

DOCUMENTATION

BDNA Normalize for ServiceNow 4.5.2

Deployment Guide

March 8, 2018

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BDNA Corporation
339 North Bernardo Avenue, Suite 206
Mountain View, CA 94043
USA
Phone +1 650 625 9530
Fax +1 650 625 9533
<http://www.bdna.com>
0542010101

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Deployment Overview

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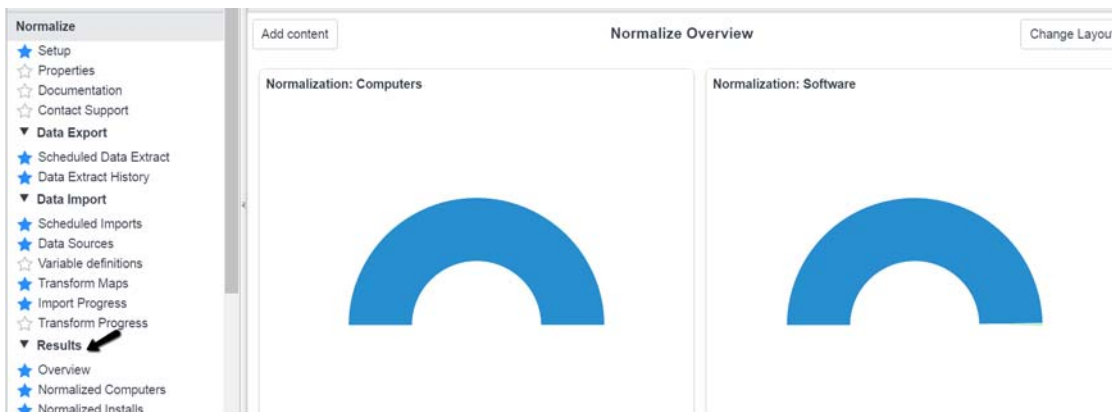
About this Document

Welcome to the *BDNA Normalize for ServiceNow 4.5.2 Deployment Guide*. This guide provides detailed information about the following topics:

- [“What’s New in Normalize for ServiceNow 4.5.2”](#)
- [“Installing the Normalize Integration Update Set”](#)
- [“Configuring the Normalize Integration”](#)
- [“Understanding the Normalization Process”](#)
- [“Customizing Data Imports \(On-Premise Only\)”](#)

What’s New in Normalize for ServiceNow 4.5.2

- A new “Results” category exists in the ServiceNow navigation menu. This includes a new “Overview” subcategory that allows customers to create interactive charts and graphs. Also the “Normalize Installs” subcategory contains the same functionality as a “software installation” option would in ServiceNow.



Installing the Normalize Integration Update Set

The following prerequisites are necessary before proceeding with the installation of the Normalize Integration Update Set:

- ServiceNow Helsinki or Istanbul.

- Activation of the Software Asset Management Plug-in.
- Sufficient privileges to load Update Sets into ServiceNow.
- BDNA Technopedia Catalog Update Set:
 - Version 3.5.0
- Manufacturers, Categories, Hardware, and Software models fully loaded by Technopedia Catalog (refer to the *Technopedia Catalog For ServiceNow Installation and Configuration Guide* for detailed instructions).
- Under Normalize “Setup,” right-click the header in order to export an XML file. You will need this in order to reapply your preferred settings after the installation is complete.

Note: Make sure that the Normalization Setup record has all of its required information, and that the Data Preparation is in the “Completed” state.

To install the Normalize Integration Update Set:

1. Navigate to the “Retrieved Update Sets” module in “System Update Sets.”
2. Select “Import Update Set from XML,” located at the bottom of the Update Set list.
3. Click the Choose File button and select the Normalize Update Set.
4. Click the Upload button.
5. After the load is completed, click on the newly loaded “TechnoedpiaNormalize4.4.9” update set.
6. Scroll to the bottom of the screen where the updates are listed. Scroll to the right in order to view the number of updates.
7. Click the “Preview Update Set” button.
8. If any errors occur, click the “Show Preview Problems” link and follow the steps below. Otherwise, proceed to Step 8.
 - 8.1. All updates must be accepted for the integration in order to install properly.
 - 8.2. For each error, click “Accept remote update” in the Available Actions column in order to accept the update.
 - 8.3. To fix a larger number of errors, scroll to the bottom of the reported errors, and click the “Actions on selected rows...” dropdown box. In the dropdown box, select “Accept remote updates.” Repeat this process for all errors.
9. When you have addressed all the errors, click the “Commit Update Set” button. The BDNA Normalize update set is then committed.
10. In Normalize ServiceNow, click “Setup” and right-click the header in order to import the XML containing your preferred settings (see requirements at the top of this page).

