Discovery Center Installation Guide

4.19.0 - Exchange, MIP and Security Updates

July 2024

ACTIVENAV

Introduction

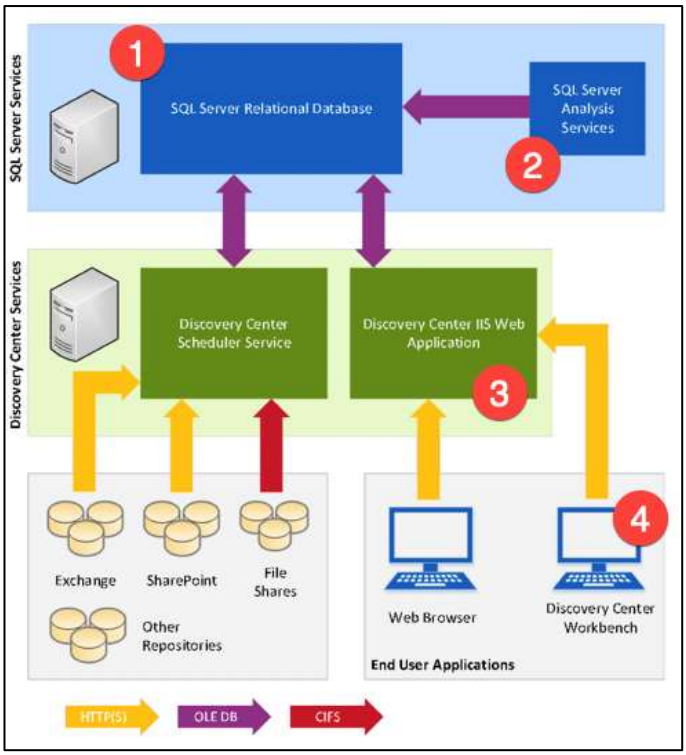
This document provides a detailed installation guide for the ActiveNav Discovery Center and Discovery Workbench applications. To install other applications and components, refer to their specific documentation.

Key: Note | Software | Hardware | Roles/Users | Syntax/Confi

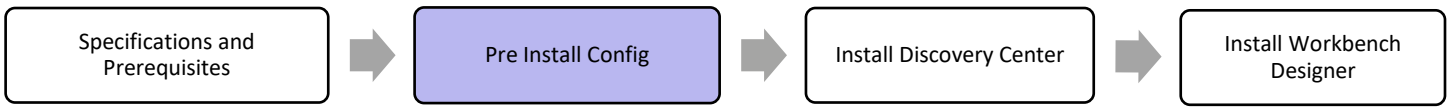
System Overview

Discovery Center comprises a range of component applications and supporting services provided by Microsoft SQL Server. The main components are Discovery Center, SQL Server Database, SQL Server Analysis (SSAS), and Discovery Center Workbench, outlined in the diagram below:

1. SQL Server Database
   The SQL Server Database stores the results of all indexing and analyses, action logs, and configuration settings.
2. SQL Server Analysis (SSAS)
   Supports interactive reporting by providing a reporting database.
3. Discovery Center
   Discovery Center is a web application delivered via Microsoft Internet Information Services (IIS) that manages the indexing and analyses of files in source repositories and delivers reports and actions across index results.
4. Discovery Center Workbench
   Design, build, and test classifications for deployment to the Discovery Center, all from the Discovery Center Workbench.



Note: The system must be architected and provisioned according to the project's scale to ensure optimal performance.



Specifications and Prerequisites

Outlined below are the minimum hardware specifications and prerequisite software requirements for a Discovery Center deployment:

Note: For large data volumes, working with the minimum specifications may lead to poor performance or a slow responding system.

Choosing Overall Configuration

Depending on your system requirements, you need to choose either a Local, Remote, or Fully Distributed database configuration for Discovery Center and its components.

Local

Installing the SQL Server components and the Discovery Center on the same server offers good performance, reducing the potential for network connectivity issues between Discovery Center and SQL Server but will likely cost more for SQL assets.

Note: The server size must be at least the sum of the sizing for the Discovery Center, and the SQL Server Hosts to accommodate both.

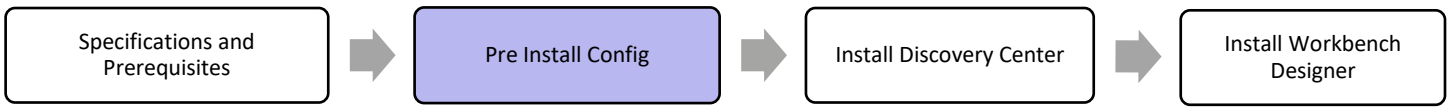
Remote

Discovery Center supports a remote SQL Server instance whether deployed on a dedicated server to support the Discovery Center or as part of a shared SQL Server instance. For large deployments, this configuration spreads the database and analysis loads. A well-provisioned SQL Server instance is likely to result in a more responsive deployment for a given investment.

Fully Distributed System

Deploying a system where Discovery Center, SQL Server, and SQL Server Analysis Services are each hosted by a dedicated server will accommodate vast amounts of data. However, additional configuration is required to support authentication between each component.

Note: Review the information in Appendix 7: Additional Configuration for Fully Distributed Configuration before installation to ensure this configuration's requirements can be met and then follow the steps outlined after installation to enable the system's correct operation.



Discovery Center Capacity Planning

Managing capacity of ActiveNav Discovery Center post-deployment is critical to long-term reliability and manageability. Some questions to consider are:

- Do I need to deploy an additional instance of Discovery Center?
- Do I have enough disk space, cores, and memory allocated on my servers?

The key factor for managing a deployment is the maximum number of Files Under Management (FUM) for each Discovery Center instance. Since most customers cannot determine that number pre-deployment and before the first skim, it is best practice to plan based upon Volume Under Management (VUM) with an assumption that each TB of content consists of roughly 1 million files. For situations where this assumption does not hold, resources provisioned should be increased or decreased proportionately, with due consideration given to adding more Discovery Center instances if required (see below).

SQL Server

Due to the intensity of textual analysis on a SQL Server, dedicated SQL instances are generally recommended. An under-specified SQL Server instance will result in a poorly performing or failing Discovery Center activities:

- Disk Space - Disk space allocation is a critical resource due to database size and transaction log growth. Database size is driven by FUM.
- RAM - Insufficient RAM for the SQL host will result in an unresponsive database which may cause timeout or processing errors and potentially causing data corruption. Lack of RAM will result in poor reporting performance.
- Processor Cores - Too few processor cores will result in an unresponsive database.

Discovery Center Application Hosts

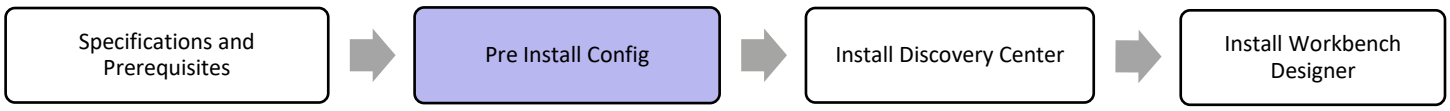
Discovery Centers need to be located close to geographically distributed content or where large volumes of content need to be indexed. Discovery Center hosts can be physical or virtual machines and the following should be considered when planning their specification:

- Processor Cores - Too few processor cores will cause poor responsiveness in the web application. Additional cores will allow some index processing to occur in parallel, improving index analysis performance. It is assumed that for deployments with higher file counts, the analysis threads will be increased accordingly.
- RAM - Insufficient RAM will cause poor responsiveness in the web application.
- Disk Space - Disk space allocation will increase based on the classifications of larger indices, which drives the size of the search data held for indexes, which is required for classification. Disk space will also be needed for application logs and the file cache. Application logs can be deleted based on the system administrator's discretion, and file cache size will be dependent on the analysis thread count setting.

Multiple Discovery Centers

When Discovery Center is deployed in data centers that host large volumes of data to be analyzed, multiple Discovery Center SQL (index) databases can share a SQL server. ActiveNav recommends no more than four (4) index databases per SQL server. Disk space and compute resources should be scaled to support multiple Discovery Center instances.

Databases should follow a naming convention to provide clarity on the different instances that will be hosted on the SQL server. The Discovery Centers application should always be hosted on dedicated servers, even in sites with multiple instances.



Hardware Specifications

The specifications outlined below include minimum Windows Server OS requirements, based on the assumption that only Discovery Center applications and services are running on each server.

Note: When deploying Discovery Center and its SQL Server Database on to the same server, add together the CPU cores, Memory, and Hard Disk requirements for each server to provide sufficient capacity.

The table below displays the recommended resources for application and SQL environments based on estimated file counts. Compute resources should be increased as Files Under Management (FUM) grows.

Application Server (each)				DC	SQL/SSAS Server				TempDB (GB)	
Size: Files (m)	**Disk (GB)**	**Cores**	**RAM**	**Instances**	**Databases**	**Disk (GB)**	**Cores**	**RAM**	**Data**	**Log**
S: up to 25	200	4	8	1	1	250	4	8	25	25
M: 25 - 75	400	4	16	1	1	300	4	8	50	50
L: 75 - 100	600	8	16	1	1	400	8	16	100	100

TempDB sizing estimates if not using autogrow setting.
Under-resourced environments risk reduced performance and/or responsiveness.

Capacity limits of a Discovery Center instance are based on the deployment model being used. Application server cores can be added to support more analysis threads for increased text content analysis performance, and SQL Server cores can be added to improve system responsiveness and performance for reporting.

Although Discovery Center does not have a hard limit on the number of files a single instance can manage, exceeding the upper limit of 100M files is not recommended by ActiveNav as performance will degrade.

Adding Discovery Center Instances

There may be times when additional Discovery Center instances need to be deployed to address capacity issues.

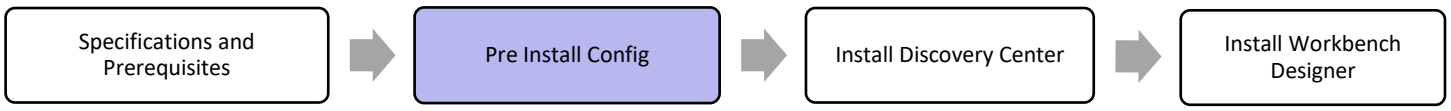
A planned Cap-and-Grow methodology is a recommended best practice where possible. Determining a threshold of when to add additional Discovery Centers can prevent load-balancing index migration exercises.

In over-capacity situations, the need to move indexes from one Discovery Center to another may be required to reduce the capacity of a Discovery Center instance.

Consideration & Recommendations:

- Moving indexes between Discovery Centers:
  - Move high-priority indexes or locations planned to be re-indexed post remediation.
  - Indexes should be removed from the original Discovery Center if they are moved to a different/new Discovery Center to avoid incorrect or double reporting.
    - Server level hosts can be removed from the Discovery Center Network Map which will subsequently remove all indexes from the Discovery Center while retaining Activity History and Actions Audit files. Any metadata manual Markup will have to be reapplied to the re-indexed location.
    - Specific paths can be deleted from the Indexing Overview.
  - If using the Discovery Center Management Reporting Database (MRD), the MRD should be reprocessed on both the original and destination Discovery Centers.
- SQL instances with multiple databases should process the reporting databases sequentially. Processing in parallel can exhaust the transaction log capacity.

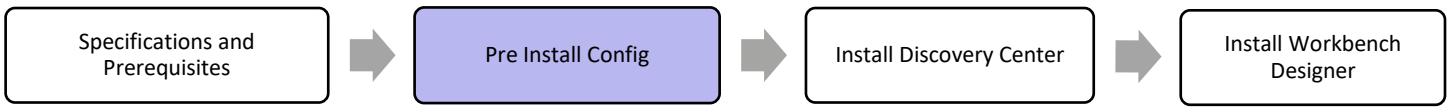
Application logs should be deleted periodically to recover disk space on the application server. Retain only what you think you need.



Client Applications

The specifications outlined below include minimum Windows OS requirements for workstations used to install and run Discovery Center client applications such as the Workbench and Regex Validator Windows Desktop applications.

Processor	64-bit quad-core
Memory	4GB RAM
Hard Disk	2GB



Software Prerequisites

Discovery Center SQL Server Database Requirements

Microsoft SQL Server 2012 or later, with the latest service packs and installed components and services:

SQL Server Database Engine Services
SQL Server Analysis Services (SSAS)
Client Tools Connectivity
Management Tools – Basic
Management Tools – Complete

Configuration for SQL Server

The SQL Server Analysis Services Instance must use a multidimensional model (Tabular and PowerPivot models are not supported).

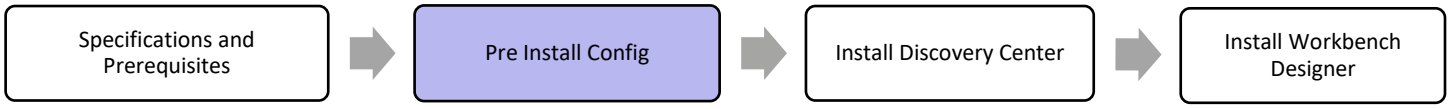
Discovery Center Server

Windows Server 2012 or later with the latest service packs with the following features and server roles enabled:

Most modern browsers
Microsoft .Net Framework 3.0 or 3.5 Server Feature
Microsoft .Net Framework 4.7 or later
Internet Information Services (IIS)

The Microsoft Universal CRT package must be available on the Discovery Center Server; this is a standard component for Windows 10 and Server 2016.

Note: For earlier versions of Windows, it can be installed via Windows update; see https://support.microsoft.com/en-gb/help/2999226/update-for-universal-c-runtime-in-windows.



The Discovery Center requires the SQL Server Feature Pack Components listed below (regardless of SQL Server version) for installation and operation. Download them from here: https://activenavcustomerportal.blob.core.windows.net/an4-release-software/AN%20436%20SQL%20Server%20Prerequisites.zip:

Microsoft System CLR Types for SQL Server 2014 x86 Package*
Microsoft System CLR Types for SQL Server 2014 x64 Package
Microsoft SQL Server 2014 Shared Management Objects x86 Package*
Microsoft SQL Server 2014 Shared Management Objects x64 Package
Microsoft SQL Server 2014 Analysis Services (ASAMO) OLE DB Provider x64 Package
Microsoft SQL Server 2014 ADOMD.NET x86 Package*
Microsoft SQL Server 2014 Analysis Management Objects x86 Package*
Microsoft SQL Server 2014 Analysis Management Objects 64-bit Package
Microsoft SQL Server 2012 Native Client 64-bit Package

* You must install the 32-bit versions of these packages even if your system is 64-bit.

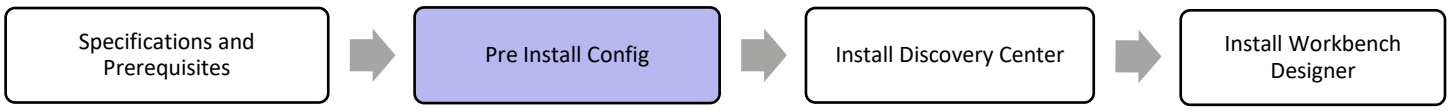
Note: If SQL Server is installed locally, then some of these components may already be present. Check before installation to avoid errors due to their absence.

If the chosen system architecture utilizes separate hosts for the Discovery Center and SQL Server, then the SQL prerequisites should be applied to both systems.

Client Application Workstations

Windows 8.1 or later
Most modern browsers
Microsoft .Net Framework 4.7 or later

Note: Running the Discovery Center user interface within multiple browser sessions, from a single client workstation, may cause it to become unresponsive. To remediate this, excess instances of the user interface should be closed.



Network Connections

Discovery Center's performance is dependent on the quality of network connections between its components.

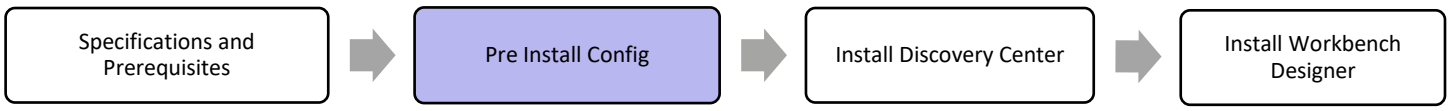
Discovery Center <-> SQL Database Server:
Must be on the same Network Switch
High Performance 1GB Ethernet with <1ms Latency

Discovery Center <-> Repository:
LAN Quality <50ms Latency

Discovery Center <-> Client Applications:
LAN Quality <50ms Latency

Virtualization

Discovery Center works well in a virtualized environment. SQL Server and its host must be configured per Microsoft and the relevant virtual host recommendations.



Pre-Installation Requirements

The following items and information are required during the installation process and initial configuration of ActiveNav.

Windows Accounts and Groups

Installation User Account

The installing user account must have rights to install software and configure IIS

IIS Administrators rights
SQL Server rights*
SSAS rights*

*See SQL Server Configuration for further information

User Roles

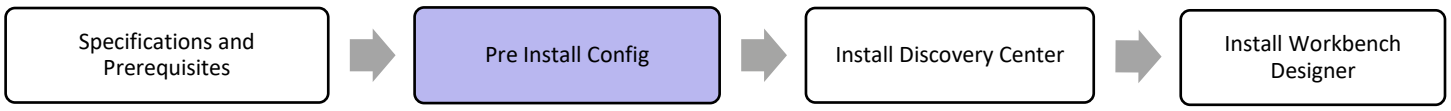
Create the following groups on your Domain Controller and assign users as necessary.

ActiveNav System Administrator
Discovery Center Network Map and Systems Settings Tabs. After installation, any user account that is a member of the local administrator's group will be assigned to this role.

ActiveNav Administrator
Discovery Center Indexes and Metadata Tabs.

ActiveNav Information Manager
Discovery Center Areas of Interest and Reporting Tabs.

ActiveNav Reviewer
Discovery Center Reporting tab with restricted capabilities.



Service Accounts

Create two or more accounts to control the Discovery Center services.

Scheduler Service

This user (e.g., ANScheduler) can be given read access for the data files to be indexed, OR specific credentials can be provided to Discovery Center. Successful installation and operation of the Discovery Center application requires the following rights:

- Logon As A Service for Discovery Center host server
- SSAS host login rights

This is normally available by default. In tightly controlled environments, ensure this is checked in advance to ensure that the Process Reporting Database task can access SQL data.

Discovery Center Web Application Service

This account (e.g., ANWebSite) will be used to run the Discovery Center web application and restrict access to the Discovery Center temporary files and database. Successful installation and operation of the Discovery Center application requires the following rights:

- Allow log on locally for Discovery Center host server

Choosing Between Local Computer and Domain Accounts

Discovery Center can be configured to use service accounts, either in a Windows domain or as local computer accounts. This choice will affect options for managing user access to the Discovery Center user interface.

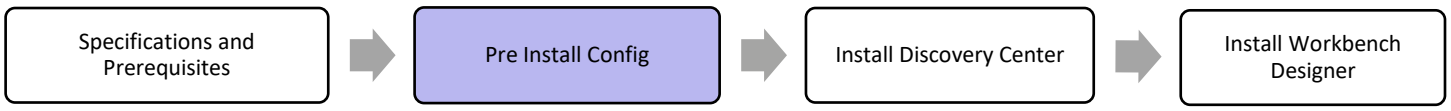
Local Computer

This will prevent groups defined in the local domain from accessing the Discovery Center. These must be configured as local groups on the Discovery Center server. Alternatively, local computer or domain user accounts can be added explicitly to Discovery Center roles via the User Access Tab.

Domain Accounts

The Discovery Center host server must be joined to the appropriate domain to allow users to use existing domain accounts to authenticate with the Discovery Center user interface. This allows the server to successfully validate user credentials when users attempt to log in to the system.

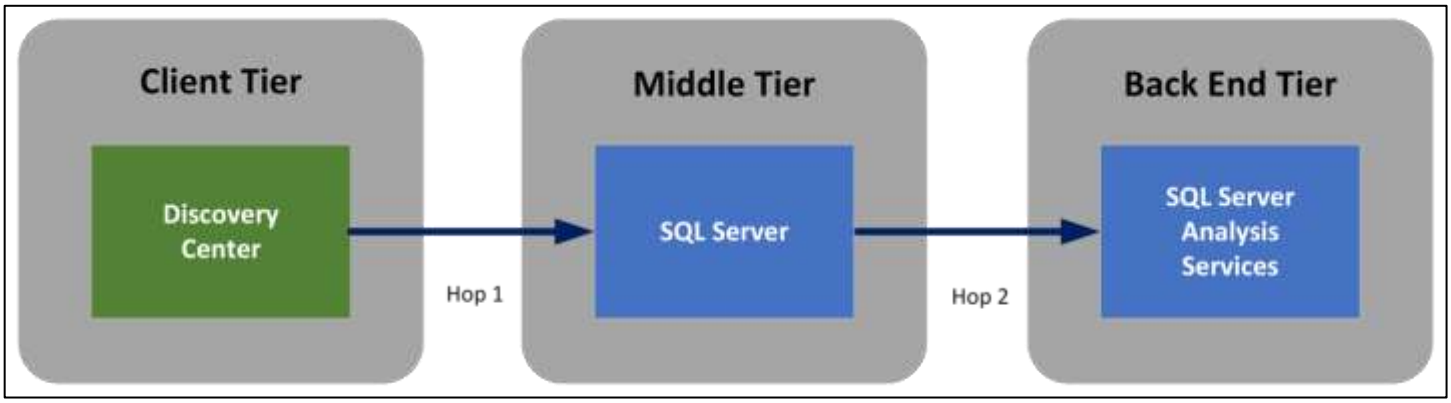
Note: For installations joined to a domain, domain service accounts must be used to avoid authentication and authorization problems. Using a database server separate from the Discovery Center will require domain accounts to support authentication.



Validate Configuration for a Fully Distributed Deployment

When planning a fully distributed configuration (i.e., Discovery Center, SQL Server, and SQL Server Analysis Services are installed on independent systems), review the requirements in Appendix 7: Additional Configuration for Fully Distributed Configuration to ensure that this configuration can be supported.

This configuration involves communication between components, as shown in the diagram below. To produce reports, the Discovery Center must be able to access data from SSAS via SQL Server, creating a situation known as Double Hop Authentication requiring SQL Server to present credentials from the Discovery Center service accounts to the Back End Tier.



Internet Information Services

The Discovery Center host server requires the IIS role. Using Windows Server Roles Service Manager, add the following role services:

Common HTTP Features:
Default Document
HTTP Errors
Static Content
HTTP Redirection

Health and Diagnostics:
HTTP Logging

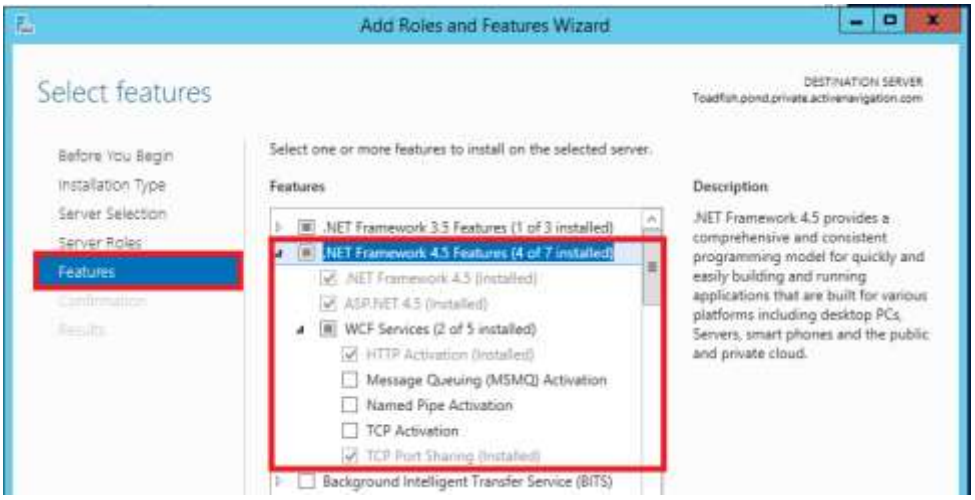
Security:
Request Filtering
Windows Authentication

Application Development:
.NET Extensibility
ASP .NET
ISAPI Extensions
ISAPI Filters

Management Tools:
IIS Management Console
IIS6 Metabase Compatibility

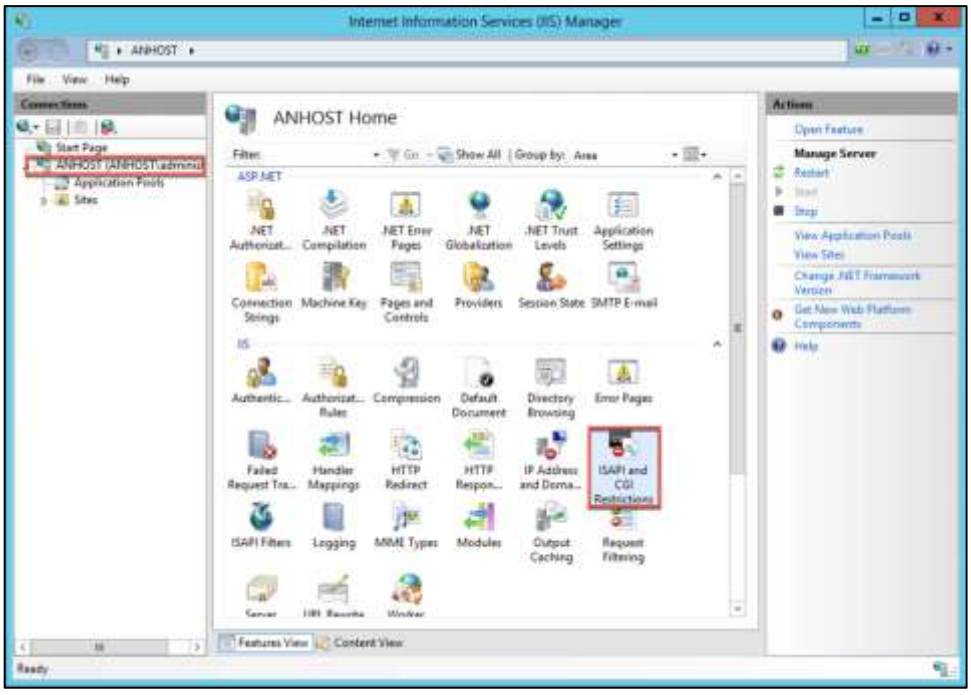
.NET Framework

1. The Discovery Center host server requires .NET 4.7 or later to be installed, and .NET Server Features enabled with Windows Communication Framework as shown below (Windows Server 2012 R2 is shown).

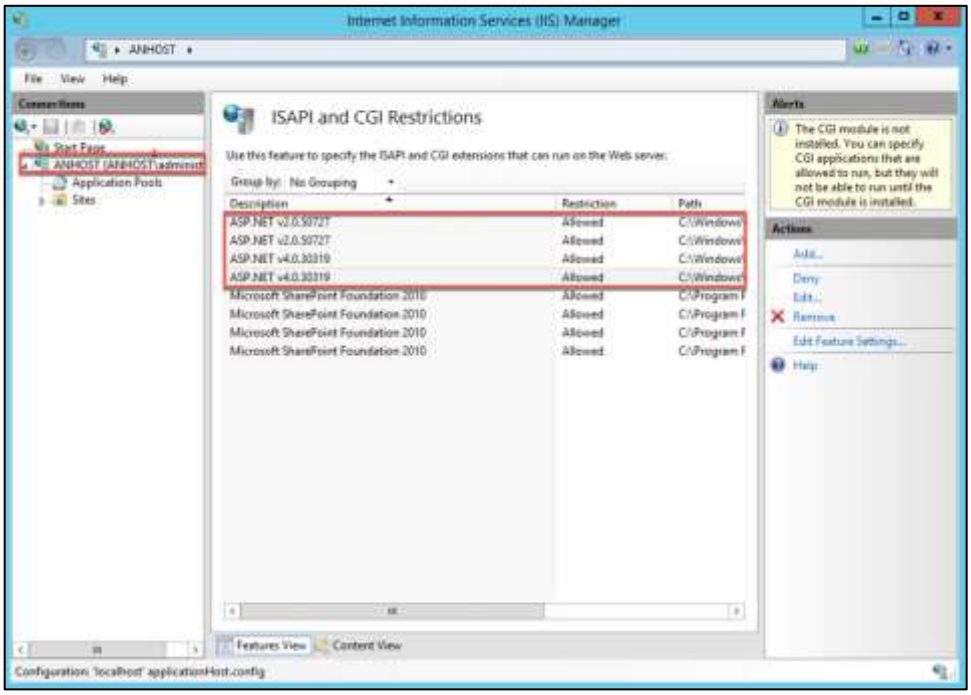


Note: Server feature dialogs will show different versions of .NET according to the specific operating system version in use. On Windows Server 2012, the options should be set in the .NET Framework 4 folder.

