



# Integrating HDS with File Access Manager

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## Capabilities

This connector enables you to use File Access Manager to access and analyze data stored in HDS and do the following:

- Analyze the structure of your stored data.
- Monitor user activity in the resources.
- Classify the data being stored.
- Verify user permissions on the resources, and compare them against requirements.
- Manage access fulfillment - automated granting and revoking of access - according to rules set in File Access Manager.

See the File Access Manager documentation for a full description.

## Supported Versions

HDS supports the File System Audit in HNAS version 11 and above.

Permissions Collections and Data Classification supports all HNAS versions.

## Connector Overview

### Activity Monitor

File Access Manager uses the HNAS File System Audit to monitor file system events. Once the audit is configured on the HNAS EVS, HNAS starts collecting events, and displays them in a Windows Event Log-like interface.

The File Access Manager HDS Activity Monitor remotely connects to the HNAS every 5 seconds to read and process new events, which it then sends to central servers every predefined interval.

The system generates events on HNAS only on shares or folders enabled for auditing. HNAS lets you define the event types and logged in users to monitor the Advanced Security Settings > Auditing tab of a share or folder.

Events received from HNAS contain the full physical path of the file, and not the share path. The Activity Monitor periodically correlates all shares and share mapping to physical paths, and translates the physical paths of events to their corresponding share paths. If the physical path is mapped to more than one share, the event is duplicated in all the matching share paths.

### Permissions Collector

File Access Manager must first run a crawl process to discover shares and folders on the HNAS.

The File Access Manager Permissions Collector service connects remotely to these shares and folders, and analyzes their permissions.

### Monitored Activities

The following activities are monitored by the HDS connector

#### ***Create File***

A new file was created.

#### ***Create Folder***

A new folder was created.

#### ***Create from Move***

A “Create Folder” event generates this event on the newly created folder.

#### ***Create from Rename***

A “Rename Folder” event generates this event on the newly created folder.

**Delete File**

A file was deleted.

**Delete Folder**

A folder was deleted.

**Move File**

A file was moved.

**Move Folder**

A folder was moved.

**Permission Change File**

A file's permissions were changed.

**Permission Change Folder**

A folder's permissions were changed.

**Read File**

A file was read.

**Rename File**

A file was renamed.

**Rename Folder**

A folder was renamed.

**Write File**

A file was modified.

## Prerequisites

Make sure your system fits the descriptions below before starting the installation.

## Software Requirements

File Access Manager requires the latest ASP.NET Core 6.0.x Hosting Bundle. This bundle consists of .NET Runtime and ASP .NET Core Runtime. You can download the latest 6.0.x Hosting Bundle version from [here](#) .

## Permissions

File Access Manager requires different permissions, based on the tasks to perform. The user configured in the Application configuration wizard must have the following permissions on the HNAS:

- Share Read permissions to all shares
- Full Control permission for each normalized folder
- Member of the local Backup Operators group
- Member of the local Administrators group

The following detailed explanation describes permissions required by each File Access Manager task:

### ***Activity Monitoring***

The user must be a member of the local Administrator group on the HNAS

### ***Crawling***

The user must have Share Read permissions to all the shares on the HNAS

The user must be a member of the local Backup Operators group on the file HNAS

### ***Permission Collection***

The user must have Share Read permissions to all the shares on the HNAS

The user must be member of the local Backup Operators group on the HNAS

The user must be a member of the local Administrators group to read the Share Permissions, and the local Users and Groups of the HNAS



### **Access Fulfillment**

The user must have Full Control permission on the normalized folders to be able to set the permissions

### **Data Classification**

The user must have Share Read permissions for all the shares on the HNAS

The user must be member of the local Backup Operators group on the HNAS

## **How to Configure the HNAS Audit Settings**

1. Log into the Hitachi NAS console using administrator credentials.
2. Navigate to Home > File Services > File System Audit Policies.
3. Select the EVS for which auditing will be enabled.
4. Click **add**.
5. The Add File System Audit Policy page opens to display a set of audit policy default settings.
6. Set the maximum log file to a value of at least 8MB (16MB is recommended) in the *Audit Log* section.
7. Select New or Wrap (Wrap is recommended) in the *Log roll over policy* section.
8. Click **OK**.
9. Repeat Steps 4 and 5 to enable auditing in additional EVS file systems.

