ontrol

Sedona Programming in Niagara 4

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Powered by sedona FRAMEWORK™

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1 INTRODUCTION

OntrolSedonanet Driver is a comprehensive integration tool designed for seamless operation within the Niagara Framework™.

The Sedona device programming workflow is very similar to Niagara programming and uses the same concepts such as components, slots, views, wiresheets, property sheets, linking etc. For engineers trained in Niagara, programming and commissioning Sedona devices should be straightforward.

This document describes the basics of setting up the programming environment within workbench and covers basic methods specific to Sedona programming.

2 PREREQUISITES

- N4 Workbench software (or equivalent), version 4.13 or higher
- Basic Niagara programming knowledge, preferably TCP certification.
- ONT-DR-SEDN feature in your license if working with non-Ontrol Sedona devices.

3 INITIAL SETUP

3.1 REQUIRED FILES

The required files can be downloaded from www.ontrol.com/sedonadownload.

- OntrolSedonanet modules
- Ontrol Sedona Package
- Optionally Ontrol Sedona Tools utility (only needed if you are going to program Ontrol's touch-screen controllers via USB connection)

These are delivered as archive (.zip) files and need to be installed differently. Always use the latest versions and update your system when new versions are released by Ontrol.

3.1.1 OntrolSedonanet Modules for Niagara N4

Simply unpack the Niagara modules (.jar files) to your Niagara installation's modules folder:

{Niagara installation folder}\modules\

For example: C:\Niagara\Niagara-4.14.1.76\modules

The required modules are:

- ontrolSedonanet-rt
- ontrolSedonanet-wb
- ontrolSedonaUi-wb (custom views for some Sedona components)
- ontrolSedonaOx-wb (only required for graphics programming on Ontrol's touch-screen controllers)

Workbench restart may be necessary after copying modules.

3.1.2 Ontrol Sedona Package

This package includes Sedona kit, manifest and platform files. These files need to be copied to multiple locations. This is normally done using Ontrol Sedona Installer, which is a view of the SedonaNetwork on a running Niagara station.

Before you can use that, you need to set up a station and add the SedonaNetwork. See below.

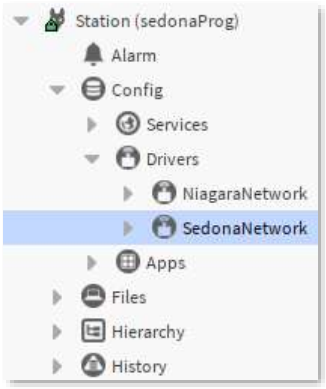
3.2 Adding a Sedona Network

A Sedona device is only accessible through a running Niagara station.

- In an actual installation, this can be a station already running on a Jace or a Supervisor.
- To program a device back in the office, you can simply run a temporary station on your engineering PC. Once a station has been created for this purpose, it can be re-used for different devices.

The workflow is the same in both setups.

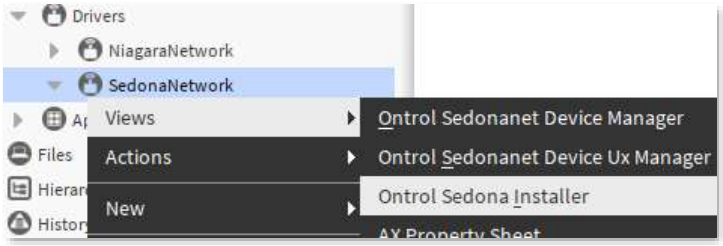
Add a SedonaNetwork, using the standard Driver Manager view. The default properties do not normally need to be changed.



Before continuing, some Sedona files need to be installed. The running station and workbench both need access to Sedona kit and platform files. Due to security restrictions in N4, these files need to be copied to multiple locations. Ontrol Sedona Installer makes this easy.

3.3 Using Ontrol Sedona Installer

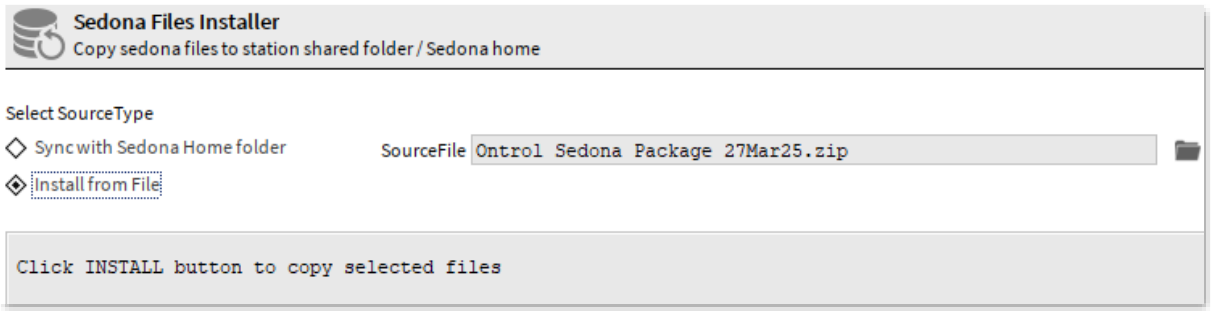
Ontrol Sedona Installer is a custom view of the SedonaNetwork component. Right-click on SedonaNetwork and select
Views -> Ontrol Sedona Installer



