Documentation

Installation Guide for Cisco Industrial Network Director, Release 1.10.0

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This installation guide contains the latest information about installing the Cisco Industrial Network Director (IND) application on a Microsoft Windows Operating System (OS) and details accessing the application after installation.

Documentation

Note: The documentation set for this product strives to use bias-free language. For purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. Exceptions may be present in the documentation due to language that is hard-coded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.

Organization

This guide includes the latest information about installing the Cisco Industrial Network Director (IND) application on a Microsoft Windows Operating System (OS) and details accessing the application after installation.

Conventions

This document uses the following conventions.

Table 1

Conventions	Indication
bold font	Commands and keywords and user-entered text appear in **bold** font.
italic font	Document titles, new or emphasized terms, and arguments for which you supply values are in *italic* font.
[ ]	Elements in square brackets are optional.
{x | y | z}	Required alternative keywords are grouped in brackets and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
courier font	Terminal sessions and information the system displays appear in courier font.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Note: Means reader take note. Notes contain helpful suggestions or references to material not covered in the manual.

System Requirements

Table 2

Desktop Requirements	Minimum Requirement
Windows Operating System (OS)	Windows 7 Enterprise or Professional with Service Pack 2 or Windows 10 Windows Server Support: Windows 2012 R2 Server Windows Server 2016 (64-bit version) **Note**: When using Windows Server 2016 (64-bit version) you may not be able to select the Uninstall option from the Windows Start program window. If this occurs, do the following: - Log out of Windows 2016 and then log in again. If you do not see the Uninstall option in the Windows menu, then Restart the PC.
Browser	Chrome: Version 50.0.2661.75 or 53.0.2785.116
	Firefox: 55.0.3, 57.0.4, 63.0.3 or above
CPU	Quad-Core 1.8 GHz
RAM	8 GB
Storage	50 GB

Before You Begin

Before a new Installation or an upgrade of IND:

1. Make sure you use the same user account for installation and upgrade.

2. Ensure that the computer name is not set to more than 15 characters as recommended for Windows.

3. Make sure you do not manually abrupt the rollback process in the middle of its execution. Such action could leave the system in an inconsistent state.

4. Make sure that your password policy permits the initial password that will be set for postgres user. The password pattern will be:

   Ind$<16 digit alpha numeric characters ><computer name>

5. Make sure the postgres Windows user account created by the installer is not denied "Log on as a service" privilege by your administrator.

   To verify that the postrgres Windows user account has not been denied, "Log on as a service" privilege, open Local Security Policy and open Local Security Settings\Local Policies\User Rights Assignment and confirm that the postgres user or Users group is not added to the: "Deny log on as a service" list.

Before you install the IND software package:

■ Ensure that the Windows machine on which the IND software is installed, **does not get powered-off abruptly**. An abrupt loss of power to the Windows machine might lead to loss of files required for IND to function and require IND to be re-installed. As a precaution, schedule periodic backup tasks **after you install** IND, so that the data can be restored, should a new installation of IND be required.

Note: Refer to the **Settings > Backup** section of Dashboard Help in IND after installation successfully completes to get details on how to schedule periodic upgrade backup tasks.

Additionally, refer to the Restore Database Backup section of this document on how to restore an earlier IND backup.

■ Make sure that the postgres Windows user account created by the installer is not denied the "Log on as a service" privilege by your administrator.

■ No other FTP server is running and listening on port 21

■ No other instance of PostgreSQL is installed on port 5432 or any other port on the system

■ The host name of the Windows machine **must** start with a letter of the alphabet (A-Z or a-z).

    – You may use special characters within your password such as (0-9), a minus sign (-) and period (.) as well as alpha characters.