## **How to Configure the Audit Log Consolidated Cache**

1. Log into the Hitachi NAS Admin Services' EVS using SSH with administrator credentials.
2. Execute the following command to switch from admin EVS to file services EVS:

```
console-context --evs <EVS name>
```

3. Execute the following command to configure the audit log consolidated cache:

```
audit-log-consolidated-cache add -s <Size> <EVS name>
```

For example, in `audit-log-consolidated-cache add -s 50MB` [file system name], the [file system name] is the name of the EVS file system on which the audit log consolidated cache file is stored. It is recommended that disk space of at least 50 MB be provisioned for an audit log consolidated cache to avoid losing events. It is also recommended that a new file system be created for the audit log consolidated cache.

4. Increase the size of the Event Pool in the EventLogEventCache by running the following command:

```
fsm set auto-heap-pool-sizeEventLogEventCache::Event 200000
```

The pool limit can be increased to 200,000, which is enough for a 50 MB audit log consolidated cache.

## How to Configuring Share Auditing

1. Open Computer Management (run `compmgmt.msc`).
2. Click *More Actions > Connect to another computer*.
3. Type the IP or DNS of the EVS.
4. Click **OK**.
5. Navigate to *System Tools > Shared Folders > Shares*.
6. The EVS shares display on the right.
7. Right click on a share, and select *Properties*.
8. Click the *Security* tab.
9. Click **Advanced**
10. The Advanced Security Settings window displays.
11. Select the *Auditing* tab.
12. Click **Add** or **Edit** to add/edit users/groups to be audited.
13. Select *Everyone* to make the EVS log events for all users.
14. Select *Success* in the *Type* field.
15. Select *Full Control* in the *Basic Permissions* field.

16. Repeat to audit additional shares.

To avoid unnecessary overhead, define only those users or groups to be monitored, as well as any actions required for monitoring. (For example, removing Read will result in much less overhead on the HNAS.)  
HSD may provide more information on how to avoid unnecessary overhead.

17. Generate activity on the shares created in a required file system in order to verify if auditing is enabled on the EVS for that file system.
18. Execute the following command on the Hitachi NAS Console to see if the events are generated:

```
audit-log-show <Name of file system>
```

## Communications Requirements

Communications Requirements

Requirement	Source	Destination	Port
File Access Manager Message Broker	Permissions Collector / Data Classification Collector	RabbitMQ	5671
File Access Manager Access	Activity Monitor	File Access Manager Servers	8000-8008
Collecting Events	Activity Monitor	HDS	MSRPC (135)
Permissions Collection	Permissions Collector	HDS	SMB (139/445)
Data Classification	Data Classification	HDS	SMB (139/445)

## HDS Installation Flow Overview

To install the HDS connector:

1. Configure all the prerequisites.
2. Add a new HDS application in the Business Website.
3. Install the relevant services:
  - Activity Monitor - This is the activity collection engine, used by all connectors that support activity monitoring.
  - Permissions Collector
  - Data Classification Collector

Installing the permissions collector and data classification services is optional and should only be installed by someone with a full understanding of File Access Manager deployment architecture. The File Access Manager Administrator Guide has additional information on the architecture.

## Collecting Data Stored in an External Application

### Terminology:

#### **Connector**

The collection of features, components and capabilities that comprise File Access Manager support for an endpoint.

#### **Collector**

The “Agent” component or service in a Data Classification and or Permission Collection architecture.

#### **Engine**

The core service counterpart of this architecture.

#### **Identity Collector**

A logical component used to fetch identities from an identity store and holds the configuration, settings for that identity store, and the relations between these identities.

The identity collector has no “physical” manifest.

- The actual work is done by the Collector Synchronizer.

The list below describes the high level installation process required to collect and analyze data from an external application. Most of these should already be set up in your File Access Manager installation. See the server Installation guide for further details.

#### **Install a Data Classification central engine**

One or more central engines, installed using the server installer

#### **Install a Permission Collection central engine**

One or more central engines, installed using the server installer

#### **Create an Application in File Access Manager**

From the Business Website. The application is linked to central engines listed above.

### ***Add an Activity Monitor***

To collect activities for this application - run the Collector Installation Manager and add an application under Activity Monitoring.

### ***Install Permission Collectors and / or Data Classification Collector (optional)***

Optionally, you can install collectors that will run on a separate server and take some of the work from the central PC and DC engines (Where supported). When installing a collector, you attach it to an engine. If no collectors are installed, the central services act as both the engine and the collector.