3.3.1 Initial Installation

In Ontrol Sedona Installer view;

- Choose option: “Install from file”
- Click on the Open button and select the source file
- Click on the “Install” button at the bottom-right

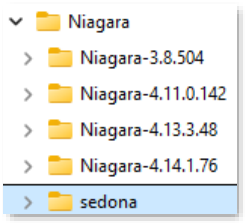


This will unzip and copy several files from the archive to multiple locations as detailed below. Station restart may be necessary after installing new Sedona files.

3.3.2 Sedona file locations

Sedona Home

Sedona files are primarily maintained directly under your main Niagara folder - typically *C:\Niagara\sedona*.



This location serves as a master repository for Workbench and all Niagara versions installed in the computer.

Daemon User Home

However, a running station cannot access this location due to N4 security restrictions. Therefore, some required files are also automatically copied by the Sedona Installer to: *{Daemon User Home}\shared\sedona*.
(for example *C:\ProgramData\Niagara4.13\tridium\shared\sedona*)

3.3.3 Syncing from Sedona Home

Note that the second location is version dependent. Therefore, when a new Niagara version is installed, it will be necessary to run the Sedona Installer view again to copy the files to the new version's daemon user home.

But this time, it would be possible to select the second option: "Synch with Sedona home folder" since the files already exist there. In that case, the Sedona Installer tool doesn't need a zip file, but will simply copy the required files from the master Sedona repository (Sedona home).

Station restart may be necessary after syncing Sedona files from the master Sedona home folder.

3.3.4 Installing additional Sedona files

After initial installation, newer Sedona files may be received from a manufacturer or downloaded from their website. Use the Sedona Installer view again to install any additional files to your system.

The "Install from file" option allows selection of the following types of Sedona files:

- Kit files (extension .kit)
- Platform files (named platformManifest.xml) that meet the required format
- Archive files (extension .zip) that meet the required folder structure

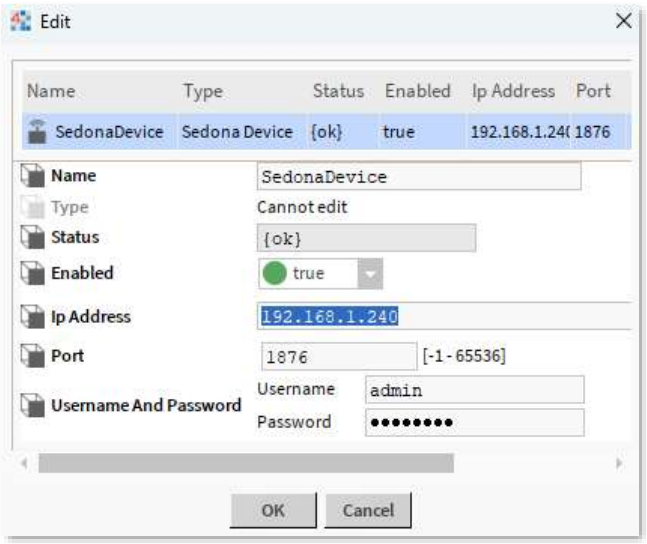
Multiple selection of files is possible to batch install a number of files from the same source folder.

Station restart may be necessary after installing new Sedona files.

3.4 ADDING DEVICES

In most cases, it should be possible to discover and add (or match) a Sedona device on the IP network.

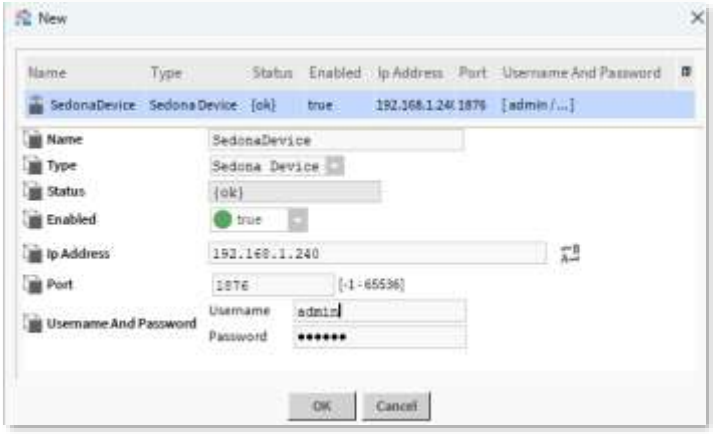
- Double-click on the SedonaNetwork to open “Ontrol Sedonanet Device Manager” view.
- Click “Discover” button to discover connected Sedona devices.
- Select a discovered device in the top pane and click on the “Add” button to add it to the database (or select a previously added device and click on the “Match” button)