2. Enable (or confirm) that ASP .NET 4 applications can run. To do this, open IIS Manager and edit ISAPI and CGI Restrictions for the installation.



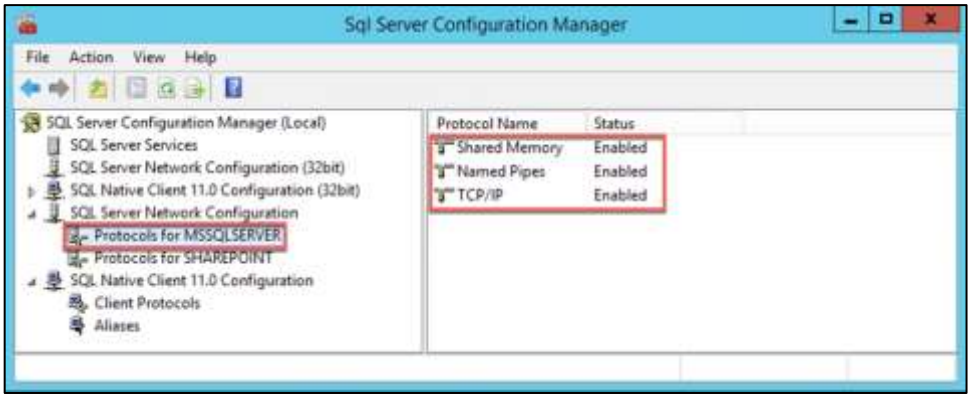
3. Locate the restrictions in place for .NET 4 and set each to Allow, as shown below.



SQL Server Configuration

Verify the Discovery Center SQL Server and SSAS configuration as follows:

1. Confirm that the SQL Server Configuration Tools are installed.
2. From SQL Server Configuration Manager, note the machine names and instances for SQL Server and SSAS.
3. Note the Windows service account names for SQL Server and SSAS.
4. Confirm the SQL Server instance is configured to provide Windows Authentication Mode (also known as Integrated Security).
5. Using SQL Server Configuration Manager, confirm that Shared Memory, TCP/IP and Named Pipes protocols are enabled for SQL Server Network Configuration (see below).



Assign SQL Server Privileges to Installation Account

The user running the Discovery Center installer should be:

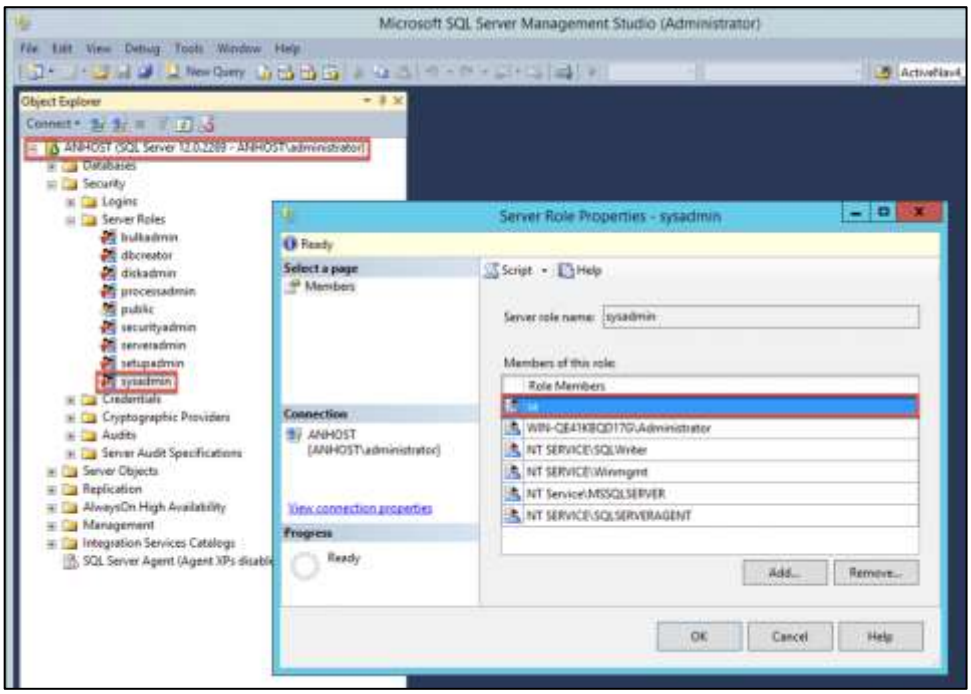
- Assigned the SQL Server sysadmin role in SQL Server
- Be a member of the System Administrators group for the SSAS instance

*After installation or upgrade, the installing user can have these privileges revoked.

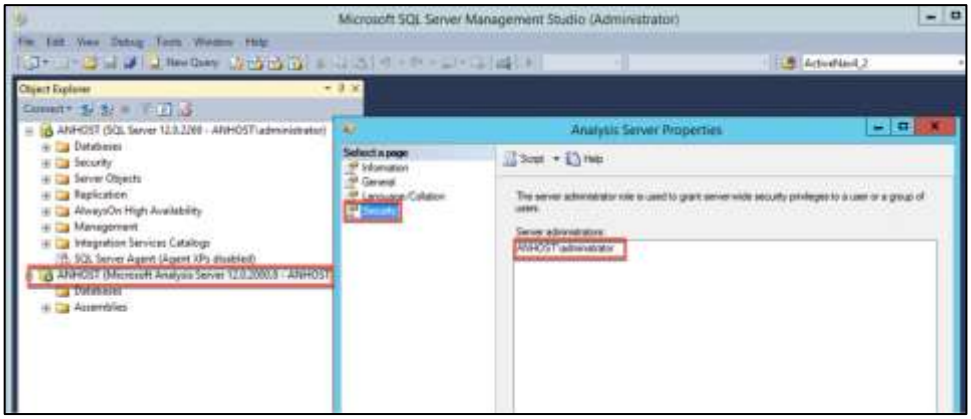
The Discovery Center installer must do the following:

1. Create or use a number of logins for the SQL Server.
2. Create and configure a SQL database and SSAS cube.
3. Makes settings required to support the required SQL CLR assemblies.

Users with SQL Server administration privileges will be in the sysadmin role, shown in SQL Server Management Studio:



Users in the SQL Server SSAS System Administrator role will appear in SQL Server Management Studio, as shown below:



SQL Server Logins

The accounts that run the following services must be able to login to the SQL Server (relational) database to allow Discovery Center to operate.

Discovery Center Scheduler service account
Discovery Center Web Application service account

Installing Discovery Center

Before starting the install, gather the required information and check prerequisites (See Appendix 1: Installation Checklist and Notes).

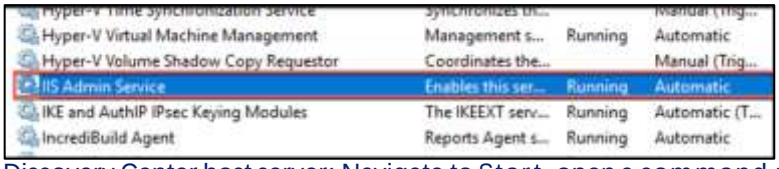
Download the installer for Discovery Center 4.19.0 from the ActiveNav support site https://support.activenav.com. Once signed into the support website, click on Downloads, then click on Discovery Center 4.19.0 under Product Downloads.

The Discovery Center 4.19.0 zip file contains:

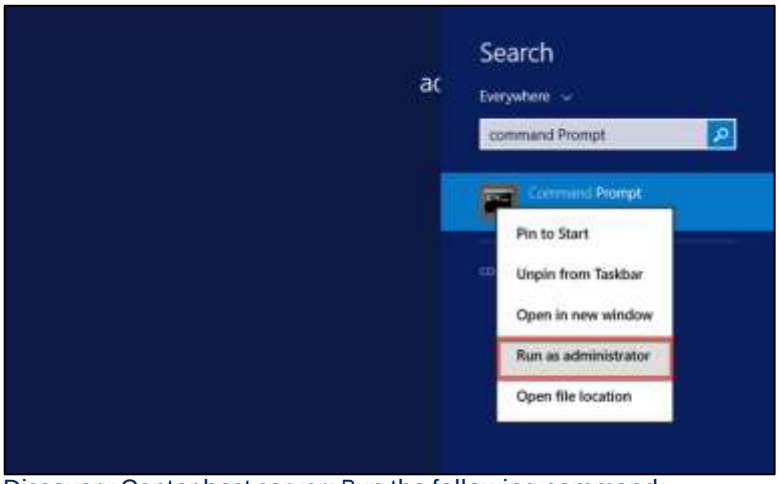
ActiveNav Discovery Center Software
ActiveNav Discovery Center Workbench Application
ActiveNav Regular Expression Validator Application
ActiveNav Discovery Center Documentation

Run the setup wizard (using the installing user account), follow these steps to start the ActiveNavigation.Setup.msi file:

1. Discovery Center host server: Open Services and confirm the IIS Admin Service is running.



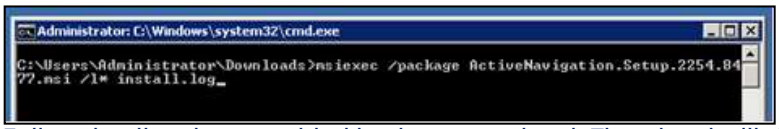
2. Discovery Center host server: Navigate to Start, open a command prompt with elevated privileges using the Run as an administrator option.



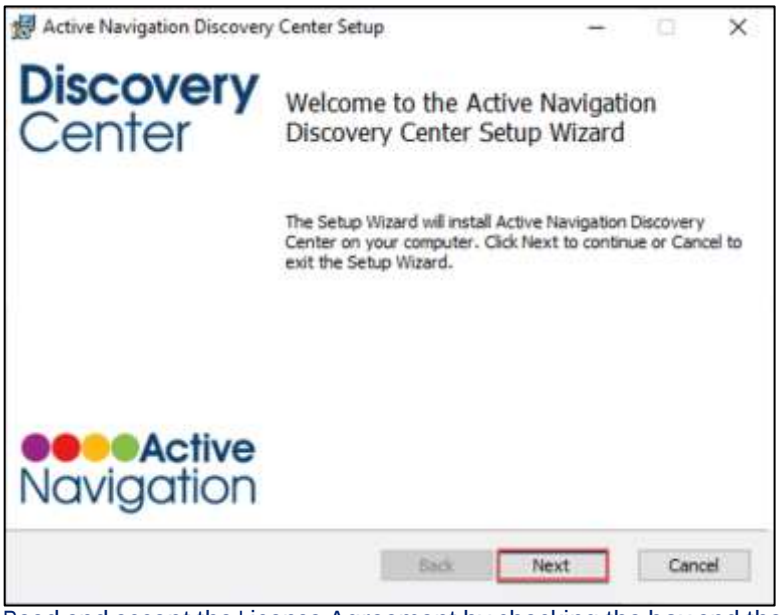
3. Discovery Center host server: Run the following command:

```
msiexec /package <ActiveNavigation.Setup.msi> /l* <install.log>
```

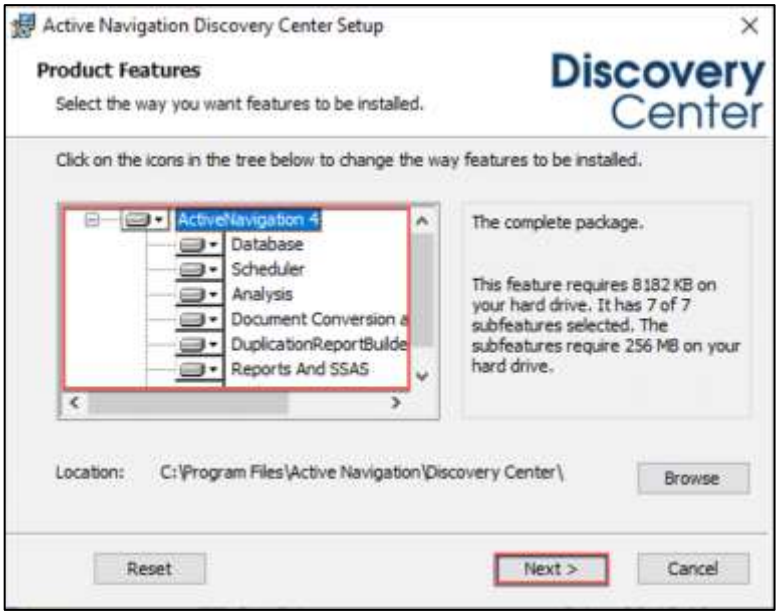
Replace <ActiveNavigation.Setup.msi> with the name of the downloaded Discovery Center msi file and replace <install.log> with the name of the log file that will be created.



4. Follow the directions provided by the setup wizard. The wizard will check for several prerequisite items and provide an error notification if they cannot be located.

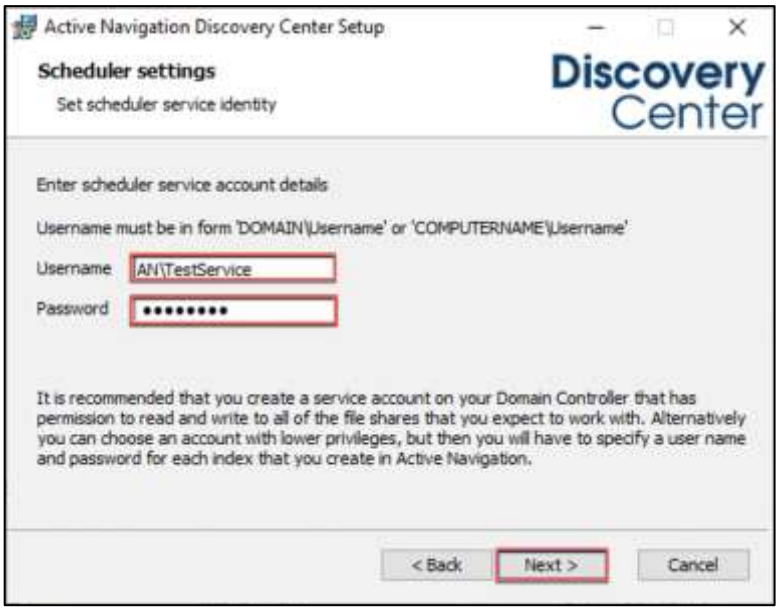


5. Read and accept the License Agreement by checking the box and then clicking Next (or cancel as appropriate).
6. Product Features allow you to skip specific parts of the installation if they are not needed. Seek advice from ActiveNav Support before electing to omit any part of the installation.

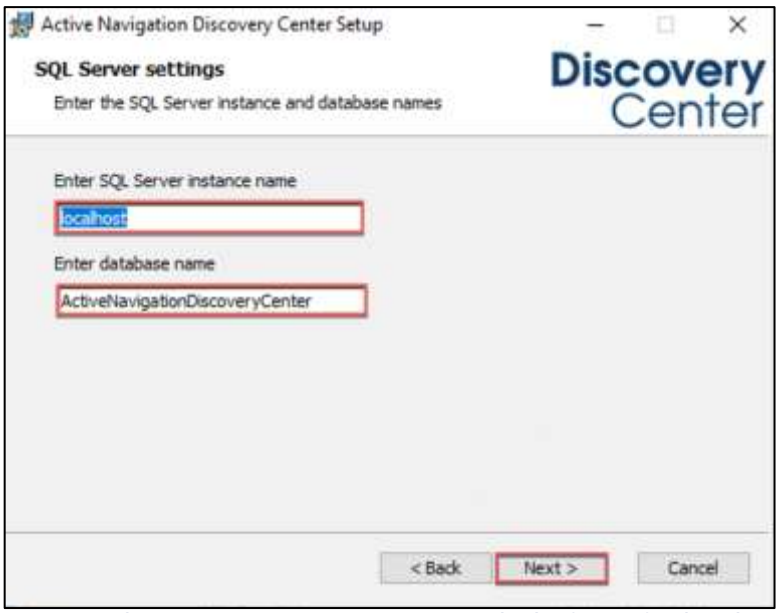


7. Use the Browse button to enter any custom locations required for the search data, file cache, or log file locations. By default, these will be created within the Discovery Center directory, as shown in the Working File Locations dialog. Provide alternate locations to distribute the working files between disks for performance or storage space reasons.

8. Provide username and password for the Windows account to be used by Discovery Center Scheduler Service.
   Note: Ensure that the account has been assigned Logon as a Service rights to enable account validation to succeed.



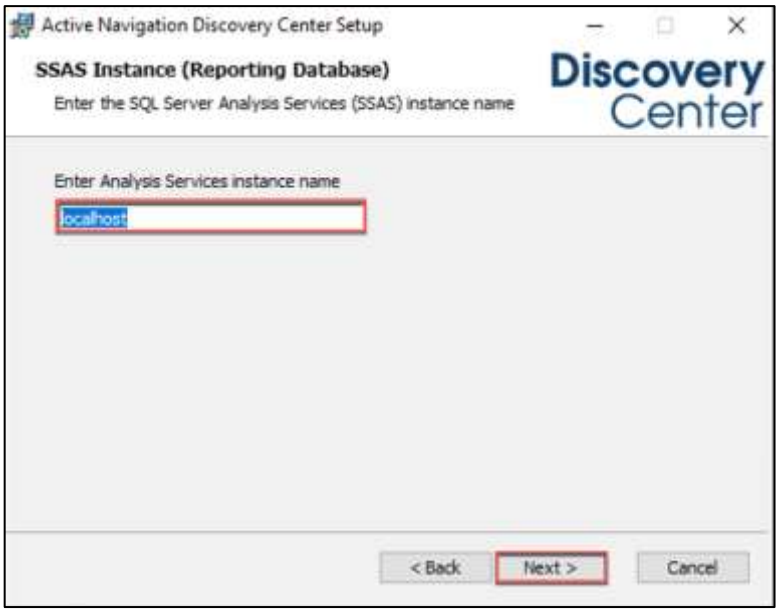
9. Enter details for the database instance:



   a. Enter the SQL Server Instance name in the form of <database server name\instance name>.
   b. Enter a database name that Discovery Center will use. If using a non-default, static port, append a comma and the desired port after the instance name.

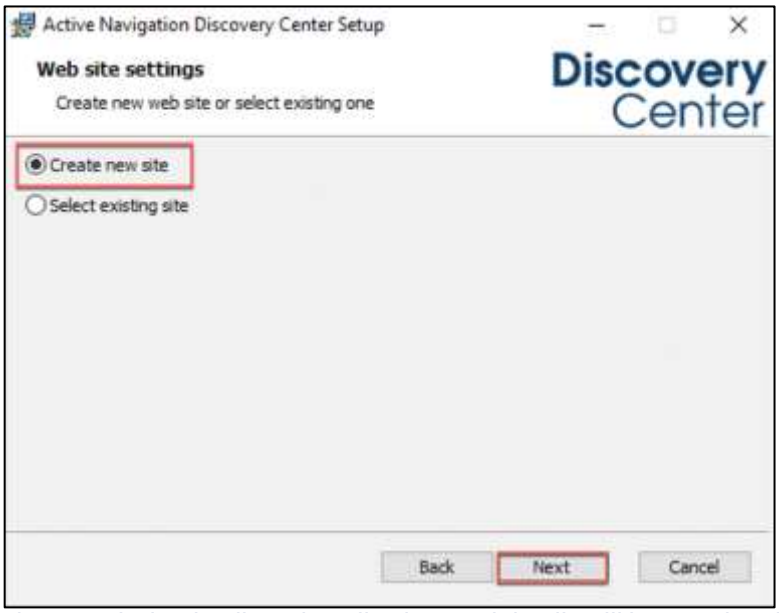
   Note: For multiple Discovery Center instances, ensure that the database names uniquely identify each one (e.g., AN1, AN2, etc.). This name will also be used for each SSAS reporting database.

10. Enter the Analysis Services instance name in the form of <server name\instance name>. If using a non-default, static port, append a comma and the desired port after the instance name.

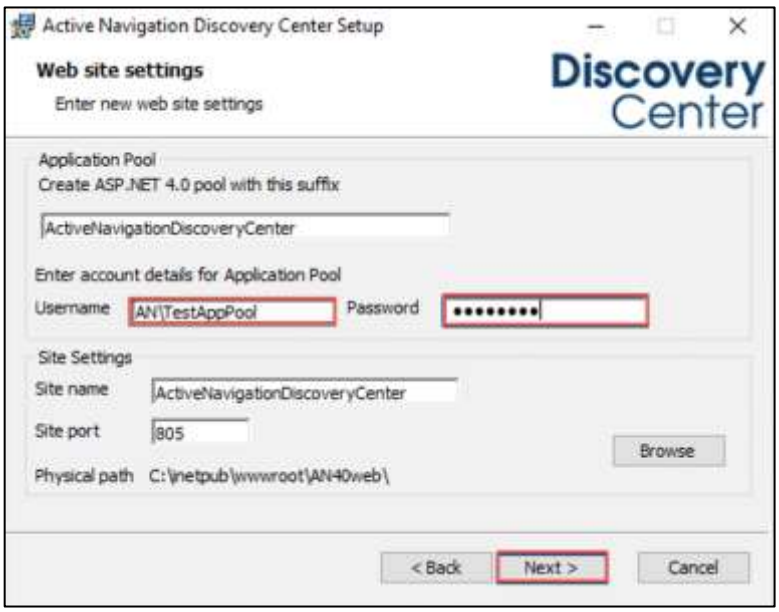


11. Select the Create new site option, then click Next.

    Note: For a deployment to an HTTPS web site see Appendix 2.

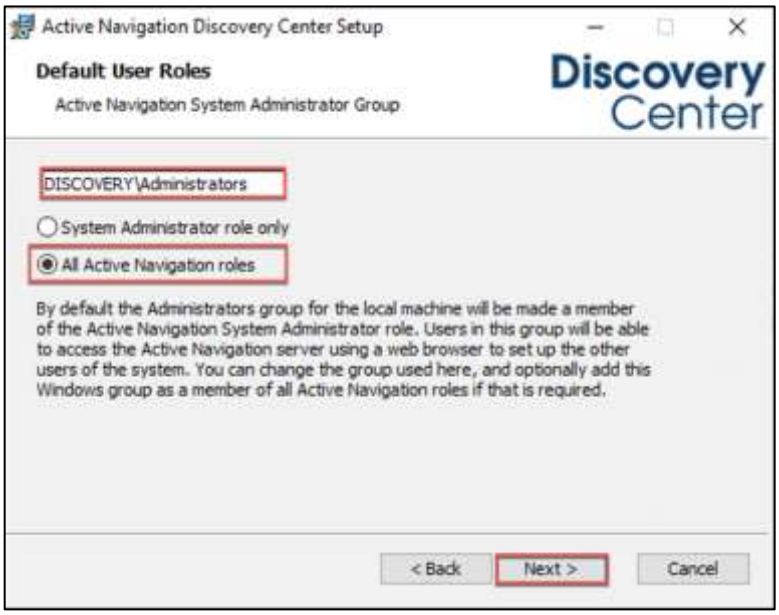


12. The IIS web site details and application pool details will be populated by default. Do not change these unless you need to meet specific installation requirements.
13. Enter your Username and Password for the Application Pool (the service account to be used by the Discovery Center web application). The website will use this account to access the Discovery Center database.



14. The local machine Administrators group will be assigned the Discovery Center System Administrator role by default. Provide a different Windows group if required.

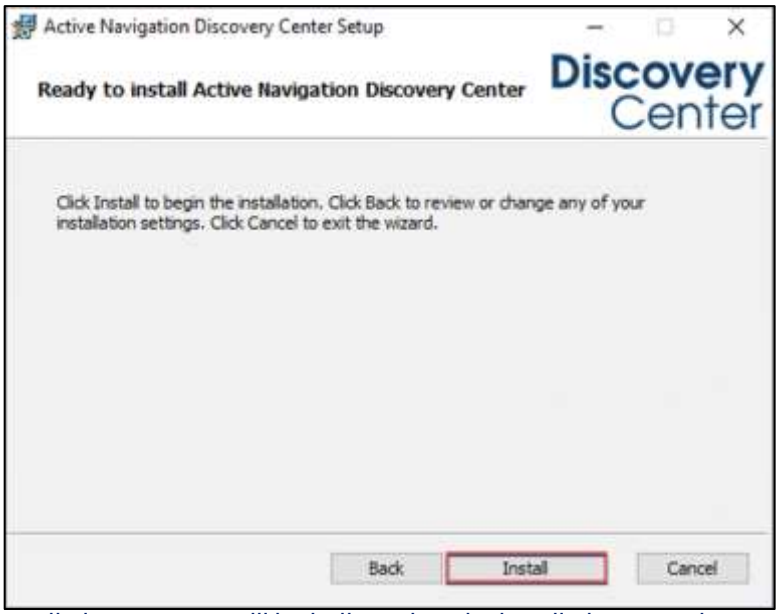
Note: A member of this group of users is responsible for applying the Discovery Center License file after a clean installation and assigning roles to any additional users.



Select the All Active Navigation roles option; this will assign the chosen group to all Discovery Center roles (If this is not selected, the group will have to delegate these responsibilities to themselves after installation).

15. Verify all the settings entered before the install takes place, then click Next.

16. Click Install to setup the Discovery Center, its database, and all other supporting assets.



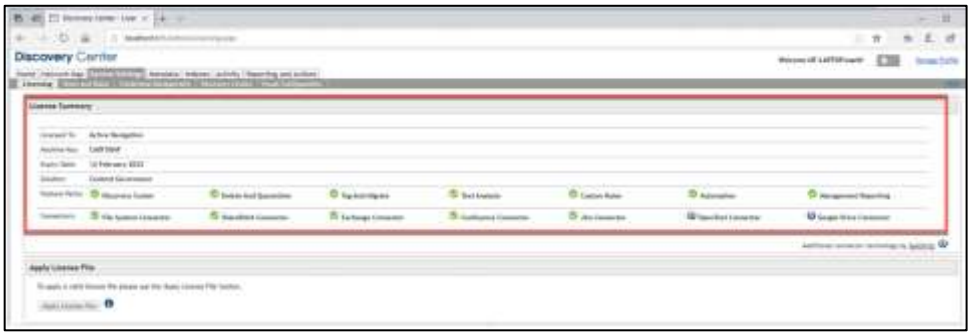
17. Installation progress will be indicated on the installation status bar and summary text. Click Finish when complete.

Discovery Center Post-Installation Functional Checks

Run the following tests once the installation is complete to ensure that the installation is configured correctly:

1. Open Discovery Center from your internet browser http://localhost:805 and enter your credentials if prompted.
   Note: You may need to modify your browser security settings and add the Discovery Center to the list of trusted sites.
2. After a successful installation, log on as the user assigned the System Administrator role. When logging into the Discovery Center for the first time, the system will need to be activated. The License Management Page will be displayed; click Apply License File and follow the prompts to activate the system.

3. If the License is accepted, a summary of the licensed features will be displayed. If errors are encountered during these steps, check the post-installation requirements provided in Appendix 1: Installation Checklist and Notes.



