

Node-RED – SE Aveva Insight Node User Manual

04/2020

EI00000004102.00

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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Table of Contents



Safety Information	5
About the Book	7
Part I Introduction	9
Chapter 1 Overview	11
General Information	12
Installation of NSSM	18
Part II Installation and Uninstallation - SE Aveva Insight Node	27
Chapter 2 Prerequisites	29
System Requirements	29
Chapter 3 Installation and Uninstallation of SE Aveva Insight Node - Windows Platform	31
3.1 Install SE Aveva Insight Node - Windows Platform	32
Installing Node.js	33
Installing Node-RED	40
Commissioning of Node-RED server	42
Installing SE Aveva Insight Node - Offline Installation Mode	58
Installing SE Aveva Insight Node - Online Installation Mode	60
3.2 Uninstall SE Aveva Insight Node - Windows Platform	63
Uninstalling SE Aveva Insight Node - Offline Uninstallation Mode	64
Uninstalling SE Aveva Insight Node - Online Uninstallation Mode	66
Chapter 4 Installation and Uninstallation of SE Aveva Insight Node - Linux Platform	69
4.1 Installing SE Aveva Insight Node - Linux Platform	70
Installing SE Aveva Insight Node - Offline Installation Mode	71
Installing SE Aveva Insight Node - Online Installation Mode	73
4.2 Uninstalling SE Aveva Insight Node - Linux Platform	74
Uninstalling SE Aveva Insight Node - Offline Uninstallation Mode	75
Uninstalling SE Aveva Insight Node - Online Uninstallation Mode	76
Part III Node Usage	77
Chapter 5 About the SE Aveva Insight Node	79
Introduction	80
Creating Aveva Insight Account	81
Launching the Node-RED Server and SE Aveva Insight Node	88

Chapter 6	SE Aveva Insight Node Configuration	93
	SE Aveva Insight Node Configuration	93
Chapter 7	Context Monitoring Use Case	95
	Context Monitoring	96
	SE Aveva Insight Node Usage	98
	Common Message Structure (CMS)	116
Part IV	IIoT and Cybersecurity	119
Chapter 8	IIoT and Cybersecurity	121
	Cybersecurity	121

Safety Information



Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Book



At a Glance

Document Scope

This document describes:

- installation and uninstallation of SE Aveva Insight node.
- configuration of the node.
- usage the node.
- limitations.

Validity Note

This document has been updated with the release of SE Aveva Insight node V2.0.0

Related Documents

Title of Documentation	Reference Number
Node-RED - SE Harmony Hub Node - User Manual	EIO0000004103

You can download these technical publications and other technical information from our website at <https://www.se.com/ww/en/download/>.

Part I

Introduction

Introduction

Chapter 1

Overview

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
General Information	12
Installation of NSSM	18

General Information

IIoT (Industrial Internet of Things)

IoT is a network of intelligent computers, devices, and objects that collect and share huge amounts of data. IIoT is the use of Internet of Things (IoT) technologies in manufacturing. With Industrial Internet of Things (IIoT), the device itself will be seamlessly wired to the business systems.

Operational Technology (OT) is a category of hardware and software that monitors and controls the physical devices. Due to increasing trend towards convergence of IT (Information Technology) and OT (Operational Technology), the plant managers in charge of operational technology are more efficient being remote.

Node-RED in EcoStruxure™

Node-RED is an IIoT wiring tool to connect services through a user-friendly graphical interface. Schneider Electric has selected Node-RED as the technology to deliver basic connectivity through tested, validated and documented nodes.



Connected Products

The secondary sensing vision is to integrate an additional layer of non-intrusive sensors mostly for installed base machines. The aim is to transform standard brownfield asset into connected asset. It means adding an additional layer of sensors and transferring data from connected devices to the upper levels. Predictive maintenance, energy saving, MES or CMMS are the typical apps integrated with these kind of solution.

Edge Control

Edge control provides connectivity for OT and IT systems and data processing right next to the machines. Instead of sending data to the cloud for processing and waiting for the analytical results, edge control devices collect and process data next to the machines. Then, those devices push their data to the cloud, thus saving bandwidth and enabling increased responsiveness. Magelis iPC and Magelis Edge Box offer smart application design and engineering to leverage asset performance with end-to-end cybersecurity.