In order to import XML containing your previously exported preferred Normalize settings (see note on the top of this page), follow the below steps:

- Go to System Definition and select Business Rules.
- Right-click the header to the right of any column.

- Select Import XML.
11. After the import, click “Force update” to make ServiceNow reapply the desired settings throughout the integration.
 12. Under “Related” links in the Normalize Setup record, run the test for about 20 records in order to confirm that the connection to the BDNA Publish schema is correct.

Note: After installation, your password is reset to its default. Make sure to update it.

Configuring the Normalize Integration

The BDNA Normalize integration for ServiceNow supports two configurations: Cloud and On-Premise.

- The Cloud configuration is used by BDNA customers who subscribe to Normalize-as-a-Service (NaaS).
- The On-Premise configuration is used by BDNA customers who have a perpetual or term license for BDNA Normalize (even if the BDNA Normalize instance is hosted in the cloud).

These configurations have several significant differences, as shown in [Table 1](#) below.

Table 1: Functionality Matrix: On-Premise vs. Cloud Configuration

Function	On-Premise	Cloud
Supports normalization of ServiceNow Discovery	YES	YES
Supports normalization of other IT data sources	YES	YES
Installation of BDNA Normalize at customer site or privately hosted environment	YES	NO
Client operates BDNA Normalize console	YES	NO
Client has option for BDNA Analyze	YES	NO
Supports normalization of multiple IT Data Sources (excluding NOW)	YES	NO
Supports normalization of multiple IT Data Sources (including NOW)	YES	NO

On-Premise Configuration

To configure an integration to work with BDNA Normalize in an On-Premise configuration, navigate to the Setup module in the main BDNA Normalize group, and configure the settings/options items as shown in [Table 2](#).

Table 2: On-Premise Configuration Settings and Options

Attribute	Setting/Options	Comments
Publisher Filter	Load Tier 1 Software only or Load All Software	This attribute allows filtering of the software loaded into ServiceNow to be limited to the Tier 1 vendors in Technopedia. To see a list of the Tier 1 vendors, look at the Manufacturers loaded by the Technopedia Catalog integration, and filter to the Manufacturers where “Technopedia Tier” equals 1.
Software Filter	Load Licenseable Software Only or Load All Software	This attribute allows for loading-only fee-based software, rather than all software. Many use cases, such as Software Asset Management, may only require fee-based software loaded into ServiceNow.
MID Server	Client-supplied MID Server	The MID Server is required to communicate from the ServiceNow instance to the BDNA Normalize database. The MID Server is also used to pass information between ServiceNow and Normalize.
Normalize Discovery Data	True or False	This flag determines if data collected by ServiceNow Discovery should be extracted for normalization.
Target Path	Fully qualified path name	When normalizing ServiceNow Discovery data, the integration must pass data between the ServiceNow instance and BDNA Normalize. The Target Path variable determines where on the MID Server the data will be placed when extracted. This path should match the path used in BDNA Normalize when creating the normalization process.
Database Type	MS SQL Server or Oracle	This determines the database type being used by BDNA Normalize.
Database Server	Hostname or IP address	Hostname or IP address of database server used by BDNA Normalize. This host must be accessible from the MID Server for a JDBC connection.
Database Port	Port number	Port number for the MS SQL Server or Oracle database. Typically 1433 and 1521, respectively.
Database Name	Database name or database schema	The database name (MS SQL Server) or database schema (ORCL) of the Publish database/schema created by BDNA Normalize. Typically, “BDNA_PUBLISH.”

Table 2: On-Premise Configuration Settings and Options (Continued)

Use integrated authentication	True or False	A flag to indicate whether or not to use integrated authentication to access the Database name/schema.
Username	Username for database	A username to access the BDNA Publish database/schema. Used only when not using integrated authentication.
Password	Password for the database	A password for the BDNA Publish database/schema. Used only when not using integrated authentication.