Complete Initial Set Up

If all the following steps have been completed, the installation was a success. For further information, refer to the Discovery Center's documentation by clicking on the Help on the right side of the Discovery Center Interface.

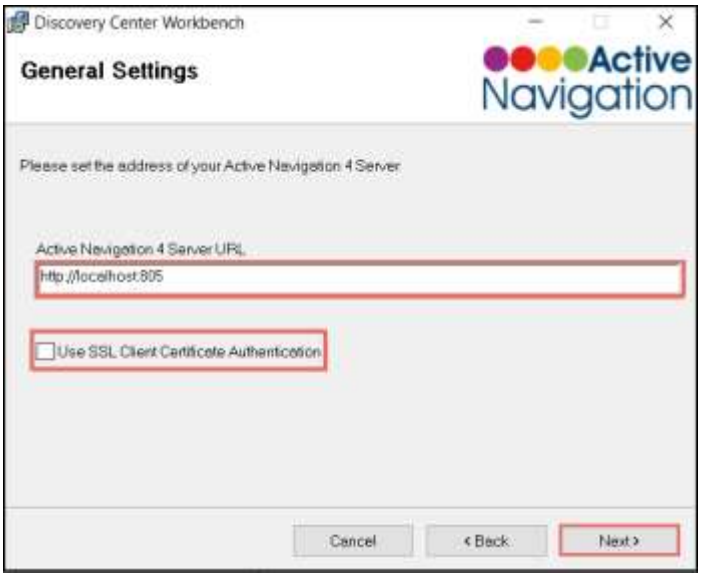
1. Note the URL for the Discovery Center; this will be needed when installing client applications.
2. Configure Discovery Center roles.
3. Build a Network Map and schedule Network Discovery.
4. Run a test index.

Generate a test report to validate the configuration

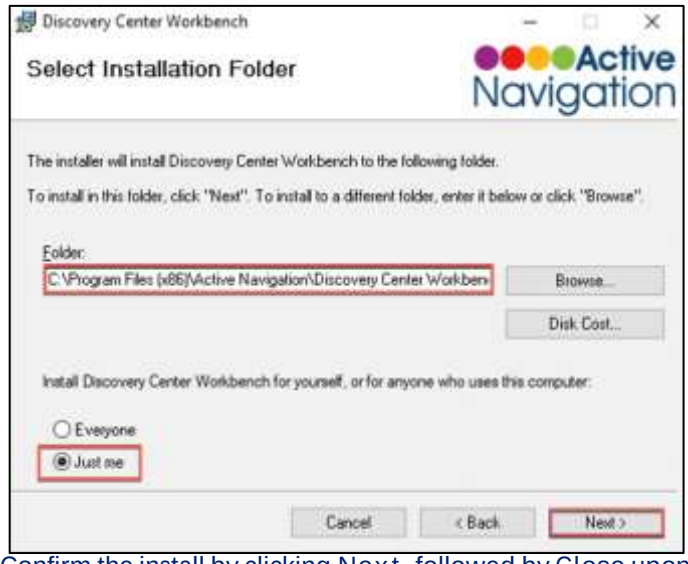
Install Discovery Center Workbench Designer

Discovery Center Workbench is usually installed on a client machine and requires network connectivity to a Discovery Center instance.

1. Locate and run the DiscoveryCenterWorkbench.msi installation file and follow the prompts.
2. In the General Settings window, when prompted for the Active Navigation 4 Server URL, enter the Discovery Center installation URL using the following format http://servername:port/.
3. Select the **"Use SSL Client Certificate Authentication"** checkbox if Workbench should authenticate with Discovery Center using client certificates or smart cards. This requires the certificates to be present in the user's personal certificate store.

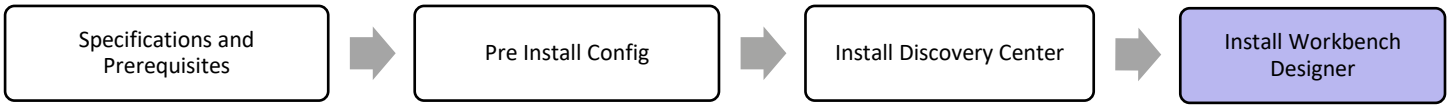


4. Unless you wish to change the install location, accept the default install folder, and choose whether to install for all users of this computer or just the current user.



5. Confirm the install by clicking Next, followed by Close upon completing the install.

Install Discovery Center Workbench Designer



Launch the Discovery Center Workbench application and check the results of an index run to test the Discovery Center installation.

Appendix 1: Installation Checklist and Notes

Pre-Installation Requirements and Information

Windows Accounts

- Identify the installing user account (the user account will be used to run the installer).
  It will require SQL Server sysadmin, SSAS Server Administrator, IIS Administrator rights.
- Provide Windows service account for Discovery Center Scheduler Service.
  Name as required (or ANScheduler) and grant with Logon as a Service rights. During installation the account will be granted:
  dbo, datareader, and datawriter roles to the SQL Server database.
  ANProcessor role on the SQL Server SSAS database.
- Provide Windows service account for Discovery Center Web Application.
  Name as required (or ANWebApp). During installation the account will be granted:
  Full Control permissions on the AN40web folder only.
  Datareader and datawriter roles to SQL Server database.
  ANprocessor role on SQL Server SSAS database.
- Provide Windows account or group for ActiveNav System Administrator users.

SQL Server Security

Confirm presence of SQL Server logins for the SSAS service accounts. Set up these logins if they do not exist.

SQL Server Configuration

Configure SQL Server network protocols for use of Shared Memory, Named Pipes and TCP/IP.

Discovery Center Host Server Configuration

- Enable Windows Server 4.X.Net Features including WCF Activation (See .Net Framework).
- Install .NET 4.7 or later.
- If using SSL and HTTPS:
  Create a valid security certificate.
  Create an IIS website with HTTPS binding and apply the certificate.
- Add the IIS role to the Discovery Center. Add the following role services to the IIS role:

Common HTTP Features:	Windows Authentication
Default Document	Application Development:
HTTP Errors	.NET Extensibility
Static Content	ASP .NET
HTTP Redirection	ISAPI Extensions
Health and Diagnostics:	ISAPI Filters
HTTP Logging	Management Tools:
Security:	IIS Management Console
Request Filtering	IIS6 Metabase Compatibility

- Ensure the IIS Admin Service is running on the Discovery Center Server.
- Install the following SQL Server Feature Pack packages on the Discovery Center Server: (See Discovery Center Server for the SQL Package download URL.)
  Microsoft System CLR Types for SQL Server 2014 x86*
  Microsoft System CLR Types for SQL Server 2014 x64
  Microsoft SQL Server 2014 Shared Management Objects x86*
  Microsoft SQL Server 2014 Shared Management Objects x64
  Microsoft SQL Server 2014 Analysis Services (ASAMO) OLE DB Provider x64
  Microsoft SQL Server 2014 ADOMD.NET x86*
  Microsoft SQL Server 2014 Analysis Management Objects x86*
  Microsoft SQL Server 2014 Analysis Management Objects 64 bit
  Microsoft SQL Server 2012 Native Client 64 bit
  * You must install the 32 bit versions of these packages even if your system is 64-bit.

Post Installation Requirements and Information

Windows Accounts

Provide Windows account for other user roles according to project requirements.

Default Ports Used

Web connection to Discovery Center: 805 TCP, 443 TCP for HTTPS
Remote SQL Server: 1433 TCP
Remote SQL Server Analysis Services: 2383 TCP
Remote SQL Browser Service (required for named instances): 1434 & 2382
Indexing connection to file servers: 445 TCP
NetBIOS name recognition: 137 & 139 TCP 137 & 138 UDP
DNS: 53 TCP, 53 UDP
Indexing connection to SharePoint: 80 TCP, 443 TCP for HTTPS

SQL Server

- Pre-allocate disk space for SQL database according to project requirements.
- Validate database recovery model and backup plan according to local database management policies.
  https://msdn.microsoft.com/en-us/library/ms191164.aspx
  https://msdn.microsoft.com/en-us/library/ms190217.aspx

Appendix 2: Configuring for SSL and HTTPS

Discovery Center can be configured to provide secure access using an HTTPS: / / URL. This protects against the possibility of data sent to a web browser being intercepted by network monitoring tools.

To create your secure HTTP site, you will need to configure a secure site in IIS and then install the Discovery Center application into this site.

Preparing a Secure Site

Choice of SSL Certificate

An HTTPS based site requires an SSL certificate that enables a browser to validate the site when negotiating a secure connection. There are two options, signed by a trusted root authority or self-signed certificate:

1. Signed by Trusted Root Certificate Authority

   Typically for a production deployment, a certificate is prepared for the specific hostname and signed by a trusted root certificate authority. Follow the procedures set out by your organization to obtain a certificate and complete the configuration of a secure site for use by the Discovery Center installation.

2. Self-Signed Certificate

   When setting up a secure site, IIS will allow a self-signed certificate, this type of certificate will not include a trusted certificate authority signature. When using a self-signed certificate with Discovery Center, the following factors will affect the use of such a certificate by Discovery Center:

   - A self-signed certificate must be added to the Trusted Root Certification Authorities folder in the local machine account's certificate store.
   - End users will see a security warning when accessing the secure site with a web browser, requiring confirmation that they are prepared to access a site with an untrusted certificate. It is possible to install the certificate as a trusted certificate on end user's systems to avoid these warnings, or users may add a security exception in their browser configuration.

Preparing an SSL Certificate

To prepare an SSL certificate for use with IIS:

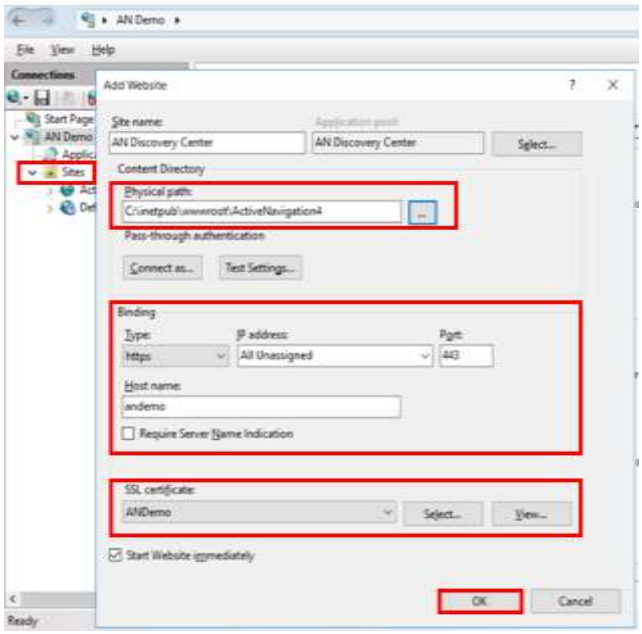
1. Open IIS Manager.
2. Select the server name in the hierarchy in the left-hand pane.
3. Locate and open the Server Certificates item in the right-hand pane.
4. If using a trusted certificate from a 3rd party, choose the Import option to add the certificate to IIS.

5. If creating a self-signed certificate, choose the Create Self-Signed Certificate option:
   - Enter a name for the certificate.
   - If offered a choice of certificate store, select Web Hosting.

Preparing a Secure Site in IIS

Complete the following steps to configure the secure site to receive the Discover Center installation:

1. Create a new folder within the IIS root directory, where the web application files should be installed. The default location for the root directory is 'C:\inetpub\wwwroot\'.
2. Open IIS Manager. Right-click the Sites node and choose Add Web Site.
3. Enter a name for the site.
4. Specify the location where the web application files should be installed. This should be the folder created in step 1.
5. Select HTTPS as the binding type.
6. Specify the hostname for the site. This should match the hostname used for the SSL certificate.
7. From the drop-down list, select the SSL certificate configured in the previous stage.
8. Select OK to create the website.



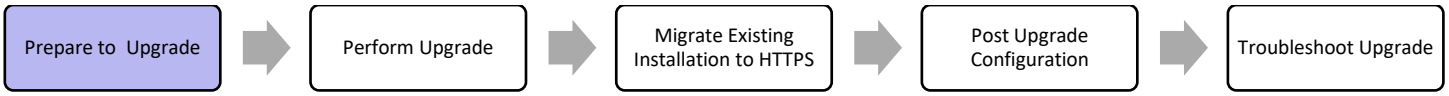
Once created, check access to the empty website. If using a self-signed certificate, a security warning will require a browser exception to be added. If the site creation is successful and the certificate is correctly applied, a warning will be displayed with the message "The Web server is configured to not list the contents of this directory".

Install Discovery Center to an Existing Secure Site

Follow the standard installation steps outlined in Installing Discovery Center until step 11, Web site settings. At the Web site settings dialog, choose the Select existing site option.

On the next page, configure the Web Application service account as in the standard installation, and select the secure web site from the Select web site drop-down list.

Proceed through the remaining steps for the standard installation. When the install is completed, ensure end-users can successfully access the Discovery Center using the secure website address and that the Discovery Center Workbench can be used to interact with the Discovery Center web services without any errors.



Appendix 3: Upgrading an Existing Installation

Discovery Center Release 4.2 SP1 and onwards upgrades are fully supported by the standard installation package. For earlier releases, contact support@activenav.com for assistance with a manual upgrade.

To upgrade client applications such as the Discovery Center Workbench, perform an uninstall, followed by installing the latest version.

Preparing to Upgrade

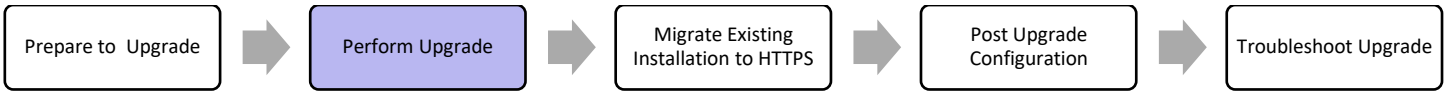
Review the release notes and this installation guide for the new release to identify any changes in software prerequisites that may affect your installation. Ensure that any new requirements are met before starting your upgrade.

Note: Before upgrading, perform a database backup and ensure that the resulting backup file is safely stored. In the event of any error in the automatic upgrade process, it will be necessary to perform a manual upgrade described in the Troubleshooting Upgrades section.

1. If any standard classification structures, e.g., File Sizes, Filetypes (by Extension), or Filetypes (by Format), have been modified, ensure that copies of those structures have been made.
2. Review the release notes to check whether any classification structures have changed, merge the updated structures if appropriate.
3. Review the release notes to check whether there are any existing unsupported indexes.

Close Existing Browsers

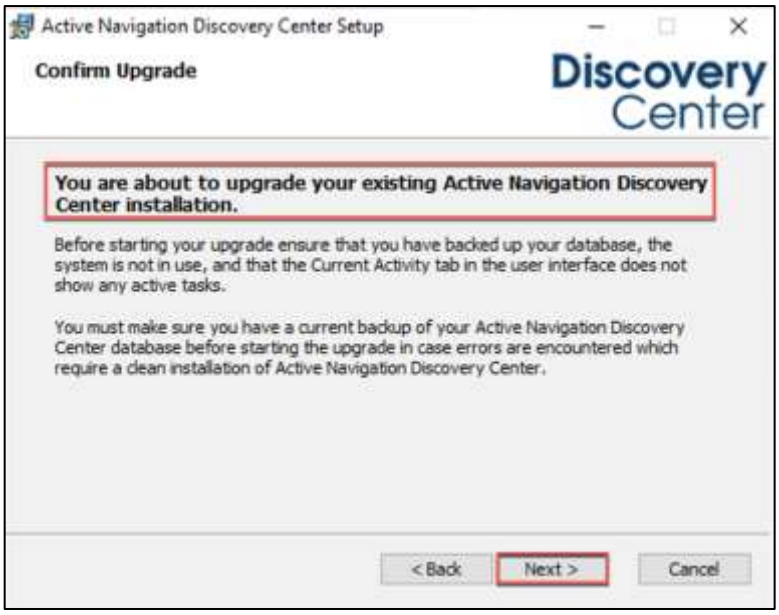
Ensure that all users have closed any existing browser sessions accessing Discovery Center; if users see incorrectly displayed elements or unexpected errors, press Ctrl + F5 to reload the page with a cache refresh to see if this resolves the problem.



Performing an Upgrade

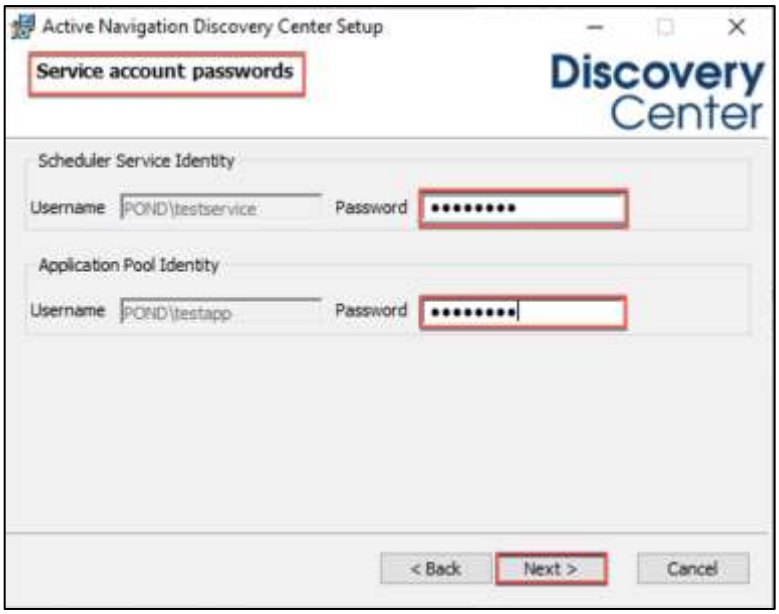
Do not attempt to upgrade Discovery Center while logged in using the Discovery Center Scheduler service account; this may affect the ability of the updater to make required changes and will require additional manual configuration (see Troubleshooting Upgrades).

1. To perform an upgrade, launch the installation package on the Discovery Center host server (See Installing Discovery Center for further information).
   Note: Any changes made to the system configuration since installation may result in the need for additional manual action after the upgrade; take backups of the configuration files and account names to assist in this process before proceeding with this process.
2. When the installer is run, it will detect the existing installation and display the following upgrade confirmation dialog. Click Next.



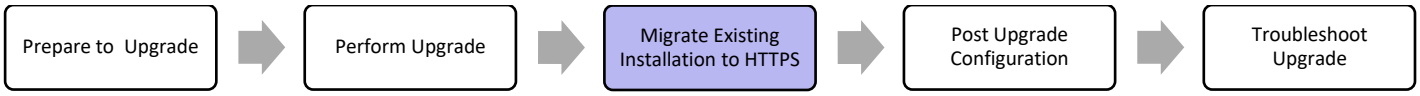
3. Proceed with the upgrade installation, following the wizard prompts. The installer will read and use the settings provided during the initial installation.

4. The upgrade will require passwords for the Scheduler Service account and, if applicable, the Discovery Center Web Application service account.



5. Upon entering valid passwords, a summary screen is displayed showing the settings that have been detected and used for the upgrade.

Note: It is not possible to update settings during an upgrade. If changes are required to any existing settings, Discovery Center should be uninstalled and a clean install performed using the existing database.

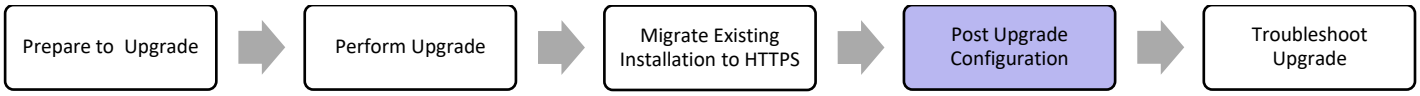


Migrating an Existing Installation to HTTPS

From Release 4.3.9, the Discovery Center installation package supports direct installation to a web application configured for HTTPS. However, this is not possible where a manual configuration has been used to create an HTTPS configuration or for migrating an existing installation to HTTPS. In such cases, you can migrate Discovery Center to HTTPS as follows:

Note: Before upgrading, perform a database backup and ensure that the resulting backup file is safely stored. In the event of any error in the automatic upgrade process, it will be necessary to perform a manual upgrade described in the Troubleshooting Upgrades section.

- From the Discovery Center host server, open Control Panel > Programs and Features.
- Locate and right-click the Discovery Center installation entry and select Change.
- The Discovery Center installation wizard will run; choose the Remove option and ensure that Remove Database within uninstall option is not selected.
- Complete the uninstall process.
- Perform a new installation specifying the name of the existing database at the appropriate step in the process.
- When configuring the IIS site for the new installation, follow the instructions in Appendix 2: Configuring for SSL and HTTPS to create an installation using HTTPS.



Post Upgrade Configuration

Validate the Upgrade

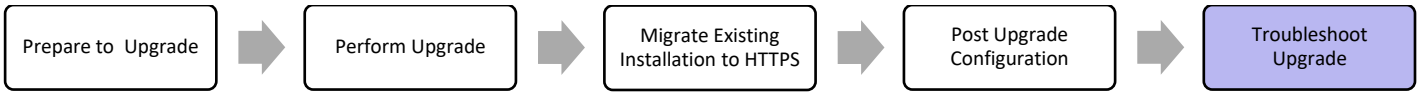
To validate an upgrade of Discovery Center, review the data that is presented in its browser interface.

1. The upgraded database will contain all previous data, which should appear unchanged in the user interface.
2. It is necessary to process the Discovery Center reporting database. This can be scheduled for immediate processing from the Reporting and Actions > Reporting Settings option in Discovery Center.

Apply any required configuration file changes

The Discovery Center application has a number of settings which are configured based on settings held in various text configuration files within the deployed location on the host server file system. Typically, these settings do not require any changes for the Discovery Center application to function optimally, however in the cases where changes are made any updated values are not persisted following an upgrade and the default settings are reverted to. It is therefore necessary to re-apply any changes that were made to these config files prior to any upgrade again, once an upgrade has completed.

It Is strongly recommended that changes to any text configuration file are only made following a recommendation from ActiveNav, refer to support portal knowledge base articles at https://www.support.activenav.com/ or contact Active Nav Support via email support@activenav.com for further help.



Troubleshooting Upgrades

Failure During Automatic Upgrade

When performing an automatic upgrade in post R4.2 releases, a common error occurs due to the Discovery Center being removed, and the database is retained. Path issues can occur if the Discovery Center is inadvertently installed in a different location. Resolve the errors as they arise as described below; once these errors are resolved, proceed with the install process. The installer will recognize any existing database and upgrade it automatically.

Correcting Connector Path Errors

When Discovery Center is inadvertently installed in a different location, its user interface may exhibit the following behaviors:

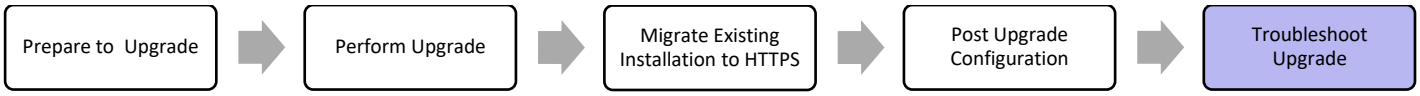
- The Network Map tab shows Load Error.
- The Indexes tab does not list indexes.
- The Area of Interest tab reports a server error.

To resolve these problems, the path stored in the ConnectorDefinition table of the Discovery Center database will need to be corrected for all registered connectors as follows:

1. Open SQL Server Management Studio, and for the Discovery Center database, create the following query:
```
DECLARE @oldInstallLocation NVARCHAR(MAX) = 'C:\Program Files (x86)\Data Discovery Solutions Ltd\'
DECLARE @newInstallLocation NVARCHAR(MAX) = 'C:\Program Files\Active Navigation\'
UPDATE ConnectorDefinition SET path = REPLACE( path, @oldInstallLocation, @newInstallLocation)
SELECT * FROM ConnectorDefinition
```
2. Replace the file path with the old installation file path, 'C:\Program Files (x86)\Data Discovery Solutions Ltd\' in the example above.
3. Replace the file path with the new installation file path, 'C:\Program Files\Active Navigation\' in the example above.
4. Run the query and review the results listed to ensure the location(s) specified match the new installations.

Unexpected Behavior in Web Interface

Sometimes browser caching behaviors will cause unexpected errors in the Discovery Center user interface, e.g., unexpected or missing elements in pages or repeated error dialogs. Refresh the browser cache by holding the SHIFT key while reloading the browser page.



Other Issues

For upgrade issues not covered in this document, refer to support portal knowledge base articles at https://www.support.activenav.com/ or contact Active Nav Support via email support@activenav.com and provide the following information:

1. Full details of the upgrade steps you have performed
2. The version number of the previous release.
3. The version to which you were upgrading.
4. A detailed description of the errors/issues observed during or after the upgrade.
5. A msiexec log file that was generated by running the installation from the command line as documented.

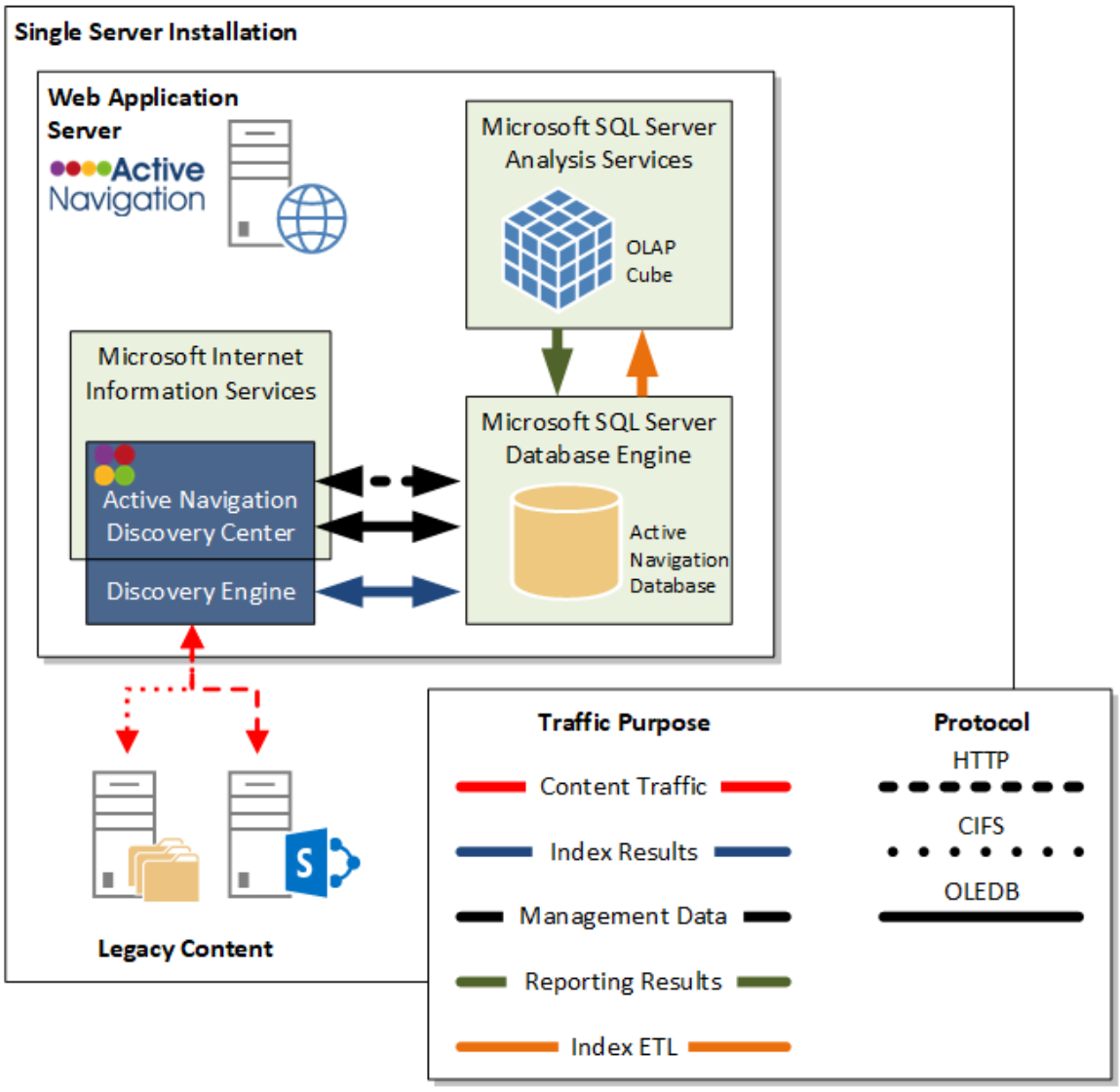
Appendix 4: Example Installations

Local Server Installation

A local server installation places Discovery Center and all supporting SQL Server components on a single-host server. This installation is simple to implement and can potentially be used for mobile deployments to address locations across a wide geographical area.