Schneider Electric provides nodes that are tested, validated, and supported to run with Node-RED on the Magelis iPC and Edge Box.

There are three main advantages of Schneider Electric nodes:

- **Scalability:** easy to add connected devices in a cyber-secure manner.
- **Time to market:** significant reduction in integration time to implement a use case solution ([see page 96](#)).
- **Expert support:** access to our strong L3 support team experts and the available technical documentation.

Apps, Analytics and Services

AVEVA Insight is an economical software-as-a-service platform that allows you to readily discover valuable insights within your organization. SE Aveva Insight is a specific node created by Schneider to simplify the Node-RED flows for usecases that require connectivity to AVEVA Insight.

AVEVA Insight brings real-time data and KPIs to your mobile device anywhere, anytime helping you make better decisions faster. Use the AVEVA Insight mobile app to receive personalized alerts from your manufacturing and industrial facilities, processes, and equipment.

Magelis Edge Box

The new Magelis Edge Box meets IIoT challenges at the Edge Control level by enabling secured communication from connected products on the shop floor to the required software and applications on the top floor. The Edge box plugs itself on top of your current application, there is no need to stop or modify your control application (including 3rd party control devices).

Magelis Edge Box types are commercialized, as detailed in the following table:

Magelis Edge Box	Reference
Magelis HMIBSC	Reference HMIBSCEA53D1L0T HMIBSC with ARM, Linux
Magelis HMIBMI	Reference HMIBMIEA5DD110L HMIBMI with Intel Atom
Magelis HMIBMO	Reference HMIBMOMA5DD1E01: HMIBMO with Intel Atom

Magelis iPC

The Magelis iPC is a robust industrial device without a fan or even a hard drive, requiring no maintenance, and designed to run in the machine or plant field, even in harsh environments. New IIoT monitors for the Magelis iPC come tested, validated, and supported in two versions - agent and server.

Overview

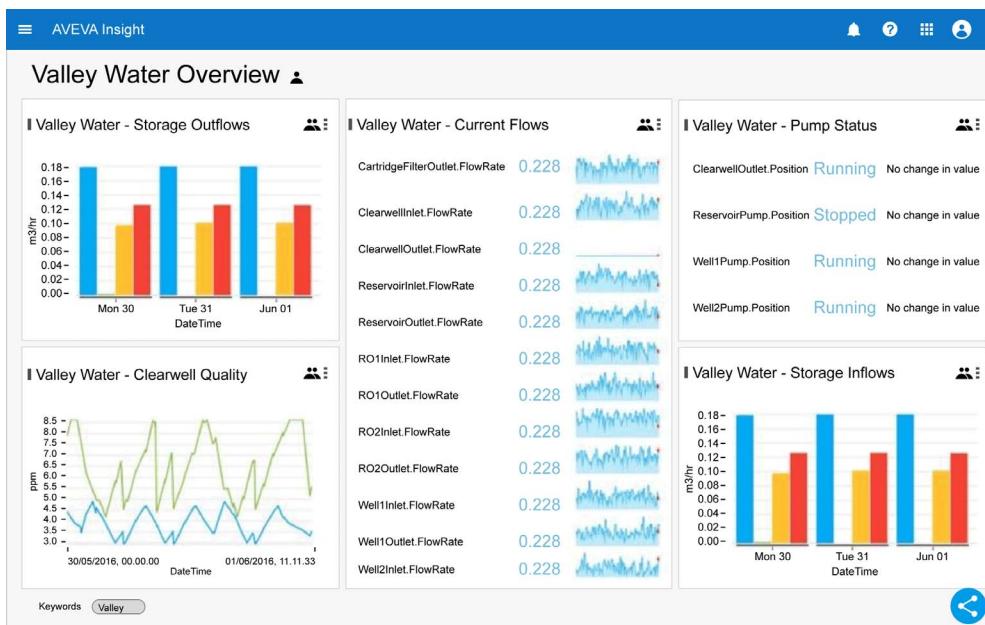
Magelis iPC Box types are commercialized, as detailed in the following table:

Magelis iPC	Reference
Magelis HMIBMP	Reference HMIBMPHI74D4801 HMIBMP with 4 expansion slots, Intel Core i7
Magelis HMIBMU	Reference HMIBMUSI29D2801 HMIBMU with 2 expansion slots, Intel Celeron

AVEVA Insight

AVEVA Insight is a secure, managed solution for collecting, storing, visualizing, and analyzing industrial data for faster, smarter business decisions. It consolidates disparate data for complete visibility into how your business is performing, and enables end users throughout the enterprise to access data and information from anywhere. With this solution, you can turn your industrial data into powerful AVEVA Insight accessible anywhere, anytime.