■ The following ports are open for inbound traffic on the firewall:

TCP ports:

    – 21 – FTP active port for ODM file transfer in regular mode

    – 8088 – HTTP for PnP

    – 8443 – HTTPs for Web UI and PnP

    – 50000-50050 – FTP passive ports for ODM file transfer in regular mode

UDP port:

    – 30162 – SNMP traps

■ The following ports are open for outbound traffic on the firewall:

TCP ports:

    – 443 – HTTPS for WSMA/JSON-RPC in secure node

    – 80 – HTTP for WSMA/JSON-RPC in regular mode

    – 22 – SSH/SCP in secure mode

    – 23 – Telnet in regular mode

    – 44818 – CIP

    – 102 – PROFINET

    – 502 – ModBus

    – 4840 – OPC -UA

    – 139 – NetBios TCP/IP

    – 1812 – RADIUS

UDP ports:

    – 161 – SNMP

    – 67 – DHCP server if the IND PnP DHCP helper is being used

- 2222 – CIP

- 34964 – PROFINET

- 4840 – OPC-UA

- The following ports are open for both inbound and outbound traffic on the firewall:

  TCP ports

  – 8910 – HTTPs for pxGrid

  – 47808 – BacNet

  Note: The above listed ports are default ports. If any of the above ports are customized as part of the installation or in the access profile, then the corresponding ports should be open in the firewall.

- The Windows services management console is closed.

- Close any command prompt, notepad or application with any open IND file and folder.

When You Employ PnP in Your Network

PnP requires that you start and run an NTP server in the network either on a separate Windows server or on the laptop or desktop where IND is installed.

- When you run the NTP server on a separate Windows server in the network (distinct from the IND server), ensure that the NTP service is up and running at all times.

- When running an IE1000 switch in your network, you must also add the NTP server IP address in the DHCP Option 43 field to be able to support PnP.

- When you run the NTP server on the IND server (laptop or desktop), perform the following steps to start Windows Time Service and ensure that it is running all the time:

  a. Go to the Start button and click on Search program and files.

  b. Type *services.msc.*

  c. Locate Windows Time, observe the current status and open to make changes.

  d. Set the Startup type to Automatic.

New Installation

Please review all content in this section before installing the IND application.

IND 1.10.0 supports English, French, German, Japanese and Spanish-Latin America languages within the Cisco Industrial Network Director user interface.

Procedure:

1. Download the Cisco Industrial Network Director (IND) software package from Cisco.com to your system from the Cisco Download Software page: https://software.cisco.com/download/navigator
   by following the path below to IND software:
   Products > Cloud and Systems Management > IoT Management and Automation > Cisco Industrial Network Director

2. Click the Downloads link (or downward arrow that appears) to download the IND installer file:
   (for example ind-1.10.0-xxx.installer.exe).

3. Double-click the downloaded installer file (for example ind-1.10.0-xxx.installer.exe) and click on **Yes** for User Account control prompt to allow the installer.exe to install on your system.

4. At the Language Selection window that appears, the Language option is selected by default. Select your desired language, if it differs from the default language and click **OK**.

5. At the Setup Wizard screen that appears, click **Next.**

6. At the License Agreement screen, click the I accept the agreement radio button, and then click **Next**.

7. At the Installation Directory screen, click **Next** to confirm the destination directory. You may specify your own directory or accept the default directory defined in the install script.

   Note: For new installations, the Program Data folder will be created under the Installation directory. The Program Data folder stores the Database data, Logs and other Application data.

8. After you select the directory, the next screen allows you to customize the install to adapt to available memory resources, if necessary. There are two options: Regular Profile (default) and Micro Profile (for a low memory system).

9. You can choose either a Self-signed or a Certificate Authority (CA) signed certificate at the Certificate selection screen.
   (See Figure 1Choose Certificate Type)

   Note: Self-signed was the default for IND 1.6.x and earlier.