The host server must be sufficiently well specified to meet all requirements for Discovery Center, SQL Server, and SSAS as described in Hardware Specifications.

Where multiple Discovery Center instances are required, there will be a cost for SQL Server licenses on every machine. Each machine will require additional RAM and disk resources to support SQL Server adequately.

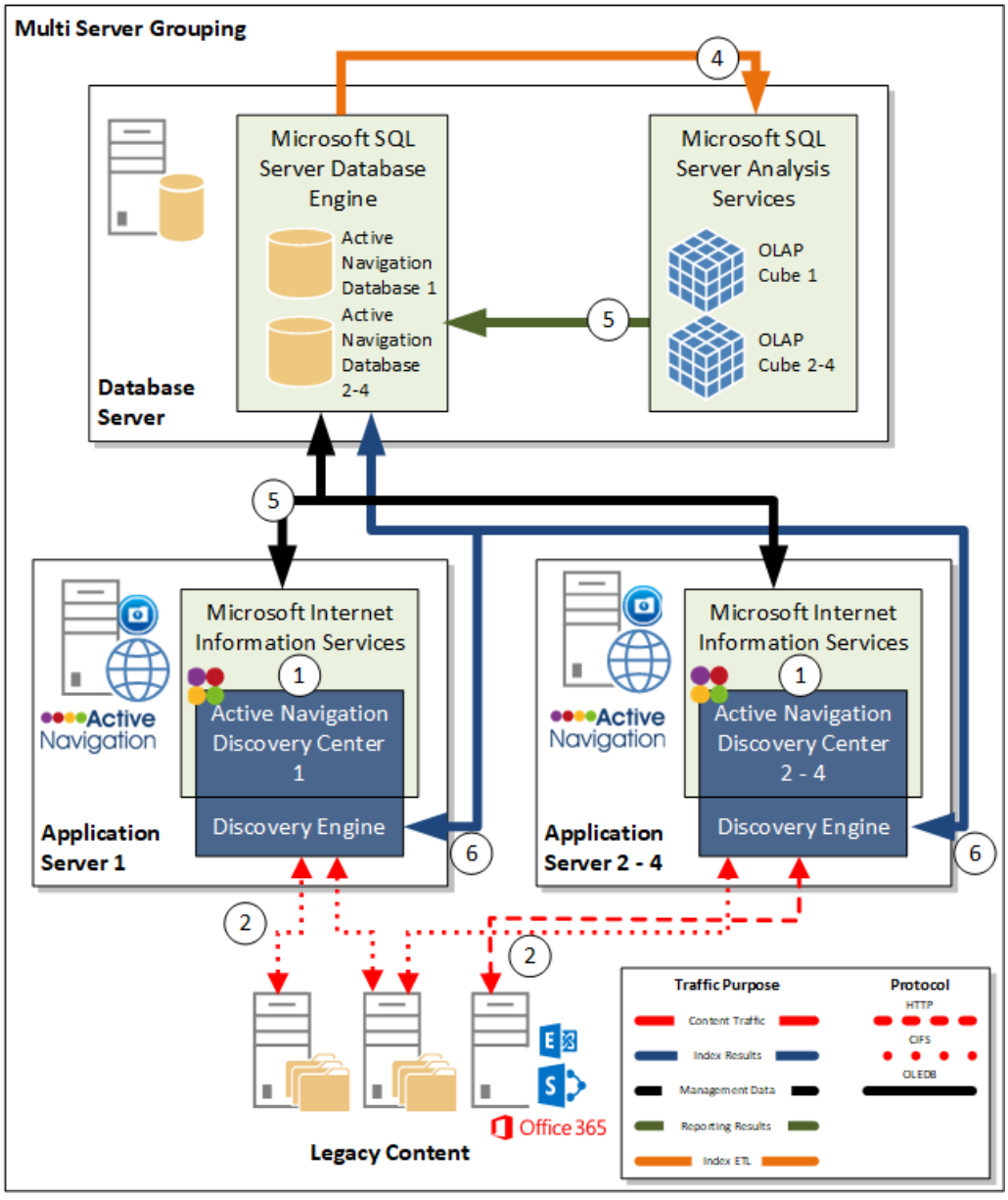


Centralized Installation

Where SQL Server assets (licenses, RAM, disk resource, and administration support) must be centralized for economies of scale, Discovery Centers can be deployed to use a single database farm limited only by SQL Server scale-out capacity. In such circumstances, an Analysis Services system should also be provisioned per Microsoft guidelines.

Note: For this configuration, insufficiently specified SQL instances may cause degraded performance or failures due to a lack of SQL system resources. For best performance, this configuration should be implemented with a dedicated and appropriately sized Discovery Center SQL Server instance.

If the centralized SQL Server environment has SQL Server and SQL Server Analysis Services hosted on separate servers, please see Appendix 7: Additional Configuration for Fully Distributed Configuration for additional steps required to support correct authentication between the elements of the system.



Example Windows Account and SQL Server Logins

In the above examples, the following Windows account and SQL Server login requirements must be met. Each account or login is shown below against the corresponding traffic in the local server installation diagram above.

Windows Accounts

ID	Description	Example	Rights
1	Discovery Center Web Application Service	Domain\ANWebSite	Windows default user account
2	Discovery Center Scheduler Service	Domain\ANScheduler	Logon as a service
3	Groups for Discovery Center user roles*	Domain\ANSysAdmin Domain\ANAdmin Domain\ANInfoMgr	Standard Windows user groups

*As determined by project requirements. System Administrator role is configured during installation.

SQL Server Logins

ID	Description	Example	Rights
4	SSAS Service login	Domain\SSASService	Windows default user account
5	Discovery Center Web Application login	Domain\ANWebSite	Logon as a service
6	Discovery Center Scheduler Service login	Domain\ANScheduler	Standard Windows user groups

*If SQL Server and SSAS are appropriately configured these logins should exist.

Appendix 5: Command Line Installation

A more advanced configuration of the Discovery Center can be achieved by installation via the windows command line, allowing more detailed control over the install process. Use the msiexec command to perform the command line install. Full details of how to use the Windows Command Line are provided as part of the Windows built-in help. The basic form of the command uses two options:

/l* <log filename.log> will cause the installer to write a detailed log file.
/package <installer filename.msi> must be provided to specify what to install.

For example: /package <ActiveNav.Setup.msi> /l*install.log

Installer Extended Command Line Properties

The Discovery Center supports extended properties shown in the table below. If a specific property is omitted, the installer will use the default value shown.

Note: Note: All values on the command line must be quoted if they contain spaces.

Property Name	Purpose	Default Value
LICENSE_FILE	Optionally specify a Discovery Center license file to be added during installation. (The license file can also be added after the installation by a user in the Active Navigation System Administrator role)	
INSTALLLOCATION	Specify the folder in which to deploy Discovery Center and working files (excluding the web site files, see below)	"C:\Program Files\Active Navigation\Discovery Center"
SEARCHDATADIR	Specify the folder in which to store the classification search index (only needed if the location based on the INSTALLLOCATION is inappropriate)	"C:\Program Files\Active Navigation\Discovery Center\SearchData"
FILECACHEDIR	Specify the folder in which to store the temporary files downloaded during analysis (only needed if the location based on the INSTALLLOCATION is inappropriate)	C:\Program Files\Active Navigation\Discovery Center\FileCache"
LOGDIR	Specify the folder in which to store the application log files (only needed if the location based on the INSTALLLOCATION is inappropriate)	"C:\Program Files\Active Navigation\Discovery Center\Logs"
WEBSITEDIR	Specify the folder into which to deploy the Discovery Center web application and log files	C:\inetpub\wwwroot\AN40Web
WEBSITE_PORT	Any valid port number for IIS	805
APP_POOL_IDENTITY	Specify "other" to allow a custom account to be specified for the IIS application pool (see APP_USER and APP_PASS)	other

Property Name	Purpose	Default Value
APP_USER	Specify a domain account	
APP_PASS	The windows password for the account specified with APP_USER	APP_PASS
APP_POOL_NAME_CUSTOM	A postfix to use for the application pool created by IIS	AN4
APP_NAME	The name (description) of the application created in IIS	ActiveNavigation4
SCHEDULER_IDENTITY	Specify "other" to allow a custom service account to be specified (see SCHED_USER and SCHED_PASS)	Other
SCHED_USER	Specify a domain account with Log on as a Service right	
SCHED_PASS	The Windows password for the account specified with SCHED_USER	
SQL_SERVER_NAME	The server and optional instance to deploy the Active Navigation database in to	localhost
SQL_DATABASE_NAME	This name is used for the SQL Server relational database and SQL Server Analysis Services reporting database that is created and used by Discovery Center	ActiveNav4
SSAS_SERVER_NAME	The server and optional instance to deploy the Discovery Center reporting database in to	Value specified for SQL_SERVER_NAME
DEFAULT_ADMIN_ACC	Specify a Windows group or user to put into the Discovery Center System Administrators role	BUILTIN\Administrators
DEFAULT_ALL_ROLES	Specify 1 to add the administrator group or to be added to all roles in the Discovery Center, or 0 to just add them to the System Administrator role.	0
VALIDATE_APP_POOL_USER	Specify this property with the value 0 to skip the password validity check for the web site application pool user	1
VALIDATE_SCHED_USER	Specify this property with the value 0 to skip the password validity check for the scheduler service account	1
DEBUG_CA	This can be used by developers to interrupt the normal installer operation to allow debugging the installer custom actions	

Example Command Line

```
C:\>msiexec /I* "install-.log" SCHEDULER_IDENTITY=other SCHED_USER=AN\svc-ansched SCHED_PASS=pass
APP_POOL_IDENTITY=other APP_USER=AN\svc-anweb APP_PASS=pass SQL_DATABASE_NAME=ActiveNav4
APP_POOL_NAME_CUSTOM=ActiveNav4 APP_NAME=ActiveNav4 WEBSITEDIR=C:\ActiveNavigation\website
WEBSITE_PORT=805 INSTALLLOCATION=C:\ActiveNavigation DEFAULT_ALL_ROLES=1 /package
ActiveNavigation.Setup.msi
```

Appendix 6: Configuring Management Reporting Database

If you are using the Management Reporting feature, a Management Reporting Database must be created and then configured in the Discovery Center Report Settings. The Management Reporting Database will allow you to build a historical record of your information management activities.

Creating the Management Reporting Database

A simple batch file has been provided in the ManagementReportingDatabase subfolder of your Discovery Center installation.

Note: For the creation process to be successful, the user running the batch file must have the SQL sysadmin role granted in the SQL instance chosen as the Management Reporting Database location. Contact support@activenav.com for more details on these requirements if needed.

To perform the database creation, follow these steps:

1. Open a command prompt window on the server where the Discovery Center application has been installed.
2. Change location in the command window to the Management Reporting folder of your Discovery Center installation. If you have installed in the default location, you can use the following command to do this:
   ```
   cd \Program Files\Active Navigation\Discovery Center\ManagementReportingDatabase
   ```
3. Run the CreateManagementReportingDatabase.bat script and enter the details to be used for your database.
   Note: For technical reasons, inputs starting with '-' or '--' are not supported. Additionally, if any input contains exclamation marks ('!' characters), then a '!' must be added before each one. For example, 'user!name' would be entered as 'user!!name'.

   When prompted, choose whether or not the database should be accessed via service accounts. If a service account is not used, a named SQL server account must be used to ensure that the Discovery Center application can access the database.
   a. If service account access is used, you will need to enter the name of at least one service account.
      Note: If you use the same account for your scheduler and the web application, you only need to enter it once.

      ```
      ManagementReporting>CreateManagementReportingDatabase.bat
      Enter Management Reporting Database Instance Name: myserver
      Enter Management Reporting Database Name: MRDB
      Use Service Accounts For MRDB (y/n)?: y
      Enter Discovery Center Scheduler Account Name (domain\username): DOMAIN\SchedulerService
      Enter Discovery Center Web Application Account Name (domain\username): DOMAIN\WebAppService
      ```
   b. If SQL account access is used, you will need to enter the account's username and password; it will be created if it does not already exist.


```
ManagementReportingDatabase>CreateManagementReportingDatabase.bat
Enter Management Reporting Database Instance Name: myserver
Enter Management Reporting Database Name: MRDB
Use Service Accounts For MRDB (y/n)?: n
Enter SQL Account Username To Use For Database: MrdbUser
Enter Password For SQL Account To Use For Database: ********
```

Upon entering the correct details, you will see the progress for creating the database:

```
ManagementReportingDatabase>CreateManagementReportingDatabase.bat
Enter Management Reporting Database Instance Name: myserver
Enter Management Reporting Database Name: MRDB
Use Service Accounts For MRDB (y/n)?: n
Enter SQL Account Username To Use For Database: MrdbUser
Enter Password For SQL Account To Use For Database: ********
Creating database...
Processing directory: Schemas... Done.
Processing directory: Assemblies... Done.
Processing directory: Tables... Done.
Processing directory: Views... Done.
Processing directory: Functions... Done.
Processing directory: ViewsWithFunctions... Done.
Processing directory: StoredProcedures... Done.
Processing directory: Data... Done.
Processing directory: Roles... Done.
Creating SQL login (if required)... Done.
```

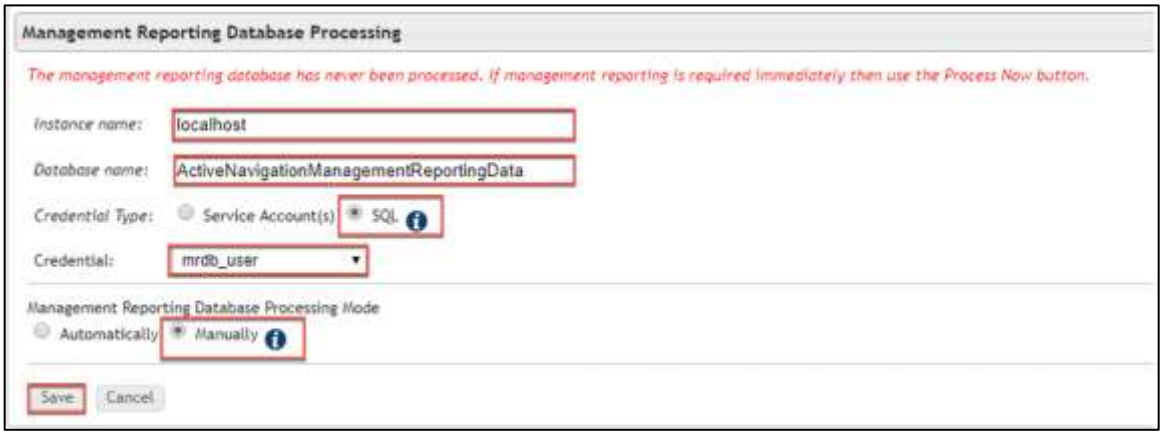
Once the process completes, a new Management Reporting Database will be available with the name provided on the given SQL instance and permissions granted to allow access and processing from Discovery Center using the specified user accounts.

Configuring the Management Reporting Database for Use

Once the database has been successfully created, you must provide the information to the Discovery Center Web Application as follows:

1. Open the Discovery Center Web Interface.
2. Navigate to the Reporting and Actions > Reporting Settings tab.
3. Locate the Management Reporting Database Processing section, then choose Edit to enable the database Instance name, Database name, and various connection credential options to be entered.

   Note: This section of the page is only visible if you have a license that enables Management Reporting.



4. There are two options for Credential Type, these are:
   a. Service Account(s) – Using Integrated Windows authentication using the service accounts that run the Discovery Center application.
   b. SQL – If the SQL Credential option is selected, a selection list will appear. This list displays all the Credential records that exist in the Discovery Center. These records are defined in the Credential Management section of the application located in the System Settings tab and allow a username and password combination to be provided. They are used to represent the SQL user and password information.

   Note: In either case, the account(s) being used must have been granted the relevant permission from the Management Reporting Database; this can be done either during creation (see Creating the Management Reporting Database) or manually.

5. Click Save; the system will check the connection to the database and the database structure to ensure that the Management Reporting Database is accessible with the provided credentials and contains a structure compatible with the current version of Discovery Center. (If the credentials entered are incorrect or the version is incompatible, you will be prompted with a message to correct them).

Upgrading the Management Reporting Database

A simple batch file has been provided to upgrade the Management Reporting Database, located in the ManagementReportingDatabase subfolder of your Discovery Center installation.

Note: For the upgrade process to be successful, the user running the batch file must have the SQL sysadmin role granted in the SQL instance that the Management Reporting Database is installed. Contact support@activnav.com for more details on these requirements if needed.

To perform the upgrade:

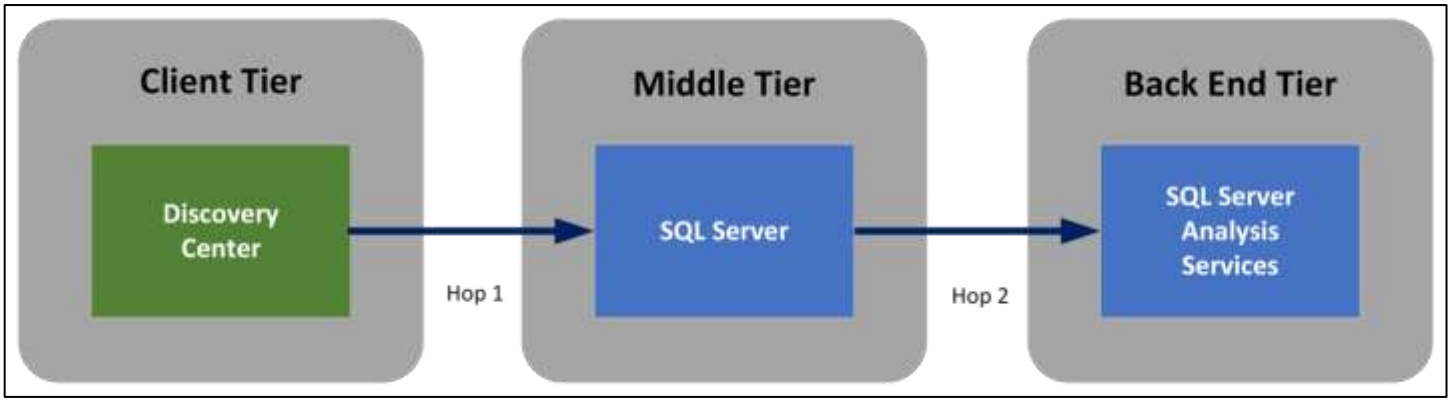
1. Open a command prompt window on the server where the Discovery Center application has been installed. You must run the command prompt as a user with access to SQL and the Management Reporting Database.
2. Change location in the command window to the Management Reporting folder of your Discovery Center installation. If you have installed in the default location, use the following command:
   ```
   cd \Program Files\Active Navigation\Discovery Center\ManagementReportingDatabase
   ```
3. Run the UpdateManagementReportingDatabase.bat script and enter the details to be used for your database.
   ```
   C:\Program Files\Active Navigation\Discovery Center\ManagementReportingDatabase>UpdateManagementReportingDatabase.bat
   Enter Database Instance Name myinstance
   Enter Database Name mrdb
   ```
   After entering the correct details, you will see the following message:
   ```
   Database mrdb successfully updated
   ```

Appendix 7: Additional Configuration for Fully Distributed Configuration

Overview

A fully distributed configuration where Discovery Center, SQL Server, and SQL Server Analysis Services are installed on separate host servers requires extra configuration to allow authentication between each component.

This configuration involves communication between components, as shown in the diagram below. To produce reports, the Discovery Center must be able to access data from SSAS via SQL Server, creating a situation known as Double Hop Authentication. This requires SQL Server to present credentials from the Discovery Center service accounts to the Back End Tier.



Windows provides two built-in authentication mechanisms; these are NTLM and Kerberos. Under normal circumstances, the underlying environment selects the appropriate authentication mechanism in the background without the user being aware of which is being used. However, Kerberos must be used to support double hop authentication; this requires certain pre-conditions to be met by the operating environment and specific configuration steps to be taken.

The following sections outline the steps needed to configure a fully distributed Discovery Center deployment correctly.

Note: Regarding Azure Cloud deployment - The use of an Azure SQL Database or Azure SQL Managed Instances for the SQL Server host in the Middle Tier above is not supported. This is because Microsoft do not support communication from SQL databases in those environments to SQL Server Analysis Services databases, which is a requirement for the Discovery Center reporting solution. The use of Azure Analysis Services as the SQL Server Analysis Services host in the Back End Tier above is also not supported as Microsoft do not support the use of Multidimensional data models in these environments, which is also a requirement for the Discovery Center reporting solution.

System Requirements

Active Directory

Kerberos authentication provided by Active Directory meeting the following requirements:

1. The Windows domain must be operating at a functional level of Windows Server 2003 or later.
2. The systems that will be used must be time-synchronized.
3. The domain must provide correct name resolution for DNS and NetBios protocols for short and fully qualified server names.
4. TCP and UDP traffic must be allowed on port 88, where firewalls are present between the installation and the domain controller components.
5. All systems to be used for the deployment must belong to the same Windows domain.
6. Domain administration rights and access to the domain controller must be available to carry out some of the configuration steps described below.

SQL Server

Kerberos authentication depends on the correct configuration of SPNs (Service Principal Names) for the components that will be carrying out authentication tasks. The steps to configure SPNs for SQL Server are described in the next section Information Required for Configuration. The SQL Server installation must use either a domain account (preferred) or a built-in system account such as Network Service or Local System for the SQL and SSAS services.

Note: Kerberos authentication configuration will not be possible if the SQL Server installation uses local computer accounts for SQL Services.

Record the service accounts used for SQL and SSAS services and the SQL SSAS instance names as these will be required for the configuration of SPNs and delegation properties.

Information Required for Configuration

To complete the Kerberos configuration, you will need to know the following information:

Item	Notes
Local domain controller name	Domain Administrator privileges are required for configuration
SQL Server host name	The fully qualified host name for the SQL Server host server
SQL Server instance name	For SQL Server instance with a non-standard name
SQL Server service account	Must use a domain service account (preferred) or a built-in service account
Local Administrator Credentials to access SQL Server system	To configure Local Security Policies for the SQL Server host server
SQL Server Analysis Services host name	The fully qualified host name for the SQL Server Analysis Services host server
SQL Server Analysis Services instance name	For SQL Server instance with a non-standard name
SQL Server Analysis Services service account	Must use a domain service account (preferred) or a built-in service account

Configuration for Kerberos Delegation

Successful authentication in a double hop scenario requires a Kerberos delegation to be configured, which requires careful configuration of SPN's for the relevant services and delegation rights for the middle tier service account.

There are several ways to configure delegation to support double hop authentication. The steps below outline how to use constrained delegation and protocol transition to allow the SQL Server service to authenticate with SSAS regardless of whether the client connection to SQL Server was made using Kerberos. Additional steps are required but will reduce the risk of authentication failures.

Configure SPNs for SQL and SSAS Using Built-In Service Accounts

If SQL is installed using built-in accounts (e.g., Network Service or Local System), SPNs are typically set up correctly during installation; however, it is important to ensure this is the case by following these steps, substituting local settings in each

Service	Host Name	Instance Name
SQL Server	SQLServer.mydomain.com	default
SSAS Server	SSASServer.mydomain.com	default

example:

Check SPN Settings for SQL Server (Built-In)

For a non-default SQL instance, substitute the instance name in place of port number 1433:

1. Run the following command to list SPN settings for the host SQLServer:
   ```
   Setspn -L SQLServer
   ```
2. Confirm that the following two SPN entries are listed in the results:
   MSSQLSvc/SQLServer.mydomain.com:1433
   MSSQLSvc/SQLServer:1433
3. If settings are missing, add the relevant entries using commands:
   ```
   Setspn.exe -S MSSQLSvc/SQLServer.mydomain.com:1433 SQLServer
   Setspn.exe -S MSSQLSvc/SQLServer:1433 SQLServer
   ```
4. If changes were made, repeat the first two steps to confirm the configuration.

Check SPN Settings for SSAS Server (Built-In)

For a non-default SSAS instance, add to the SPN a colon and then the instance name (e.g., MSOLAPSvc.3/SQLServer:myinstance).

1. Run the following command
   ```
   Setspn -L SSASServer
   ```
2. Confirm the following two SPN entries are listed in the results:
   MSOLAPSvc.3/SSASServer.mydomain.com
   MSOLAPSvc.3/SSASServer
3. If settings are missing, add the relevant entries using commands:
   ```
   Setspn.exe -S MSOLAPSvc.3/SSASServer.mydomain.com SSASServer
   Setspn.exe -S MSOLAPSvc.3/SSASServer SSASServer
   ```
4. If changes were made, repeat the first two steps to confirm the correct configuration.

Configure SPNs for SQL and SSAS Using Domain Service Accounts

If SQL is installed using domain accounts, the steps are the same as used for built-in accounts, the only difference being the command line species the service account instead of the hostname.

Note: If SQL Server uses domain accounts for its services, the setspn command-line tool can be run from server systems within the domain – domain administration rights are required.

When SQL is installed with a domain account, an SPN is not normally configured automatically, and therefore it is normal for the SPNs not to be present in this scenario. Substitute the following values for your local settings when running the example command lines below:

Service	Host Name	Instance Name	Service Account
SQL Server	SQLServer.mydomain.com	ANSQL	MYDOMAIN\sql
SSAS Server	SSASServer.mydomain.com	ANSSAS	MYDOMAIN\ssas

Check SPN Settings for SQL Server (Domain)

For a default SQL instance, substitute the port number 1433 in place of the instance name ANSQL:

1. Run the following command to list SPN settings for account MYDOMAIN\sql:
   ```
   Setspn -L MYDOMAIN\sql
   ```
2. Confirm that the following two SPN entries are listed in the results:
   MSSQLSvc/SQLServer.mydomain.com:ANSQL
   MSSQLSvc/SQLServer:ANSQL
3. If settings are missing, add the relevant entries using commands:
   ```
   Setspn.exe -S MSSQLSvc/SQLServer.mydomain.com:ANSQL MYDOMAIN\sql
   Setspn.exe -S MSSQLSvc/SQLServer:ANSQL MYDOMAIN\sql
   ```
4. If changes were made, repeat the first two steps to confirm the configuration.

Check SPN Settings for SSAS Server (Domain)

For a default SSAS instance, remove the instance name, ANSSAS from the SPN, e.g., MSOLAPSvc.3/SSASServer.

1. Run the following command
   ```
   Setspn –L MYDOMAIN\ssas
   ```
2. Confirm the following two SPN entries are listed in the results:
   MSOLAPSvc.3/SSASServer.mydomain.com:ANSSAS
   MSOLAPSvc.3/SSASServer:ANSSAS
3. If settings are missing, add the relevant entries using commands:
   ```
   Setspn.exe -S MSOLAPSvc.3/SSASServer.mydomain.com:ANSSAS MYDOMAIN\ssas
   Setspn.exe -S MSOLAPSvc.3/SSASServer:ANSSAS SSASServer MYDOMAIN\ssas
   ```
4. If changes were made, repeat the first two steps to confirm the correct configuration.