To install a collector, you must have the **RabbitMQ** service installed for communication between the central engines and the collectors. RabbitMQ is installed

For further details, see section **Application > Central Service > Collector Relations** in the File Access Manager Administrator Guide

## Adding an HDS Application

In order to integrate with HDS, we must first create an application entry in File Access Manager. This entry includes the identification, connection details, and other parameters necessary to create the link.

To add an application, use the **New Application Wizard**.

1. Navigate to *Admin > Applications*
2. Click **Add New** to open the wizard.

### Select Wizard Type

1. Click **Standard Application**
2. Click **Next** to open the **General Details** page.

### General Details

#### *Application Type*

HDS

#### *Application Name*

Logical name of the application

#### *Description*

Description of the application

#### *Tags*

Select tags for the application from the dropdown menu, and / or type a new name, and press **Enter** to create a new tag. The dropdown list of tags filters out matching tags as you type and displays up to 50 tags.

The **tags** replace the **Logical container** field that was used when creating applications in releases before 8.2

#### *Event Manager Server*

This option is available if there are more than one event manager servers configured in the system.

Select an event manager from the drop down menu.

### ***Identity Collector***

Select from the Identity Collector dropdown menu.

- You can create identity collectors in the administrative client. **Applications > Configuration > Permissions Management > Identity Collectors.**

See section "OOTB Identity Collection" in the Collector Installation Manager File Access Manager Administrator Guide for further details.

- If adding a new identity collector, press the **Refresh** button to update the Identity Collector dropdown list.

Click **Next**. to open the Connection Details page.

## **Connection Details**

### ***Server Name***

The name of the HNAS filer to which users connect

### ***Domain Name***

The user defined in the prerequisites

### ***Username***

The user defined in the prerequisites

### ***Password***

The user defined in the prerequisites

Click **Next**

## **Configuring and Scheduling the Permissions Collection**

Permissions can be analyzed to determine the application permissions of an out-of-the-box application, provided you have defined an identity store for File Access Manager to use in its analysis, and you have run a crawl for the application.


The permission collector is a software component responsible for analyzing the permissions in an application.

The Central Permission Collector Service is responsible for running the Permission Collector and Crawler tasks.

If the "File Access Manager Central Permission Collector" wasn't installed during the installation of the server, this configuration setting will be disabled.

### **To configure the Permission Collection**



- Open the edit screen of the required application.
  - a. Navigate to **Admin > Applications**.
  - b. Scroll through the list, or use the filter to find the application.
  - c. Click the edit icon  on the line of the application.
- Press **Next** till you reach the **Crawler & Permissions Collection** settings page.

The actual entry fields vary according to the application type.

When entering this page in edit mode, you can navigate between the various configuration windows using the **Next** and **Back** buttons.

### ***Central Permissions Collection Service***

Select a central permission collection service from the dropdown list. You can create permissions collection services as part of the service installation process. See section "Services Configuration" in the File Access Manager Administrator Guide for further details.

### ***Calculate Effective Permissions***

Calculate effective permissions during the permissions collection run.

### ***Calculate Riskiest Permissions***

Calculates the riskiest permission on a resource – for example, Full Control is riskier than Read permissions if both are on a resource.

This option is available when selecting **Calculate Effective Permissions**

### ***Skip Identities Sync during Permission Collection***

Skip identity synchronization before running permission collection tasks when the identity collector is common to different connector.

This option is checked by default.

### ***Permission Source***

NTFS, Share, Both

This option is available when selecting **Calculate Effective Permissions**

## **Scheduling a Task**

## **Create a Schedule**

Click on this option to view the schedule setting parameters.

### **Schedule Task Name**

A name for this scheduling task

When creating a new schedule, the system generates a default name in the following format:

{appName} - {type} Scheduler

You can override or keep this name suggestion.

### **Schedule**

Select a scheduling frequency from the dropdown menu.

- **Schedule Types and Intervals**

#### **Once**

Single execution task runs.

#### **Run After**

Create dependency of tasks. The task starts running only upon successful completion of the first task.

#### **Hourly**

Set the start time.

#### **Daily**

Set the start date and time.

#### **Weekly**

Set the day(s) of the week on which to run.

#### **Monthly**

The start date defines the day of the month on which to run a task.

#### **Quarterly**

A monthly schedule with an interval of 3 months.

### ***Half Yearly***

A monthly schedule with an interval of 6 months.