Figure 1   Choose Certificate Type
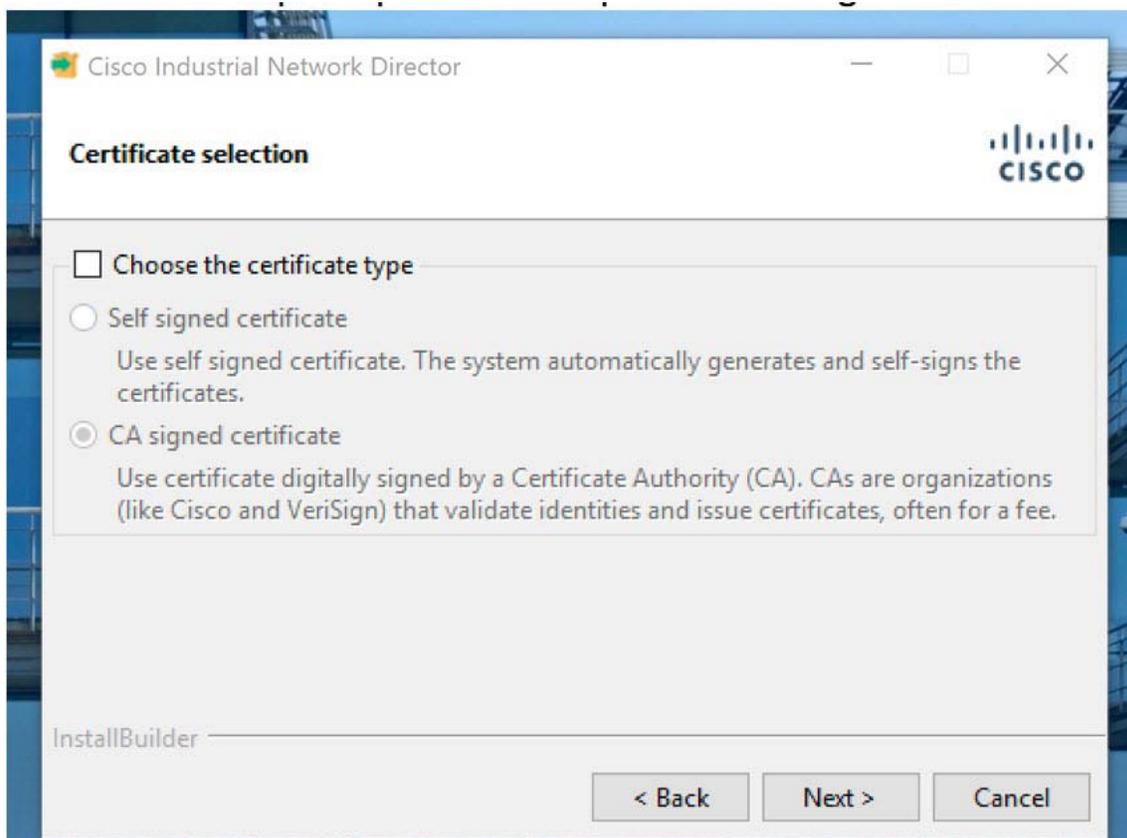
To select the CA certificate option, select the box next to that option. Then select one of the Certificate types (PKCS or PEM format). A screen specific to the selected certificate appears.

- **PKCS12/PFX File Format:**

In the entry panel that appears:

    a. Import the CA certificate file (.pfx or .p12 extension only)

    b. Enter the password for that Certificate and enter the Password again in the Confirm field.

- **PEM/CER/DER File Format:**

In the entry panel that appears:

    a. Import a Public Key CA Certificate File (.pem, .cer or .der) extension format.

    b. Import a Private Key CA Certificate File (.pem or .cer) extension format.

    c. Enter the password for the Certificate File.

    d. Reenter the password for the Certificate File to confirm.

10. Click **Next** to complete the Certification selection.

11. Once you have selected the Self-signed option, click **Next** and the installation will proceed.

12. At the Ready to Install screen, click **Next** to begin installation of the IND application on your system.

    Note: For New installs, if the installer detects that TCP port 8443 is already in use, an Error pop-up window appears asking for you to specify a different port. You can enter any available port.