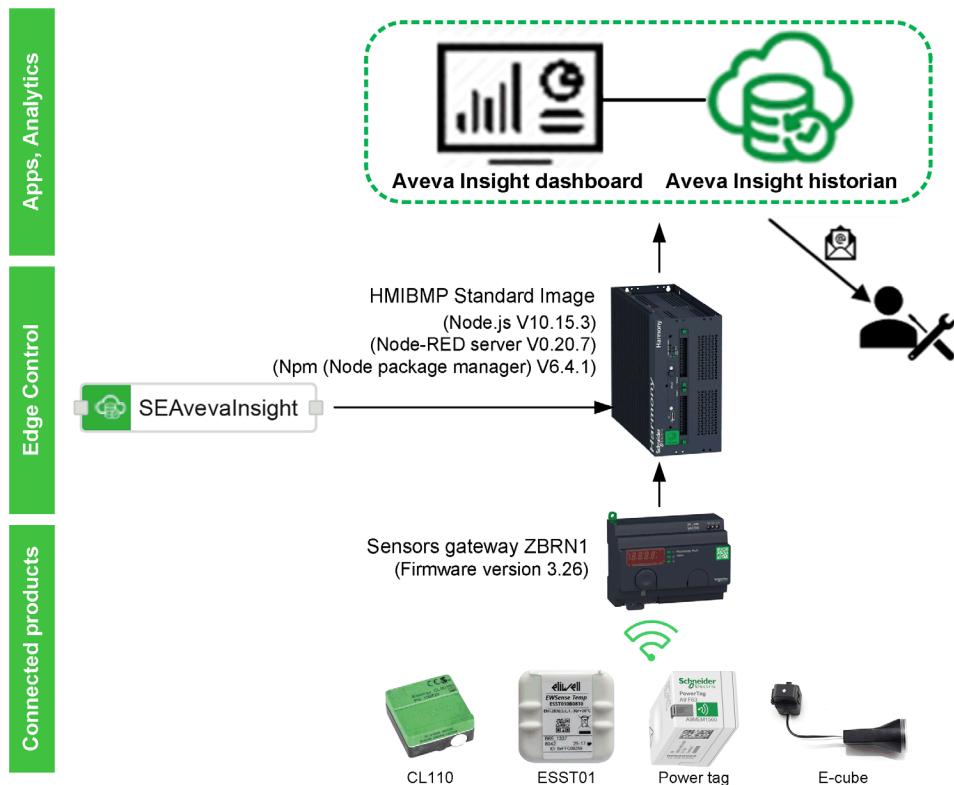
AVEVA Insight collects and stores high fidelity, time-series data from multiple, disparate sensors and smart devices in a secure cloud environment. Authorized users receive information through web or mobile connections, in easy-to-digest power analysis and intelligent reporting tools, including charts, dashboards, news-feeds and alerts. This cloud-based approach eliminates the need for additional investment in hardware servers and software.



SE Aveva Insight Node Integration in Ecostruxure™ Architecture

SE Aveva Insight node collects data from the collection node and transfers the data to AVEVA Insight cloud.

The following figure shows the integration of SE Aveva Insight node in Ecostruxure™:



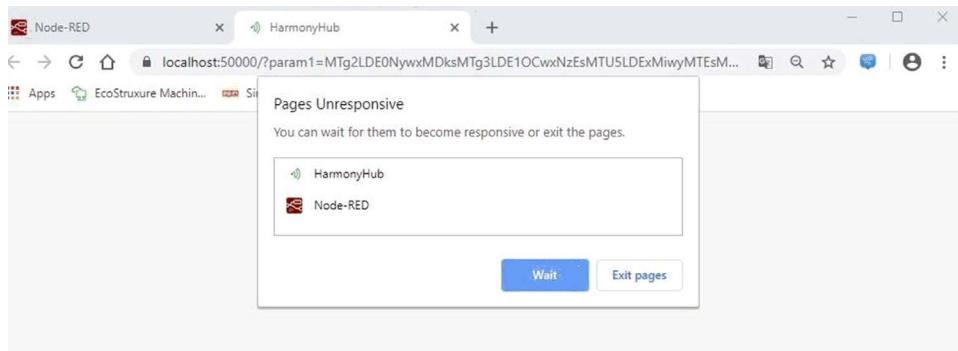
Best Practices for Node-RED

1. Running Node-RED as a service on Windows using NSSM ([see page 18](#)).
2. Use Browsers Wisely

When more web pages are accessed in the browser, Node-RED server may not be responsive to the program. Remove unused web pages in the browser to prevent this.

