE ControlPointMetadata.EditorHash
(
     RepositoryId   INTEGER        NOT NULL,
     HashKey    BINARY(8)          NOT NULL,
     Value          NVARCHAR(255)      NOT NULL,
     CONSTRAINT  ControlPointMetadata_EditorHash_PK
     PRIMARY KEY NONCLUSTERED(RepositoryId, HashKey) WITH FILLFACTOR = 80
)
END
GO
```

2. Add a new column to the **ControlPointMetadata.Additional** table to support the MD5 hash of the AU_DOCUMENT_EDITOR_STRING string value.

```
USE ControlPointMetaStore
GO
ALTER TABLE ControlPointMetadata.Additional
ADD LastEditedByHash BINARY(8) NULL
GO
```

3. Create a foreign key relationship from the source table to the corresponding hash table.

```
USE ControlPointMetaStore
GO
ALTER TABLE ControlPointMetadata.Additional
ADD CONSTRAINT  ControlPointMetadata_Additional_FK_LastEditedByHash
```

```
FOREIGN KEY (RepositoryId, LastEditedByHash)
REFERENCES ControlPointMetadata.EditorHash(RepositoryId, HashKey)
GO
```

4. Configure AU_DOCUMENT_EDITOR_STRING data mapping using the MetaStore.MapField stored procedure.

```
USE ControlPointMetaStore
GO
EXEC MetaStore.MapField
@SourceName            = 'AU_DOCUMENT_EDITOR_STRING',
@TargetTable           = 'ControlPointMetadata.Additional',
@TargetType            = 'SVF',
@TargetColumn          = 'LastEditedByHash',
@TargetTransform       = 'HashValue',
@SupportingTable       = 'ControlPointMetadata.EditorHash'
GO
```

5. Refresh document ingest, import and update sequences to support the newly captured AU_DOCUMENT_EDITOR_STRING field in HPE Storage Optimizer MetaStore.

```
USE ControlPointMetaStore
GO
EXEC MetaStore.ConfigureAddDocument
EXEC MetaStore.ConfigureUpdateDocument
EXEC ControlPointMetadata.ConfigureImportDocument
GO
```

6. Restart the HPE Storage Optimizer MetaStore service to utilize the refreshed sequences.
7. If you add custom fields in Insert Configuration, you must restart the HPE Storage Optimizer Engine.

Example 3 – multiple values for the same document

Documents can comprise multiple AU_DOCUMENT_AUTHOR_STRING values. These will be recorded in the **ControlPointMetadata.Author** table. Data mappings must be configured to instruct the MetaStore service on how to capture and record these field values during document ingestion.

To map data

1. Create a table, **ControlPointMetadata.Author** to record all AU_DOCUMENT_AUTHOR_STRING values for each document.

```
USE ControlPointMetaStore
GO
IF OBJECT_ID(N'ControlPointMetadata.Author', N'U') IS NULL
BEGIN
CREATE TABLE ControlPointMetadata.Author
(
```

```
        RepositoryId            INTEGER         NOT NULL,
        DocKey                  BINARY(8)               NOT NULL,
        Author                  NVARCHAR(255)           NOT NULL
        CONSTRAINT  ControlPointMetadata_Author_PK
        PRIMARY KEY CLUSTERED(RepositoryId, DocKey, Author)
        WITH FILLFACTOR = 80
)
END
GO
```

2. Configure `AU_DOCUMENT_AUTHOR_STRING` data mapping using the `MetaStore.MapField` stored procedure.

```
USE ControlPointMetaStore
GO
EXEC MetaStore.MapField
        @SourceName                     = 'AU_DOCUMENT_AUTHOR_STRING',
        @TargetTable                    = 'ControlPointMetadata.Author',
        @TargetType                     = 'MVF',
        @TargetColumn                   = 'Author',
        @TargetTransform               = 'ToString'
GO
```

3. Refresh document ingest, import and update sequences to support the newly captured `AU_DOCUMENT_AUTHOR_STRING` field in MetaStore.