### ***Yearly***

A monthly schedule with an interval of 12 months.

### ***Date and time fields***

Fill in the scheduling times. These fields differ, depending upon the scheduling frequency selected.


### ***Active check box***

Check this to activate the schedule.

Click **Next**.

## **Configuring and Scheduling the Crawler**

### ***To set or edit the Crawler configuration and scheduling***

- Open the edit screen of the required application.
  - a. Navigate to **Admin > Applications**.
  - b. Scroll through the list, or use the filter to find the application.
  - c. Click the edit icon  on the line of the application.
- Press **Next** till you reach the **Crawler & Permissions Collection** settings page.

The actual entry fields vary according to the application type.

### ***Calculate Resource Size***

Determine when, or at what frequency, File Access Manager calculates the resources' size.

Select one of the following:

- Never
- Always
- Second crawl and on (This is the default)

## Create a Schedule

Click to open the schedule panel. See [Scheduling a Task](#)


## Setting the Crawl Scope

There are several options to set the crawl scope:

- Setting explicit list of resources to include and / or exclude from the scan.
- Creating a regex to define resources to exclude.

## Including and Excluding Paths by List

### *To set the paths to include or exclude in the crawl process for an application*

- Open the edit screen of the required application.
  - a. Navigate to **Admin > Applications**.
  - b. Scroll through the list, or use the filter to find the application.
  - c. Click the edit icon  on the line of the application.
- Press **Next** till you reach the **Crawler & Permissions Collection** settings page.


The actual entry fields vary according to the application type.

1. Scroll down to the Crawl configuration settings.
2. Click **Advanced Crawl Scope Configuration** to open the scope configuration panel.
3. Click Include / Exclude Resources to open the input fields.
4. To add a resource to a list, type in the full path to include / exclude in the top field and click **+** to add it to the list.
5. To remove a resource from a list, find the resource from the list, and click the **x** icon on the resource row.

When creating exclusion lists, excludes take precedence over includes.

## Excluding Paths by Regex

**To set filters of paths to exclude in the crawl process for an application using regex.**

- Open the edit screen of the required application.
  - a. Navigate to **Admin > Applications**.
  - b. Scroll through the list, or use the filter to find the application.
  - c. Click the edit icon  on the line of the application.
- Press **Next** till you reach the **Crawler & Permissions Collection** settings page.

The actual entry fields vary according to the application type.

1. Click **Exclude Paths by Regex** to open the configuration panel.
2. Type in the paths to exclude by Regex, See regex examples in the section below. Since the system does not collect BRs that match this Regex, it also does not analyze them for permissions.

### Crawler Regex Exclusion Example

The following are examples of crawler Regex exclusions:

**Exclude all shares which start with one or more shares names:**

```
Starting with \\server_name\shareName  
Regex: \\server_name\shareName$
```

```
Starting with \\server_name\shareName or \\server_name\OtherShareName  
Regex: \\server_name\(shareName|OtherShareName)$
```

**Include ONLY shares which start with one or more shares names:**

```
Starting with \\server_name\shareName  
Regex: ^(?!\server_name\shareName($|\.*)).*
```

```
Starting with \\server_name\shareName or \\server_name\OtherShareName  
Regex: ^(?!\server_name\(shareName|OtherShareName)($|\.*)).*
```

### ***Narrow down the selection:***

Include ONLY the C\$ drive shares: \\server_name\C\$
Regex: <code>^(?!\\\\server_name\\C\\$(\\$ \\\.*)).*</code>
Include ONLY one folder under a share: \\server\share\folderA
Regex: <code>^(?!\\\\server_name\\share\\$(\\$ \\folderA\$ \\folderA\\\.*)).*</code>
Include ONLY all administrative shares
Regex: <code>^(?!\\\\server_name\\[a-zA-Z]\\$(\\$ )).*</code>

To write a backslash or a Dollar sign, add a backslash before it as an escape character.

To add a condition in a single command, use a pipe character “|” .

## **Excluding Top Level Resources**

Use the top level exclusion screen to select top level roots to exclude from the crawl. This setting is done per application.

### ***To exclude top level resources from the crawl process***

1. Open the application screen

*Admin > Applications*

2. Find the application to configure and click the drop down menu on the application line. Select **Exclude Top Level Resources** to open the configuration panel.

3. ***Run Task***

The Run Task button triggers a task that runs a short detection scan to detect the current top level resources.