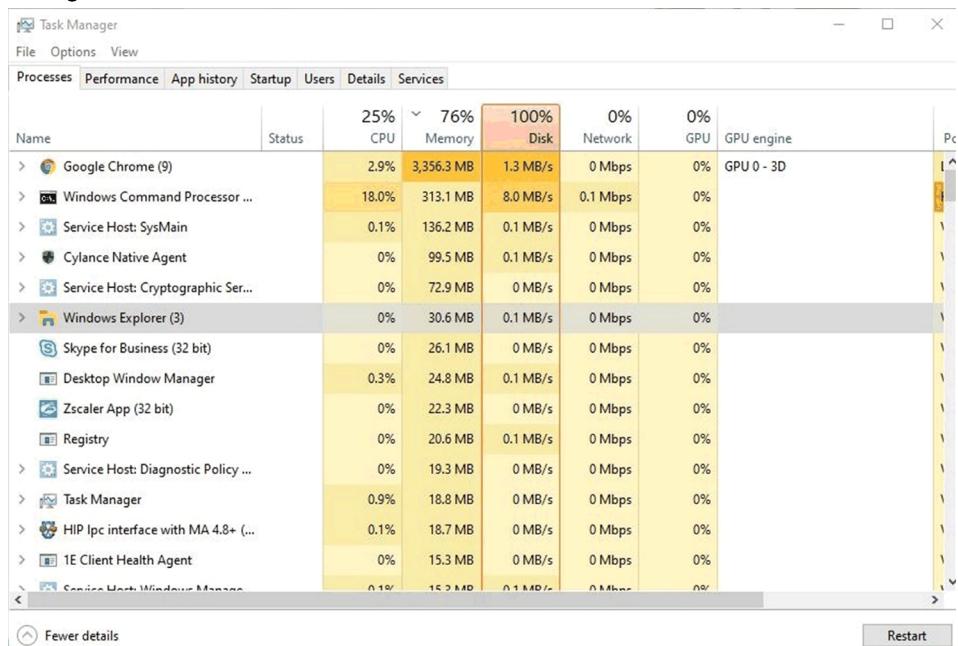
Overview

If Node-RED application is not responsive, you can see the below messages on your browser.



3. Stop Unused Services

Stop unused services that consume more memory displayed in **Task Manager**.



NOTE: Memory consumption can be observed by using **Task Manager**.

Limitations

SE Aveva Insight node has the following limitations:

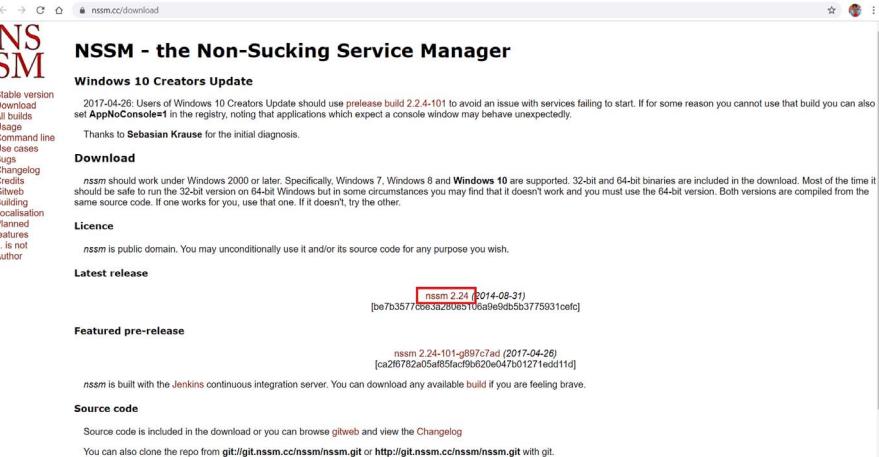
1. Operating system anything less than Windows 10 is not supported.
2. Node-RED application is supported in any browser with V8 engine or similar (for instance: Google Chrome V73.0 and Firefox V66.0). Refer README for future version support.
3. Node-RED web page is only available in English, irrespective of the system language.
4. SE Aveva Insight node will not work on Node.js® unstable versions and 6.x.x, 8.x.x and 12.x.x versions.
5. SE Aveva Insight node should work on Node.js V10.15.3 and Node-RED 0.20.7 version only.
6. When you launch a Node-RED server, it takes time to get started, in order to avoid this refer to **Commissioning of Node-RED** procedure (steps 11...14) ([see page 45](#)).
7. Based on the AVEVA Insight subscription of the user, the maximum number of tags pushed through one SE Aveva Insight node cannot exceed the limit defined for a **Data Source**.
For example: If AVEVA Insight user has subscribed 500 tags per **Data Source** and the node attempts to push more than 500 tags data in to the **Data Source**. In such instances, the **Store-and-Forward** functionality assumes that the data has been successfully pushed and that the files stored are deleted. However, the user will not be notified that the data push has been unsuccessful.
8. When the user wants to do the offline installation, the internet should be disabled. It takes longer to install if the internet is enabled.