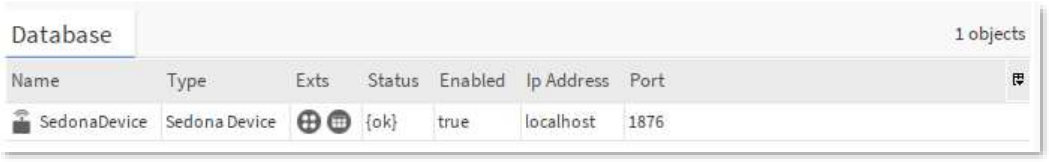
If the device is undiscoverable, it can still be added using the “New” button:

The required settings are:

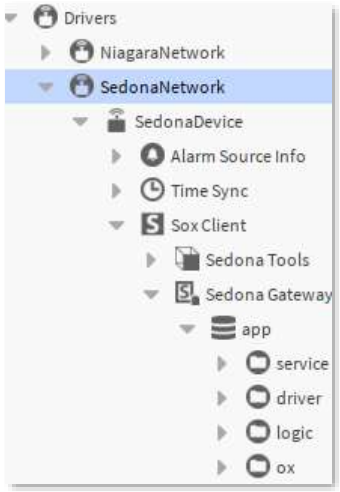
- IP Address
- Port (default 1876)
- Username & password for a valid admin account on the device



When device connection is established with no faults, the “Status” column should read “{ok}” as shown below.



4 SEDONA PROGRAMMING



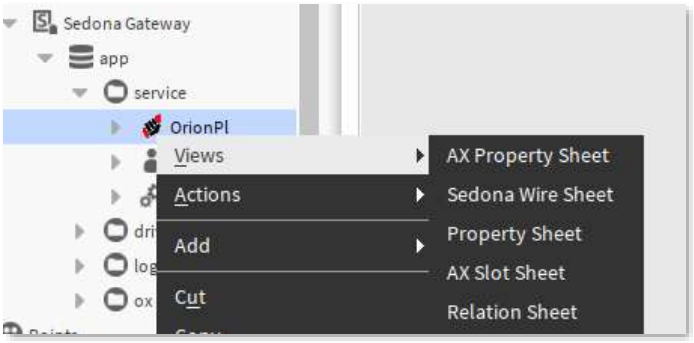
Once communication is established with a Sedona device, you can navigate to:

SedonaNetwork
|-> SedonaDevice
|-> SoxClient
|-> SedonaGateway
|-> app

This “app” node represents the application running on the device. Everything under it (including the “app” component itself) is live updated from the device. All changes you make will be immediately pushed to the device.

TIP: If the “app” node is not visible and you are getting an error, the device may be marked down. Try right-clicking on the device and selecting Actions > Ping.

4.1 SEDONA COMPONENTS



Sedona components are similar to Niagara components. Therefore, you can access the standard Niagara component views (property sheet, wire sheet etc) and configure logic by adding components and linking.

But there are differences and limitations:

- Sedona component names are limited to a maximum of 7 characters
- It is not possible to add dynamic slots. All slots are frozen by component type.
- It is not possible to add or edit facets.
- Property slots don’t have any status, only a value.
- String type property slots have a predefined length limitation.

4.2 Adding Components

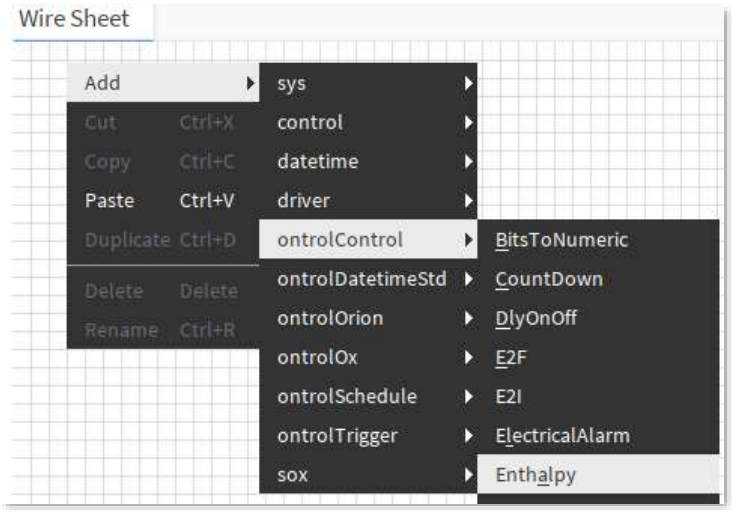
There are 2 ways to add components to your Sedona application:

1. The Add menu on right-click
2. Sedona Palette sidebar

4.2.1 Add Menu

To add a component to the Sedona application;

- Right-click on a folder/component (or an empty area on a wire-sheet) and click on the "Add" sub menu.
- Select a kit, then a component type.
- The selected component will be added to the app.