When you finish the configuration, click the Update button in order to save your changes. The navigation panel, located on the left side of the screen, refreshes and updates, because changes in the configuration alter what elements are visible and available. When the refresh is done, navigate back to the Setup module and verify the changes you made to the configuration.

Cloud Configuration

In order to configure the integration to work with BDNA Normalize in a Cloud configuration, navigate to the Setup module in the main BDNA Normalize group, and configure the settings/options as shown below.

Table 3: Cloud Configuration Settings and Options

Attribute	Setting/Options	Comments
MID Server	Client-supplied MID Server	The MID Server is required in order to transfer data from ServiceNow to BDNA in a cloud configuration. Extracted information is staged on the MID Server prior to transferring to BDNA when normalizing ServiceNow Discovery.
Normalize Discovery Data	True or False	This flag determines if data collected by ServiceNow Discovery should be extracted for normalization.
FTP Server	Hostname	The FTP server is used to move un-normalized data to BDNA and bring normalized data back from BDNA in the cloud configuration. The Hostname will be provided to customers by BDNA.
FTP User	Username for FTP server	A username to access the FTP server. Provided to customers by BDNA.
FTP Password	Password for FTP server	A password to access the FTP server. Provided to customers by BDNA.

When you finish the configuration, click the Update button in order to save your changes. The navigation panel, located to the left, refreshes and updates, because changes in the configuration alter what elements are visible and available. When the refresh is done, navigate back to the Setup module and verify the changes you made to the configuration.

Testing the Configuration

Whichever configuration you chose, the Setup module has a “Test Load 20 Records” link at the bottom of the page. Before running this test load, you must ensure that normalized data is available in the On-Premise BDNA Normalize configuration, or that you have sent data to BDNA that has been normalized in a Cloud configuration. If data is not available for a Test Load, contact your BDNA Normalize administrator for further information.

The progress and results of the Test Load will be visible in the Import Progress module under the Data Import group. Please see the “[Troubleshooting](#)” section for more information on interpreting the results of the Test Load.