Note: If either the SQL or SSAS components are using a named instance, configure an SPN for the SQL Browser service to successfully discover port numbers for the instances. See the link in the Summary of Common Kerberos Errors for details.

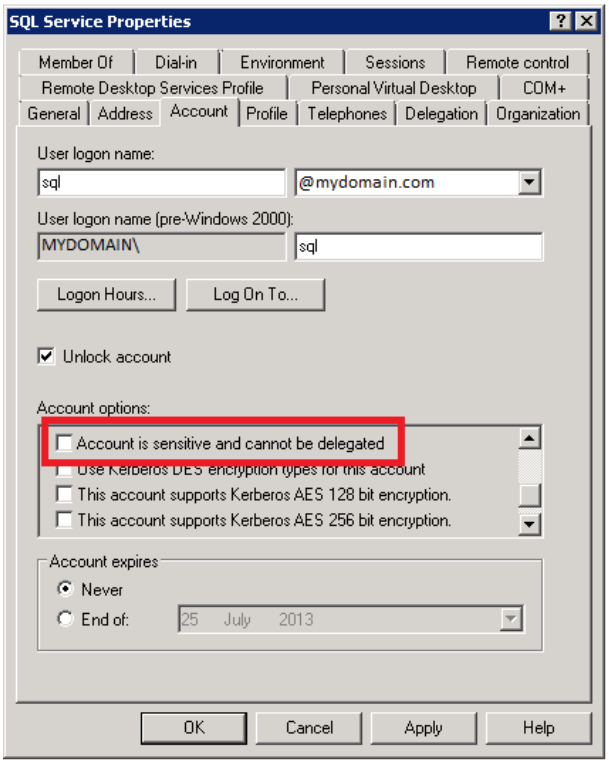
Active Directory Configuration for Service Accounts

The following requires domain administration rights and access to a domain controller. The steps below are grouped by Domain Service Account, Built-In Service Account, and Both (where the steps are the same for both types of configuration); follow them to ensure your configuration can be used in a delegation situation.

Configuration Using Domain Service Account or Built-In Service Account

Domain Service Account

1. On the domain controller, launch the Active Directory Users and Computers configuration tool.
2. Locate the service account for the SQL Service and open the properties dialog for the account.



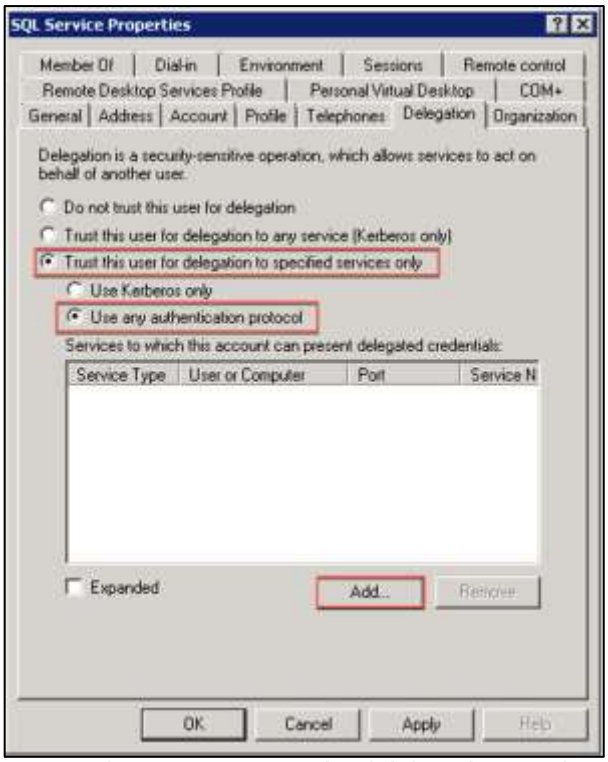
3. Ensure that the account is permitted to participate in delegation by ensuring the Account is sensitive and cannot be delegated check box is NOT checked.
4. If the SPN for the SQL service has been correctly configured to use this account, the user properties dialog will have a tab labeled Delegation. If this is not present, check the SPN settings.

Built-In Service Account

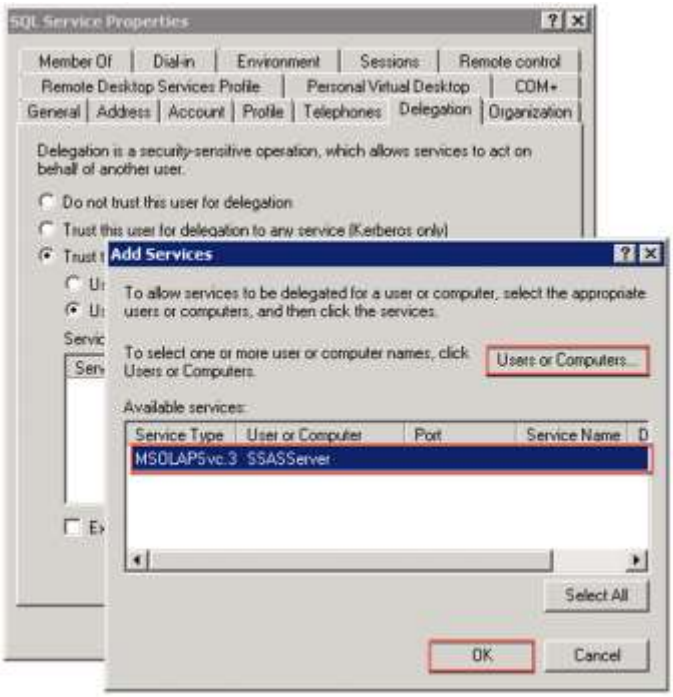
5. If using a built-in service account (e.g., Network Service), open the account properties dialog for the SQL server host (in our example SQLServer).

Both

6. To allow constrained delegation: select the Delegation tab, enable the Trust this user for delegation to specified services only option, and enable the sub-option Use any authentication as shown.



7. For security reasons, constrained delegation requires that specific services are identified as valid candidates for delegation. Click the Add button in the Delegation tab. The Add Services dialog will open.
8. Click the Users or Computers button.



Domain Service Account

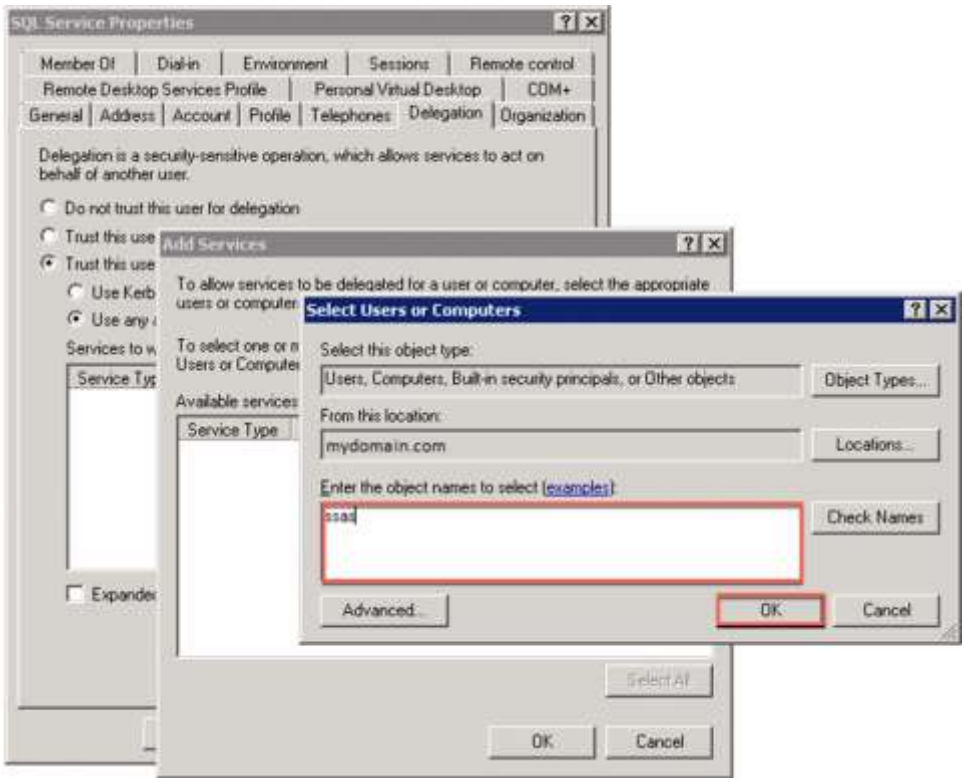
9. If the SSAS Service uses a domain service account, enter the name of the account in the Select Users or Computers dialog as shown below.

Built-In Service Account

10. If the service is using a built-in system account such as a Network Service, enter the hostname of the SSAS host system (e.g., SSASServer)

Both

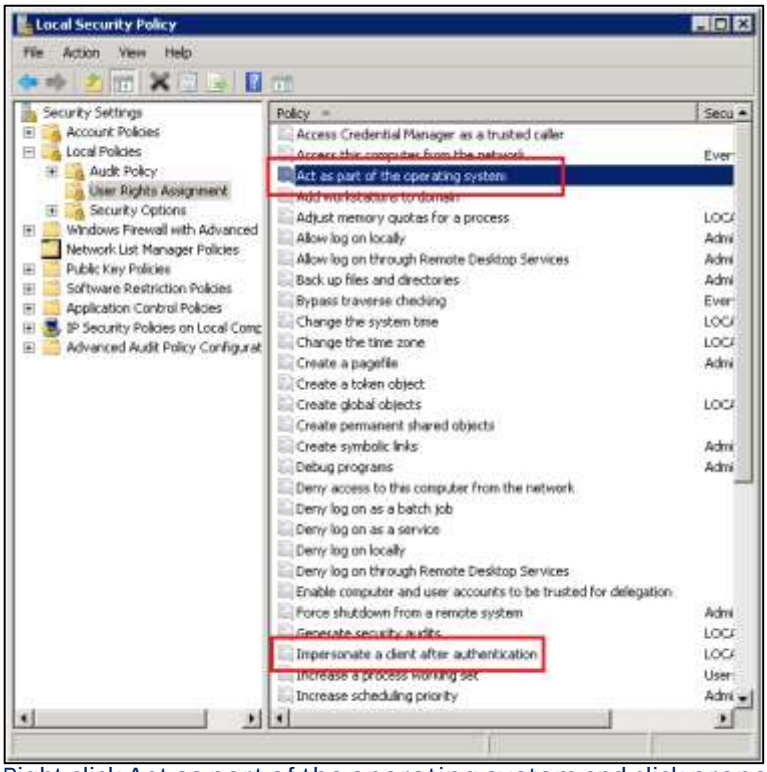
11. All SPNs registered to the specified account will be added as shown.
12. Locate and select the SPN record for service type MSOLAPSvc.3 on the correct server and select OK to dismiss the Add Services dialog for the SQL Server service account.
13. If the required SPN is not listed, review the steps for registering SPNs in the previous section Configuration for Kerberos Delegation.



Local Rights on SQL Server (Middle Tier) System

The final requirement for the successful operation of Kerberos Delegation is to assign specific user rights to the SQL Server Service account on the SQL Server host system as follows:

1. Connect to the SQL Server host system.
2. Launch the Local Security Policy application (To run directly, use secpol.msc).
3. Select the Security Settings > Local Policies > User Rights Assignment node in the directory on the left pane.



4. Right-click Act as part of the operating system and click properties. Add the service account used by SQL to the list of accounts.
5. Right-click Impersonate a client after authentication and click properties. Add the service account used by SQL to the list of accounts.

Validating Configuration

Validate your Kerberos configuration to ensure that it allows Discovery Center to function correctly using the following steps:

1. Complete the ActiveNav Discovery Center Installation.
2. Perform a skim index over a small number of test files.
3. Confirm that the Discovery Center can generate reports and export file details from the reporting interface.
4. If reports cannot be generated:
   - Review the error log for details of the error(s) encountered.
   - Review the Kerberos configuration steps above; accurate configuration of every step is essential for authentication to succeed.
   - Check the underlying Active Directory requirements described above.
   - Review the links in the following section for further information regarding Kerberos's correct configuration and troubleshooting configuration issues.

Additional Information and Troubleshooting

Solving problems with Kerberos can be a difficult process; the links below were used in preparing the guidance above and offer additional detail on configuration requirements and troubleshooting.

Configuration of SPN for SQL Server

Summary of configuration for SQL Server:

https://msdn.microsoft.com/en-us/library/ms191153%28v=sql.105%29.aspx.

Note: Versions of the page are available for different versions of SQL Server.

Detailed case study of constrained delegation between SQL Server and SQL Server analysis services:

https://msdn.microsoft.com/en-us/library/ee191523%28SQL.100%29.aspx

Configuration of SPN for SQL Browser Service

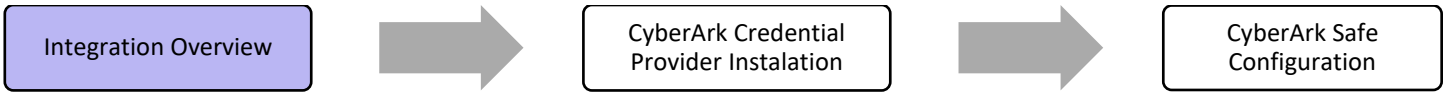
An SPN for the SQL Server Browser service is required to establish a connection to a named instance of SQL Server Analysis Services or SQL Server:

https://support.microsoft.com/kb/950599.

Summary of Common Kerberos Errors

Common error messages that can occur when using Kerberos:

https://msdn.microsoft.com/en-us/library/ms819978.aspx.



Appendix 8: CyberArk Configuration

Integration Overview

Discovery Center includes an optional licensed feature that can define Credentials using accounts and passwords stored in a CyberArk vault.

- Discovery Center integrates with CyberArk using the Application Identity Management (CyberArk AIM) architecture.
- Discovery Center's CyberArk interface uses a collocated CyberArk Credential Provider windows service to communicate with a target CyberArk vault.
- For this release, the Discovery Center integrates with Version 9.95 of the CyberArk Credential Provider only. Discovery Center will be unable to retrieve passwords from the target vault if a later version of the Credential Provider is installed.
- Discovery Center's Cyber Ark interface is enabled by installing a license with the CyberArk AIM Custom Feature Pack. Once enabled, the Discovery Center application does not require any additional configuration steps.

  Note: The CyberArk Credential Provider Service must be installed and configured on the same machine as the Discovery Center application. The target vault must also be configured to accept requests from the Discovery Center.

For a more detailed description of the CyberArk AIM architecture and the steps required to install and configure the CyberArk AIM facility, refer to the CyberArk document Credential Provider and Application Server Credential Provider Implementation Guide.

CyberArk Credential Provider Installation

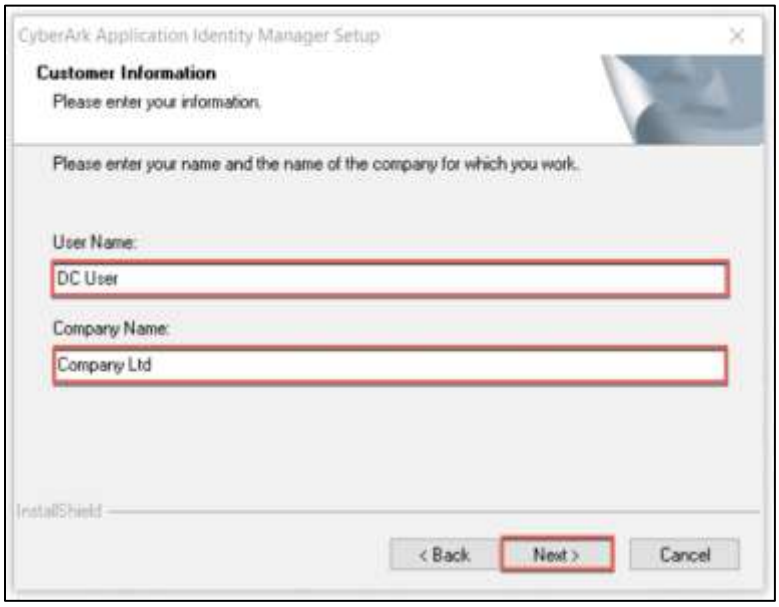
The CyberArk Credential Provider is a windows service that provides a secure, authenticated interface between the client applications and an instance of a Cyber Ark vault.

- A single instance of a Credential Provider windows service acts as the interface point for any CyberArk AIM-enabled application installed on the same machine.
- The Credential Provider does not need to be re-installed or reconfigured if it's already present on a machine.
- The Credential Provider must be installed on the same machine that hosts the Discovery Center application.
- The Credential Provider Installer CD Image is available on the CyberArk support portal for registered customers.

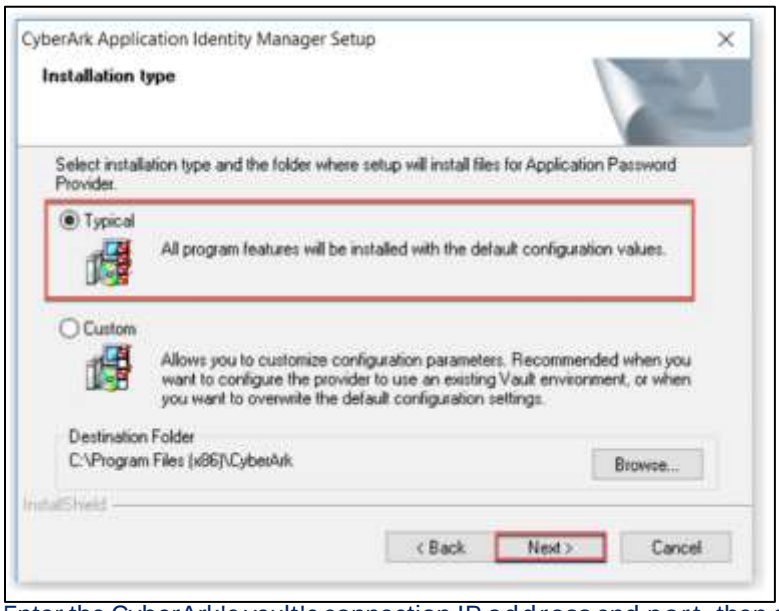
Note: Before installing, make a note of the IP Address and Port of the target CyberArk vault. Check that these are not blocked by any firewall or other security settings. The installation will attempt to contact the vault and will fail if the vault is inaccessible.

The following steps describe the simple case for a new Credential Provider Installation where the host machine hasn't been registered with a target CyberArk vault. A standard vault configuration is used. Refer to CyberArk's 'Credential Provider and Application Server Credential Provider Implementation Guide' for more complex cases such as reinstallation or automated/silent installs.

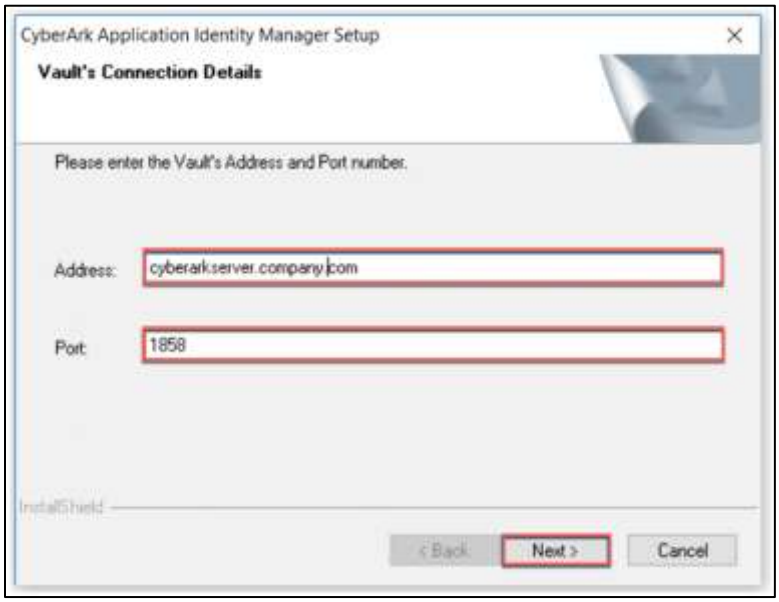
1. In the AIM CD Release Image, navigate to the Credential Provider > Windows folder.
2. Run Setup.exe, accept the license prompt, and then click Next.
3. Enter your Customer Information (this doesn't affect the functionality of the Credential Provider).



4. Unless the target CyberArk vault has been configured with custom settings, choose the Typical option, then click Next.

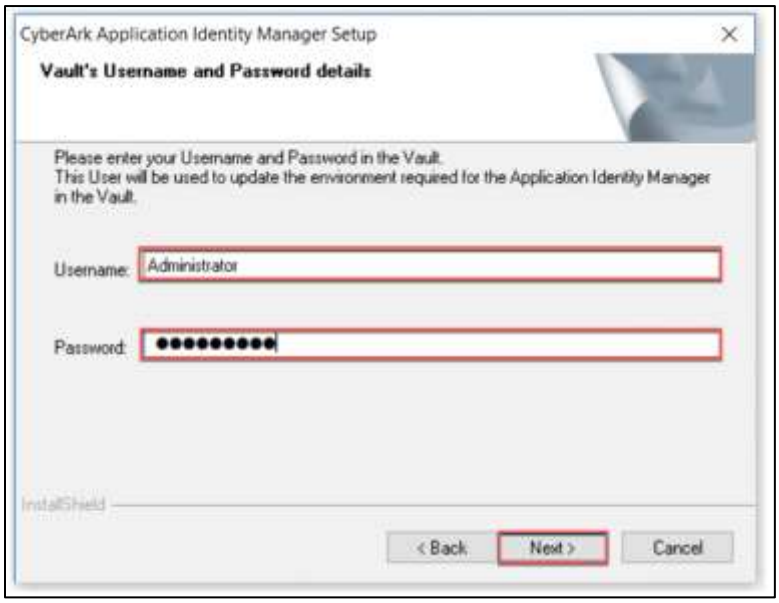


5. Enter the CyberArk's vault's connection IP address and port, then click Next.



6. If necessary, define an account in the CyberArk vault that can be used by the Credential Provider.

7. Enter the vault username and password, then click Next.



Note: The installation will now attempt to contact the vault and register the Credential Provider for the machine. If successful, the installation will start the service. To check this, run the Windows Task Manager select services and confirm that the service CyberArk Application Password Provider is visible and has a status of Running.

The installation may not complete if:

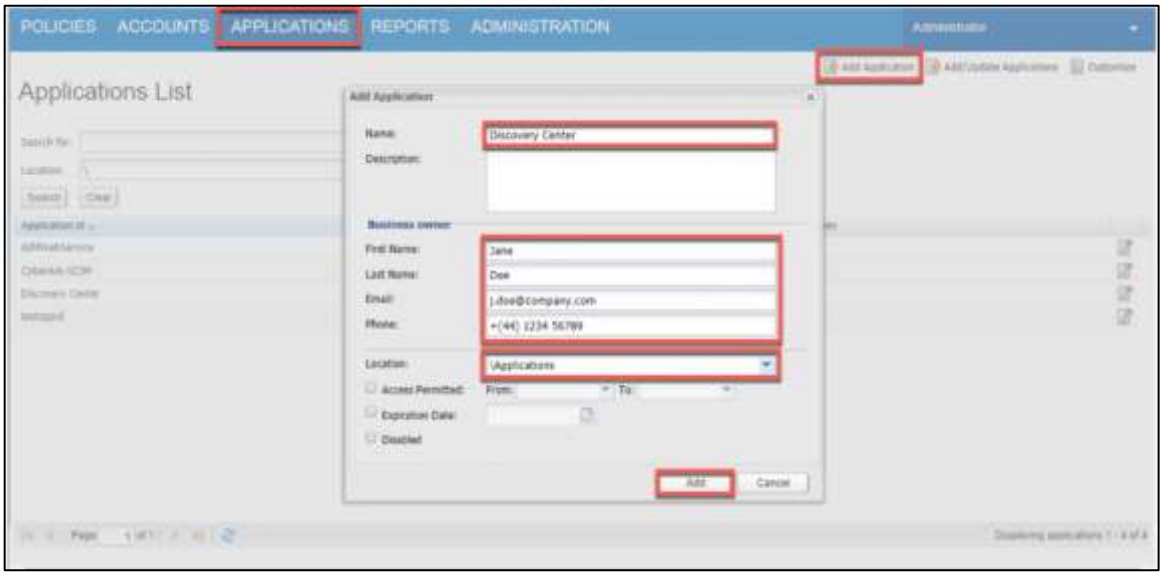
- The installer cannot contact the vault using the given IP address and port.
- The given username, password, or both are incorrect.
- The target vault has the Credential Provider for the same machine already registered. This may occur when a Credential Provider has been installed then uninstalled.

CyberArk Safe Configuration

To allow the Discovery Center to access a safe on the target vault, the safe must have both the Credential Provider and the Application as members. The following describes how the CyberArk Password Vault Web Access (PVWA) web application can be used to set a safe's membership and grant access to the Discovery Center's application. For a more complete description of the PVWA, see the CyberArk documents' Credential Provider and Application Server Credential Provider Implementation Guide' and 'Privileged Account Security Implementation Guide'.

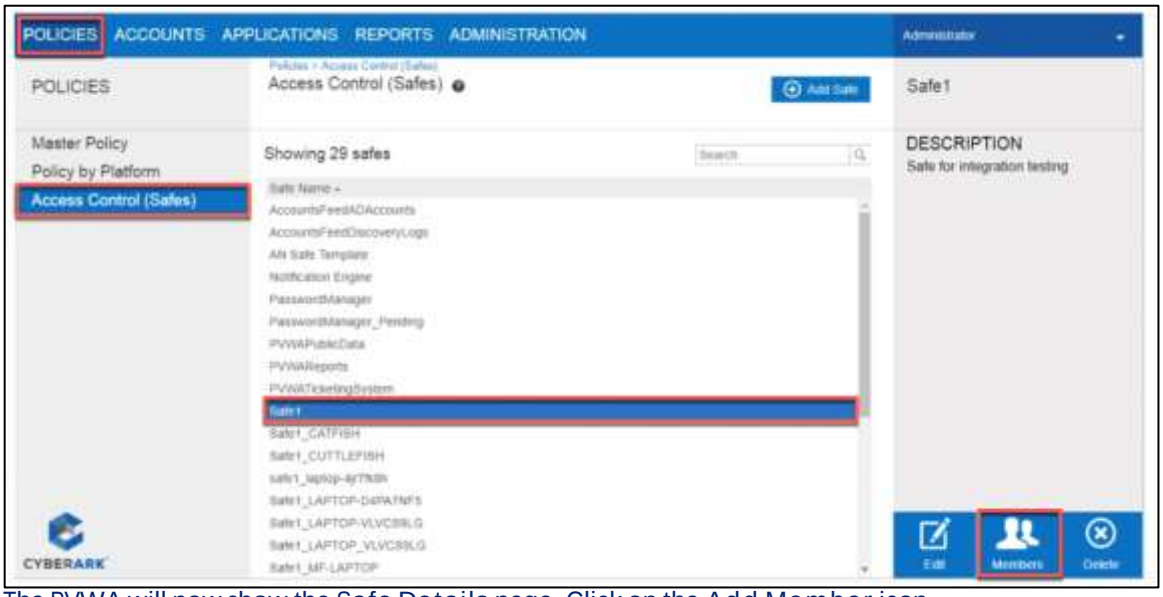
1. In a web browser, enter the PVWA URL for the vault.
2. Enter the username and password for the vault and select Sign in. If successful, the app will show the accounts list.