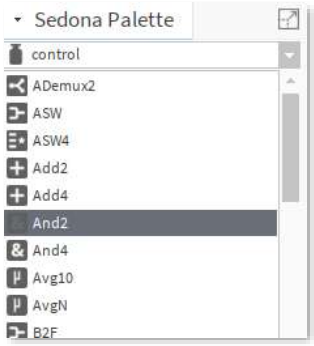
Only kits already loaded to the device are shown. If you need to add a new kit to the device, see the "Manage Kits" tool in section 5.1

4.2.2 Sedona Palette Sidebar

Enable the Sedona Palette sidebar by using the menu Window -> SideBars or the clicking the Sidebars icon in the toolbar.

Use the pull-down box to select a kit. Component types available from the selected kit will be listed below. Drag-and-drop any component type to your wire-sheet to add it to the Sedona App.

Note: The Sedona Palette is functional only when a view of a connected Sedona device is active on the main pane.



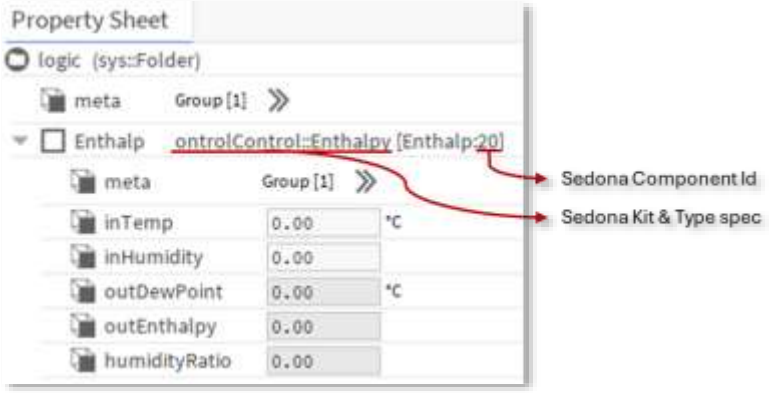
4.3 Linking Slots

Linking is also done in a similar way to Niagara components, except for the following limitations.

- Only like slots can be linked. For example, you can't link a float type slot to an int type slot.
- Action type slots can't be linked.
- String or Buf type slots can't be linked.

4.4 Property Sheets

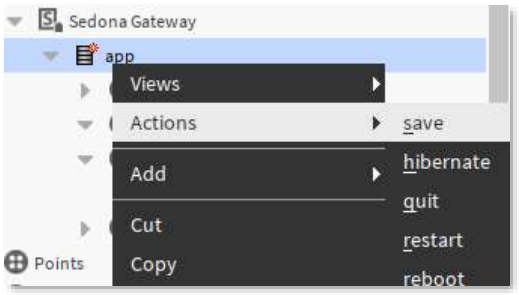
Property Sheet view for Sedona components includes some additional information that may be useful.



4.5 Remember to Save!

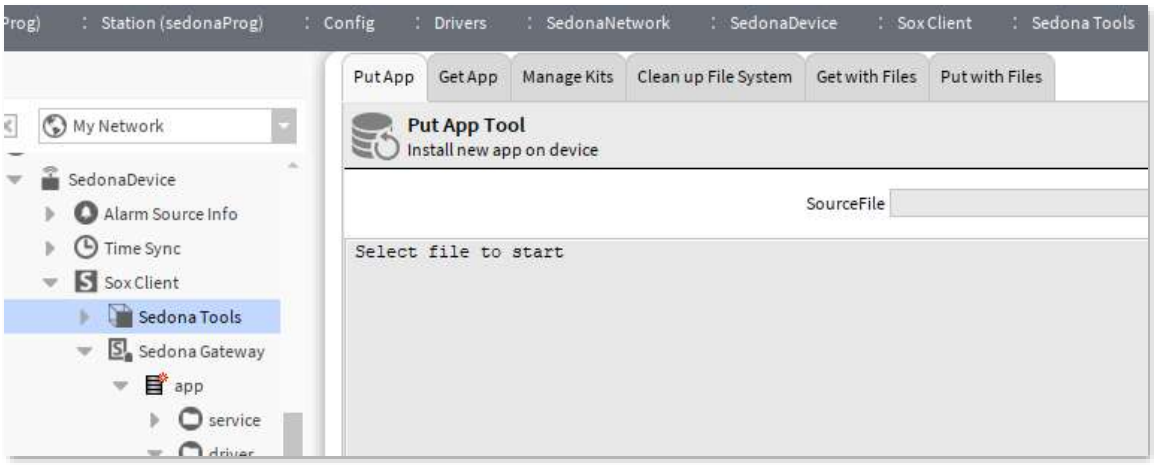
The changes you make to the Sedona app on the device are effective immediately, but they may not be committed to permanent memory. Changes could be lost in case of a power interruption to the device. Remember to save the app:

- Right click on the “app” node
- Select Actions -> Save



5 Sedona Tools

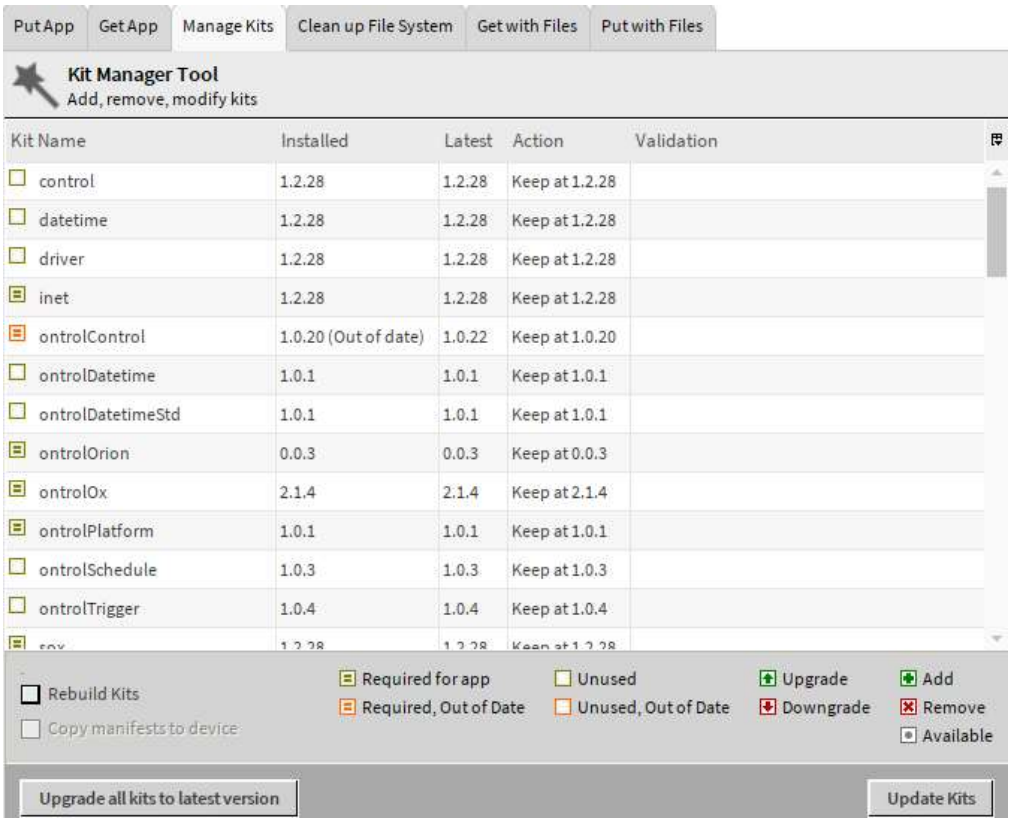
Double-click the Sedona Tools node (SedonaDevice -> SoxClient -> SedonaTools) to access a number of utilities for provisioning/commissioning Sedona devices. This is a view with multiple tabs. Each tab (Sedona tool) is explained below.


Prog)
Station (sedonaProg)
Config
Drivers
SedonaNetwork
SedonaDevice
Sox Client
Sedona Tools
Put App
Get App
Manage Kits
Clean up File System
Get with Files
Put with Files
My Network
SedonaDevice
Alarm Source Info
Time Sync
Sox Client
Sedona Tools
Sedona Gateway
app
service
Put App Tool
Install new app on device
SourceFile
Select file to start

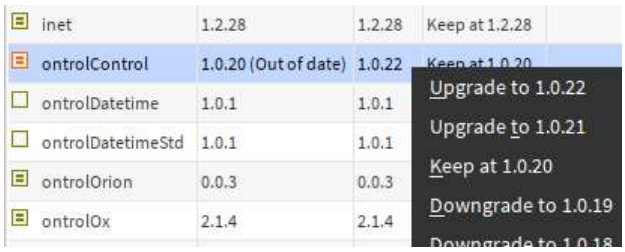
5.1 MANAGE KITS TOOL

This tool is used to manage kits on the device. Kits can be added, removed or updated with different versions.

The main window will show all kits available on your PC. The kits already present on the connected device are listed first. The table columns show the version in the device and the latest version available on the PC:



The default action is to keep the existing version of a kit on the device. Right-click on any kit to select a different action. It is possible to add, remove or change a kit to a different version.

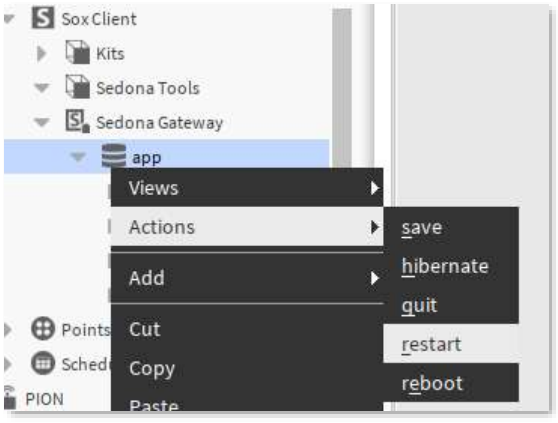


The symbols on the left column indicate the following information:

- Required for app: Components from this kit are used in the app running on the device. Therefore, the kit can't be removed.
- Required, Out of Date: Components from this kit are used in the app running on the device and it can't be removed. A newer version of the kit is available on the PC.
- Unused: The kit is loaded to the device, but not used in the running app. The kit can be removed.
- Unused, Out of Date: The kit is loaded to the device, but not used in the running app. A newer version of the kit is available on the PC.
- Upgrade: An action to upgrade the kit to a newer version has been selected.
- Downgrade: An action to downgrade the kit to an older version has been selected.
- Add: An action to add the kit to the device has been selected.
- Remove: An action to remove the kit from the device has been selected.
- Available: The kit is available on the PC, but not present on the device. It can be added.
- Not Supported: The kit is not compatible with the connected device and can't be loaded.

Clicking the "Update Kits" button on the bottom-right initiates the transfer. The new set of kits is compiled into a scode binary file (kits.scode) and transferred to the device. If any incompatibility is detected at this stage, an error message will be displayed.

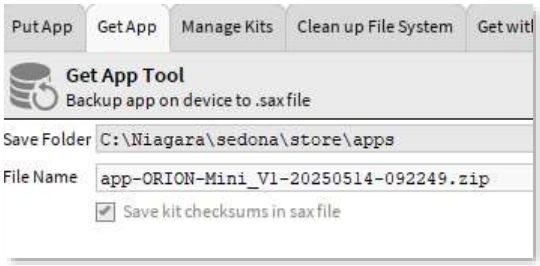
After the transfer, the device needs to be restarted to run with the new set of kits. This can be done by power cycling the device. Alternatively, right-click on "app" node and select Actions > Restart



5.2 GET APP TOOL

Makes a backup of the app on the device.

- A default file name is automatically generated, but this can be changed
- The save folder defaults to *{NiagaraHome}\sedona\store\apps*. This can also be changed.



Click on the GET button at the bottom-right of the view to finish saving the backup.

The saved zip file contains three files:

- application binary (app.sab) as retrieved directly from the device
- scode file (kits.scode) as retrieved directly from the device
- xml version of the app (app.xml) generated by the tool

5.3 PUT APP TOOL

Restores a Sedona app to the device from a backup. This tool will work with backup files of the following types.

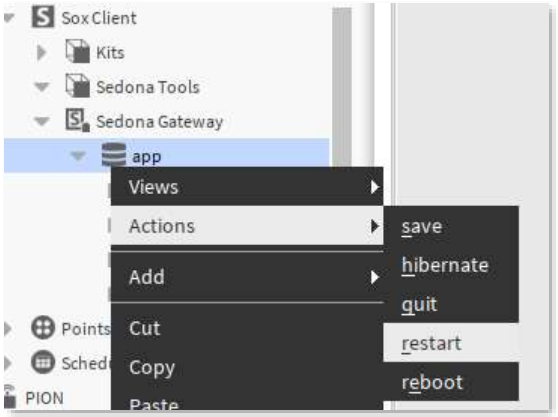
- Standard Sedona application binary (.sab extension)
- Standard Sedona application XML (.xml extension)
- Ontrol Sedona Get App Tool backup (.zip archive)

Once a backup file is selected, the kit management pane is displayed. Here, you can add or change kits as explained in section 5.1, before compiling and transferring the new app to the device.

Click the PUT button at the bottom-right to start the restore operation.

The tool will generate and transfer 2 files to the device: *app.sab* and *kits.scode*.

After the transfer, the device needs to be restarted. This can be done by power cycling the device. Alternatively, right-click on “app” node and select Actions > Restart



5.4 Get With Files Tool

This tool is available only when working with Ontrol's touch-screen controllers.

The use is similar to the Get App Tool, but the saved backup file includes image and font files retrieved from the device.

5.5 Put With Files Tool

This tool is available only when working with Ontrol's touch-screen controllers.

The use is similar to the Put App Tool, but image and font files are transferred from the backup zip file to the device in addition to the app.

5.6 Clean Up File System Tool

This tool is available only when working with Ontrol's touch-screen controllers.

Detailed explanation is available in the document "AN042 ORION oxPage Design Guide". This tool will first delete all image and font files on the touch-screen device and transfer only the files required by the current version of the app, thus clearing some memory.

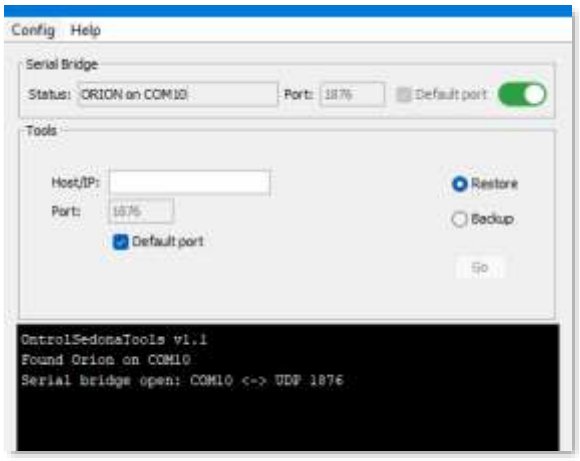
6 ONTROL SEDONA TOOLS UTILITY

Ontrol Sedona Tools is a small utility that serves a number of functions.

