

Kodaro's Niagara 4 Port Installation Guide

August 16, 2018

Documents the process of installing Kodaro's Niagara 4 Port on the Dell Edge Gateway hardware

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OVERVIEW

This document serves as a guide for installing Niagara 4 on the Dell Edge Gateway hardware.

System Compatibility

The Niagara 4 software is compatible with the following hardware and operating systems

Supported Hardware:

- Dell Edge Gateway 5000,5100
- Dell Edge Gateway 3001, 3002, 3003

Supported Operating Systems:

- INodeOS (Iotium) – 5000 series only
- Ubuntu Core 16 (Canonical)

Workflow Summary

1. Determining installation path based on Operating System
 - a. IoTium (TBD)
 - b. Ubuntu Core
 - i. Preparing to install on Ubuntu Core 16
 - ii. Loading the installer onto the Dell Edge Gateway
 - iii. Running the installer on Ubuntu Core 16

Determining the Operating System

The operating system must be determined before moving forward as the process to install on IoTium is vastly different than that of Ubuntu Core.

If you have purchased an Edge Gateway with the IoTium operating system, there will be a sticker with the IoTium logo and a serial number on the side of the Gateway. Note: The IoTium OS cannot be accessed by plugging in a console and keyboard to the Dell Edge Gateway. See Installing Niagara 4 on IoTium for access information.

The Ubuntu Core 16 operating system can be loaded on the Gateway in two ways: When ordered directly from Dell, the Ubuntu Core OS is a configuration option; When ordered from an authorized Dell distributor, the Ubuntu Core 16 can be loaded via a bootable USB drive. Installing Ubuntu Core via a USB drive is beyond the scope of this document.

If you are unsure about which operating system is loaded on your gateway, it is recommended you contact the sales associate who supplied you with this device. If there is no such associate, you can find support to determine your operating system at www.community.kodaro.com.

Once you have determined your operating system, please move onto the appropriate section in this document corresponding to your OS for the step-by-step Niagara 4 install process.

Installing Niagara 4 on IoTium

TBD

Preparing to Install on Ubuntu Core

This section of the guide assumes that you are working from the default installation of the Ubuntu Core 16 operating system. Assumptions made by this:

Assumption 1: There is no FTP service running so it cannot be used to transfer the installer onto the system.

Assumption 2: The default (only) user available is: User: admin Pw: admin

If either of these assumptions do not apply to your setup, please adjust the following procedure accordingly.

1. Getting the Installer:

To install Niagara 4 on the Dell Gateway, you will need to first download a copy of the installer from (TBD). The installer will be in the file format of .tar, which is a zip file format for Linux.

Name Format: Niagara_<Niagara_Version>_Kodaro_<OS>_Installer_<Installer_Version>

Example: *Niagara_4.2.36.34_Kodaro_UC16_EDGE5_Installer_1.0* would be the initial release (1.0) for Niagara 4.2.36.34 for the Ubuntu Core 16 (UC16) operating system.

Niagara Version: Refers to the matched Niagara release version

OS: The operating system this installer is designed for

Installer Version: Refers to the installer version which is paired with a Niagara Version for offline installation. Once a version of an installer is loaded onto a gateway (4.2, 4.6, etc), online installation can be used for any upgrades.

Example *Niagara_4.2.36.34_Kodaro_UC16_EDGE5_Installer_1.0* would come paired with version Niagara 4.2.36.34.0.1. If an update came out as *Niagara_4.2.36.34_Kodaro_UC16_EDGE5_Installer_1.1* , unless specified elsewhere, you could grab that update by defining it during the installation process without having to download the new installer.

Niagara Version image. Details of these releases can be found in the release notes.