    The installer detects for port 8088 as well. If the installer detects that the port is already is in use, a pop-up window appears asking you to re-enter a new available port value.

    During IND installation, a postgres file is installed. If the IND installation process attempts to overwrite an existing third-party postgres file, a popup window appears alerting you to the conflict. Additionally, you are instructed to remove that existing postgres file to allow the IND installation to continue.

    During IND installation, an indeterminate progress popup displays until all IND Services initialize and are ready and accessible. Please wait for the initialization progress popup to complete. Depending on your PC configuration, IND Services may take up to 8 minutes to initialize.

    Important: When IND installation completes, a window appears with:

      – Your initial login information: User name and Password

      – URL for the Application

    Be sure to capture this information before you select **Finish** and exit the screen.

Upgrade an Existing IND Application

Upgrade support for Non-English language upgrades of Cisco Industrial Network Director from IND 1.9.0 to IND 1.10.0 is supported.

To upgrade to IND 1.10.0 from IND 1.9.0, do the following:

1. Download the Cisco Industrial Network Director (IND) software package from Cisco.com to your system from the Cisco Download Software page: https://software.cisco.com/download/home
by following the path below to IND software:
Products > Cloud and Systems Management > IoT Management and Automation > Industrial Network Director
Enter 1.10.0 in the Search Field to bring up the Industrial Network Director software page

2. Click the Downloads link (or downward arrow that appears) to download the IND installer file:
(for example ind-1.10.0-xxx-installer.exe).

3. Double-click the downloaded installer file (for example ind-1.10.0-xxx.installer.exe) and click on Yes for **User Account** control prompt to allow the installer.exe to install on your system.

4. At the Language Selection window that appears, a default language appears in the drop-down menu. The default language will be the same language that you selected at the original install. Click **OK**.

5. A pop up window appears, asking you to confirm that you want to upgrade your current IND application to a new version.

   – Click **Yes** to upgrade.

   – Click **No** to cancel the upgrade.

6. At the Setup Wizard screen that appears, click **Next**.

7. At the License Agreement page, click the I accept the agreement radio button; and, then click **Next**.

8. At the Ready to Install screen, click **Next** to begin installation of the IND application on your system or for upgrades you can choose the Customize option with an option for system profile selection. After the upgrade, the same system profile you selected during the initial install will be applicable.

   Note: During an IND upgrade, an indeterminate progress popup displays until all IND Services initialize and are ready and accessible. Please wait for the initialization progress popup to finish. Depending on your PC configuration, IND Services may take up to 8 minutes to initialize.

   Note: When you upgrade to IND 1.10.x, the location of the Program Data folder, which stores the Database data, Logs and other Application data, remains the same: %ALLUSERSPROFILE%\Cisco\Cisco Industrial Network Director **for all upgrades from
IND 1.8.0**.

   Note: For upgrades from IND 1.9.0, the location of the programData folder will be within the installation directory.

   Important: When IND Installation completes, a window appears with:

   – **a URL for the application**

   Be sure to capture the URL before you select Finish and exit the screen.

Cancelling a New IND Installation or An Upgrade

■ A new installation or an upgrade will be automatically canceled if the installer encounters an error during installation.

■ When a new installation or an upgrade is canceled either automatically due to an error, the installer will automatically rollback the changes done, so that the system is brought back to the same state that it was at **before** a new installation or an upgrade was initiated. If the installation was canceled due to an error, the installer will display the error, before commencing the rollback.

Additional Notes About Stopping a New or Upgrade Installation

- The installer must be allowed to complete the rollback without any interruption to avoid leaving the application in an inconsistent state.

- After the rollback of an unsuccessful new installation, the installation directory and the services, if any were created, will be removed.

- After the rollback of an unsuccessful upgrade, IND Services will restart and it may take up to 8 minutes to reinitialize depending on your PC configuration. The IND application can then be accessed using the same URL as before.