1. It can be used independently from Niagara to back up and restore applications to Sedona devices (with some restrictions). This is particularly useful when devices need to be updated by anyone in a simple way.
2. It provides an optional routing from Sedona IP connections to a PC's USB port. This allows programming devices with no IP port (such as Ontrol's wall-mounted touch-screen controllers) through a serial USB connection.

6.1 DOWNLOAD & INSTALL

Ontrol Sedona Tools can be downloaded from the Ontrol website, specifically from the page www.ontrol.com/sedonadownload. It is downloaded as a single zip file.



Extract the contents to any location on your computer (recommended location is under your Sedona Home folder, for example: *C:\Niagara\sedona\OntrolSedonaTools*). Then simply run the OntrolSedonaTools

.exe file.

6.2 SERIAL BRIDGE PANE

Some Ontrol devices are programmed through a direct USB connection instead of IP (notably Ontrol touch-screen controllers). When working with such devices, toggle the *Serial Bridge* switch to the on position and leave the software running in the background. If the Serial Bridge pane is not visible, use the Config menu to enable it.

When switched on, this function will scan the USB ports for a compatible device and start routing between the device and the selected UDP port. On a successful connection,

- The Host/IP box will show device name and serial port (e.g. "ORION on COM9") and
- A message will be displayed in the console area (e.g. "Serial route open: COM9 <-> UDP 1876").

When a connection is not detected, the utility will keep trying every 5 seconds, so there is no need to toggle the switch off/on or restart the program.

When the Serial Bridge is connected, any other Sedona tool, for example Niagara Workbench, can connect to the Sedona device as if it were an IP device through this utility.

6.3 TOOLS PANE

The tools pane lists a number of available tools. Currently, there are two options: Backup and Restore. These are explained in this chapter.

If the Tools Pane is not visible, use the Config menu to enable it.

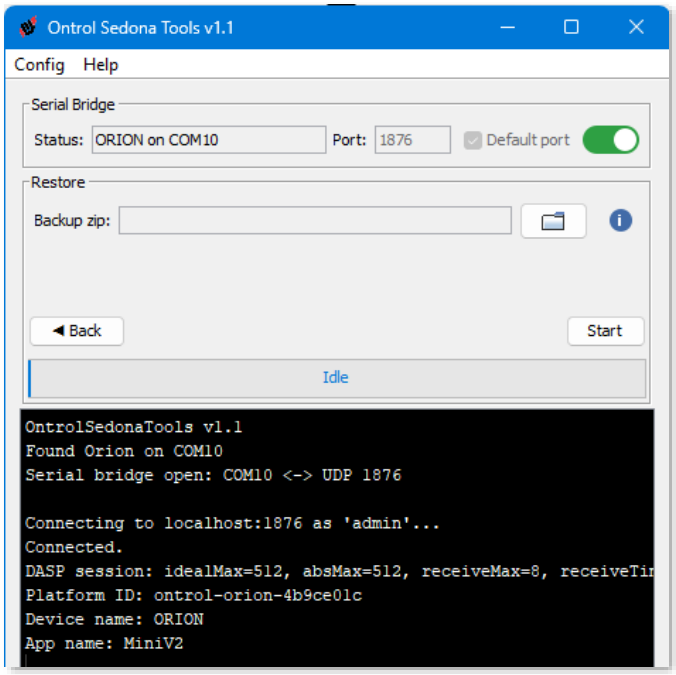
6.3.1 Device Address

Before executing a backup or restore operation, you must set the device's IP address and port.

- To connect to a standard IP-based Sedona device, simply enter the device's IP address.
- To connect to an Ontrol touch-screen controller ona USB port, toggle the SerialBridge switch on and enter "localhost".
- To connect to a simulated device running on your PC, enter "127.0.0.1"
- The *Default Port* checkbox automatically assigns the standard Sedona UDP port of 1876.

6.3.2 Restore Function

The Restore function can be used to load an app to a device from a backup file. The workflow is as follows:



1. Enter IP address/port, select Restore and click GO button.
2. Enter credentials (user name and password) of an admin account on the device. This is prompted only once per session or when the credentials are not valid for the device.
3. When credentials are entered, the utility will attempt a connection and if successful, display information about the running app on the connected device.
4. Select a backup file to restore by using the Browse button.
5. Click the Start button.
6. Check the displayed platform ID and make sure the backup you are about to transfer is compatible with the device. See warning below.
7. Click YES to start the transfer.