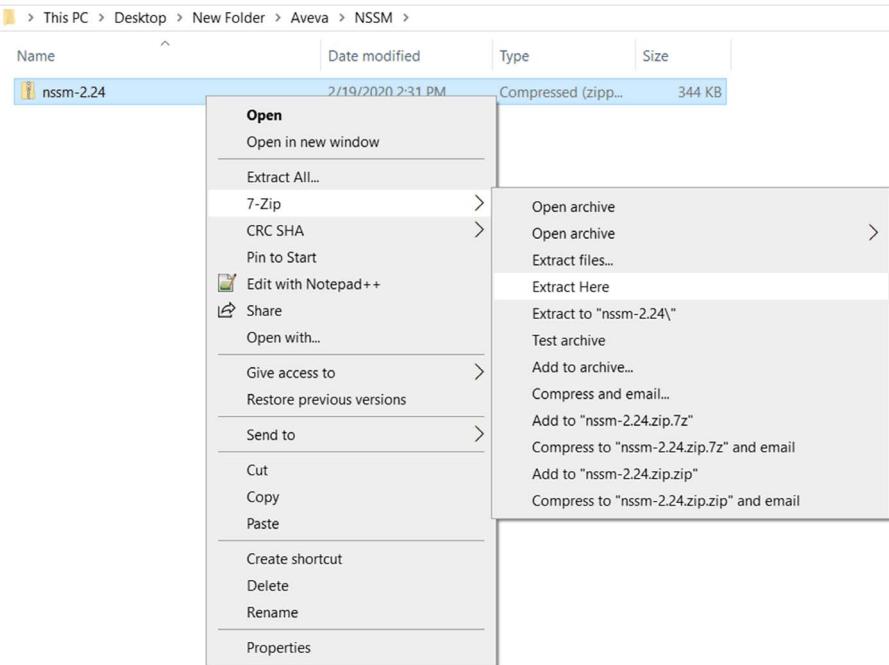
Installation of NSSM

Running Node-RED as a service on Windows Using NSSM

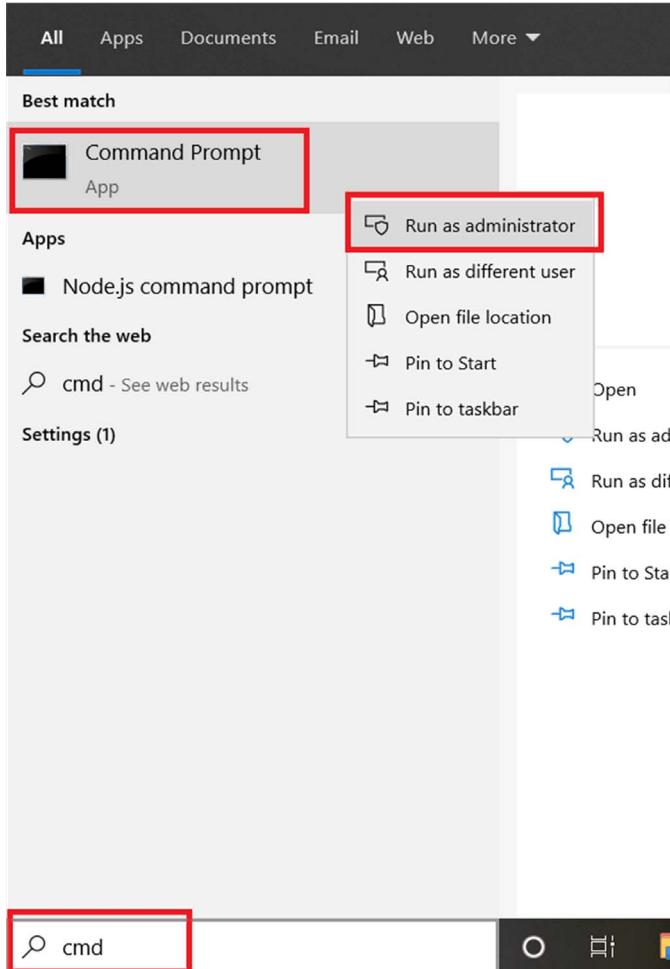
You need to install NSSM (Non-Sucking Service Manager) to open Node-RED server directly from the web page.

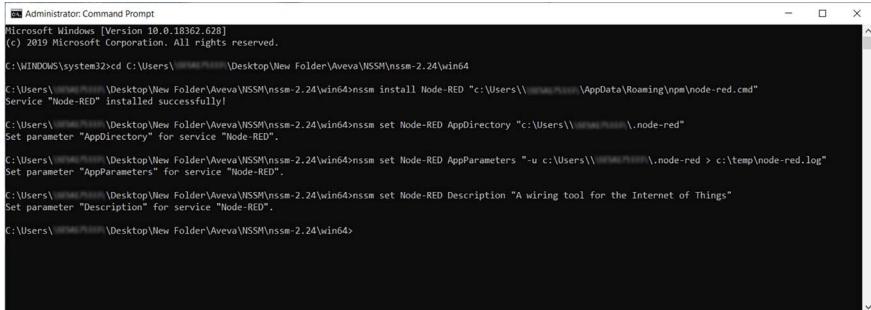
The following procedure shows the installation of NSSM:

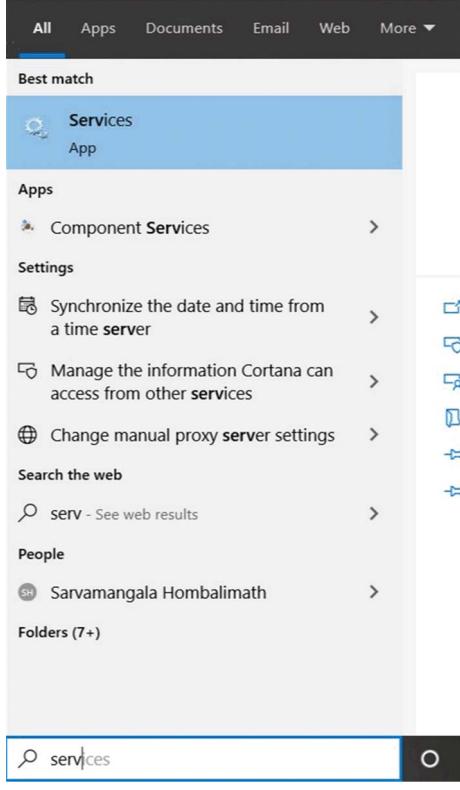
Step	Action
1	<p>Download the <code>nssm-2.24.zip</code> file from the link given below: https://nssm.cc/download</p> <p>NOTE: Make sure unzip software is available in your device, if not available, download it from the given link: https://www.7-zip.org/download.html</p>
2	<p>Click <code>nssm 2.24</code> link.</p> 