Figure 2   Message that gets Displayed Before a New IND Installation or an Upgrade is Rolled Back
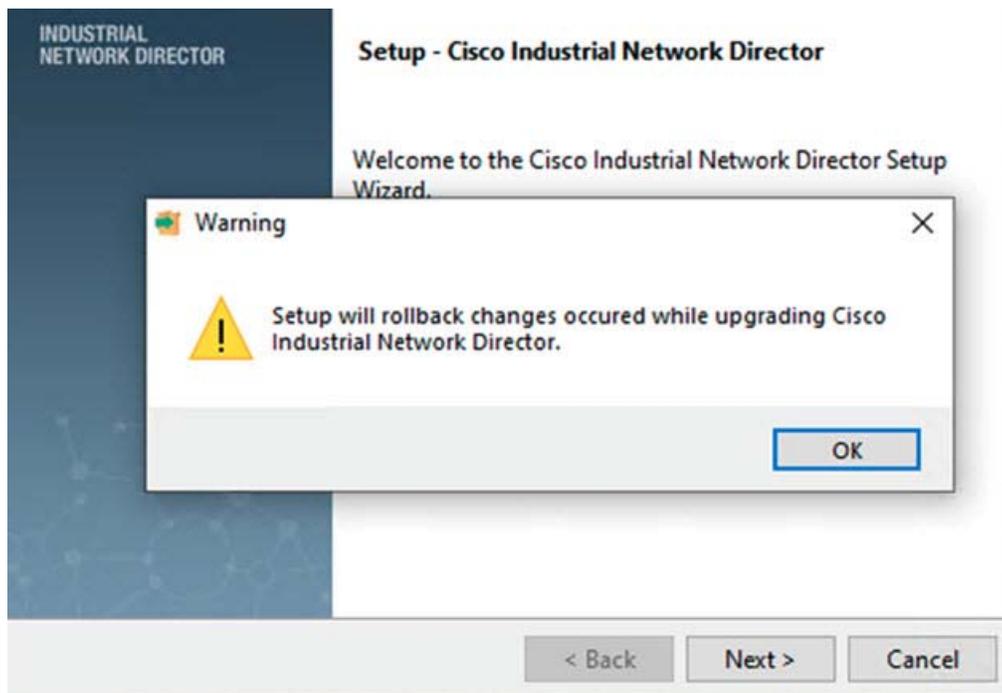
Uninstall an Existing IND Application

On your system, do the following:

1. From the Windows system, go to the Control Panel and choose Programs > Uninstall a Program > Programs and Features.

2. In the panel that appears, double-click Cisco Industrial Network Director.

3. At the uninstall confirmation window, click **Yes**. A window appears showing removal of the files. When the uninstall completes, a window appears confirming completion.

Information About Removal of Old Postgres User Profile Folders

The installer will remove the postgres user profile folders, those that are no longer in use, after a new install, upgrade or uninstall. If the installer is unable to delete a particular folder due to it being locked by the OS process, it will be marked for deletion and will be deleted upon the next reboot of the system.

The default location of the postgres user profile folders is C:\Users.

Note: The presence of these old postgres user profile folders will not impact the functionality of IND.

Logging in to Cisco IND Application

IND is a server application and it can be accessed by any client machine that has connectivity to the system on which IND is installed.

Chrome and Firefox are supported browsers. See System Requirements.

Before You Begin

Before you install the IND software package, confirm that:

After an initial install or upgrade, a Setup complete screen displays a check box to launch Cisco Industrial Network Director. Click **Finish** to launch the IND Login URL using the default browser of the system on which IND is installed.

1. On the client machine, open your browser window.

2. Enter the URL <https://a.b.c.d:portNum> provided at the end of the IND install, where <a.b.c.d> is the IP address of the system where IND was installed. By default, portNum is 8443. If the 8443 value is not available during install, you can enter any available port number.