3. Before configuring a safe, a Discovery Center Application definition must be created in the target vault. In the PVWA app, navigate to the Applications tab and click Add Application.
4. By default, the Discovery Center identifies itself through the Credential Provider to the vault using the name Discovery Center. Enter this into the Application Name field along with any relevant Business Owner information.
5. Set the Location drop-down to /Applications, then click Add.

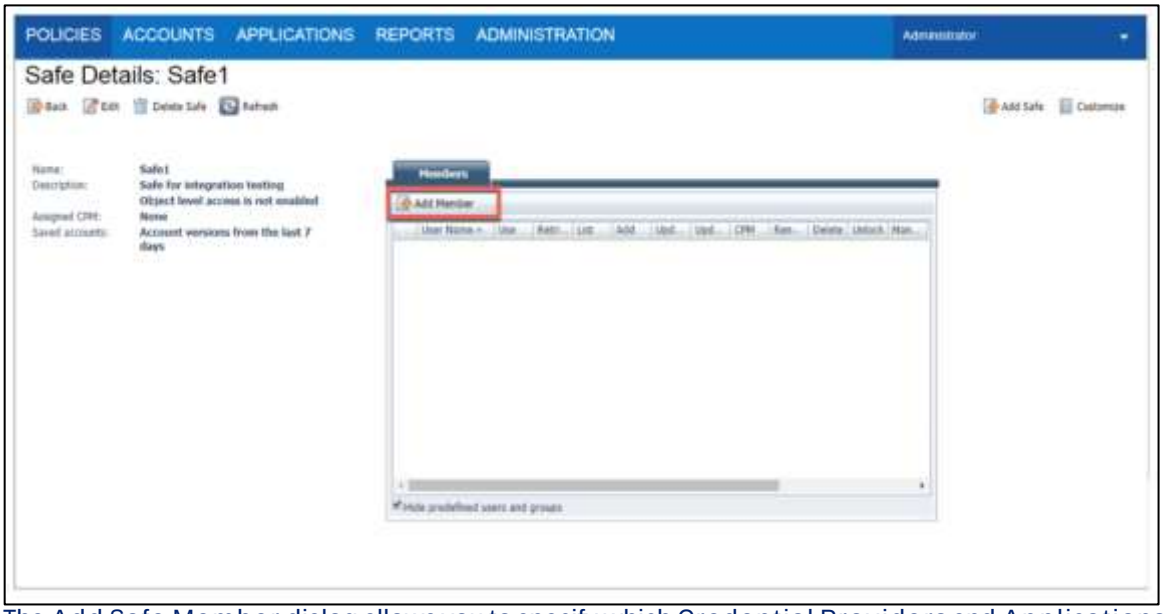


Note: The Applications page also allows you to define additional access restrictions. Discovery Center CyberArk AIM integration does not support hash-based authentication.

6. Navigate to Policies > Access Control (Safes) and select the safe that you want to grant access to Discovery Center. The context buttons for Edit, Members, and Delete will appear on the bottom right-hand info panel. Click on the Members icon.

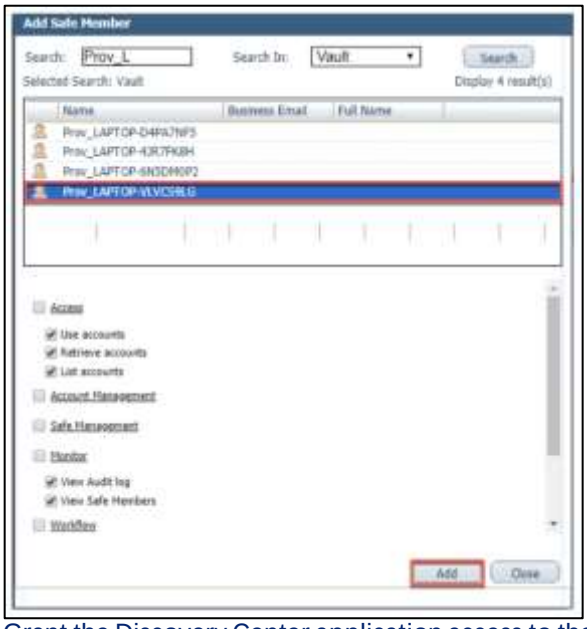


7. The PVWA will now show the Safe Details page. Click on the Add Member icon.

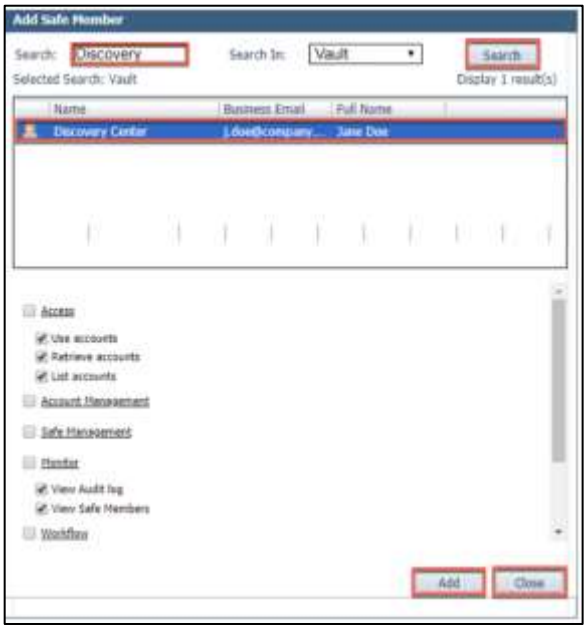


8. The Add Safe Member dialog allows you to specify which Credential Providers and Applications can access the safe. To grant a Discovery Center instance access, both the Application and the Credential Provider of the host machine must be added as members.

9. In the Search textbox (assuming that the default Credential Provider Prov_machine_id naming format has been followed), type Prov and click Search. The table will show all Credential Provider entities that match the given standard pattern.
10. Select the Credential Provider that matches the name of the machine hosting the Discovery Center. Credential Providers register themselves with the vault during the installation process. Click Add.



11. Grant the Discovery Center application access to the safe by entering Discovery in the search textbox. The list should show the entry for the Discovery Center.
12. Select the Discovery Center application and click Add, then click Close to dismiss the dialog.



13. The Discovery Center and the Provider should now both be shown in the safe member list.

The Discovery Center instance running on the same machine as the registered Credential Provider should now be able to access the accounts stored in the safe.

Appendix 9: SharePoint Online Authentication

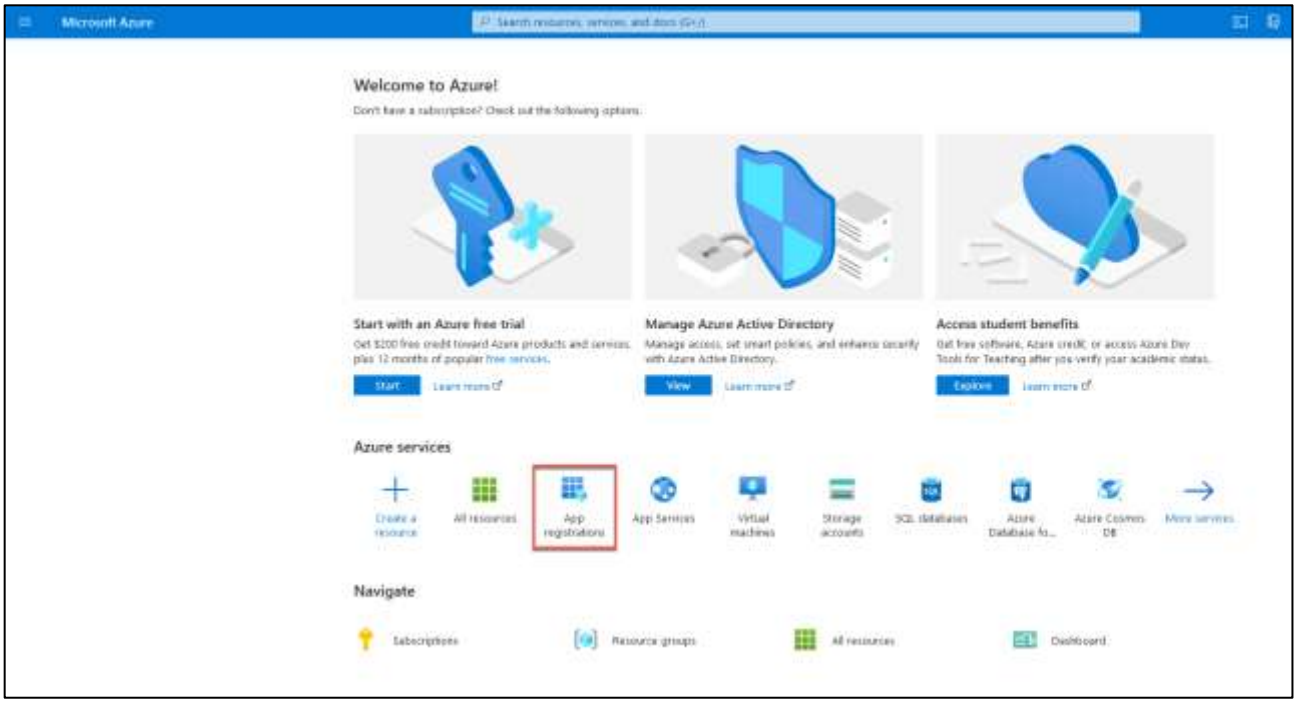
The release of Discovery Center 4.14.3 introduced a new SharePoint connector to provide enhanced performance for operations targeting SharePoint locations. This new connector uses modern APIs when interacting with SharePoint Online to reduce the risk of throttling and to provide other perfromance improvements. A pre-requisite to the use of these APIs is to authenticate using an Azure AD registered application and certificate. The following provides details on how to set up an application in Azure AD to support this authentication method. Details of how to create and use a credential record in the Discovery Center application to integrate with this application, and ultimately connect to SharePoint Online are included in the Discovery Center User Guide.

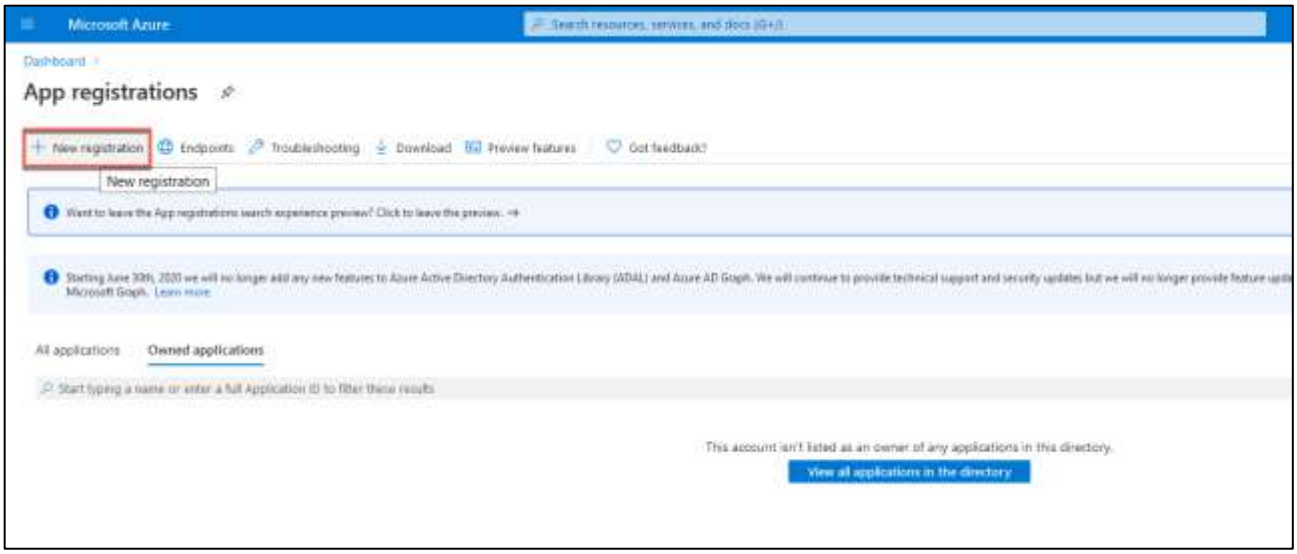
Registering an Azure Application for a SharePoint Online tenant

The following provides steps for registering an application in Azure AD for the SharePoint Online tenant to be accessed with a credential in Discovery Center. The steps include screenshots that were correct at the time of writing, but which may be outdated following any changes to the Azure AD cloud interface. For the latest instructions on how to register applications in Azure AD see https://docs.microsoft.com/en-us/azure/active-directory/develop/quickstart-register-app.

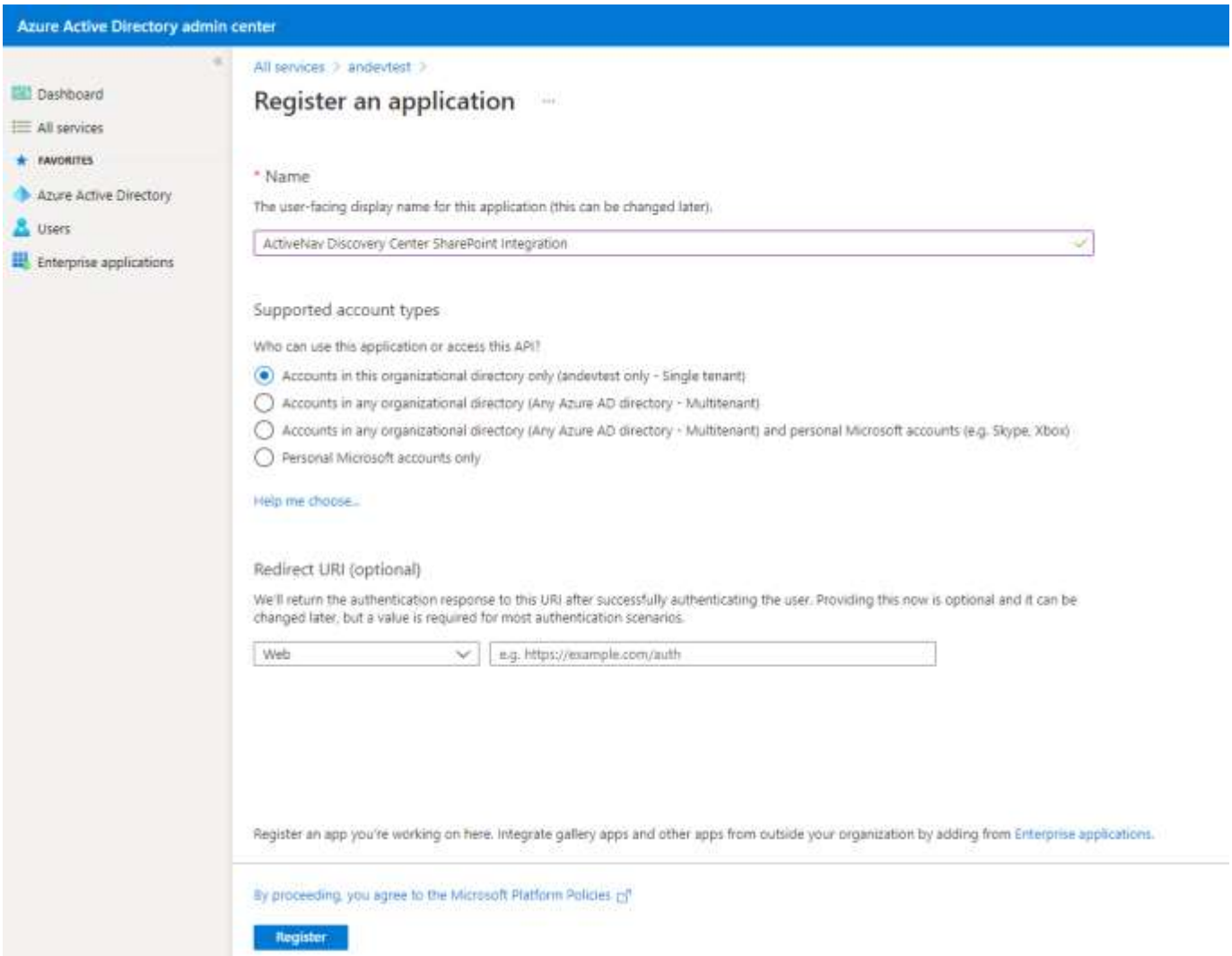
Note: Discovery Center makes use of a Certificate credential type for authentication with the registered Azure App. As a pre-requisite to this the public key element of a certificate must be uploaded to the Azure app with the private key element being uploaded to the Discovery Center application. The steps below assume a certificate has already been created for this purpose.

1. Log in to Azure AD as user with permissions to add and update App Registrations and navigate to App Registrations and choose New Registration:

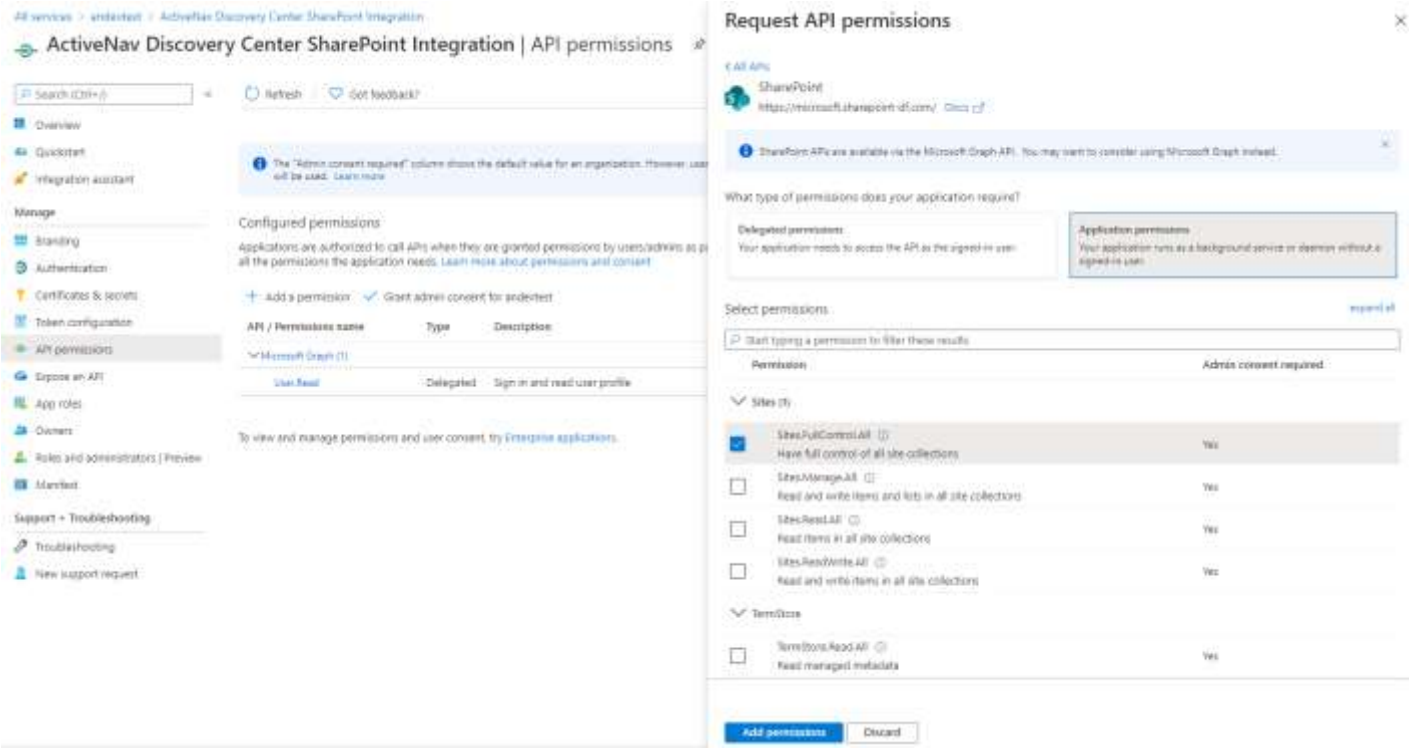




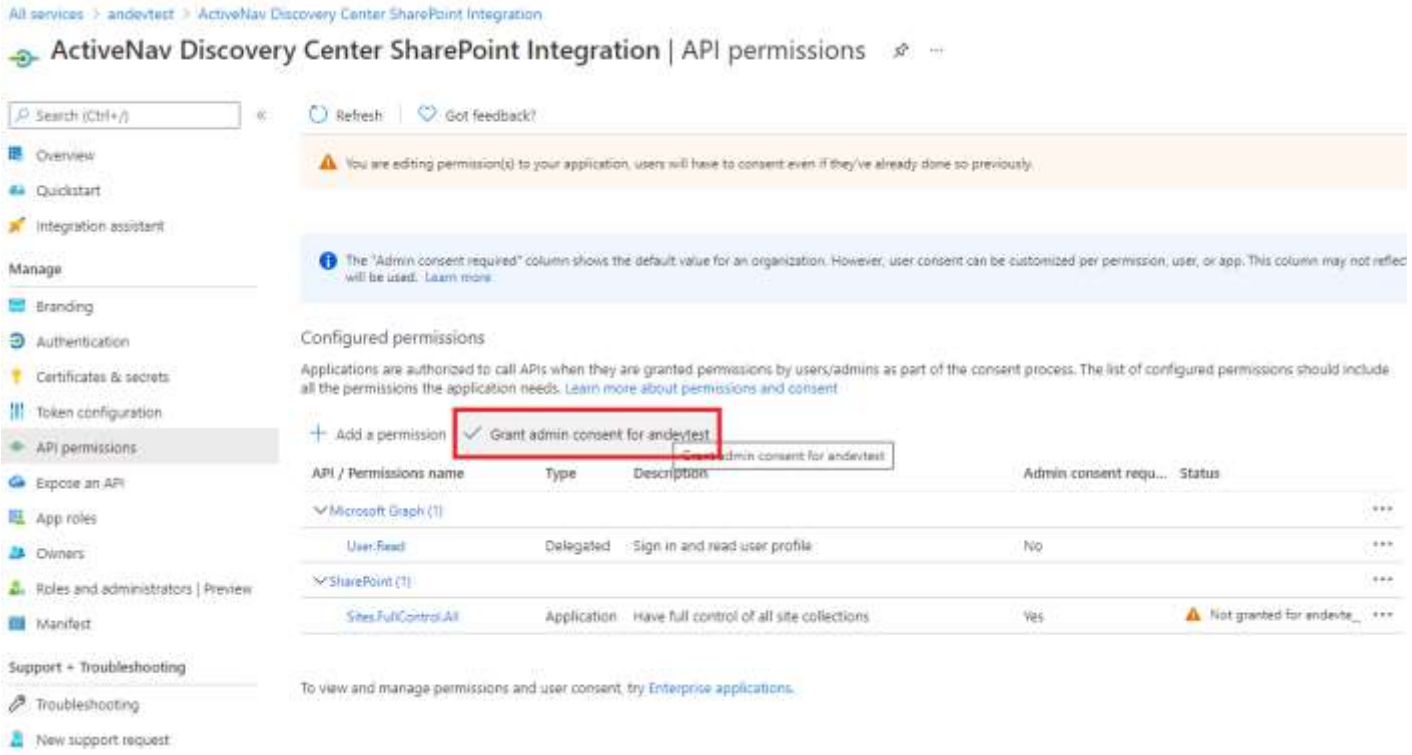
2. Enter the name of the app, choose Accounts in this organizational directory only as the Supported account types, leave the Redirect URL blank and select Register.



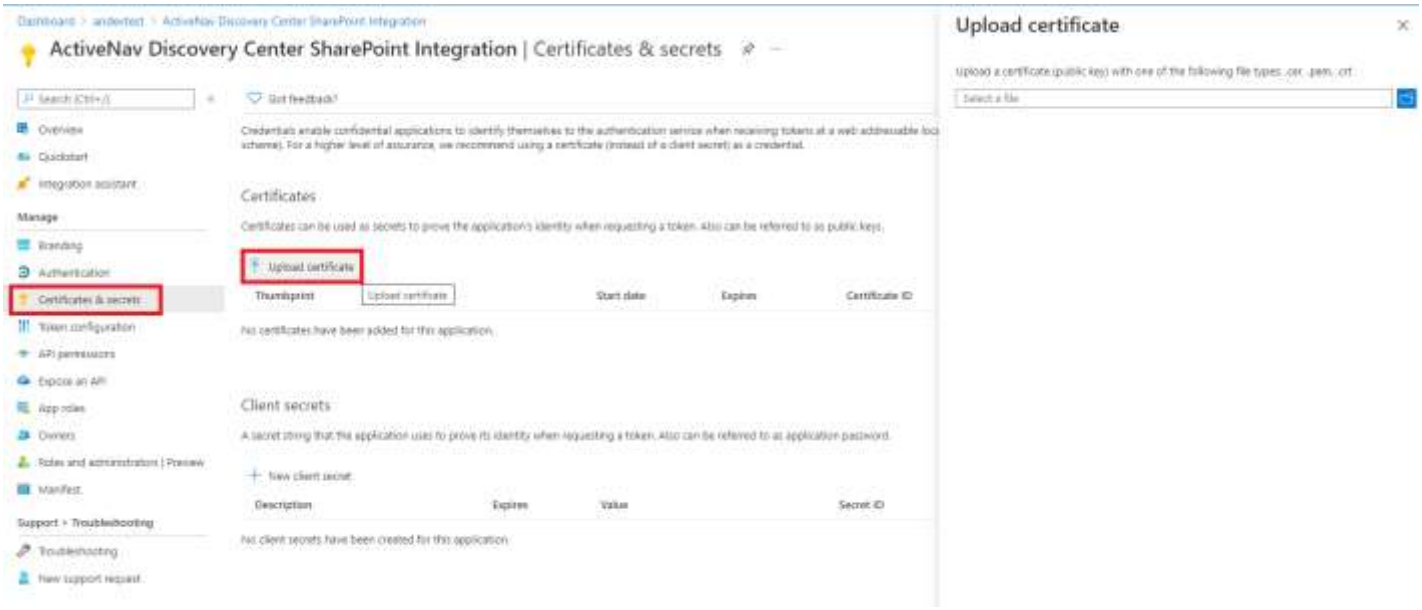
3. Select API permissions and choose Add a permission, under Microsoft APIs select SharePoint. Select Application permissions and select the Sites.FullControl.All checkbox before selecting Add Permissions.



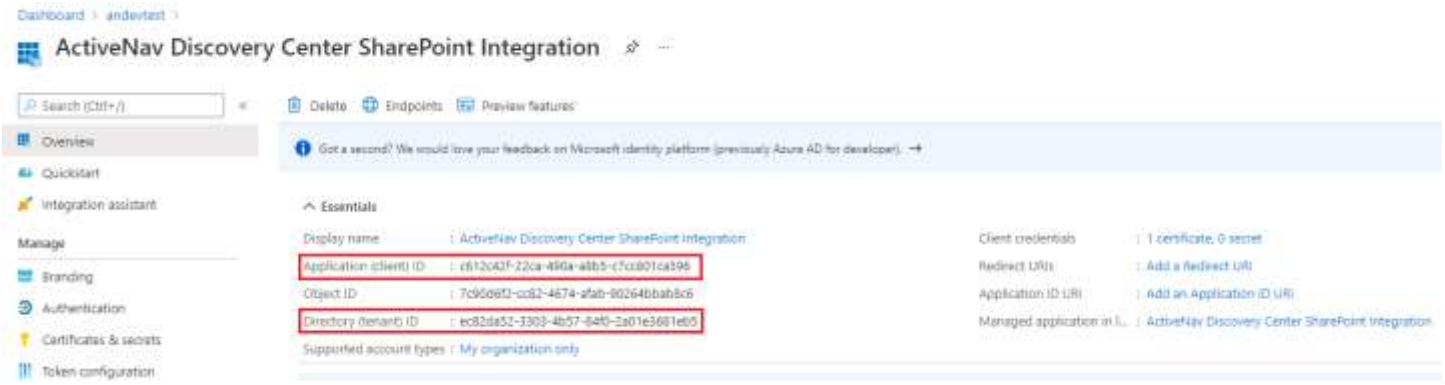
4. Select to Grant admin consent for the domain for the chosen permissions:



5. Select Certificates & secrets and then Upload certificate before browsing to select the public key portion of the certificate to use for authentication with the app (.cer, .pem or .crt file types are accepted).



