

Technical Document

JACE-8000 Backup and Restore Guide

December 2, 2015

niagara⁴

JACE-8000 Backup and Restore Guide

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About this guide

This guide explains how to create a USB backup of a JACE-8000, and how to restore from a backup.

Document change log (USB Backup)

Updates and changes to the document are listed in this topic.

- Updated: December 2, 2015
In the USB Backup and Restore feature topic, added a caution about USB drives causing the unit to fail.
In the Create a USB Backup topic, added a caution about USB drives causing the unit to fail.
- Updated: November 20, 2015
The Restore USB backup procedure was updated to reflect change in the restore options.
- Updated: October 26, 2015. Changes throughout to reflect Niagara 4.1 updates.
- Initial release publication: August 18, 2015.

Related documentation (USB Backup)

Additional related information on the Niagara platforms is available in the following document.

- *Niagara 4 Platform Guide*

Chapter 1 USB backup and restore feature

Topics covered in this chapter

- ◆ Creating a USB backup
- ◆ Restoring from a USB backup
- ◆ Recovering factory defaults

The JACE-8000 allows you to back up the entire platform and station to a USB flash drive without requiring the backup functions of Workbench. Called a clone backup, the file created by a USB backup contains a complete image of the platform and station, including system modules and the QNX OS.

The BackupService, which comes standard with Workbench, backs up station files to a local Supervisor or browser PC. A backup made by the BackupService includes only pointers to required core software modules. To restore from a backup made using Workbench, not only do you need Workbench, but also its software database with matching versions of all required core .dist files, OS .dist files, and software modules. Afterwards, use the **Distribution File** Installer to restore the backup.

The JACE-8000 provides the ability to:

- Initiate a backup manually by inserting a USB flash drive into the USB port and pressing the backup and restore button on the unit itself.
CAUTION: Certain types of USB flash drives (ex.: SanDisk Cruzer Glide) used in backup/restore procedures may cause the JACE-8000 to fail (lockup), requiring a reboot. To prevent such unintended results, test any USB drive that you plan to use for backup/restore purposes in a test environment prior to using it at an actual job site.
- Restore a USB backup image using a USB flash drive, USB-to-microUSB cable connection and a terminal emulator program.
- Recover the factory default image. This feature does not require a USB flash drive, special cable or terminal emulator. The system pulls the factory image from non-volatile, read-only memory.

Creating a USB backup

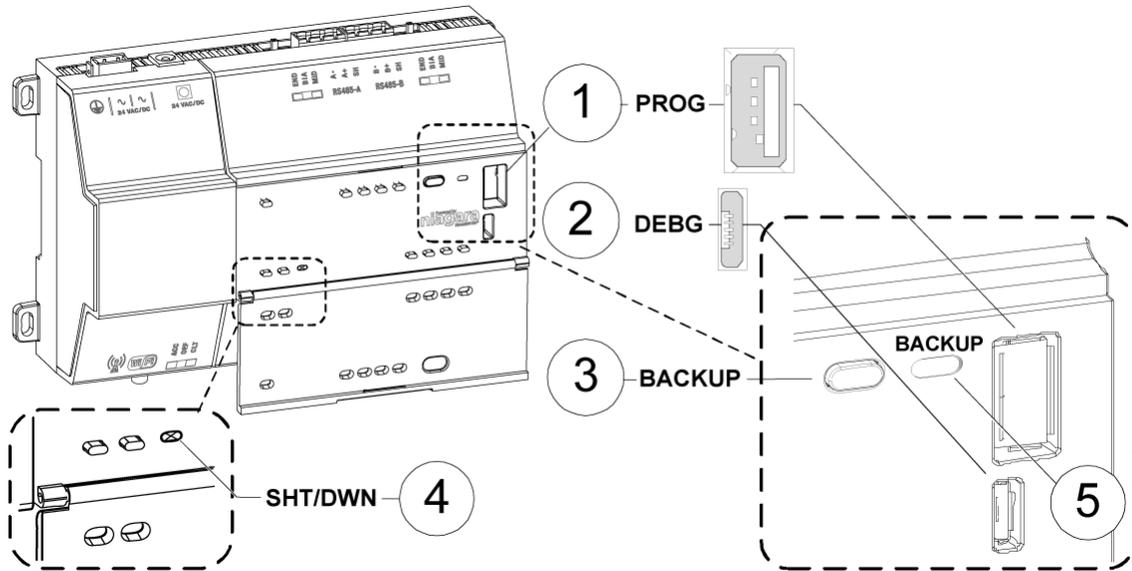
You may create a clone backup while a station is running or stopped. When the controller is powered on, the software continuously monitors the USB port. Putting a USB flash drive in the port triggers backup/restore mode.