3. At the login window that displays, enter the initial Login and Password values provided at completion of the application install.
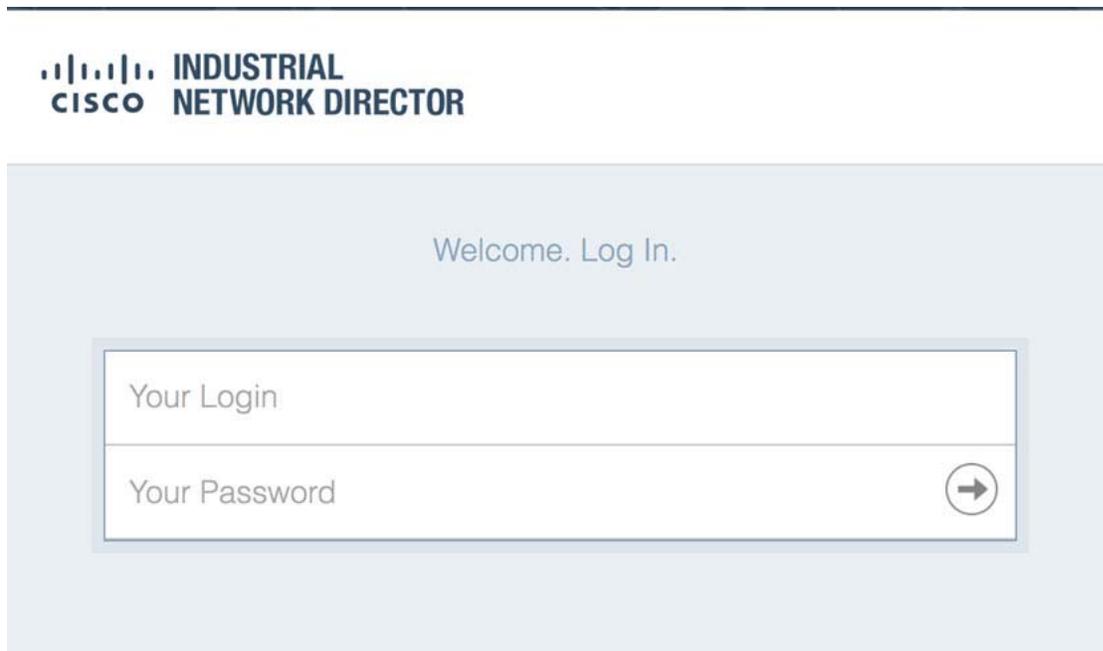
4. Click the arrow in the Your Password field. A window appears requesting you to define a new password.

5. After you define a new password, the application automatically logs you out. You must reenter your login and password to reenter the application.

6. When IND opens, the Operate > Dashboard for the Groups Root page appears. There are four summary panels within that page: Alarms, Assets, Traffic Utilization, and Port Counts.
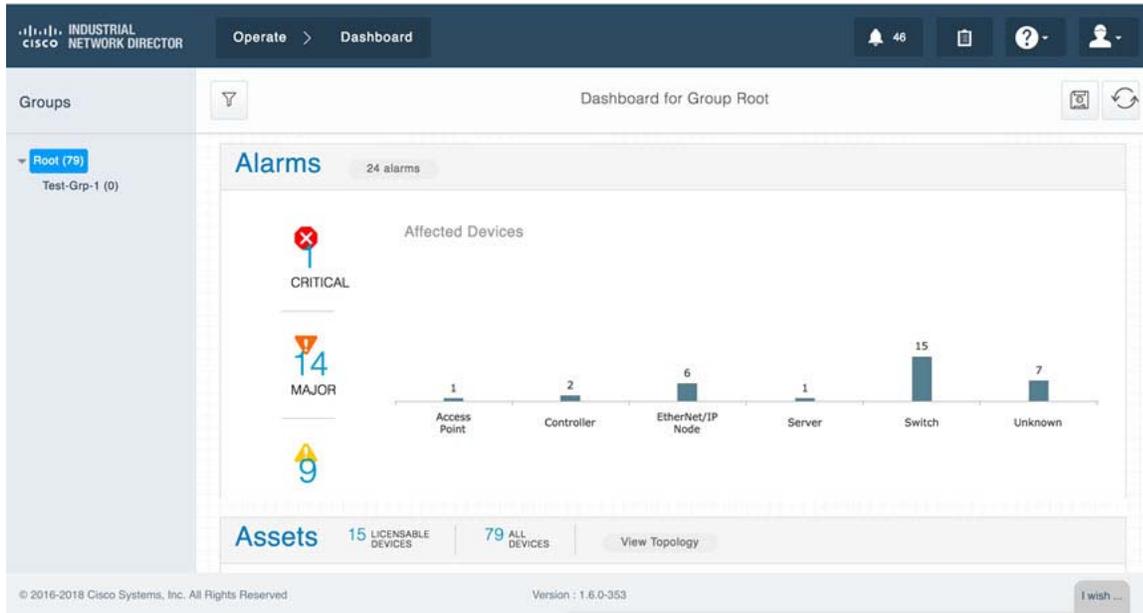
7. To set up the system:

   a. Click on the question mark (?) icon in the top right-hand corner of the screen to display menu options: Dashboard Help, Guided Tours, Download Logs, and API Tool.

   b. Click on the Guided Tours option to access step-by-step instructions for the system.
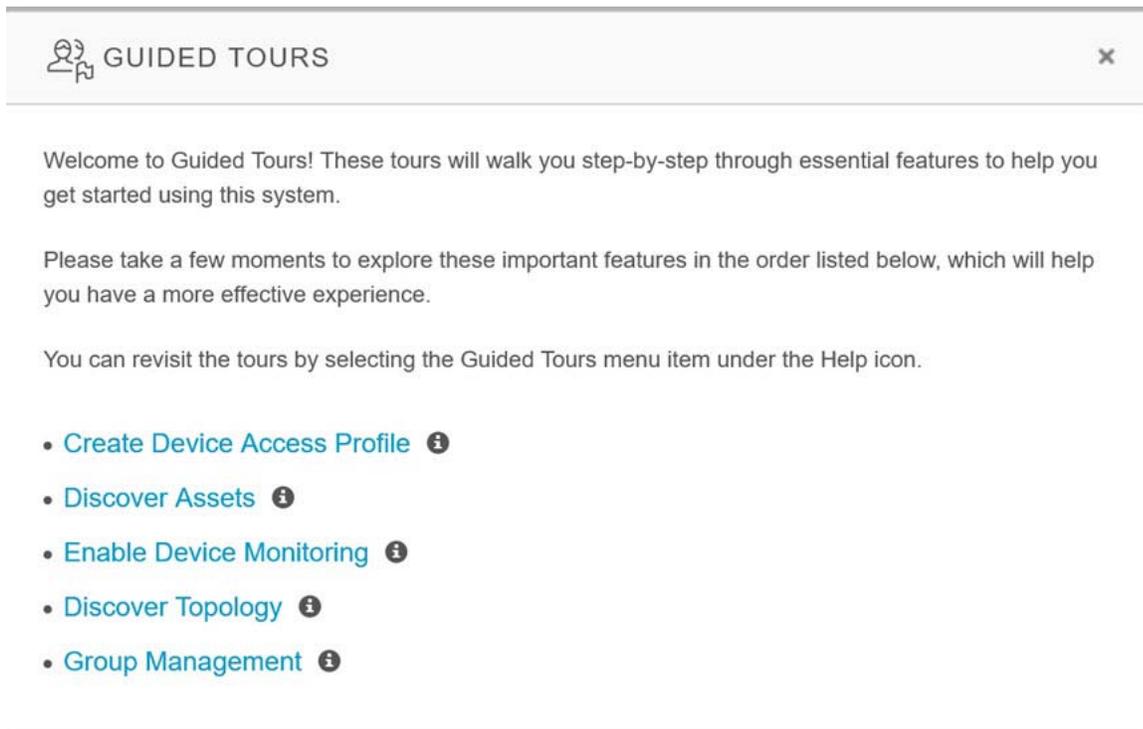
Installing IND Device Packs

You have two options for installing the IND Device Pack:

- Option 1: Install the IND Device Pack Through the Web User Interface

- Option 2: Install the IND Device Pack directly from an executable file present on the Windows system on which the IND Application is installed

Note: The benefit of installing the IND Device Pack through the Web User Interface is that the device support is available immediately without having to restart the IND application.