```
USE ControlPointMetaStore
GO
EXEC MetaStore.ConfigureAddDocument
EXEC MetaStore.ConfigureUpdateDocument
EXEC ControlPointMetadata.ConfigureImportDocument
GO
```

4. Restart the HPE Storage Optimizer MetaStore service to utilize the refreshed sequences.
5. If you add custom fields in Insert Configuration, you must restart the HPE Storage Optimizer Engine.

Example 4 – multiple values hashed for the same document

Documents can comprise multiple `AU_DOCUMENT_AUTHOR_STRING` values. This example assumes that these string values are readily repeated throughout.

A new hash table, **ControlPointMetadata.AuthorHash**, will be created to help reduce storage footprint. Hashed `AU_DOCUMENT_AUTHOR_STRING` values for each document will be stored in **ControlPointMetadata.Author**. Data mappings need configured to instruct the MetaStore service on how to capture and record these field values during document ingestion.

To map data

1. Create a new hash table, **ControlPointMetadata.AuthorHash**, to support the AU_DOCUMENT_AUTHOR_STRING string value and MD5 hash value mappings.

```
USE ControlPointMetaStore
GO
IF OBJECT_ID(N'ControlPointMetadata.AuthorHash', N'U') IS NULL
BEGIN
CREATE TABLE ControlPointMetadata.AuthorHash
(
       RepositoryId    INTEGER         NOT NULL,
       HashKey BINARY(8)               NOT NULL,
       Value           NVARCHAR(255)           NOT NULL,
       CONSTRAINT  ControlPointMetadata_AuthorHash_PK
       PRIMARY KEY NONCLUSTERED(RepositoryId, HashKey) WITH FILLFACTOR = 80
)
END
GO
```

2. Create a table, **ControlPointMetadata.Author** to record all MD5 hashes for AU_DOCUMENT_AUTHOR_STRING values for each document.

```
USE ControlPointMetaStore
GO
IF OBJECT_ID(N'ControlPointMetadata.Author', N'U') IS NULL
BEGIN
CREATE TABLE ControlPointMetadata.Author
(
       RepositoryId            INTEGER         NOT NULL,
       DocKey                  BINARY(8)               NOT NULL,
       AuthorHash              BINARY(8)               NOT NULL
       CONSTRAINT  ControlPointMetadata_Author_PK
       PRIMARY KEY CLUSTERED(RepositoryId, DocKey, AuthorHash)
       WITH FILLFACTOR = 80,
       CONSTRAINT  ControlPointMetadata_Author_FK_AuthorHash
       FOREIGN KEY (RepositoryId, AuthorHash)
       REFERENCES ControlPointMetadata.AuthorHash(RepositoryId, HashKey)
)
END
GO
```

3. Configure AU_DOCUMENT_AUTHOR_STRING data mapping using the MetaStore.MapField stored procedure.

```
USE ControlPointMetaStore
GO
EXEC MetaStore.MapField
       @SourceName                     = 'AU_DOCUMENT_AUTHOR_STRING',
       @TargetTable                    = 'ControlPointMetadata.Author',
```