2. Installing the Installer:

- a. Place the downloaded file onto a USB drive and plug it into any available USB port on the Gateway.
- b. Perform the following steps defined by either connecting directly to a monitor and keyboard or connect to a terminal application via SSH such as PuTTY (<http://www.putty.org/>)

- i. If connecting with SSH, you will need to determine the IP address. If you do not know this, then you will need to access initially with a keyboard and monitor. Login to the system and type *ifconfig* and this will give the IP address to connect to.

Loading the Installer onto the Gateway

This section assumes you have prepared all necessary steps to complete the following commands successfully either with a keyboard and monitor directly connected or over an SSH connection. If you are unsure of your setup, please refer to the section labeled *Preparing to Install on Ubuntu Core*.

Commands below are shown with supporting screen shots for clarity and supporting text areas with the command so they can be copy pasted (SSH only).

1. Mount the USB drive

- a. Find out what the operating system has designated by running the command

```
lsblk
```

This will return a result similar to:

```
NAME MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda   8:0    0  59.6G  0 disk
├─sda1 8:1    0    1G  0 part
├─sda2 8:2    0   64M  0 part /boot/efi
├─sda3 8:3    0  58.6G  0 part /writable
└─sdb   8:16   0 149.1G  0 disk
   └─sdb1 8:17   0  149G  0 part
loop0 7:0    0  80.5M  0 loop /
loop1 7:1    0  124M  0 loop /lib/firmware
```

In this example, the USB drive being used is 150GB. When the `lsblk` command is run, you can see that it is identified as `sdb1`. This will differ for each system so make sure to update the following commands to match your system based on your results of `lsblk`.

- b. Now let's create a mount point for your drive. The easiest way to do this is to create a directory in your home directory called `~/media/usb` directory called `usb`. You can perform this in one command.

```
admin@localhost:~/media$ sudo mkdir -p ~/media/usb
admin@localhost:~/media$ cd ~/media/usb
```

```
mkdir -p ~/media/usb
```

Verify the command succeeded by navigating to the directory.

```
admin@localhost:~$ ls ~/media
usb
admin@localhost:~$
```

```
ls ~/media
```

- c. At this point we have the source and destination ready. We will now mount the USB drive identified as sdb1 to our new directory ~/media/usb1. This will need to be run as root so the use of the word sudo will be required for this command.

Without sudo:

```
admin@localhost:~/media/usb$ mount /dev/sdb1 ~/media/usb
mount: only root can do that
```

With sudo:

```
admin@localhost:~/media/usb$ sudo mount /dev/sdb1 ~/media/usb
admin@localhost:~/media/usb$
```

```
sudo mount /dev/sdb1 ~/media/usb
```

2. Copy the Installer to the gateway

- a. Due to the nature of Ubuntu Core, once mounted, this directory will now be owned by the root user and you will not actually be able to navigate to it. You can still verify the contents by typing the following command:

```
sudo ls ~/media/usb
```

Once the mount and contents are verified, you will want to copy the installer file onto the system directly. You can move this anywhere you would like on your system but for this example, we will create a folder in our home directory called “installer” and place it there.

Like the usb folder we created, we will perform a similar command for the installer directory.

```
admin@localhost:~/media$ sudo mkdir -p ~/installer
```

```
sudo mkdir -p ~/installer
```

- b. We now have the installer available on the system that lives on the USB drive and a location for it to be placed. We can do this by just copying from our mounted usb directory into our new installer directory. As stated earlier, due to the ownership of the usb directory as root, this must be run using the sudo command.

```
admin@localhost:~/media$ sudo cp ~/media/usb/Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0.tar ~/installer
admin@localhost:~/media$
```

Modify the following command to match the installer and version desired to be used.

```
sudo cp ~/media/usb/Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0.tar ~/installer
```

- c. Verify the installer was successfully copied to your system.

```
admin@localhost:~$ cd ~/installer
admin@localhost:~/installer$ ls
Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0.tar
admin@localhost:~/installer$
```

Move into the directory:

```
cd ~/installer
```

Verify the contents:

```
ls
```

3. Extract the contents of the installer

```
admin@localhost:~/installer$ sudo tar -xvf Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0.tar
./Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0/
./Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0/install.sh
./Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0/lib/
./Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0/lib/configure.sh
./Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0/bin/
./Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0/bin/installer.sh
./Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0/cleanSystem.sh
```

Change the following command to match the version of your installer

```
sudo tar -xvf Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0.tar
```

Validate the contents to make sure it successfully extracted.

```
admin@localhost:~/installer$ ls
Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0  Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0.tar
```

```
ls
```

You should see the original .tar file and a new directory named the same thing but without the .tar indicating the extracted information.

