

Migrating Your Stations From Niagara AX to Niagara 4

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This page covers how you can use the Niagara 4 Migration Tool to migrate your station from Niagara AX 3.8 to Niagara 4.

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What is Migration?

Migration is the modification of the contents and format of Niagara AX files (like a station config.bog file) to fit the Niagara 4 architecture. To enable the new features and capabilities of Niagara 4, Tridium has had to make some changes to the structure of Niagara station databases. These changes mean that a Niagara AX station is not directly runnable in a Niagara 4 environment. In order to transform the Niagara AX station into the right structure for Niagara 4, you will need to run the **Niagara 4 Migration Tool**. This tool will "migrate" the station and its

associated files into the proper format, so that you can install it into your Niagara 4 installation environment and retain the engineering and configuration.

Running the Tool

The migration tool is provided in Niagara 4.0 as a command line tool. You will need to execute this tool from the Niagara 4 console window.

Steps to open a Console

Command Line Execution

Getting the Usage Parameters and Options

The command to invoke the Migration Tool is **n4mig**. If you invoke it with no arguments you will get the usage information. You can also get the the usage information by invoking with the **-help** or **-h** or **-?** options:

Usage option

[Expand source](#)

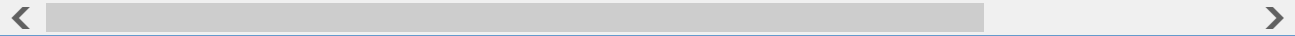
Typical Execution

The preferred, and most common, way you will run the Migration Tool, will be to migrate a Niagara AX Station Backup distribution file to Niagara 4. A typical execution of this might look like this:

Migration Execution - Part 1

```
d:\niagara\NIAGARA_SYSTEM_HOME>n4mig d:\niagara\Niagara-3.8.38\backups\backup_demo_
*****
** WARNING: The Security manager has been disabled!!! **
** NOTE: This ability is temporary and will be removed prior to release! **
*****
14:55:18,940 WARNING [sys] FIPS is licensed but FIPS module is not present.
14:55:22,267 INFO [sys.registry] Up-to-date [54ms]
14:55:22,363 INFO [sys.registry] Loaded [94ms]
14:55:23,444 INFO [sys] Niagara runtime booted ("d:\niagara\NIAGARA_SYSTEM_HOME") o
14:55:25,176 INFO [alarm.database] Loading...
14:55:25,200 INFO [alarm.database] Loaded [0ms, 0 alarms, 0 pages]
14:55:25,485 INFO [alarm.database] Created
Migration Templates:
  1: Controller Migration Template (ControllerMigrationTemplate.ntpl)
  2: Supervisor Migration Template (SupervisorMigrationTemplate.ntpl)
  3: Mig Small (migSmall.ntpl)
  4: Prepare Service (PrepareService.ntpl)
  5: Svsmon Station (SvsmonStation.ntpl)
```

Please select a Migration Template:



In this instance, the tool was run with no options beyond specifying the source dist file.

- The target station will be determined from the station name inside the dist file.
- The Niagara 4 migration template is not specified, so you will be prompted to choose one (see the last lines of the output above).
- Note that the first two template options are always the Niagara system migration templates.

After selecting the migration template, the tool execution will proceed:

Migration Execution - Part 2

Please select a Migration Template:

s

Completed Migration

Source: d:\niagara\Niagara-3.8.38\backups\backup_demo_pc_150309_1343.dist

Target: d:\niagara\NIAGARA_WB_USER_HOME\stations\demo

Migration Report: d:\niagara\NIAGARA_WB_USER_HOME\stations\backup_demo_pc_150

Important Migration Notes - see Migration Report for details

Using Migration Template SupervisorMigrationTemplate.ntpl

d:\niagara\NIAGARA_WB_USER_HOME\migTemp\srcMig\config.bog: REMOVED all uses of typ



At the conclusion of the tool execution, you will see the Source and Target locations listed. Note the target is a *folder*, not a file. The output of the tool is a station folder, in the Niagara Workbench User Home. This can then be installed into the Niagara Daemon User Home, from where it can be run on the local platform. It can also be installed onto another platform, for example, if you are migrating a station retrieved from an embedded controller.