Prerequisites:

- USB backups are enabled on the controller:
Platform Administration→**Advanced Options**→**USB Backup Enabled** property is selected
- You need a USB flash drive with enough memory to contain the complete platform and station image along with the operating system and all software modules.

CAUTION: Certain types of USB flash drives (ex.: SanDisk Cruzer Glide) used in backup/restore procedures may cause the JACE-8000 to fail (lockup), requiring a reboot. To prevent such unintended results, test any USB drive that you plan to use for backup/restore purposes in a test environment prior to using it at an actual job site.

- Step 1 Confirm that the controller's power is on.
- Step 2 Insert a USB flash drive into the USB port.
The backup and restore LED turns on.



1	USB port
2	Micro-A USB debug port
3	Backup and restore button
4	Shutdown (initiates an orderly shutdown)
5	Backup and restore LED

Step 3 Hold the backup and restore button until the LED flashes at medium speed (100mS on and 100mS off), then release the button.

The system begins the backup. While backing up, the LED flashes slowly (one second on, one second off).

When the backup completes, the system prepares the USB flash drive to be removed safely. If the backup is unable to complete successfully, the LED flashes rapidly (200mS on, 200mS off), indicating an error.

Step 4 When the backup and restore LED turns off, remove the USB flash drive and store it in a safe place.

The backup image includes the contents of the boot partition, /home/niagara, /opt/niagara, etc. The name of the resulting image file follows this convention: `hostid` (unique host ID of the JACE-8000), underscore (`_`) timestamp, For example:

- Qnx-TITAN-D01C-CA36-CB10-4E3B_20170912230355
- Qnx-TITAN-D01C-CA36-CB10-4E3B_20171015212346

Restoring from a USB backup

Restoring from a USB backup returns the controller to the state it was in when the system made the backup. You may restore to a controller other than the one on which the backup was made, provided that the target controller is the same model. The restore procedure does not require access to Workbench.

Prerequisites:

- The USB flash drive on which the backup is stored.

CAUTION: Certain types of USB flash drives (ex.: SanDisk Cruzer Glide) used in backup/restore procedures may cause the JACE-8000 to fail (lockup), requiring a reboot. To prevent such unintended results, test any USB drive that you plan to use for backup/restore purposes in a test environment prior to using it at an actual job site.

- A USB-to-microUSB cable (same cable as that used to connect a smart phone to a computer). The Debug port on a controller is a standard Micro-A type USB port for debugging serial communications.
- A terminal emulator (system shell program), such as PuTTY.

You use this program to access the controller's system shell menu, which lists the restore options.

- The system passphrase of the system to which you are restoring the backup.
- The system passphrase used to create the backup. If you are restoring the image to a different controller (another of the same model), or if the system passphrase for the controller on which the backup was made changed since you made the backup, the passphrase required to decode the backup will be different from the current system passphrase.

Step 1 Set up the terminal emulator program running on your PC with the following settings:

- baud rate: 115200
- data bits: 8
- parity: N
- stop bits: 1

For details on using a serial connection to this port, see the "JACE Niagara 4 Install and Startup Guide."

Step 2 Ensure that the controller's power is off.

Step 3 Connect the USB-to-microUSB cable from the computer to the controller's microUSB port (Debug port).

Step 4 Insert the USB flash drive that contains the backup into the USB port.

Step 5 Hold the backup and restore button momentarily as you power up the controller.

The backup and restore LED flashes at medium speed (100mS on and 100mS off).

Step 6 Wait (approximately 5 seconds) for the following banner to appear, then release the backup and restore button:

```
*****
Backup/Restore button press detected. Release button
now to proceed.
*****
```

NOTE: If the boot process is unable to detect the release of the button within five seconds, it exits restore and recovery mode and proceeds with a normal boot.