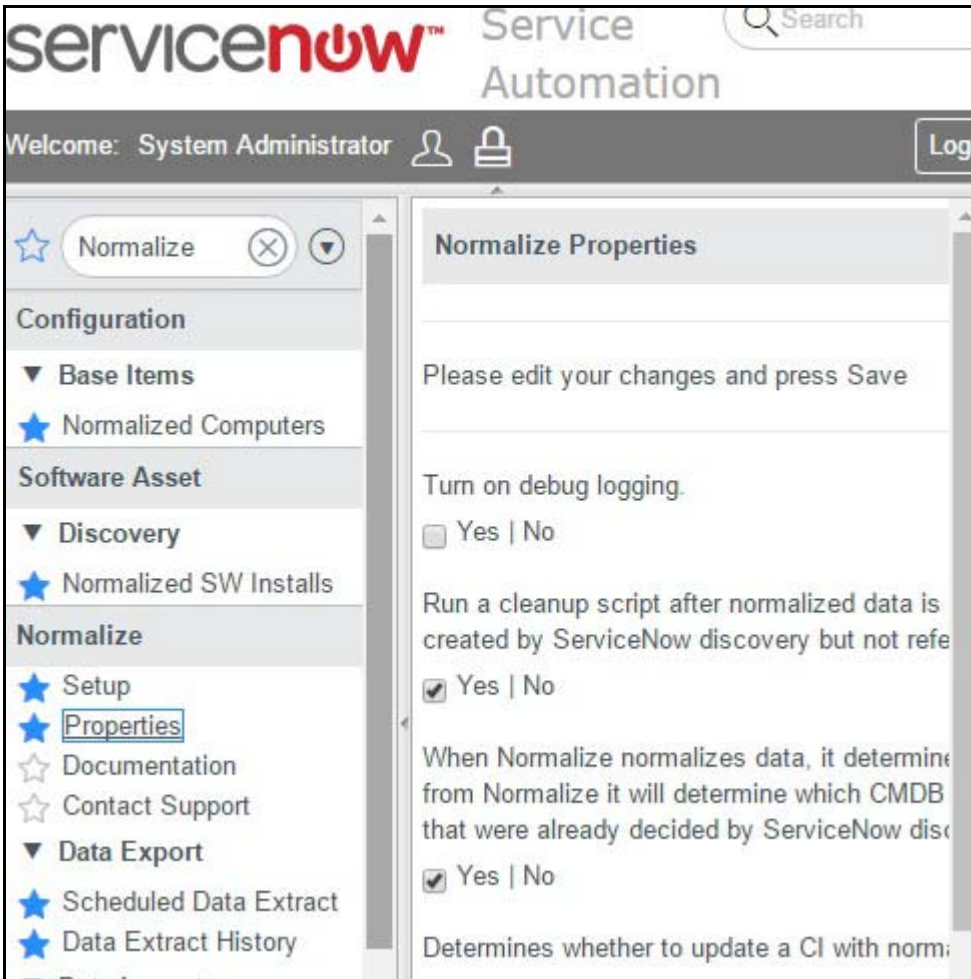
Setting Additional Properties

There are several additional Properties that you can set for the integration that address unique situations with ServiceNow Discovery. These properties can be found under the Properties module in the main group, and they are described in “[Properties in the Properties Module](#).”

Table 4: Properties in the Properties Module

Property	Comments
Turn On Debug Logging	This function provides very detailed logging. Typically only used for troubleshooting issues.
Cleanup Script	ServiceNow Discovery creates new hardware models when it cannot match a discovery hardware CI to an existing Hardware model. After normalization, however, the hardware CI will be mapped to a Hardware model provided by Technopedia, which can create orphaned Hardware models. This script automates the removal of orphaned Hardware models after normalization. This should only be used in conjunction with ServiceNow Discovery.
Lock Table Rows	When normalizing ServiceNow Discovery data, un-normalized data is extracted from ServiceNow, normalized, and brought back into ServiceNow. Depending on the size of the dataset, this may take a few minutes or a few hours. Setting this flag “hides” the rows being normalized during the process in order to avoid users from accessing un-normalized data.
Hide Titles and Models	During the normalization process of ServiceNow Discovery, a significant amount of raw data extracted from ServiceNow is identified as irrelevant (i.e. executable files, such as products, KB patches, etc.). After normalization, these rows of data are flagged as irrelevant and hidden from the user. This flag allows that data to remain visible.

Note: If you make any changes to properties, be sure to Update the Properties module. The Properties reset to their defaults after installation. After installation, make sure to reset any properties that you wish to make permanent.



Understanding the Normalization Process

While there are many different configurations, the normalization process typically follows three primary phases. [Table 5](#) describes the three phases and the functions performed during each phase of the normalization process.

Table 5: Phases of the Normalization Process

Phase	Description
Extraction	<p>Gathers raw hardware and software data from IT data sources to be normalized.</p> <ul style="list-style-type: none"> • On-Premise Configuration Details: <ul style="list-style-type: none"> – If multiple sources are being normalized (i.e. Microsoft SCCM and ServiceNow Discovery), all IT data sources are aggregated prior to normalization. – If ServiceNow Discovery is being normalized, BDNA Normalize uses API calls to the integration in order to signal the instance to extract the data. • Cloud Configuration Details: <ul style="list-style-type: none"> – If the IT data source being normalized is an On-Premise solution (i.e. Microsoft SCCM), raw data is uploaded to the Cloud by a separate process outside of the BDNA Normalize integration. – If ServiceNow Discovery is being normalized, the extraction process is scheduled via the Scheduled Data Extract module with the Data Export group of the integration.
Normalization	<p>Normalizes raw hardware and software data, aligning data to Technopedia Catalog.</p> <ul style="list-style-type: none"> • On-Premise Configuration Details: <ul style="list-style-type: none"> – Eliminates duplicate/conflicting results (if any) via rules defined in BDNA Normalize. – Publishes resulting normalized data to BDNA Publish schema. – Signals ServiceNow via the API in the integration that data is ready to be loaded. • Cloud Configuration Details: <ul style="list-style-type: none"> – Publishes resulting normalized data to FTP server in fixed file format. – Signals ServiceNow via the API calls in the integration that data is ready to be loaded.
Loading	<p>Loads normalized data into ServiceNow, populating hardware and software CIs.</p> <ul style="list-style-type: none"> • On-Premise Configuration Details: <ul style="list-style-type: none"> – Data is loaded directly from BDNA Publish schema via JDBC calls from the MID Server. • Cloud Configuration Details: <ul style="list-style-type: none"> – Data is moved via FTP to MID Server then imported via bulk load process into ServiceNow.