Once these steps have been completed credential records can be created in the Discovery Center application to use for authentication to SharePoint Online using this registered app. These credential records should make use of the private key portion of the certificate that has been uploaded to the app, along with the Application ID and Tenant ID shown for the registered app.



Full details of how to create and make use of these credentials for interaction with SharePoint Online can be found in the Discovery Center User Guide.

Note: The permissions required for the Azure AD registered app as detailed above are recommended requirements of the APIs used to interact with SharePoint Online. Microsoft has recently introduced the ability to assign Selected Site permissions, but the feature is subject to change. For more information on the Selected Site permissions, please contact ActiveNav Support Team at support@activenav.com.

Appendix 10: MIP Sensitivity Label Integration

Integration Overview

For Discovery Center to integrate with MIP Sensitivity Labels defined for an organization, it must communicate with the organization's Microsoft Office 365 instance with a given user account. This integration allows the Discovery Center application to retrieve the valid set of published MIP Sensitivity Labels for the user account in question.

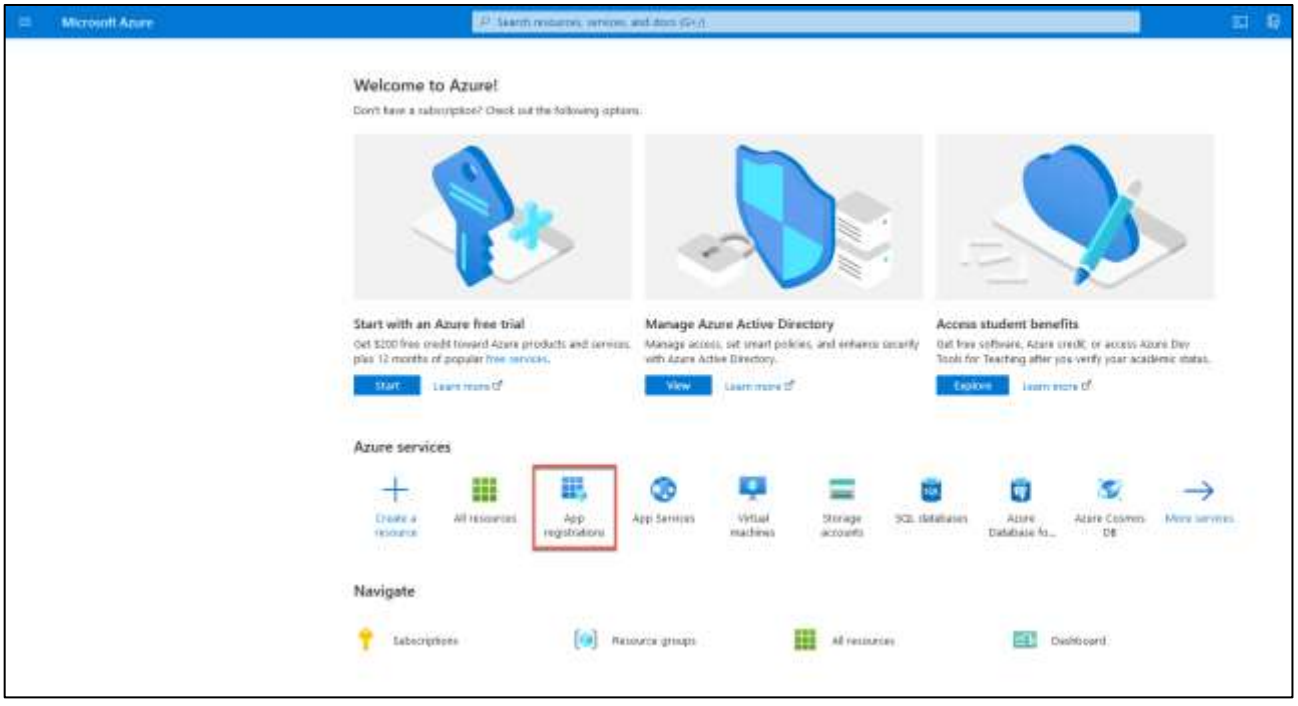
This integration is performed within Discovery Center using the Microsoft MIP SDK. This SDK is the only supported means of integration provided by Microsoft for code level integrations and has some pre-requisites.

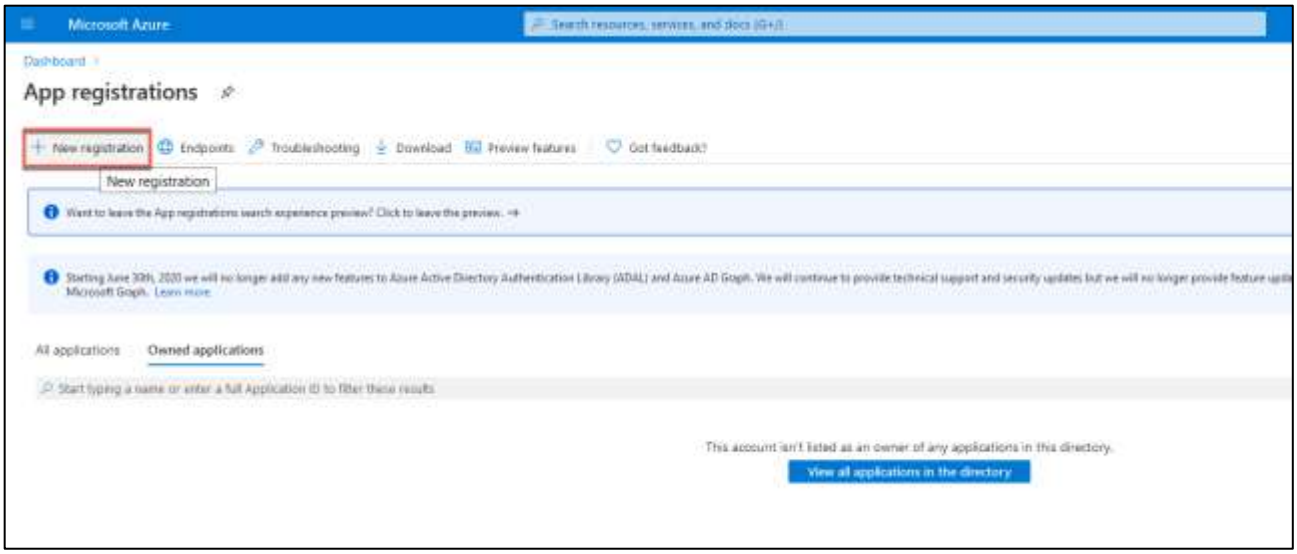
Note: The application making use of the SDK must be registered within the Azure AD environment of the Microsoft 365 tenant where the MIP Sensitivity Labels are defined. Details from this registration must be provided to the SDK from within Discovery Center's configuration, along with the account of a user that has permissions to view and/or apply the labels.

Registering Discovery Center in Azure AD

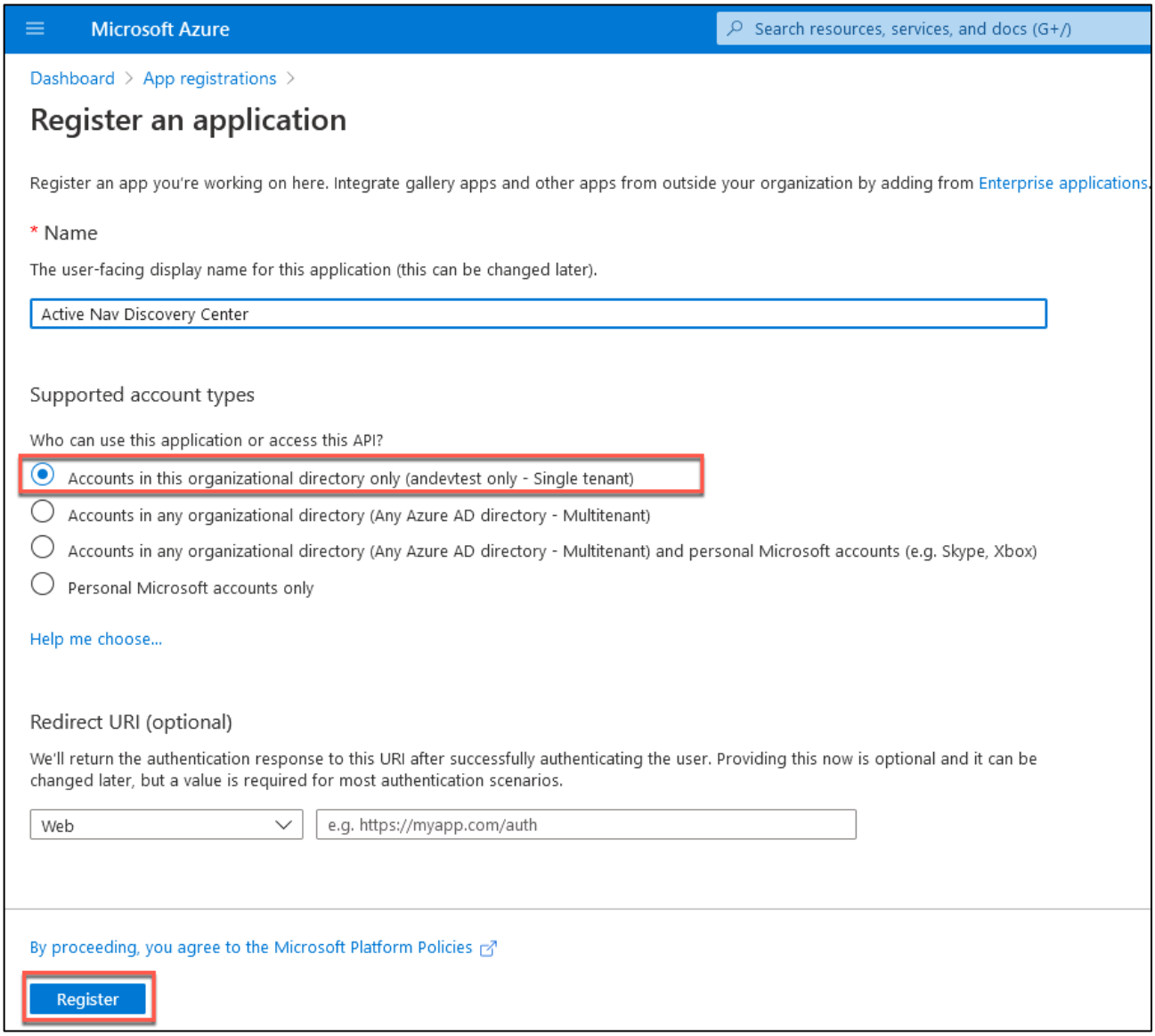
The following details the steps required to register the an application within Azure AD to allow the app registration to then be used by Discovery Center. The steps include screenshots that were correct at the time of writing, but which may be outdated following any changes to the Azure AD cloud interface. For the latest instructions on how to register applications in Azure AD see https://docs.microsoft.com/en-us/azure/active-directory/develop/quickstart-register-app.

6. Log in to Azure AD as user with permissions to add and update App Registrations and navigate to App Registrations and choose New Registration:

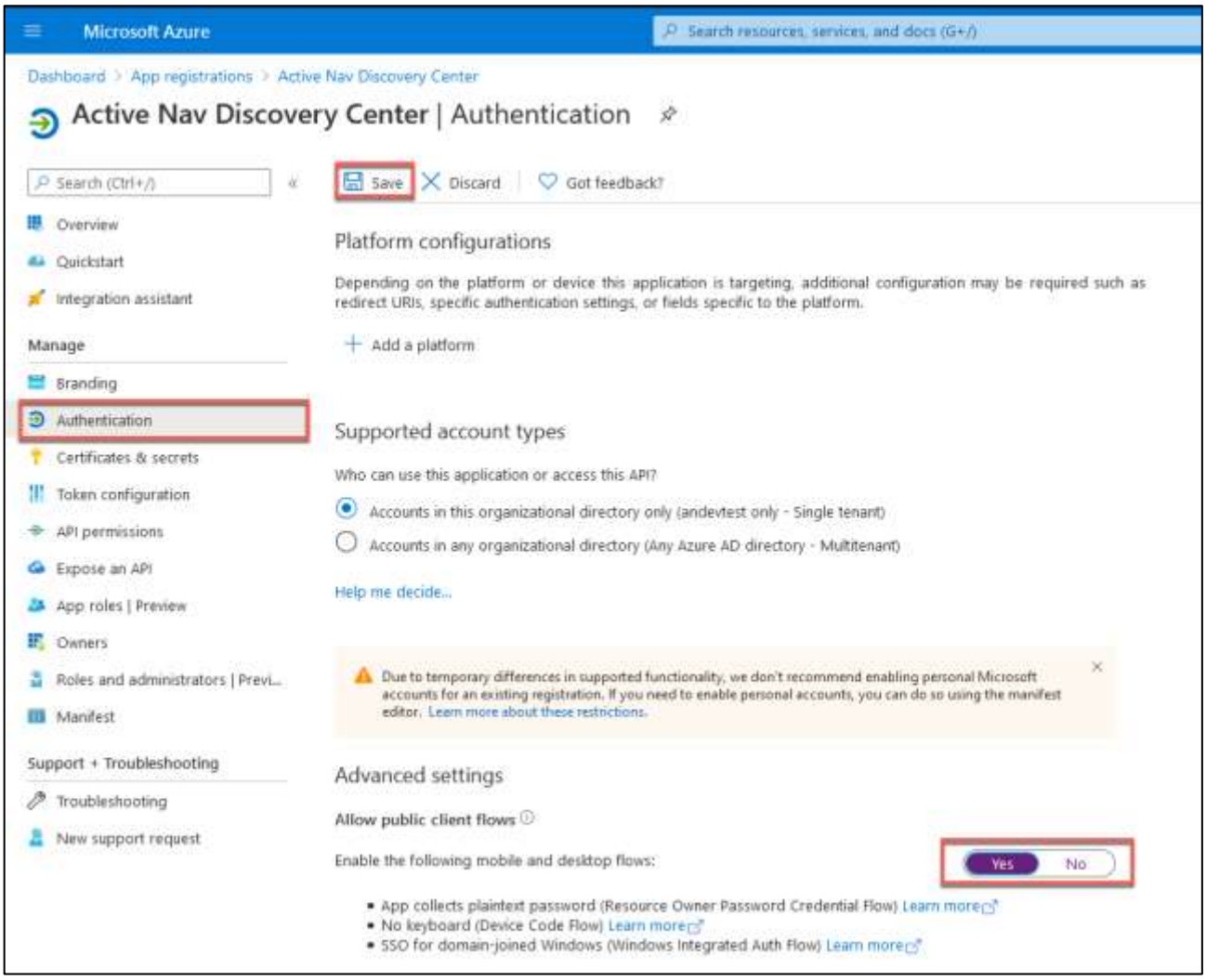




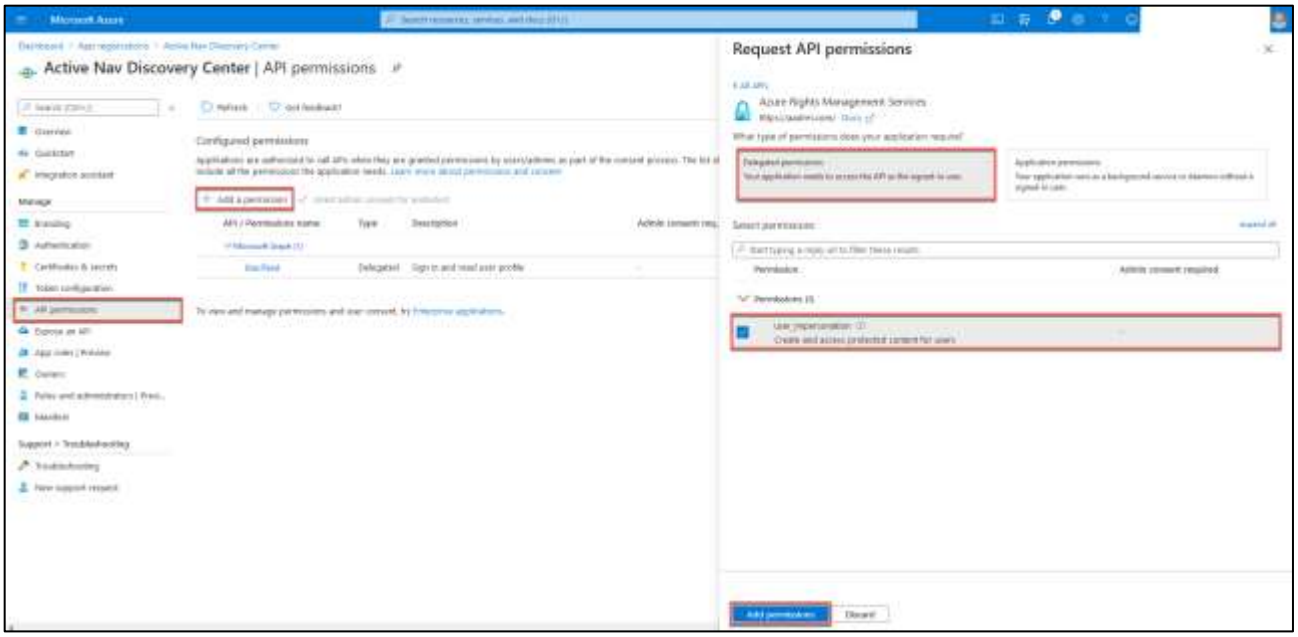
7. Enter the name of the app, choose Accounts in this organizational directory only as the Supported account types, leave the Redirect URL blank and select Register.



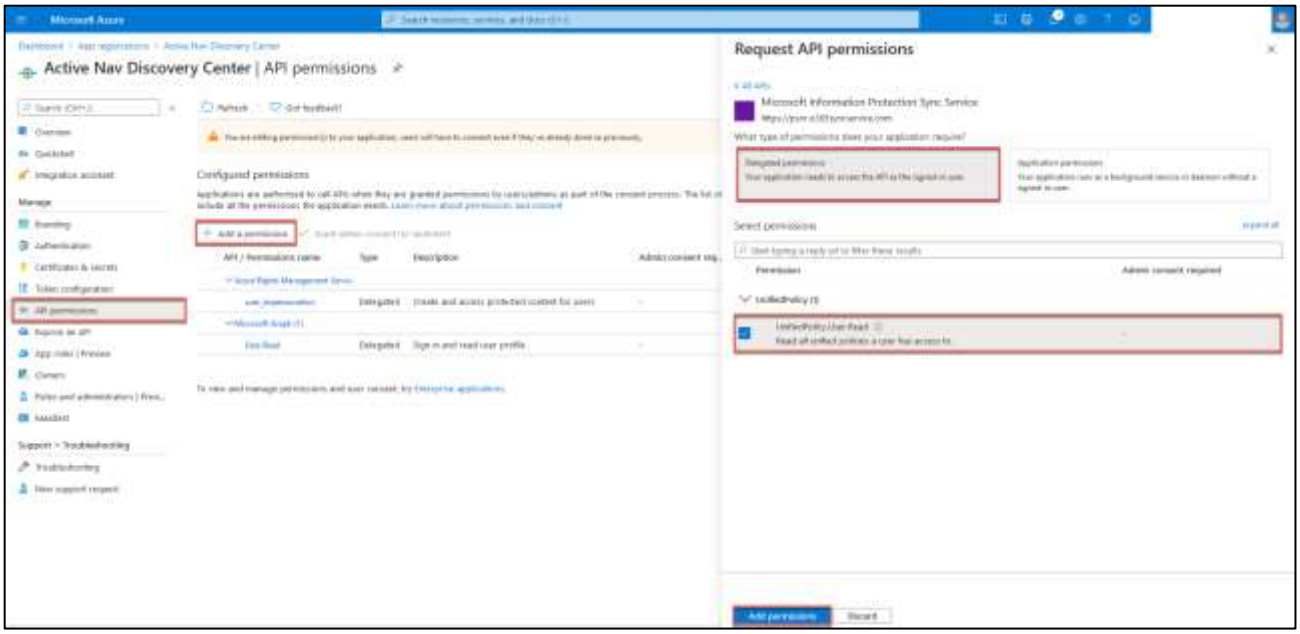
8. Under Manage -> Authentication and Advanced Settings set Allow public client flows to Yes and Save.



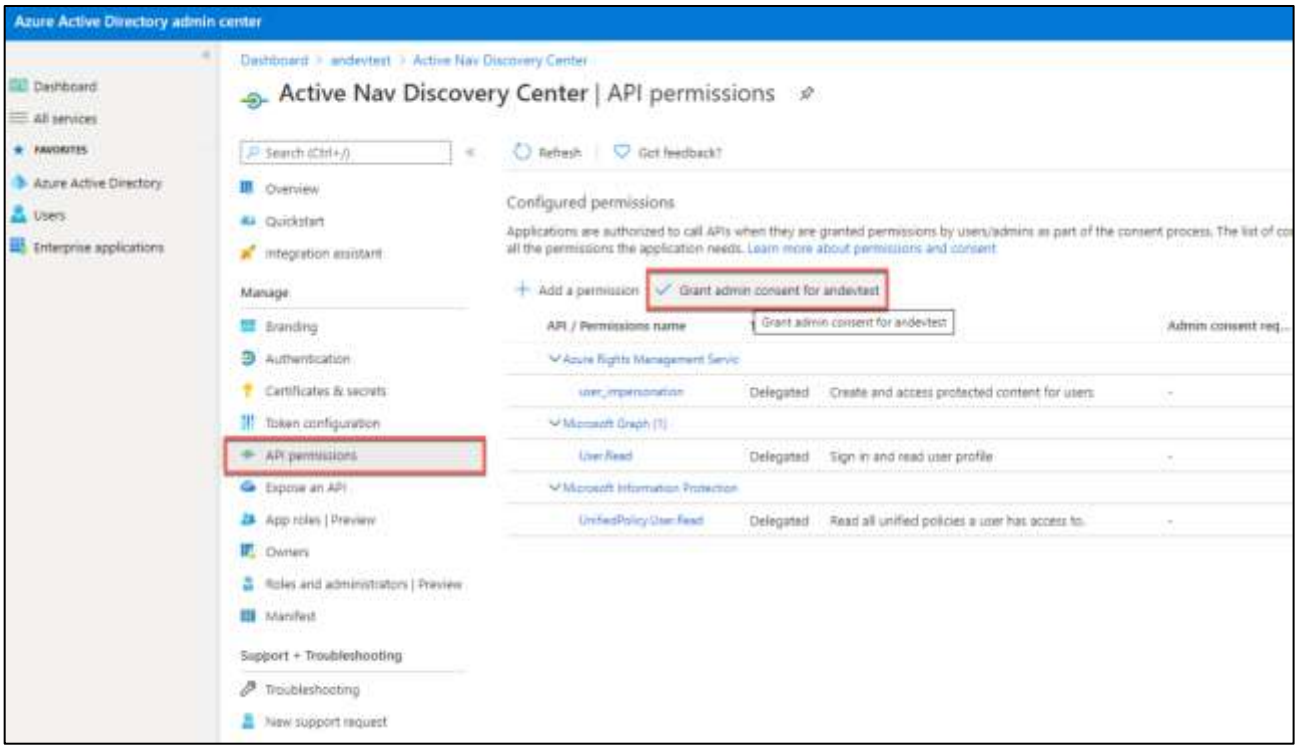
9. Under Manage -> API permissions, select Add a permission. Select the Azure Rights Management Services option, select Delegated permissions, select the user_impersonation checkbox before selecting Add Permissions.



10. Select Add a permission again, select APIs my organization uses and search for and select Microsoft Information Protection Sync Service. Select Delegated permissions and select the UnifiedPolicy.User.Read checkbox before selecting Add Permissions.

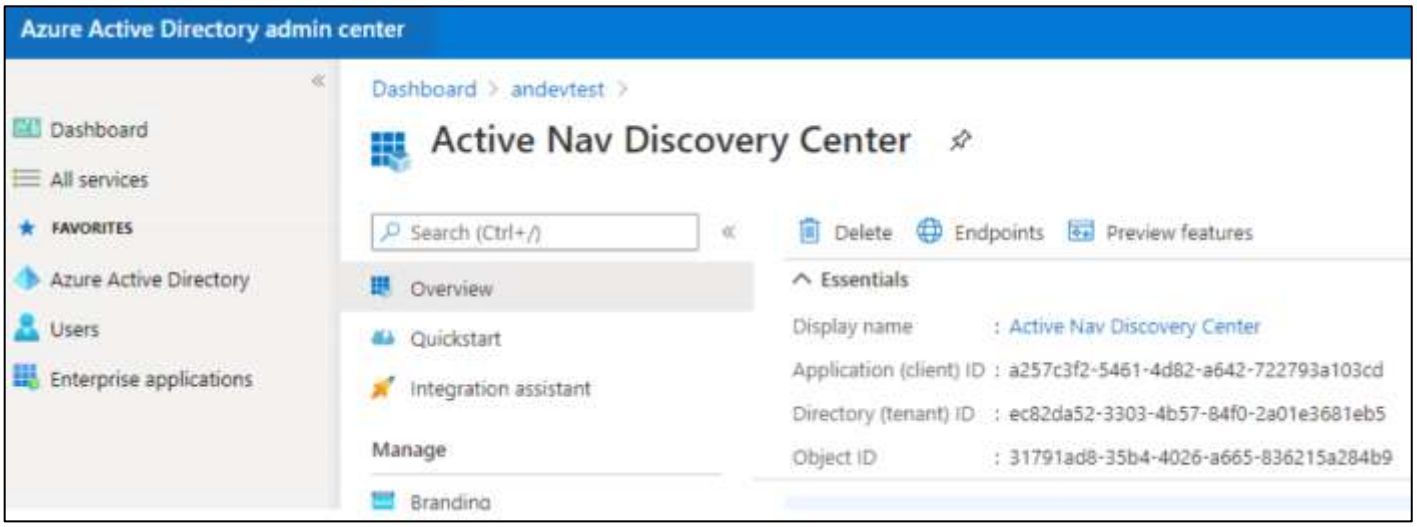


11. Finally, select to Grant admin consent for the domain for the chosen permissions:



Discovery Center System Setting requirements

Once Discovery Center has been registered as an app in Azure AD, some of the app registration details need to be applied to the Discovery Center System Settings for the integration to be successful. To find the relevant details in Azure, navigate to the app registration `Overview` page where the values for the `App Name`, `Application ID`, and `Tenant ID` are available and can be copied to the clipboard:

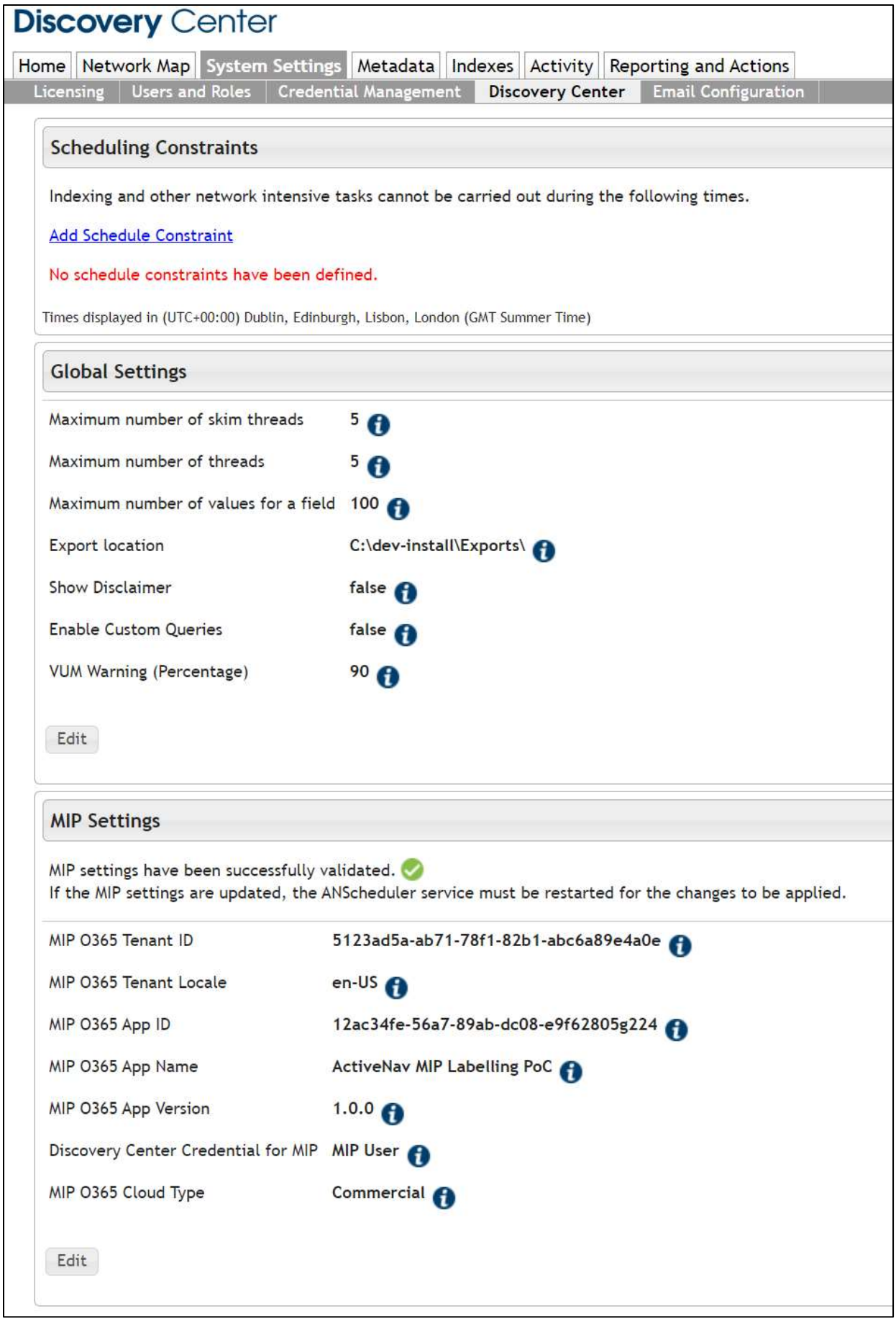


These values can then be applied to the `MIP Settings` section of the `Discovery Center System Settings` page and the credential of a user who has permissions to the MIP Sensitivity Labels published for the Microsoft 365 tenant.