If the boot process detects the release of the button within five seconds, it enters the restore and recovery mode and displays the restoration options:

```
This Platform's ID is hostid
Please make your selection below
1) Abort Recovery/Restore mode
2) Factory Recovery "ALL DATA WILL BE LOST!!"
2) Show backups for other host IDs
3) backup file name
```

After the button is released, system displays a countdown.

At this point, you must press a key on the terminal within 10 seconds or the system will enter factory recovery mode. If no key is pressed, the factory recovery will begin at the moment the count-down finishes.

Step 7 Press any key to restore from a USB backup.

The system enters the USB restore mode and the following banner and warning appears:

```
*****
Restore from a USB Backup
*****
```

Existing Niagara and platform installation will be completely removed!

This includes

```
licenses
TCP/IP and WiFi configuration
platform credentials
```

If restoring a backup from another unit, you will need to install a new license.

TCP/IP configuration and platform credentials will be set to values in the backup.

Niagara daemon and station will be killed if they are currently running

Enter the system passphrase for this system to proceed, or return to exit and reboot

Step 8 At the passphrase prompt, enter the current system passphrase for the controller to which you are attempting to restore the backup.

One of the following happens:

- If the entered passphrase does not match the system passphrase for this controller, after prompting a second time and no match, the backup and restore LED flashes rapidly (200mS on, 200mS off) and it prompts you to reset the system.
- If the entered passphrase and the passphrase on the controller match, the system waits while the USB drive mounts, this can take a few minutes. The following message appears:

```
Waiting for USB drive to mount. Press any key to quit and reboot.
```

Once USB drive is detected, the following information and options appear:

```
USB drive detected
This platform is Qnx-TITAN-61BA-B6DB-88FE-4A31
Please make your selection below
1) Abort Recovery/Restore mode
2) Show backups for other host IDs
3) Qnx-TITAN-61BA-B6DB-88FE-4A31_20151119154109
```

Step 9 Type the number for a listed backup file name (for example: 3) or other option and press **Enter**.

NOTE: The backup file name is the name of the backup file on the USB flash drive:

```
(hostid (unique host ID of the JACE-8000), underscore (_) timestamp)
```

The system asks about the passphrase for the backup file.

Step 10 At the prompt for whether the backup file's passphrase is the same as the system passphrase for the controller, type Y (yes) or N (no).

- If **Yes**, then the system passphrase entered in the earlier step is used to decode the backup.
- If **No**, you must enter the passphrase used to encrypt the backup file to decode the backup.

Step 11 If you entered **N** in the previous step, at the prompt enter the passphrase for the backup, and confirm it.

The restore begins.

CAUTION: Once a restore begins, do not interrupt the process by removing the USB flash drive, disconnecting the power, or pressing the backup and restore button again. If you do not allow the restore to complete, the controller could be left in a non-functional state.

When the restore successfully completes, the backup and restore LED turns off and the system displays a message indicating that the restore is complete and that the controller requires a reset.

Step 12 Turn the controller’s power off and back on again.

Recovering factory defaults

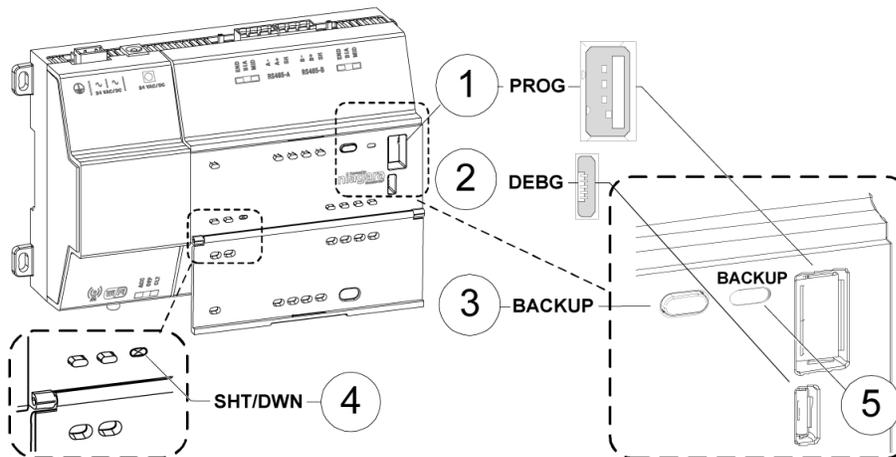
Recovery returns the controller to the state it was in when it shipped from the factory.