Now that you have loaded the installer, you can move to the *Running on the Installer on Ubuntu Core* section of this document.

Running the Installer on Ubuntu Core

This section assumes you have followed the previous section as it relates to placing the installer onto your system. If you have chosen a different directory than defined there, then you will need to update the following commands accordingly.

1. Move into the directory where the installer has been loaded and extracted. This will allow all the commands after this to work the same regardless of the installation location.

```
admin@localhost:~$ cd ~/installer/Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0/
admin@localhost:~/installer/Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0$
```

```
cd ~/installer/Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0/
```

2. You can view the contents of this folder by typing “ls” to confirm all the files are available.

```
admin@localhost:~/installer/Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0$ ls
bin cleanSystem.sh install.sh lib
```

3. The only thing left to do is to run the install.sh script. It must be run as root. If you don't run as root, it will fail.

Without sudo:

```
admin@localhost:~/installer/Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0$ ./install.sh
This script must be run as root
```

With sudo:

```
admin@localhost:~/installer/Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0$ sudo ./install.sh
Searching your system for possible images to install from..
REPOSITORY      TAG          IMAGE ID      CREATED      SIZE
No Niagara images currently installed
1) Install the Niagara image provided with this installer. Any updates to this version can be downloaded later during the install process.
2) Define the version available online to download and install
3) Download and install the version marked as 'latest'. This version is not guaranteed to be a stable release
Please select an option to proceed:
```

```
sudo ./install.sh
```

The installer will now walk you through all the options available from here on out.

It is recommended to always refer to the installer messaging as this document does not intend to specify every step in the actual installer process. If you have any questions and/or concerns about the installation process, please visit our forums for support at www.community.kodaro.com.

Upgrading Your Installation

There are multiple scenarios for upgrading depending on which version you are moving to and what version you are moving from. This section attempts to document the known scenarios and walk you through this process.

All scenarios described below will decommission the Niagara installations current state. Commissioning will be required after upgrading with these methods.

Scenario 1:

An instance of Niagara on your gateway was installed from Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8

This means your service is named Niagara_4.2.36.34. All newer versions after this have the version removed in favor of simplifying updates. You can verify this by running the command on the gateway:

```
sudo docker ps -a
```

At this point, we have two options:

Option 1: Rename and Use New Installer

If you are planning on upgrading to 4.6 or any other version other than 4.2, this is the option you will need.

1. Rename the service by running the command:

```
sudo docker rename Niagara_4.2.36.34 Niagara
```

Before Rename:

```
admin@6LNQ802:~/installer/Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8$ sudo docker ps -a
CONTAINER ID        IMAGE                                COMMAND                  CREATED             STATUS              PORTS              NAMES
d8a4175224a1      kodaro/uc16_edge_niagara_4_2_36_34:1.8  "/usr/bin/supervisord"  8 seconds ago      Up 6 seconds              Niagara_4.2.36.34
```

2. Confirm the rename command was successful:

```
sudo docker ps -a
```

```
ler/Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8$ sudo docker rename Niagara_4.2.36.34 Niagara
ler/Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8$ sudo docker ps -a
CONTAINER ID        IMAGE                                COMMAND                  CREATED             STATUS              PORTS              NAMES
d8a4175224a1      kodaro/uc16_edge_niagara_4_2_36_34:1.8  "/usr/bin/supervisord"  2 minutes ago      Up 2 minutes              Niagara
```

3. Download the newer installer you are planning on upgrading from www.kodaro.com

4. Go back to the section “Prepare to Install on Ubuntu Core” and follow the steps with your new installer. Starting at Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.9 and above will now be able to upgrade the older versioned service name without issue.