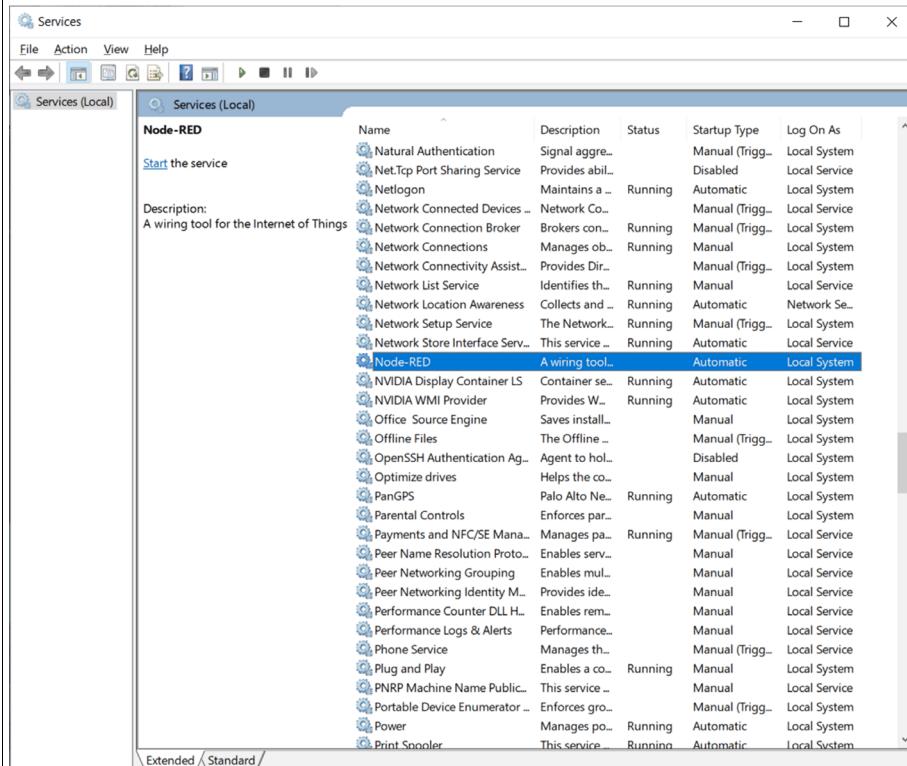
Step	Action
3	<p>Right-click the downloaded <code>nssm-2.24.zip</code> file and select 7-Zip → Extract Here.</p>  <p>Result: The selected file is unzipped.</p>