Before running the task for the first time, the message above this button is:

**"Note: Run task to detect the top-level resources"**

If the top level resource list has changed in the application while you are on this screen, press this button to retrieve the updated structure.

Once triggered, you can see the task status in

*Settings > Task Management > Tasks*

This will only work if the user has access to the task page

When the task has completed, press **Refresh** to update the page with the list of top level resources.

4. Click the top level resource list, and select top level resources to exclude.
5. Click *Save* to save the change.
6. To refresh the list of top level resources, run the task again. Running the task will not clear the list of top level resources to exclude.

## Top Level Resources Exclusion



WFS-DC testing

Last Successful Run 06-22-2021 4:57:27 PM

[Run Task](#) [View Task Status](#)

**Note:** Refresh the list to view recently discovered resources [Refresh](#)

Top Level Resources Exclusion List 0 Selected | Clear Selection

Top Level Resources Exclusion List ^

- \\si-...-5\C\$
- \\si-...-5\MSSQLSERVER
- \\si-...-5\print\$

## Special Consideration for Long File Paths in Crawl

If you need to support long file paths above 4,000 characters for the crawl, set the flag

**`excludeVeryLongResourcePaths`**

in the Permission Collection Engine App.config file to true.

By default this value will be commented out and set to false.

This key ensures, when enabled, that paths longer than 4000 characters are excluded from the applications' resource discovery (Crawl), to avoid issues while storing them in the SQLServer database.

When enabled, business resources with full paths longer than 4000 characters, and everything included in the hierarchical structure below them, will be excluded from the crawl, and will not be collected by File Access Manager. This scenario is extremely rare.

You should not enable exclusion of long paths, unless you experience an issue.

### **Background**

File Access Manager uses a hashing mechanism to create a unique identifier for each business resource stored in the File Access Manager database. The hashing mechanism in SQL Server versions 2014 and earlier, is unable to process (hash) values with 4,000 or more characters.

Though resources with paths of 4000 characters or longer are extremely rare, File Access Manager is designed to handle that limitation.

### **Identifying the Problem**

When using an SQL Server database version 2014 and earlier

The following error message in the Permission Collection Engine log file:

```
System.Data.SqlClient.SqlException (0x80131904): String or binary data would be truncated.
```

In all other cases, this feature should not be enabled.

### **Setting the Long Resource Path Key**

The Permission Collection Engine App.config file is `RoleAnalyticsServiceHost.exe.config`, and can be found in the folder

```
%SailPoint_Home%\FileAccessManager\[Permission Collection instance]\
```


Search for the key `excludeVeryLongResourcePaths` and correct it as described above.

## **Selecting and Scheduling the Data Classification Settings**

**To associate an application with a data classification service, and set the schedule:**

- Open the edit screen of the required application
  - a. Navigate to **Admin > Applications**
  - b. Scroll through the list, or use the filter to find the application



- c. Click the edit icon  on the line of the application
- Press **Next** till you reach the **Data Classification** settings page.

The actual entry fields vary according to the application type

### **Central Data Classification Service**

Associate the application with a Central Data Classification Service. This service is responsible for running the Data Classification tasks.

If the “Central Data Classification” wasn’t installed during the installation of the server, this field is disabled.

### **Disabling Data Classification**

To disable data classification, delete the entry from the central data classification field.

Disabling data classification can also be achieved by setting the scheduler to be inactive (which is the default setting for data classification).

### **Create a Schedule**

This option is enabled only if a central data classification service is selected.

See [Scheduling a Task](#)

See the chapter “Data Classification” in the File Access Manager Administrator Guide for more information

Click **Next** or **Finish**.

## **Data Privacy**

A user can associate the application with a Central Data Classification Engine Service. This engine will be responsible for executed Data Privacy tasks.


Though using different processes for each, the Data Classification engine service is in charge for both Data Privacy and Data Classification discovery tasks.

You may choose the same service for both, or use a different one for each, to run them in parallel.

The fields on the Data Privacy step are the same as the Data Classification step.

## Configuring Activity Monitoring

### *To configure the activity monitoring polling parameters*

- Open the edit screen of the required application
  - a. Navigate to **Admin > Applications**
  - b. Scroll through the list, or use the filter to find the application
  - c. Click the edit icon  on the line of the application
- Press **Next** till you reach the **Activity Configurations & Decs** settings page.