Option 2: Keep Same Name and Installer

If you do not wish to go through the steps of getting the latest installer, you can upgrade to the latest version within the installer version as it relates to the Niagara version (4.2,4.6 etc). This means if you wanted to just update from 1.8 to 1.9, all you would need to do is to re-run the installer and select 1.9 from the manual version selection. This would also mean that you would keep the version in the service name so upgrading to Niagara 4.6 would still require additional work. See Scenario 2 in this section of the document.

```
admin@6LNQ802:~/installer/Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8$ sudo ./install.sh
1) Install the image provided with this installer. Any updates to this version can be downloaded later during the install process.
2) Define the version available online to download and install
3) Download and install the version marked as 'latest'. This version is not guaranteed to be a stable release
4) Re-install from an already existing version
Please select the install source you would like to use?2
What version would you like to install?1.9
Attempting to download 1.9
1.9: Pulling from kodaro/uc16_edge_niagara_4_2_36_34
```

After completing the above new installation by defining the version, you can verify the new version is using the latest image by running:

```
sudo docker ps -a
```

```
admin@6LNQ802:~/installer/Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8$ sudo docker ps -a
IMAGE                                COMMAND                                CREATED    STATUS    PORTS    NAMES
kodaro/uc16_edge_niagara_4_2_36_34:1.9  "/usr/bin/supervisord"                9 seconds ago    Up 3 seconds    Niagara_4.2.36.34
kodaro/uc16_edge_niagara_4_2_36_34:1.8  "/usr/bin/supervisord"                10 minutes ago    Exited (0) 54 seconds ago    Niagara_4.2.36.34_b
```

Note we now have a 1.9 image installed for the active Niagara service and the old 1.8 is defined as the backup.

Scenario 2:

An instance of Niagara on your gateway was installed from Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8 and you upgraded it to another version using Scenario 1 Option 2 and are now ready to upgrade to a newer version than a 4.2 release.

Rename and Use New Installer

If you are planning on upgrading to 4.6 or any other version other than 4.2, this is the option you will need.

1. Rename the service by running the command:

```
sudo docker rename Niagara_4.2.36.34 Niagara
```

Before Rename:

```
admin@6LNQ802:~/installer/Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8$ sudo docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
d8a4175224a1	kodaro/uc16_edge_niagara_4_2_36_34:1.8	"/usr/bin/supervisord"	8 seconds ago	Up 6 seconds		Niagara 4.2.36.34

2. Confirm the rename command was successful:

```
sudo docker ps -a
```

```
ler/Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8$ sudo docker rename Niagara_4.2.36.34 Niagara
```

```
ler/Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8$ sudo docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
d8a4175224a1	kodaro/uc16_edge_niagara_4_2_36_34:1.8	"/usr/bin/supervisord"	2 minutes ago	Up 2 minutes		Niagara

```
ler/Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8$
```

3. Download the newer installer you are planning on upgrading from www.kodaro.com
4. Go back to the section “Prepare to Install on Ubuntu Core” and follow the steps with your new installer. Starting at Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.9 and above will now be able to upgrade the older versioned service name without issue.

HISTORY

Unless otherwise noted in the specific version, all updates (Added, Fixed Changed, etc) propagate up to all higher versions.