After the loading of software installations is complete, a process removes any software from ServiceNow that was originally created by Normalize if it was not found during this current normalization run.

Software that originated in ServiceNow will not be deleted by this cleanup process, but is controlled by an out-of-the-box ServiceNow cleanup script located here:

http://wiki.servicenow.com/index.php?title=Using_Counters_for_Software_License_Reconciliation#Scanning_Software_Installations_with_the_System_Scheduler.

Running a Normalization

The process used to run a normalization depends to a great extent upon the type of configuration, as well as the type and number of IT data sources that are being normalized. [Table 6](#) provides a matrix of configurations and the methods used to run the normalization process:

Table 6: Configurations and Methods Matrix

Configuration	NOW Discovery?	Other IT Data Source(s)?	Method
On-Premise	YES	NO	BDNA Normalize
On-Premise	YES	YES	BDNA Normalize
On-Premise	NO	YES	Scheduled Import
Cloud	YES	NO	Scheduled Extract
Cloud	YES	YES	NOT CURRENTLY SUPPORTED
Cloud	NO	YES	Scheduled Import

BDNA Normalize Method

BDNA Normalize manages the entire process. Please contact your BDNA Normalize administrator for further information.

Creating a Scheduled Import Task

In situations where ServiceNow Discovery is not one of the IT Data Sources being normalized, the Scheduled Import method is used. This method runs an on-demand or scheduled import task in order to load data into ServiceNow from either an On-Premise or Cloud configuration.

To create the Scheduled Import task:

1. Navigate to the Scheduled Imports module in the Data Import group of the integration.
2. Select the Scheduled Data Import for Computers.

Note: The Scheduled Data Import name may vary slightly based upon configuration, but it will be the only Scheduled Data Import that does not have a Parent associated with it.

3. In the Scheduled Data Import record for Computers, you can perform the following:
 - Execute the task immediately.
 - Set the task to run at a later date.

- Schedule the task to run at regular intervals.

The Computer import is the only Scheduled Data Import you need to define. The other associated Scheduled Data Imports are all executed after the Computer import in the appropriate sequence.

Note: When considering a production deployment that uses a Scheduled Import method that is automated via a defined schedule, you must ensure that normalized data results are available for loading at the time the Scheduled Data Import runs.

Creating a Scheduled Extract Task

The Scheduled Extract method is used in situations where ServiceNow Discovery is the IT Data Source being normalized via the Cloud configuration. This method runs an on-demand or scheduled export task that performs the following:

- Extracts the ServiceNow Discovery data.
- Transfers the data to the BDNA Cloud infrastructure.
- Normalizes the data.
- Automates the Schedule Import to load the data back into ServiceNow.

To create the Scheduled Extract task:

1. Navigate to the Scheduled Data Extracts module in the Data Export group of the integration.
2. Select the Scheduled Data Extract for Computers.

Note: The Scheduled Data Extract for Computers name may vary slightly based upon configuration.

3. In the Scheduled Data Extract record for Computers, you can perform the following:
 - Execute the task immediately.
 - Set it to run at a later date.
 - Schedule it to run at a regular interval.
4. Return to the Scheduled Data Extracts module and select the Scheduled Data Extract for Software Installations.
5. In the Scheduled Data Extract record for Software Installations, you can:
 - Execute the task immediately.
 - Set it to run at a later date.
 - Schedule it to run an a regular interval.

While the two extracts can be scheduled to run at different times, the data will not be transmitted to the BDNA Cloud infrastructure until both extracts are available. It generally makes more sense to schedule or execute them at the same time.

Note: When considering a production deployment that uses a Scheduled Extract method that is automated via a defined schedule, you must ensure that the raw ServiceNow Discovery data results are available to be loaded at the time the Scheduled Data Extract runs. Typically, you should consider scheduling a task that follows ServiceNow Discovery tasks in order to execute the Scheduled Data Extracts.