The user account for this integration must have a username and password defined; the MIP SDK does not support the use of an app password for Multi-Factor authentication in the way that other Azure AD apps do.

The account used for this integration must have access to the MIP Sensitivity Labels defined in the Microsoft 365 tenant being used. This permission is dependent on the MIP label policies published in the Microsoft 365 Compliance Center. Essentially, suppose a user account has permissions to read and apply labels to files using other tools, such as directly in MS Office apps or through the Azure Information Protection Unified client. In that case, they will also have permission to do so from Discovery Center via the SDK integration.

Whenever any protection has been applied to a file with an MIP Sensitivity Label, if the user account used for the integration has permission to read the protected file, it will also be able to read and apply MIP Sensitivity Labels. Therefore, it is recommended that the user chosen for the integration is granted permission using an MIP Sensitivity Label policy to read and apply all labels that have been published for an organization. The user should also have permission to access any protected files. Beyond this, no specific MIP-related admin permissions or roles are required for the integration to work successfully.


Discovery Center
Home
Network Map
System Settings
Metadata
Indexes
Activity
Reporting and Actions
Licensing
Users and Roles
Credential Management
Discovery Center
Email Configuration
Scheduling Constraints
Indexing and other network intensive tasks cannot be carried out during the following times.
Add Schedule Constraint
No schedule constraints have been defined.
Times displayed in (UTC+00:00) Dublin, Edinburgh, Lisbon, London (GMT Summer Time)
Global Settings
Maximum number of skim threads 5
Maximum number of threads 5
Maximum number of values for a field 100
Export location C:\dev-install\Exports\
Show Disclaimer false
Enable Custom Queries false
VUM Warning (Percentage) 90
Edit
MIP Settings
MIP settings have been successfully validated.
If the MIP settings are updated, the ANScheduler service must be restarted for the changes to be applied.
MIP O365 Tenant ID 5123ad5a-ab71-78f1-82b1-abc6a89e4a0e
MIP O365 Tenant Locale en-US
MIP O365 App ID 12ac34fe-56a7-89ab-dc08-e9f62805g224
MIP O365 App Name ActiveNav MIP Labelling PoC
MIP O365 App Version 1.0.0
Discovery Center Credential for MIP MIP User
MIP O365 Cloud Type Commercial
Edit

Appendix 11: Exchange Online ROPC Authentication

Resource Owner Password Credentials (ROPC) Authentication

Discovery Center must authenticate using a secure token obtained from an Azure Active Directory registered application when using the Discovery Center Exchange Connector for indexing and report actions on Exchange Online mailboxes.

The OAuth 2.0 ROPC Grant authentication flow (see https://docs.microsoft.com/en-us/azure/active-directory/develop/v2-oauth-ropc for details) uses secure tokens. These tokens are provided following authentication to an Azure AD registered application using Discovery Center username and password credentials and are then used for interaction with Exchange Online.

To enable ROPC in Azure Active Directory, either use ActiveNav Exchange Connector multi-tenant application or register your application in your Azure Active Directory tenant.

- If using the provided multi-tenant application, follow the instructions in the section titled ActiveNav Exchange Connector Multi-Tenant Application.
- If registering your application, follow the instructions in the Registering an Application for Exchange Connector ROPC Authentication and Using the Registered Application with Discovery Center sections.

Note: This only applies to Exchange Online. On-Premises Exchange instances will use the username and password credential for NTLM authentication.

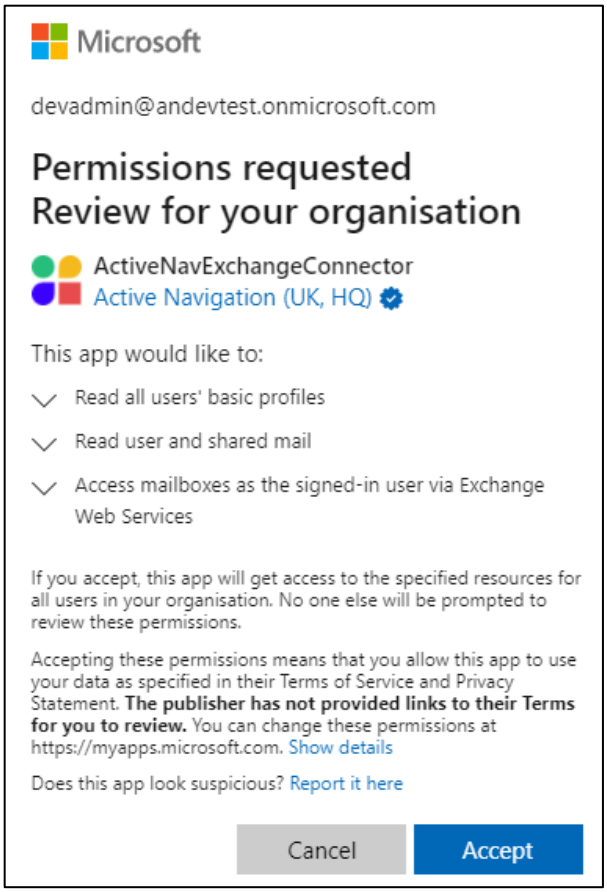
ActiveNav Exchange Connector Multi-Tenant Application

By default, the ActiveNav Exchange Connector uses the ActiveNav Exchange Connector Multi-Tenant Application for authentication. The application must be granted tenant-wide admin consent on the tenant that the connector needs to authenticate against to be successful.

To grant tenant-wide admin consent, take the following steps:

1. Navigate to URL: https://login.microsoftonline.com/common/adminconsent?client_id=182cffc8-d45a-49ad-972f-22675ceeaf2f&redirect_uri=https://activenavcustomerportal.blob.core.windows.net/an-customer-resource/ExchangeConnector.html
2. Sign-in as a user on the Azure Activity Directory tenant who has one of the following roles:
   Global Administrator
   Application Administrator
   Cloud Application Administrator.

3. A consent prompt will display, detailing the specific permissions the multi-tenant application is requesting. Review the information and select Accept.

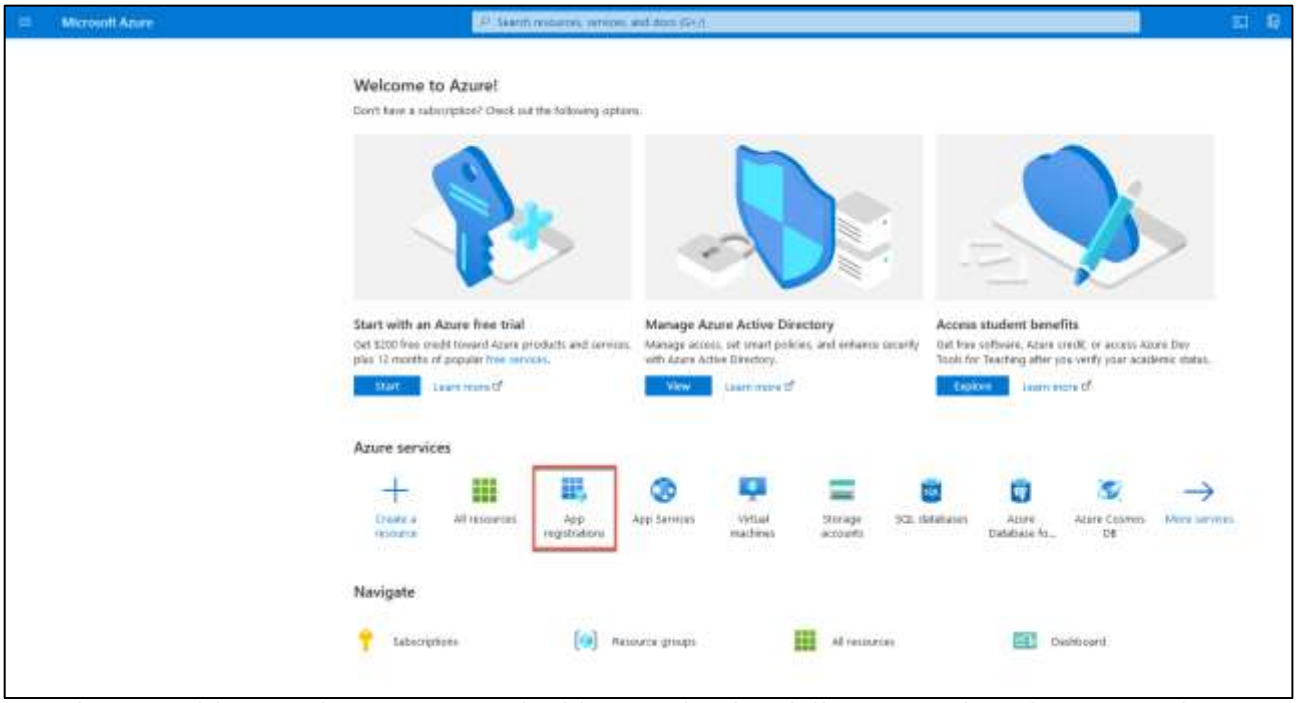


4. This will redirect the user to the URL below, which displays a message confirming that tenant-wide admin consent has been successfully granted to the application. Note that {TenantId} will be replaced with the identifier for the tenant where consent has been granted.
https://activenavcustomerportal.blob.core.windows.net/an-customer-resource/ExchangeConnector.html?admin_consent=True&tenant={TenantId}

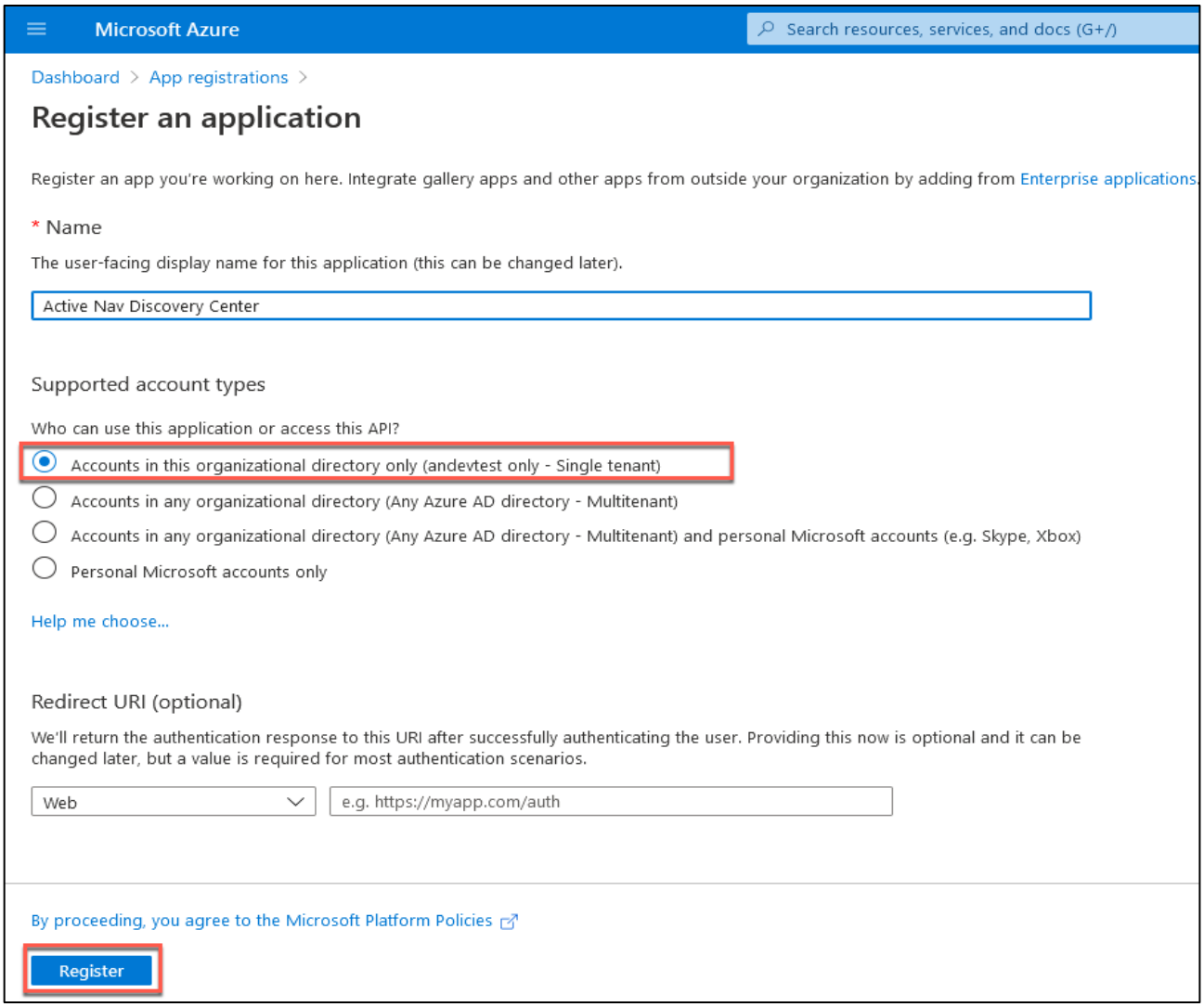
Registering an Application for Exchange Connector ROPC Authentication

The following steps detail what is required to register your own Azure Active Directory application and use this for ROPC authentication when connecting Discovery Center to Exchange Online. The steps include screenshots that were correct at the time of writing, but which may be outdated following any changes to the Azure AD cloud interface. For the latest instructions on how to register applications in Azure AD see https://docs.microsoft.com/en-us/azure/active-directory/develop/quickstart-register-app.

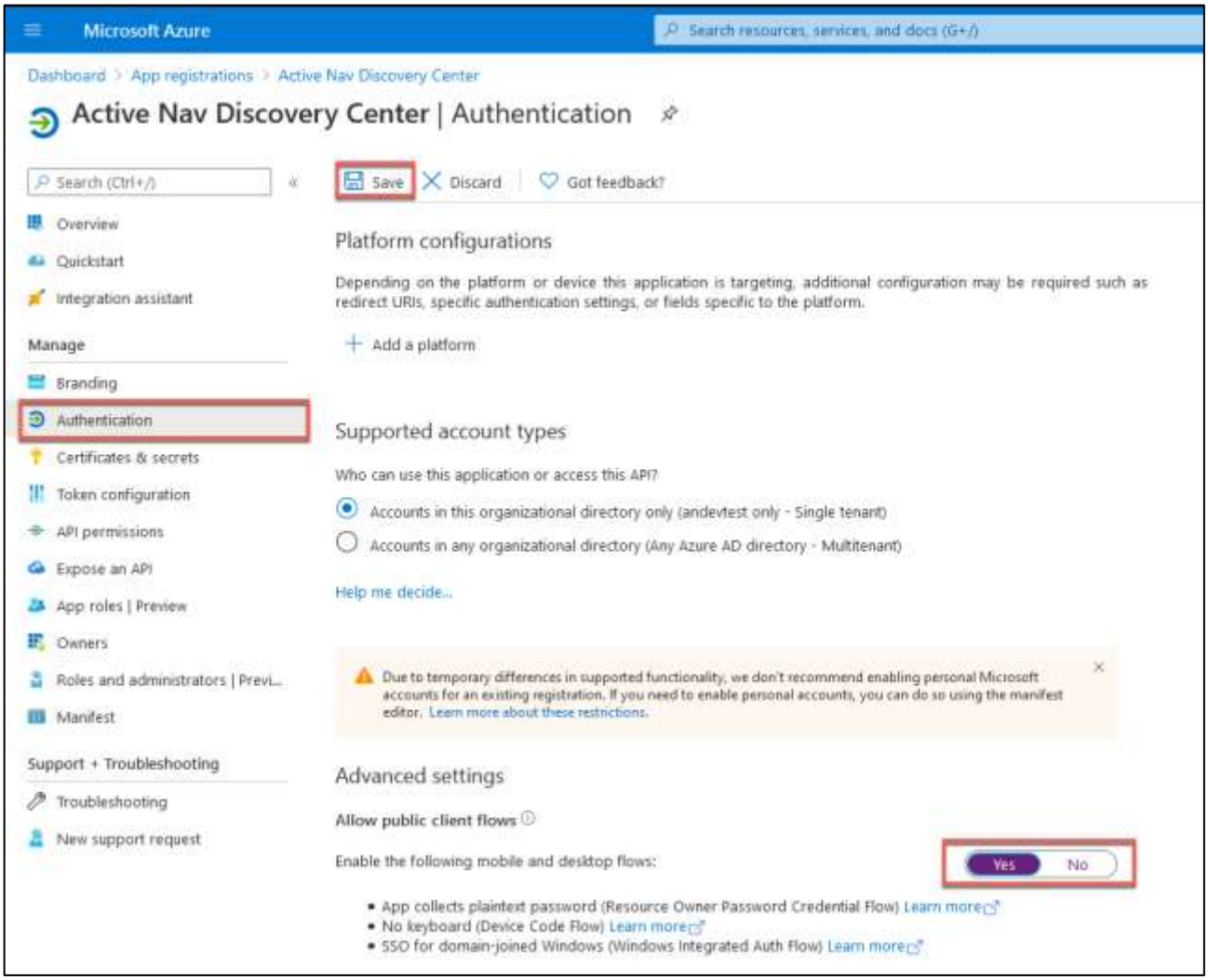
1. Log in to Azure AD as a user with permissions to add and update App Registrations and navigate to App Registrations and choose New Registration:



2. Enter the name of the app, choose Accounts in this organizational directory only as the Supported account types, leave the Redirect URL blank, and select to Register.

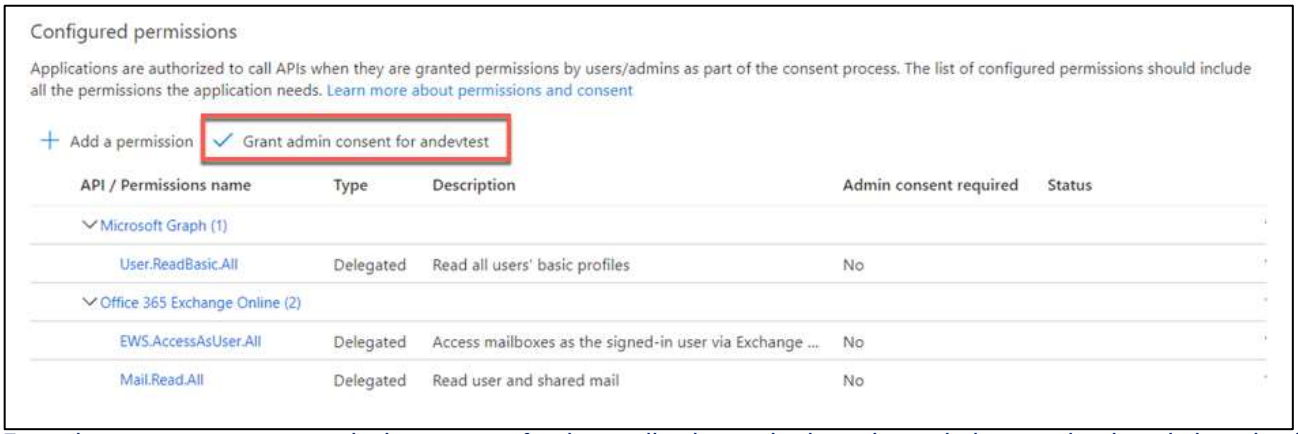


3. Under Manage -> Authentication and Advanced Settings set Allow public client flows to Yes and Save.



4. Under Manage => API permissions choose to Add a permission. The following Delegated permissions will need to be added for the application.

API Name	Permission Name
Microsoft Graph	User.ReadBasic.All
Office 365 Exchange Online	Mail.Read.All
Office 365 Exchange Online	EWS.AccessAsUser.All



5. From the same page, grant admin consent for the application and selected permissions on the domain by selecting Grant admin consent for {tenant name}, where {tenant name} is the name of the tenant where tenant-wide admin consent is being granted.

Using the Registered Application with Discovery Center

This section details the action required to reference your own registered Azure AD Application from Discovery Center for use when performing ROPC authentication Exchange Online.

Navigate to the Overview page for the registered application to obtain the Application (client) ID. This will be used to add the below setting value in the Discovery Center application configuration files, where {ApplicationId} is replaced with the Application (client) ID.

```
<ActiveNavigation.ConnectorsFramework.Exchange.Settings>
  <setting name="AuthClientId" serializeAs="String">
    <value>{ApplicationId}</value>
  </setting>
</ActiveNavigation.ConnectorsFramework.Exchange.Settings>
```

This setting will need to be added to the following Discovery Center configuration files, where {install location} is the installation directory chosen when installing Discovery Center.

a. {install location}\Analysis\ANAnalysis.exe.config
b. {install location}\Scheduler\SchedulerTasks.config
c. {install location}\Scheduler\ActiveNavigation.Scheduler.exe.config
d. {install location}\Skimmer\ANSkimmer.exe.config

For assistance with locating and updating the Discovery Center configuration files, please contact ActiveNav Support.

Appendix 12: Prerequisites for Preserving NTFS File Owner

The restore of the File Owner to the state prior to labeling will be performed by the Credential applied to target location in Discovery Center. To successfully change the File Owner, this credential must meet the following criteria:

- It must have `Full Control` permission on the target file share;
- It must be assigned `SeRestorePrivilege`. This is most commonly obtained by being a member of the Backup Operators or Administrators group.

Furthermore, if the credential being used to perform the File Owner update is a Local (non-Domain) account, Windows User Account Control (UAC) may prevent the file owner being updated. To circumvent this Microsoft suggest a workaround whereby a registry entry is set to disable UAC for remote connections, detailed here: https://docs.microsoft.com/en-us/troubleshoot/windows-server/windows-security/user-account-control-and-remote-restriction .

Appendix 13: Common Problems

How to Troubleshoot Installer Problems

Most installation problems with the Discovery Center are related to pre-requisite software, user account permissions, or both. Please refer to the installation instructions and check that each step has been followed.

If problems persist, run the installer from the command window and generate a log file to locate the problem:

1. Open a command window and run the following command where <ActiveNavigation.Setup.msi> is the name of your Active Navigation setup file.
   ```
   msiexec /package <ActiveNavigation.Setup.msi> /l* install.log
   ```
2. Follow the steps in the installer in the usual way until the installer fails.
3. A file named install.log will be generated in the same folder as the setup.msi script. Open the log file using a text editor and search for Value 3; this will highlight where the error lies. If Value 3 doesn't exist, contact ActiveNav Support.

Common Installation Problems

Below are some common installation problems and their solutions.

Installation fails, and the log indicates that "The library drive or media pool must be empty to perform this operation. Exception from HRESULT 0x800710D3", or the Discovery Center web UI displays "Server Error in '/' Application."

Ensure ASP.NET v4 has been installed and registered with IIS by following the instructions provided in the .NET Framework section of this guide.

Installation fails with "Scheduler identity validation" message

The installer might display a message with the text "the user has not been granted the requested logon type at this computer, and user must be given 'Logon as a service right'", even though the Local Policy Manager application has been used to assign the Logon as a service right. To resolve the issue, exit the installer and install using the following command-line options:

```
VALIDATE_SCHED_USER=no
VALIDATE_APP_POOL_USER=no
```

Installation Fails with "Could not load file or assembly."

This error indicates some missing pre-requisites from the SQL Server Feature Pack. If the SQL Server installation is on a separate server to Discovery Center, the SQL Server Feature Pack Components must be installed on the Discovery Center Server. SQL Server Feature Pack Components are detailed in the Discovery Center SQL Server Database Requirements section of this guide.

Visiting Discovery Center Shows Only "Page not found" or "404.2 Not Found."

IIS has not been configured to allow ASP.NET v4 Web Service Extensions. Enable this using the IIS Manager application ISAPI and the CGI Restrictions configuration option.

Visiting Discovery Center Shows Only "Server Error '/' Application" or "Unknown Error"

Ensure ASP .NET v4 has been installed and registered with IIS by following the instructions in the .NET Framework section of this guide.

Cannot See All Tabs in the Discovery Center Interface

The Discovery Center tabs are hidden if the logged-in user is not mapped to relevant ActiveNav roles. Log in as an ActiveNav System Administrator, and from the User Access tab, map the correct users to the necessary roles.

Test Index Fails with Error "start location not found."

By default, an index will use the Scheduler Service account credentials to access index files. If the Scheduler has insufficient rights to the test data set, the text index will fail. Grant the failing index specific credentials or change the Scheduler Service credentials.

Downloaded Connector Files are Blocked from Execution After System Upgrade

A connector package downloaded directly to a server system and copied as part of an upgrade may cause local system policies to mark the zip file and contents as downloaded from a remote system, preventing execution.

Installing connector files marked in this way as part of an upgrade will cause errors like this:

System.NotSupportedException: An attempt was made to load an assembly from a network location which would have caused the assembly to be sandboxed in previous versions of the .NET Framework.

Follow these instructions https://msdn.microsoft.com/en-us/library/ee890038.aspx to unblock the individual DLLs installed for the connector.

Using ActiveNav Support

The ActiveNav Support Center allows you to create and track support tickets, review Knowledge Base articles, and access product and documentation downloads. New customers and partners can register on the support site to gain access.

http://support.activenav.com

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