Before You Begin

IND Device Packs can only be installed with the IND application that has a matching version number, and the release number must be the same or greater than the IND release number.

For example, in release 1.10.0-xxx, 1.10.0 is the version number and xxx is the release number.

A new device pack must be version 1.10.0 and the release must be xxx or higher.

You can verify the Device Pack version and PID at the Settings > Device Pack page.

Procedure

- **Option 1:** To install the Device Pack using the IND Application User Interface:

  1. Choose **Settings > Device Pack** page.

  2. To install a new device Pack, click I**nstall New Device**. Browse the IND device pack executable list, select the desired device pack and then click **Upload and Install**.

     When installation is complete, support for the new devices is available immediately on the IND application. No restart of the application is required.

- **Option 2:** To install the Device Pack executable file directly from the Windows system:

  1. Click on the executable file to start installation of the Device Pack.

  2. When installation successfully completes, restart the Cisco IND application to activate the new Device Pack.

Supported Utilities

IND supports the following three utilities:

Reset System Admin Password

Reset Database Password

Restore Database Backup

Reset System Admin Password

As a System Admin, you can reset the password when you are locked out of IND because you have either forgotten your credentials or your credentials have expired.

Before You Begin

To reset the System Admin password, you as System Admin, must have administrative rights to the Windows location where the
Cisco Industrial Network Director is installed:

C:\Program Files\Cisco\Cisco Industrial Network Director\bin <--- default location

Procedure

1. Run the ind-resetpassword.exe utility to reset the IND System Admin password.

2. In the password change confirmation panel that appears, click **Next**.

3. In the Reset System Admin Password panel that appears, enter your new password in both the Enter Password and Confirm Password fields. Click **Next**.

   Note: For guidelines on creating IND passwords, click the "i" icon nest to the New Password field. A panel with password requirements displays.

4. In the confirmation panel that appears to confirm password update, click **Save** to accept the password update.

Reset Database Password

During the install, the IND application automatically generates a random password, which is not accessible to the user.

If you need to access the database, you must reset the IND database password. Additionally, you must have administrative rights to the window in which the application runs.

To reset the database password:

Procedure

1. Run the ind-resetdatabasepassword.exe utility. A window appears asking you to confirm that you want to reset the database password.

2. To stop the reset of the database password, click **No** and close the window.

3. To continue with the database password reset, click **Yes**. A Reset Database Password utility window appears.

4. Click **Next >**. A window displays and prompts you to enter the new password and then confirm the entry.

5. Click **Yes** to continue the Restore Tool. To cancel the reset, click **Cancel**. Click **No** to stop the Restore activity.

Restore Database Backup

To restore an IND database from a previous IND backup, you **must** have administrative rights to the Windows location where the IND application is installed.

Procedure

1. Run the ind-restore.exe utility to restore an IND database from a previous IND database backup.
   A Question panel appears noting that when IND restarts, any date currently present on IND will be overwritten.

2. Click **Yes** to continue the Restore Tool.

   Click **No** to stop the Restore activity.

3. Enter the location of the Database Backup file in the Backup File panel that appears. Click **Next.**

The following validations will be done on the file path that you provide for the Backup File:

– Does the file path exist and is it a valid IND backup file?

– Is the backup compatible with the IND version running currently?

A backup is considered incompatible if the IND version currently running supports a greater number of PIDs than the last backup version.

Once all validations complete, data from the backup will be restored to the database and IND will restart.

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Supported Utilities