```
        @TargetType                     = 'MVF',
        @TargetColumn                   = 'AuthorHash',
        @TargetTransform                = 'HashValue',
        @SupportingTable                = 'ControlPointMetadata.AuthorHash'
GO
```

4. Refresh document ingest, import and update sequences to support the newly captured `AU_DOCUMENT_AUTHOR_STRING` field in MetaStore.
5. Restart the HPE Storage Optimizer MetaStore service to utilize the refreshed sequences.
6. If you add custom fields in Insert Configuration, you must restart the HPE Storage Optimizer Engine.

Existing data and re-ingestion

The steps outlined in the examples ensure that the new field, `AU_DOCUMENT_EDITOR_STRING`, is captured for new document files being ingested.

Existing data will need to be re-ingested in order to capture values for this new metadata field.

> **NOTE:**
> If you add custom fields in Insert Configuration, you must restart the HPE Storage Optimizer Engine so that HPE Storage Optimizer picks up the new custom fields.

To re-ingest data

- select **Re-Index Repository** on the Repositories dashboard.
- remove the connector database file from the connector installation directory, followed by a connector service restart.

Field text and advanced properties

The new metadata has been captured into HPE Storage Optimizer MetaStore through document ingestion. In order to make use of this new data for field text purposes and to return as part of the Properties/Advanced Properties within the HPE Storage Optimizer Dashboard, a number of further changes are required.

Field Text

In order to make the new field available within the category field text builder, a new Rule Builder Fields mapping must be configured within the HPE Storage Optimizer Administration Dashboard.

To support this, a database view modification must be made to ensure the new field is available from the list of rule builder available fields in the HPE Storage Optimizer UI.

To add a new field within the category field text builder

1. Open SQL Management Studio and expand **Databases > ControlPointMetaStore > Views**.
   a. Select **MetaStorePro.FieldTypeInfo**, right click and click **Script View as > Alter To > New Query Editor Window**.
   b. The new field, for example, `AU_DOCUMENT_EDITOR_STRING`, must be appended to both Match and RulesBuilderInc FieldType list of supported fields and then executed.
2. On the HPE Storage Optimizer Administration dashboard, click **Settings**.

   The Settings page opens.
   a. On the General tab, select **Fields**. In the Rule Builder section, add a new field by clicking **Add** (+).

      The Add New Field page opens.
   b. Enter a name for the new field in the **Display Name** box.
   c. Select the new metadata field from the **Fields** list.
   d. Click **Add**.

      After the new field mapping is added, the new metadata captured into MetaStore can be used for category training purposes.

Properties and Advanced Properties

The new field is available within the HPE Storage Optimizer UI in the Advanced Properties list after you restart Internet Information Service (IIS).

To configure a new property mapping

1. On the HPE Storage Optimizer Administration dashboard, click **Settings.**

   The Settings page opens.
2. On the General tab, select **Fields**. In the Item Properties section, add a new item property by clicking **Add** (+).

   The Add Property page opens.
3. Enter a name for the new property in the **Display Name** box.
4. Select the type from the **Type** list.
5. Select the new metadata field from the **Fields** list.
6. Click **Add**.

Appendix B: Support Utility

The ControlPoint Support utility captures system information and configuration file information from your Storage Optimizer environment.

The utility supports the following modes:

- User interface — captures the information and generates a ZIP archive of the results and the report file.
- Command line — see Synopsis, below for command line options and examples.

> **NOTE:**
> Command line enhancements are new to Storage Optimizer 5.4. In releases before 5.4, run the utility with the user interface.

Location

```
\Program Files\Hewlett Packard Enterprise\Storage
Optimizer\Engine\Scheduler\ControlPointSupportUtility.exe
```

Synopsis

```
ControlPointSupportUtility.exe
```

```
ControlPointSupportUtility.exe -c
```

Options

`No option`

Generates a ZIP archive of the results and the xml/xslt browser report file.

`-c`

Moves the data to the `\<user>\AppData\Local\Temp` directory for comparison. Does not generate a ZIP archive of the results or the report file.

To generate a report that contains comparison results, you must run the utility with the -c option twice.

Example

> **NOTE:**
> The following example applies to ControlPointStorage Optimizer versions 5.4 and later. If you are running version 5.3 or earlier, this example does not apply.

Run the utility as a preparatory step when changing the Storage Optimizer environment.

1. Run the Support utility from the command line as the Administrator.

   ```
   ControlPointSupportUtility.exe -c
   ```

   The utility gathers and copies all of the system information and configuration file information and label it as `Pre` capture data.
2. Perform the changes to the environment.
3. Run the Support utility to gather the data and label it as `Post` data.

   ```
   ControlPointSupportUtility.exe -c
   ```

   The utility runs a comparison feature, which generates a report named `diffReport.txt`. The ControlPoint Support Utility creates the report in the same directory as the utility.

   The report lists any differences between the two `SystemInfo.xml` files, including changes, additions and deletions. In addition, it lists any differences between all configuration files located in the Storage Optimizer installation directory.

Results

When the utility is run with the `-c` option, the locations of the `Pre` and `Post` data files are as follows:

`<systemroot>\Users\<user>\AppData\Local\Temp\PreLogFiles`

`<systemroot>\Users\<user>\AppData\Local\Temp\PostLogFiles`

`<systemroot>\Users\<user>\AppData\Local\Temp\PreSystemInfo.xml`

`<systemroot>\Users\<user>\AppData\Local\Temp\PostSystemInfo.xml`

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Feedback on Installation Guide (HPE Storage Optimizer 5.4)

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