### ***Polling Interval (sec)***

Activity fetching interval [in seconds]. Default is set to 60 seconds,

### ***Report Interval (sec)***

Activity Monitor Health reporting interval [in seconds]. Default is set to 60 seconds.

### ***Local Buffer Size (MB)***

Local buffer size for activities [in MB]. Default is set to 200MB.

This cyclic buffer is used to store activities on the Application Monitor's machine in case of network errors that prevent the activities from being sent.

### ***Monitoring Exclusions***

- To add an exclusion
  - Click the dropdown list
  - Type in an exclusion (file extension, user, folder, etc. as relevant)
  - Click the **+** icon to add this item to the list
  - After completing the list, click **Next** or **Cancel** to close the panel
- To edit or remove an exclusion from the list
  - Click the dropdown list
  - On the extension to edit or remove click the delete or edit icon
  - click **Next** or **Cancel** to close the panel

- Click **Clear Selection** to clear the entire list

### ***Excluded File Extensions***

List of file extensions that are not monitored, e.g., txt, exe.

Enter one value at a time as described above.

### ***Exclude Folders***

List of folders that are not monitored, e.g., \\servername\share1\folder1.

Enter one value at a time as described above.

### ***Exclude Users***

List of users whose activities are not monitored, e.g., user1, domain\user2, user3@domain.com.

Enter one value at a time as described above.

The user format to be used depends on how the activity is logged by the endpoint. If you are not sure which of the user formats above to use, either specify all of them, or leave the list empty for now, navigate to the Forensics > Activities screen in the File Access Manager Website after some activities flow in to see how the user is depicted in them and use that depiction in the exclusion list.

### **When an activity from a new resource is detected:(Modes of Storing Activities)**

Full Auto-Learning Mode – Will audit everything (every action) on every resource.

Semi Auto-Learning Mode – Will monitor activities on resources nested under the top-level resources that are marked for Monitoring. This operation mode will also allow the user to select what type of activities are being monitored.

**When an Activity From a New Resource is Detected**

Store the activity (Full Auto-Learning Mode)

Store the activity only if the top-level resources were manually created in advance (Semi Auto-Learning Mode)

Click **Next**.

## Monitored Actions

The user has the ability set monitored actions within Manage Resources.

1. Navigate to **Admin > Applications**.
2. Under the Actions column, click the ellipsis on the desired application.
3. Click **Manage Resources**.  
The Manage Resources will display with all resources listed.
4. Click **Manage Monitored Actions**.
5. Toggle the **Enable Activity Monitoring for this Resource Hierarchy**.

The user can now select the type of actions they want monitored.

All actions are automatically selected initially.

## Configuring Data Enrichment Connectors

The Data Enrichment Connectors (DEC) configuration enables us to select data enrichment sources. These can be used to add information from other sources about identities.

An enrichment source could be a local HR database that is used to combine users' job descriptions or departments to the information stored in the identity store.

Select the data enrichment connectors to enrich monitored activities from the Available DEC's text box.

Use the > or >> arrows to move the selected DEC's to the Current DEC's text box.

The user can select multiple DEC's. Simply select each desired DEC.

You can create a new DEC in the Administrative Client (Applications>Configuration>ActivityMonitoring>DataEnrichmentConnectors).


After creating a new DEC, click **Refresh** to refresh the dropdown list.

The chapter Connectors of the File Access Manager Administrator Guide provides more information on Data Enrichment Connectors, including what they are, how to configure them, and how they fit in the Activity Flow.

## Enabling Access Fulfillment for an Application

Access fulfillment is enabled per application in the application setting screen, for applications that support fulfillment (See the compatibility table in Compass for the full list)

**To enable Access Fulfillment for an application:**

1. Open the configuration screen of the required application.
  - a. Navigate to **Admin > Applications**.
  - b. Scroll through the list, or use the filter to find the application.
  - c. Click the edit icon  on the line of the application.
2. Press **Next** till you reach the **Access Fulfillment** settings page.

The setting pages and entry fields vary according to the application type.

3. For non-normalized resources, you can click **Enable Access Fulfillment for Revoking Explicit Permissions** . See [Access Fulfillment for Removal of Explicit Permissions](#).
4. Click **Enable Access Fulfillment for Normalized Groups**.

**Identity Collector**

Fulfillment requires an identity collector in order to run. If you did not select an identity collector in the General Details configuration page, you can select one from the drop down list now.