NOTE: Recovering factory defaults removes all platform and station data in the controller.

A couple of scenarios for which you might choose to restore factory defaults are:

- While commissioning a brand new JACE, you make an error entering the default platform daemon credentials or passphrase. The result is that you cannot commission the controller. In this scenario, your only recovery option is to restore the factory defaults.
- When decommissioning a JACE, a best practice to follow is recovering the factory defaults in order to wipe all of the platform and station data in the controller.

The figure with numbered call-outs, shown here, indicates the position of USB ports and switches behind the access door.



1	PROG	USB 2.0 for use with USB Flash (thumb) drive
2	DEBUG	Micro-A USB for serial debug communications
3	BACKUP	Pushbutton switch to start a USB backup, or if held in during power up/boot up, initiates a factory recovery image
4	SHT/DWN	Recessed pushbutton switch for initiating a controlled shutdown
5	BACKUP	LED to indicate USB media present, or a backup, restore, or factory recovery image in progress.

- The DEBUG port is a standard Micro-A type USB port for serial debug communications to the controller. For more details, see "About JACE System Shell mode".

NOTE:

Login requires administrator level platform credentials.

- The SHT/DWN pushbutton initiates a “controlled shutdown” of the controller, ensuring that all station data is preserved.

Step 1 Ensure that the controller’s power is off.

Step 2 Hold the Backup button for at least five seconds as you power up the controller.

The Backup LED flashes at medium speed (100 mS on, 100 mS off).

Step 3 Release the Backup button.

If you held the button for at least five seconds with no USB flash drive in the USB port, after 10 seconds the boot process defaults to recovery mode. Upon entering recovery mode, the boot process overwrites the controller with a default factory image. During this process the Backup LED flashes at slow speed (one second on, then one second off).

CAUTION: Once in recovery mode (BACKUP LED is flashing in “working mode” pattern, 1s On/1s Off, or slow blink), do not interrupt the process. Allow the recovery to complete or the controller could be left in an inoperable state.

Step 4 When the Backup LED stops flashing, turn the controller’s power off and back on again.

Chapter 2 Backup and Restore reference information

Topics covered in this chapter

- ◆ Platform and station backup options
- ◆ Restore options

The following sections provide additional backup and restore options reference information.

Platform and station backup options

Several options are available for backing up platform and station data.

In Niagara, the term *backup* describes different operations.

Backup type	Contents	Size	Tool	Notes	Platforms supported
Station copier	Station .bog file, histories, and alarms	<1 to 50 MB	Workbench	Supports cross-model installation of station backup	All (NiagaraAX and Niagara 4)
Backup .dist	Station .bog file, histories, alarms, references to modules, JVM and OS version, and platform configuration	<1 to 50 MB	Workbench	Requires a clean dist (distribution) to downgrade	All (NiagaraAX and Niagara 4)
Clone backup	Station bog, histories, alarms, copies of modules, JVM, OS image, platform configuration	50+ MB	Browser, USB port, debug port access	Completely self-contained. May only be restored to the same model of controller.	JACE-8000 (Niagara 4 only)

Restore options

The restore options are displayed when restoring a controller (platform and station) that was backed up to a USB flash drive.

The restore options display when you connect to the controller using a USB-to-microUSB cable and run a terminal emulator.

```
This Platform's ID is hostid
Please make your selection below
1) Abort Recovery/Restore mode
2) Show backups for other host IDs
3) backup file name
```

Where: backup file name is the name of the backup file on the USB flash drive:

(hostid (unique host ID of the JACE-8000), underscore (_), timestamp)

Menu item	Description
1) Abort Recovery/Restore mode	Allows you to abandon the process of recovering or restoring a USB backup.
2) Factory Recovery **ALL DATA WILL BE LOST!**	Recovers the controller to its factory default state.

Menu item	Description
3) Show backups for other host IDs	Displays all backups on the UPS flash drive.
4- <i>n</i>) <i>hostid_timestamp</i>	Displays the USB backup file name, where: <i>n</i> is the option number. <i>hostid</i> is the host name. <i>timestamp</i> identifies the date and time when the backup was made.

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