Monitoring Progress

You can monitor the progress of the normalization process from various modules within the Normalize integration, as shown in [Table 7](#) below.

Table 7: Monitoring Progress from Various Modules

Module	Description
Data Extract History	Records all extraction attempts and the status of ServiceNow Discovery data for both Cloud and On-Premise configurations.
Import Progress	Records the import process from both Cloud and On-Premise configurations.
Transform Progress	Records all transformations from both Cloud and On-Premise configurations.

Customizing Data Imports (On-Premise Only)

When you import data from BDNA Normalize in an On-Premise configuration, the integration allows for leveraging BDNA Normalize pass-through and mashup capabilities. These capabilities allow custom data fields (such as Owner, Location, Cost Center, and Usage Information) to be aligned to the normalized hardware and software data. The Custom Data Imports feature allows the integration to access this data, import it into ServiceNow, and transform it to user-defined tables.

Important: To customize data imports, you need a solid knowledge of BDNA Normalize and the Normalize Publish schema. Typically, this requires the assistance of a BDNA Normalize administrator. Customizing the data import alters the queries used by the integration in order to extract data from the Publish schema. You will need to understand exactly how the data is structured before proceeding.

Custom Data Imports are defined in the Variables module of the Data Import group of the integration. The variables that can be set and a description of the variables are provided in [Table 8](#) below.

Table 8: Custom Data Imports as Defined in the Variables Module

Variable	Description	Example
Active	If set to 1, integration will load only hardware assets and associated software where the system is flagged as active. If set to 0, integration will load only hardware and software where the system is flagged as inactive. If set to "0,1", it will load all data.	1
CAT_MAUFACTURER_JOIN_VAR	System Variable. Do not change.	n/a
CAT_SOFTWARE_RELEASE_VAR	System Variable. Do not change.	n/a

Table 8: Custom Data Imports as Defined in the Variables Module (Continued)

HW_CUSTOM_FIELDS	Comma separated list of fully qualified table-column names of custom attributes to be imported for hardware.	BIOSRELEASEDATE ,BIOSVERSION
HW_CUSTOM_TABLES	Comma separated list of table names that hold data for HW_CUSTOM_FIELDS.	LEFT JOIN DISC_MUPT_HOST_MID DISC_MUPT_HOST_MID ON DISC_MUPT_HOST_MID.INVENTORY_ID = DISC_ALL_OS.INVENTORY_ID AND DISC_MUPT_HOST_MID.MACHINEID = DISC_ALL_OS.HOST_ID
HW_CUSTOM_WHERE	SQL WHERE clause required to join standard hardware tables from BDNA Publish to the HW_CUSTOM_TABLES.	AND 1=1
INVENTORY	Custom inventory input. By default, the most recent inventory ID is imported. To customize the list, provide a comma separated list of Inventory IDs.	123, 345, 678
LICENSABLE_VAR	System Variable. Do not change.	n/a
SW_CUSTOM_FIELDS	Comma separated list of fully qualified table-column names of custom attributes to be imported for software.	MATCH_HOST_SW_INSTANCE1.INST_VAL as INSTALLDIRECTORY, MATCH_HOST_SW_INSTANCE2.INST_VAL as ISRUNNING
SW_CUSTOM_TABLES	Comma separated list of table names that hold data for SW_CUSTOM_FIELDS.	LEFT JOIN MATCH_HOST_SW_INSTANCE MATCH_HOST_SW_INSTANCE1 ON MATCH_HOST_SW_INSTANCE1.TASK_ID = MATCH_HOST_SW_PROD_DET.TASK_ID AND MATCH_HOST_SW_INSTANCE1.DISC_SW_PRO D_ID = MATCH_HOST_SW_PROD_DET.ID AND MATCH_HOST_SW_INSTANCE1.INST_KEY = 'installdirectory' LEFT JOIN MATCH_HOST_SW_INSTANCE MATCH_HOST_SW_INSTANCE2 ON MATCH_HOST_SW_INSTANCE2.TASK_ID = MATCH_HOST_SW_PROD_DET.TASK_ID AND MATCH_HOST_SW_INSTANCE1.DISC_SW_PRO D_ID = MATCH_HOST_SW_PROD_DET.ID AND MATCH_HOST_SW_INSTANCE2.INST_KEY = 'isrunning'
SW_CUSTOM_WHERE	SQL WHERE clause required to join standard hardware tables from BDNA Publish to the SW_CUSTOM_TABLES.	AND 1=1
TIER_VAR	System Variable. Do not change.	n/a