If there is no identity collector defined for this application, or if you want to use a different identity collector than the ones in the dropdown list, you can create a new identity collector in the Administrative Client (*Applications > Configuration > Permissions Management > Identity Collectors*).

See [Create/Edit an Active Directory Identity Collector](#) for more details on creating an identity collector.

**Managed Group OU (DN)**

The organizational unit in which the managed permission groups will be created. Make sure that the chosen identity collector's user has permissions to create groups under this location (e.g. OU=FileAccessManagerManaged, DC=SailPoint, DC=COM)

OU refers to an Organizational Unit, and DN refers to a Distinguished Name.

**How to Handle 'List Folder Contents' Permissions**

- Create and manage a dedicated permissions group for it - this is the default value
- Revoke these permissions

### ***How to Handle Inexact Permissions Matches***

During the normalization process, the application has to decide what to do with permissions that do not match the normalized permissions.

- Fail the normalization process
- Elevate to the nearest permission match
- Revoke the permission

5. Open the Advanced Settings panel for additional settings:

#### ***Group Cache Sync Interval(sec)***

This setting will add a pause to the process of setting normalize permissions on the resource. This will allow the endpoint's local AD groups cache to sync the newly created managed groups.

The default is 0 - signifying the process will not pause by default.

#### ***Use Template Permission Group***

Template groups are created per application and added as a template to every managed resource. These groups are not managed by File Access Manager, and are usually used to ensure that users who need application-wide access such as backup or archiving users have access.

Select for each permission group whether File Access Manager should create a group or whether to use an existing group, for the following groups:

- List Folder Contents
- Read & Execute
- Modify
- Full Control

If you select **Use an Existing Group**, select the required group to use from the dropdown list.

Once an application is enabled for access fulfillment, you can set specific resources to be normalized using the [Manage Normalized Resources](#) page.

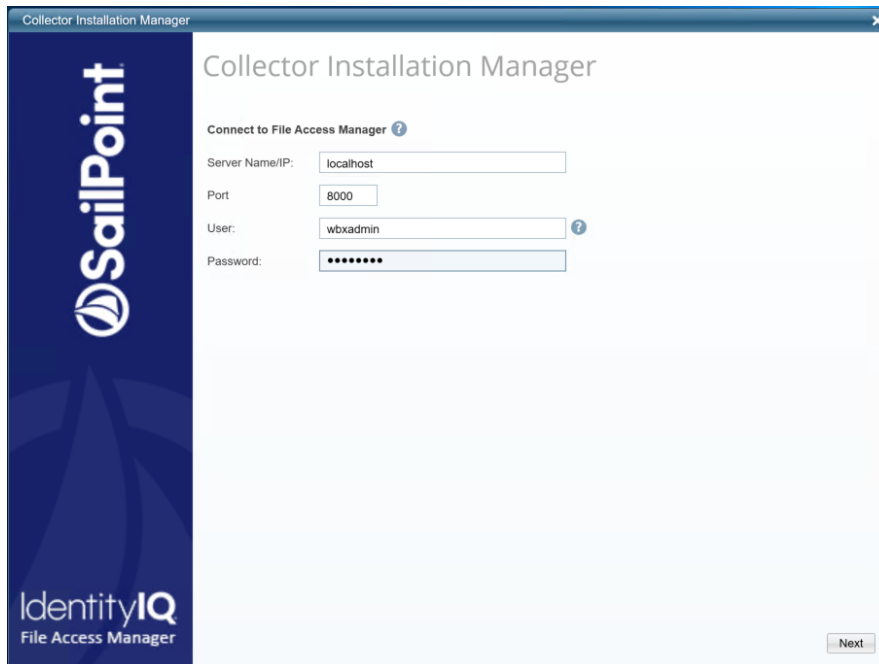
## Installing Services: Activity Monitor and Collectors

The Collector Installation Manager is part of the File Access Manager installation package. This tool is used to install the activity monitor, permission collector, and data classification collector.