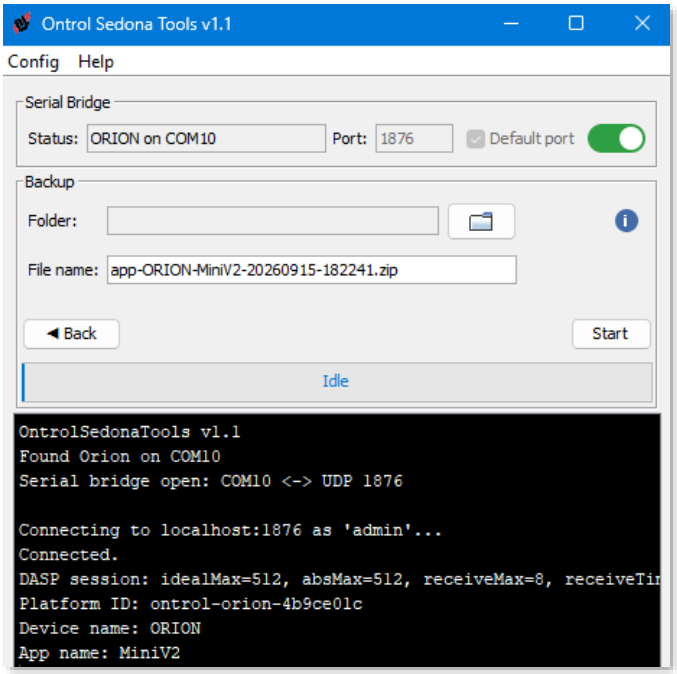
WARNING

This utility does not check compatibility between the backup file and the device. Transferring an incompatible app can render the device inoperable!

6.3.3 Backup Function

The backup function can be used to make a backup of the app running on a device. The workflow is as follows:

1. Enter IP address/port, select Backup and click GO button
2. Enter credentials (user name and password) of an admin account on the device. This is prompted only once per session or when the credentials are not valid for the device.
3. When credentials are entered, the utility will attempt a connection and if successful, display information about the running app on the connected device.
4. Select a folder and file name for the backup file.
5. Click the Start button to start the transfer.



IMPORTANT NOTE

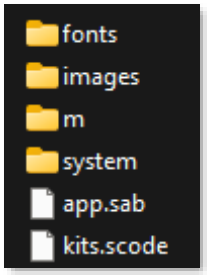
This utility backs up only the following files:

- Application binary (app.sab)
- Kit code (kits.scode)
- Manifests (m/m.zip)

Any other files on the device are *not* backed up because the utility has no way of being aware of them. This means that the utility will not produce a full backup for Ontrol's touch-screen controllers that contain additional image and font files. For these devices, use the Niagara Workbench to make a comprehensive backup.

6.3.4 Backup file structure

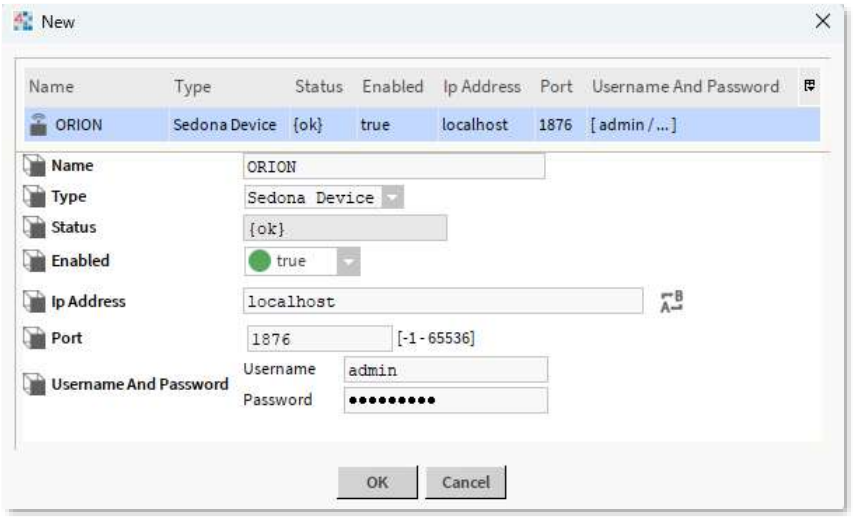
The backup zip file needs to contain a "device" subfolder containing a minimum of 2 files: *app.sab* (application binary) and *kits.scode* (kit code). These two files are transferred to the device and staged to become functional on device restart.



In a restore operation, any additional folders under the "device" folder are also transferred to the device with no modification. These could be:

- *m/m.zip* file containing manifests for the kits used in the app being restored.
- Sub-folders named "images" and "fonts": These would be present for Ontrol's touch-screen controllers and contain image and font files the app needs.
- Other sub-folders may be present depending on device type or app.

6.4 ADDING A USB DEVICE TO YOUR STATION

An Ontrol touch-screen controller (e.g. ORION) connected via USB may need to be manually added to the SedonaNetwork

- Double-click on SedonaNetwork to open the Ontrol Sedonanet Device Manager View
- Click the New button
- Use “localhost” for the IP address
- Remember to enter credentials (user/password)