Usage Options

n4mig [options] <source> [target]

Parameters

Parameter name	Required?	Interpretation
source	YES	Niagara AX station backup distribution file. Generally an absolute system path is used. If a relative path is used, this is interpreted starting from the current directory.
target	NO	The output folder name to write the migrated station. This can be an absolute path location. If a relative pathname is used, it will be relative to the Niagara

Parameter name	Required?	Interpretation
		User Home stations folder for this Niagara 4 installation (usually C:\Users\ <username>\Niagara4\stations).</username>

Options

Option	Notes
-version	print version info
-log:<level>	<p>specify the log level</p> <p>level is one of (in increasing detail of output): off, severe, warning, info, config, fine, finer, finest, all</p> <p>Default is info. This level produces the Migration Report, which lists the changes made to the AX station in migration to N4.</p>
-help, -?	print the usage information
-o	Overwrite the file/folder at the target location with the output of the migration.
-t:<template>	<p>Select the migration template to use</p> <p>template is one of the migration templates available on your system. Typical choices are:</p> <p>1 = Controller Migration Template (this can also be selected by using 'c')</p> <p>2 = Supervisor Migration Template (this can also be selected by using 's')</p> <p>Others may be listed after, if your user installation has defined additional migration templates.</p>

Advanced Options

Option	Notes
-keepTemp	Retain the temporary files generated during the migration. This is typically only used if you are working with Tridium Tech Support to diagnose a problem with the Migration Tool execution.
-showSystemLogs	Do not hide the non-migration log messages. These are generally hidden to minimize unwanted output; you should not need to see these unless you are working with Tridium Tech Support to diagnose a problem with the Migration Tool execution.

Specifying a Target Name

The behavior of the tool is a little different depending on whether you supply a target name with the command invocation.

Target name supplied

If you supply a target name, this name will be used as a folder, and the stations in the dist will be migrated to station folders underneath this target folder.

Target name not supplied

If you do not supply a target name, the stations in the dist will be migrated to station folders underneath the Workbench User Home stations folder.

Special Cases

There are some scenarios where extra steps are required either before or after the migration tool is run in order for your station to be properly migrated.

Kerberos Keytab File

If your AX station is Kerberos enabled and uses a keytab file, the Migration Tool requires that the keytab file resides in "Station_Home/ldap" prior to migration. You must create a folder named "ldap" in your AX station's "Station_Home" directory, and move your keytab file to this "ldap" folder. You must also update the Kerberos Authenticator's "Key Tab Location" property to the new location of the keytab file.

OBIX

With the addition of the new Authentication Service, OBIX requests must be authenticated with the HTTP Basic Authentication Scheme. If your station has an OBIX Server that other stations or OBIX clients connect to, it is not possible for the Migration Tool to determine which users were used for OBIX authentication. Since the HTTP Basic Authentication Scheme is assigned on a per-user basis, the tool will update the authentication by completing the following steps:

1. Add an HTTP Basic Authentication Scheme from the baja Palette to Services -> Authentication Service -> Authentication Schemes.
2. Create a new user (the default name is "obix"). If a User with the name "obix" already exists, the Migration Tool will try "obix1", "obix2", etc. until a free username is found.
3. Set the Authentication Scheme Name of the User created in Step 2 to the HTTP Basic Authentication Scheme added in step 1.



Password for OBIX client user

The password assigned to this user is the default password. It cannot be used by OBIX clients until you manually assign a password.

After Migration: Completing OBIX Authentication configuration

After migration, you **MUST** perform the following additional configuration in order to allow OBIX clients the proper access to the station's OBIX server. These requirements apply to the default "obix" User, or any other User that you are using to allow OBIX clients access (see the Tip below).

1. The "obix" User must be assigned a non-default password that complies with the password configuration requirements.
2. The "obix" User must be assigned a Role from the RoleService that allows access to the necessary station components you desire to be accessible to OBIX clients.
3. The permissions given to the "obix" User must allow read access to the ObixNetwork in order to provide access to the OBIX Lobby of the Server.

Tips for Configuring OBIX Authentication

✔ Assign Role from previous user

During migration, a Niagara Role is created for each AX User in the station. If the AX station was being accessed by OBIX clients, you can probably pick the User that clients were using, and simply select the Role with that name as a starting point for N4 OBIX client access.

Additional considerations for configuring OBIX access:

✔ Separate Users for each Client

Consider using a separate User for each OBIX client (or client type) that accesses the station's OBIX server. This is another way to increase the security of your installation by encapsulating access and giving each user the minimum access necessary to accomplish the needed function.