1. Run the **Collector Installation Manager** as an Administrator.

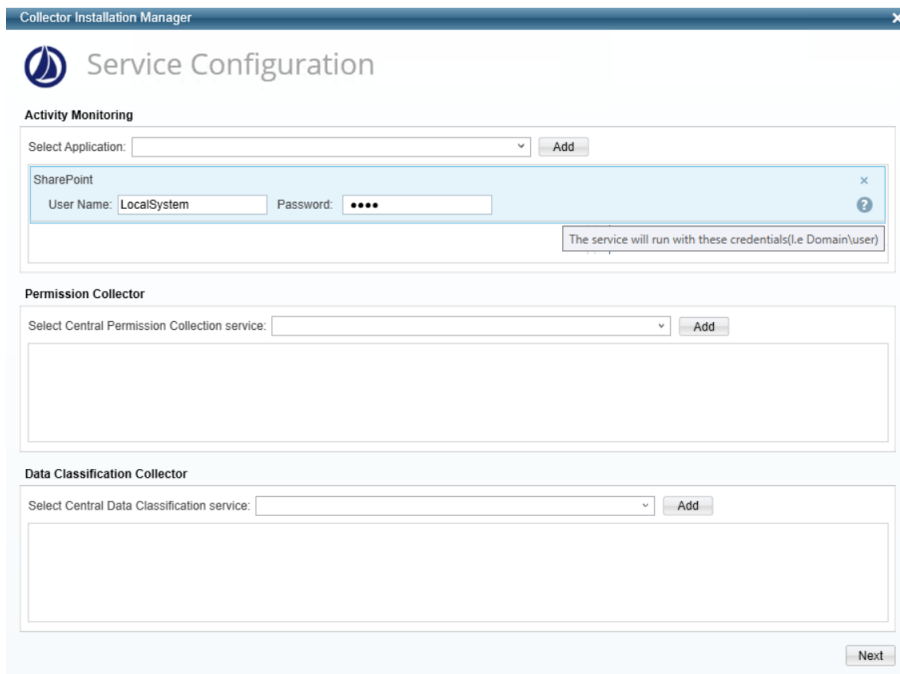
The installation files are in the installation package under the folder Collectors.

The Collector Installation Manager window displays.



2. Enter the credentials to connect to File Access Manager.
  - a. ServerName/IP should be pointed to the Agent Configuration Manager service server.
  - b. An File Access Manager user with Collector Manager permission (permission to install collectors). For Active Directory authentication, use the format domain\username.
3. Click **Next**.

The Service Configuration window displays.



4. If you are installing the Activity Monitor, select the application, and click **Add**.
5. When installing a SharePoint Activity Monitor, you will be prompted for service account credentials. This service account will be used by the Activity Monitor service to run the service and authenticate against the SharePoint IIS servers to fetch the logs (“Log on as”). Make sure the service account provided has local administrator privileges on the local server (hosting the Activity Monitor service) and can access the activity logs on the IIS servers.
6. If you are installing the Permission Collector, select the Central Permission Collector to which to connect this service, and click **Add**.
7. If you are installing the Data Classification, select the Central Classification Collector to which to connect this service, and click **Add**.
8. Click **Next**.

The Installation Folder window displays.

If this is the first time you are installing collectors on this machine, you will be prompted to select an installation folder, in which all future collectors will also be installed.

9. Browse and select the location of the target folder for installation.



10. Browse and select the location of the folder for system logs.
11. Click **Next**.
12. The system begins installing the selected components.
13. Click **Finish**.

The Finish button is displayed after all the selected components have been installed.

The File Access Manager Administrator Guide provides more information on the collector services.

## Verifying the HDS Connector Installation

### Installed Services

Verify that the services installed for the connector are available and active. Using windows Service manager, or other tool, look for the File Access Manager services, and see that they are running.

for example:

- File Access Manager Central Permissions Collection - <Service Name>
- File Access Manager Central Activity Monitor - <Service Name>
- File Access Manager Central Data Classification - <Service Name>

### Log Files

Check the log files listed below for errors

- "%SAILPOINT\_HOME\_LOGS%\PermissionCollection\_<Service\_Name>.log"
- "%SAILPOINT\_HOME\_LOGS%\DataClassification\_<Service\_Name>.log"
- "%SAILPOINT\_HOME\_LOGS%\HDS-<Application\_Name>.log"
- .

### Monitored Activities

1. Simulate activities on the HNAS.
2. Wait a minute (approximately).
3. Verify that the activities display in the File Access Manager website under *Forensics > Activities*

### Permissions Collection

1. Run the Crawler and Permissions Collector tasks (*Settings > Task Management > Scheduled Tasks*)

2. Verify that:

- The tasks completed successfully
- Business resources were created in the resource explorer (*Admin > Applications > [application column] > Manage Resources*)
- Permissions display in the Permission Forensics page (*Forensics > Permissions*)