After any change to a Custom Data Import, the subsequent data import will remove all software records from ServiceNow that do not meet the new criteria. For example, if you change from importing all software to only Tier 1 software, all Tier 2 and Tier 3 software records will be removed. If you do not want to remove the old records, do the following:

1. Navigate to the Transform Maps module in the Data Import group of the integration.
2. Select the “Installed Software Transform Map.”
3. At the bottom, you will see a Transform Script named “onComplete.”
4. Change the Active flag of the onComplete Transform Script to FALSE and save.

5. Subsequent software loads will no longer remove old records.

Note: Under Normalize Data Imports, Transform Maps (including On-Before scripts), Variable definitions, and Data Sources (queries) will be overwritten by default. Make sure to save any customizations, as these must be redone after installation.

Known Issues

If a discovered computer is normalized and determined to be a network device, a new network device will be created and the original computer will not be updated.

If a network device is discovered and Normalize determines that it is actually a computer, a computer record will be created and the original network devices will not be updated.

Frequently Asked Questions

- Q.** Can a user modify the fields/data that are imported into ServiceNow?
- A.** This can be done, but requires customization.
- Q.** Do users need other ServiceNow plug-ins, such as the SCCM Plugin, in order to move data into ServiceNow?
- A.** No. The BDNA integration will pull data from all data sources, avoiding the need to apply and maintain plug-ins for individual discovery tools.
- Q.** Does BDNA normalize data before or after it is written to the CMDB?
- A.** BDNA normalizes all non-ServiceNow Discovery data BEFORE it arrives in the CMDB. For ServiceNow Discovery, the data is normalized AFTER it is written to the CMDB.
- Q.** How does BDNA handle custom or homegrown applications?
- A.** BDNA does not create rules for custom or homegrown applications. Other functionality in ServiceNow such as Field Normalization is often used to handle these applications.
- Q.** Does BDNA place Normalized hardware into the CI classes such as Servers, Network Gear, and Workstations?
- A.** No, BDNA has chosen to put all Normalized hardware into the `cmdb_ci_computer` table. If customers want to classify these CIs, they can create a post-import business rule to apply the appropriate classes based on BDNA hardware categories.
- Q.** Will BDNA Normalize impact the performance of my Service Now instance?
- A.** No, BDNA Normalization happens outside of the Service Now instance, either in the Cloud or via an onsite installation of Normalize. After data is Normalized it is imported into Service Now, minimizing any performance impact to the Service Now instance.

Troubleshooting

Symptom

Import fails in on-premise configuration.

Cause/Resolution

- Invalid database configuration:
 - Validate username and password.
 - Validate that MID Server has network access to the database server.

Symptom

- Number of Normalized Software installations is low.

Cause/Resolution

- Check the Publisher Filter and Software Filter on the setup screen. Validate that the settings are set to Load all Publishers and Software.
- Check the variable definitions of Inventory field. Is it loading the default (max inventory ID). Are you expecting additional inventories to load from Normalize to ServiceNow?
- Verify that you completed a Normalize gap-fill.

Symptom

(For on-Premises configuration only)

- Test connection to the shared path if the process setup is failing with the message “Connection failed. Specified file does not exist.”

Cause/Resolution

- This path should reside on the server where the mid-server is installed. Verify that it exists.
- The path should be the network path:
 - Go to the mid-server and navigate to the folder.
 - Open the folder properties and go to the “sharing” tab.
 - The Network Path should be listed in the top section “Network File and Folder Sharing.”

Symptom

- Normalize fails with error “Specified File Does not Exist.”

Cause/Resolution

- This error usually occurs because of an incorrect setting on the “Scheduled Data Extract” page. BDNA recommends not making any changes to the default settings on this page, including the Append Timestamp checkbox, which should remain unchecked.