Migrating Offline (Platform) Backups

When you migrate a backup dist that was made using the Platform Backup available from the Platform Administration tool, this will contain all the stations that are on the platform. For non-embedded platforms, this may be multiple stations, as subordinate stations are often copied to the supervisor.

⚠ Warning

You should NOT use Station Copier to copy stations for migration. The proper source for a migration is a Niagara Backup Distribution file. The Backup contains the necessary additional information to correctly migrate the station, whereas a station folder, whether obtained through the Station Copier, or copied from the file system directly, does **NOT**. If you attempt to migrate one of these station copies, the migration tool will not work correctly, and you will experience problems, either during migration, or upon installing the migrated station into the Niagara 4 platform.

You should use only backup distribution files obtained from the host upon which the original station is running for the source of the migration.

Most of the time, there will be one station in the backup that is to be migrated, or at most only a few. When you run the migration tool, you will be shown a list of the available stations in the backup. Then you will be prompted to enter a choice selecting which station to migrate.

Platform Backups: Selecting a Station

```
INFO [09:48:50 29-Apr-15 EDT][sys] Niagara runtime booted ("d:\niagara\niagara-4.0.
[09:48:50 29-Apr-15 EDT][migration]
-----
[09:48:50 29-Apr-15 EDT][migration] Migrating station backup_localhost_demo10_4.di
The following station folders were found in this backup:
```

```
2    badCop_oldPwds
3    cgAxBac
4    cgOrdsAx
5    demoAppliance
6    goodCop
7    j38
8    nccb11320
9    nccb11602s1_ax
10   nccb12006
11   nccb12649
12   pc38
13   sanity3_8_38
```

Please select a station from the backup to migrate:

8

Station to be migrated: nccb11320

Migrating station nccb11320 to nccb11320

Migration Details, or What Happened?

Preservation of the Original Source

The original artifact is **not harmed** during the migration, regardless of the outcome of the operation. The output of the migration always goes to a separate location, along with a log of the execution of the tool. Even if the migration totally fails, the source is left intact.

Migration Report

What did the tool do?

The last lines of output from the tool display the completion message which includes the source and target locations. The location of the logfile is also provided, so the execution can be diagnosed if anything went wrong.

The logfile generated at the INFO level provides the *Migration Report*, which lists the changes made to migrate the source to the target. The INFO level is the default logging output level if no logging option is specified. You can also generate more detailed output by specifying CONFIG, FINE, FINER, or FINEST levels.



Review the Migration Report

You should always review the Migration Report to make sure that nothing was removed that is critical to your station's operation, and to ensure that there were not any failures, or items that could not be migrated by the tool. In some cases, there may be issues that need to be resolved by the integration engineer post-migration. See Post-Migration Tasks for more information.

You should inspect the Migration Report for the following:

- **Migration failures** - If any migration failure occurs, this will be noted in the report. You should report any migration failures to your support channel. In some cases it may be necessary to modify this part of the station manually, and your support channel should be able to assist in that.
- **Program compilation failures** - The migration tool attempts to recompile the Program objects in the station with the new modules. In some cases, this may not be successful. Programs that cannot be compiled will be noted in the report, and you will need to modify the program manually to allow it to compile.
- **Removed station components** - Station components whose type or module does not exist in N4, and for which there is not a type to migrate to, are removed. This should not occur frequently, as the modules that were removed for N4 were generally unused or deprecated modules. If you find that a component has been removed that should not be, please report this to your support channel, as it may be that a converter needs to be developed for that type.
- **Any WARNING or SEVERE messages** - these messages will be included in the Migration Report prefixed by "WARNING" or "SEVERE", as appropriate. They indicate something that is a more significant issue, likely a problem with the tool execution. You should inspect the items referenced in these messages to make sure that the migrated artifact is what you want.

Tips and Tricks

- You do not have to create the target directory beforehand. The current default if the target is not supplied is to put the migrated artifact into your N4 Workbench User Home folder.
- You can skip the prompt for migration template, if you know the choices beforehand, by using the `-t` option. Simply use `-t: #`, where # is the migration template choice. You can also use the shortcuts 's' and 'c' for the standard Supervisor and Controller templates, respectively.

Troubleshooting

If you encounter any problems with the migration tool, the important pieces of information to help Tridium diagnose the problem will be:

- The Niagara AX artifact you were trying to migrate
 - The Niagara AX version it was running
 - The Niagara 4 version which you used to migrate the artifact
 - The exact command you entered (including options, etc.)
 - The tool output on the console
-