August 16, 2018: Niagara_4.6.96.28_Kodaro_UC16_EDGE_Installer_1.2

- Paired with nre version 4.6.96.28.0.2
 - Added – Creates persistent platform user database for restoration through upgrades and/or re-installs. Added in nre version 4.6.96.28.0.2
 - Added – Docker image *kodaro/uc_edge_niagara_4.6.96.28:1.2* which contains restoration of platform user database through upgrades and re-installs. Requires at least nre version 4.6.96.28.0.2 for a user database backup to be created first.
 - Fixed – DNS server information loading in Niagara TCP/IP views inconsistently caused by race condition with the IP stack and Niagara daemon startup time.
 - Changed – Operating System Name no longer identifies as “Core”. This effects distribution file naming pattern. Old and new distribution files are included with this release for legacy upgrades to this version but will not be created or distributed past this version.

Old Naming Conventions:

nre-config-Kodaro-UbuntuCore-<Hardware>.dist

nre-core-Kodaro-UbuntuCore-<Hardware>.dist

New Naming Conventions:

nre-config-Kodaro-Ubuntu.<Hardware>.dist

nre-core-Kodaro-Ubuntu-<Hardware>.dist

August 16, 2018: Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.11

- Paired with nre version 4.6.96.28.0.11
 - Added – Creates persistent platform user database for restoration through upgrades and/or re-installs. Added in nre version 4.2.36.34
 - Added – Docker image *kodaro/uc_edge_niagara_4.2.36.34:1.11* which contains restoration of platform user database through upgrades and re-installs. Requires at least nre version 4.2.36.34.0.10 for a user database backup to be created first.
 - Changed – Operating System Name no longer identifies as “Core”. This effects distribution file naming pattern. Old and new distribution files are included with this release for legacy upgrades to this version but will not be created or distributed past this version.

Old Naming Conventions:

nre-config-Kodaro-UbuntuCore-<Hardware>.dist

nre-core-Kodaro-UbuntuCore-<Hardware>.dist

New Naming Conventions:

nre-config-Kodaro-Ubuntu.<Hardware>.dist

nre-core-Kodaro-Ubuntu-<Hardware>.dist

August 13, 2018: Nre Version 4.2.36.34.0.10

- Fixed - DNS server information loading in Niagara TCP/IP views inconsistently caused by race condition with the IP stack and Niagara daemon startup time.

July 31, 2018: Niagara_4.6.96.28_Kodaro_UC16_EDGE_Installer_1.0

- Initial Release for the 4.6 Niagara Software
- Paired with nre version 4.6.96.28.0.1

July 31, 2018: Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.9

- Paired with nre version 4.2.36.34.0.9
 - Added - Web Service can now access ports below 1024 (80,443, etc). No port forwarding or elevated access to the service is required.
 - Fixed – IonIP resolves adapter list correctly. Adapter descriptions now append interface name to make them unique which was the root of the failure in 4.2.36.34.0.8
 - Changed – Name of running service removes version number. Niagara_4.2.36.34 is now just Niagara. This allows for better upgrading to Niagara 4.6 and above. See “*Upgrading Your Installation*” section for details to account for this change.
 - Updated – Underlying OS updated from Ubuntu 17.10 to 18.04 LTS (Long Term Support – April 2023).
 - Updated - JRE is now at version 1.8.0.171 from 1.8.0.161

April 24, 2018: Niagara_4.2.36.34_Kodaro_UC16_EDGE_Installer_1.8

- Paired with nre version 4.2.36.34.0.8
 - Added - ability to write to hosts file
 - Added - DNS search naming convention to resolve correctly
 - Changed - Wireless adapters to read only in platform TCP/IP manager
 - Fixed - DHCP server information resolving issue
 - Fixed - Platform User comments causing error
- Removed hardware series to the installer naming convention to coincide with support for Gateway 3000 hardware series using the same installer.

December 20, 2017: Niagara_4.2.36.34_Kodaro_UC16_EDGE5_Installer_1.0

- Added hardware series to the installer naming convention

November 01, 2017: Niagara_4.2.36.34_Kodaro_UC16_Installer_1.0

- Initial Release for the 4.2 Niagara Software
- Paired with nre version 4.2.36.34.0.1
 - Limitation - BACnet MSTP not supported

- Limitation - LON serial not supported.