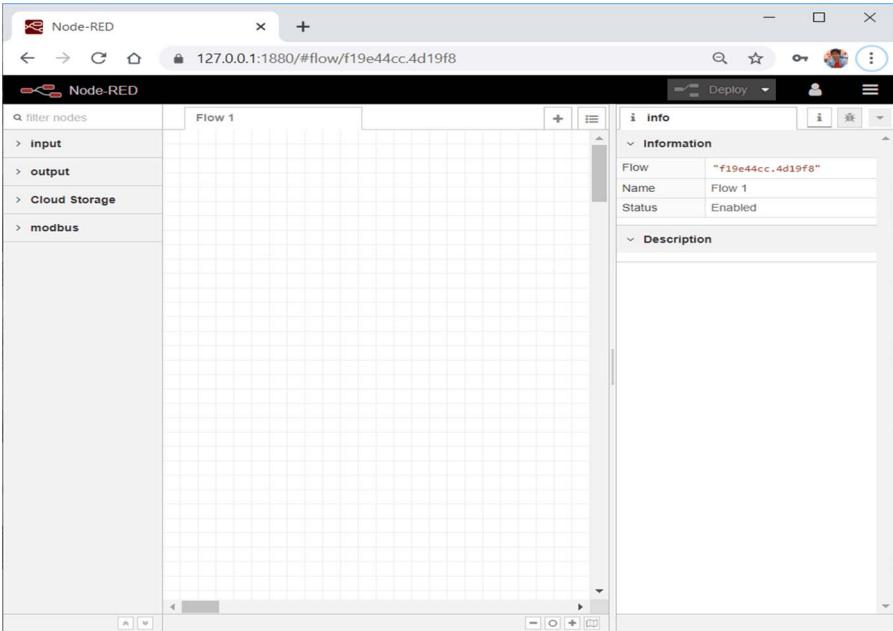
Overview

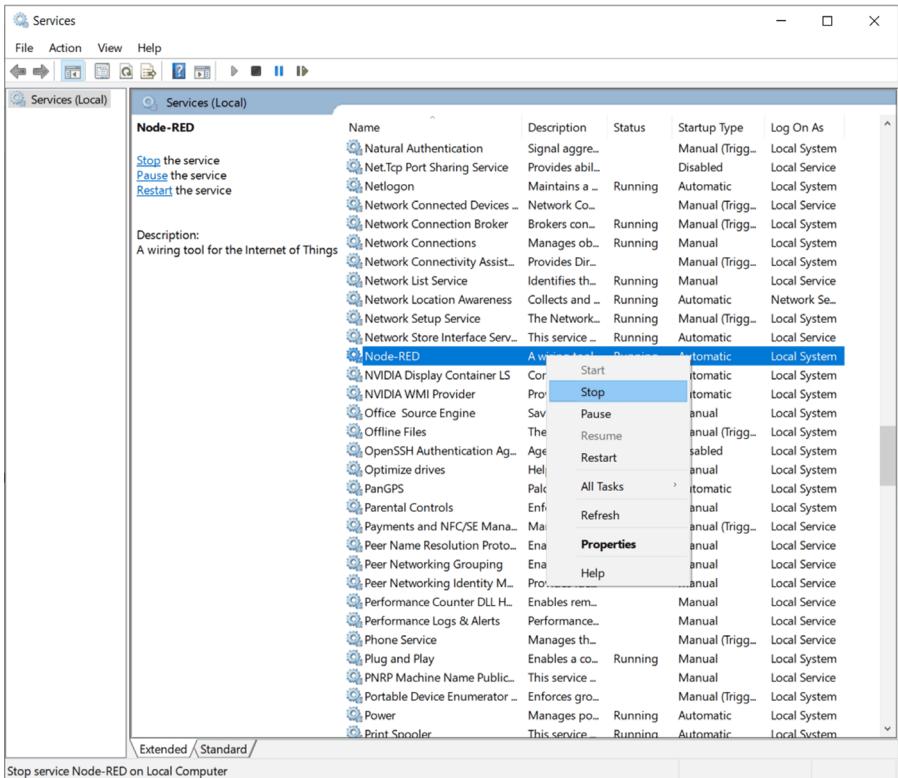
Step	Action
4	<p>Type cmd in search bar and right-click Command Prompt → Run as administrator.</p>  <p>Result: Command Prompt opens.</p>
5	<p>Copy the location of the folder you downloaded. For example: C:\Users\SESAXXXXX\Desktop\New Folder\Aveva\NSSM\nssm-2.24\win64</p> <p>NOTE: Use your device name in the text above instead of SESAXXXXX.</p>

Step	Action
6	<p>Navigate to the location where NSSM is installed. Paste in the command prompt adding cd. For example: <code>cd C:\Users\SESAXXXXX\Desktop\New Folder\Aveva\NSSM\nssm-2.24\win64</code></p>
7	<p>Type <code>nssm install Node-RED "c:\Users\SESAXXXXX\AppData\Roaming\npm\node-red.cmd"</code> and press Enter Result: Service "Node-RED" installed successfully.</p>
8	<p>Type <code>nssm set Node-RED AppDirectory "c:\Users\SESAXXXXX\.node-red"</code> and press Enter. Result: Set parameter "AppDirectory" for service "Node-RED".</p>
9	<p>Type <code>nssm set Node-RED AppParameters "-u c:\Users\SESAXXXXX\.node-red > c:\temp\node-red.log"</code> and press Enter. Result: Set parameter "AppParameters" for service "Node-RED".</p>
10	<p>Type <code>nssm set Node-RED Description "A wiring tool for the Internet of Things"</code> and press Enter. Result: Set parameter "Description" for service "Node-RED".</p>  <pre> Administrator: Command Prompt Microsoft Windows [Version 10.0.18362.628] (c) 2019 Microsoft Corporation. All rights reserved. C:\WINDOWS\system32>cd C:\Users\...\.node-red C:\Users\...>cd Desktop\New Folder\Aveva\NSSM\nssm-2.24\win64\nssm install Node-RED "c:\Users\...\AppData\Roaming\npm\node-red.cmd" Service "Node-RED" installed successfully! C:\Users\...>nssm set Node-RED AppDirectory "c:\Users\...\node-red" Set parameter "AppDirectory" for service "Node-RED". C:\Users\...>nssm set Node-RED AppParameters "-u c:\Users\...\node-red > c:\temp\node-red.log" Set parameter "AppParameters" for service "Node-RED". C:\Users\...>nssm set Node-RED Description "A wiring tool for the Internet of Things" Set parameter "Description" for service "Node-RED". </pre>

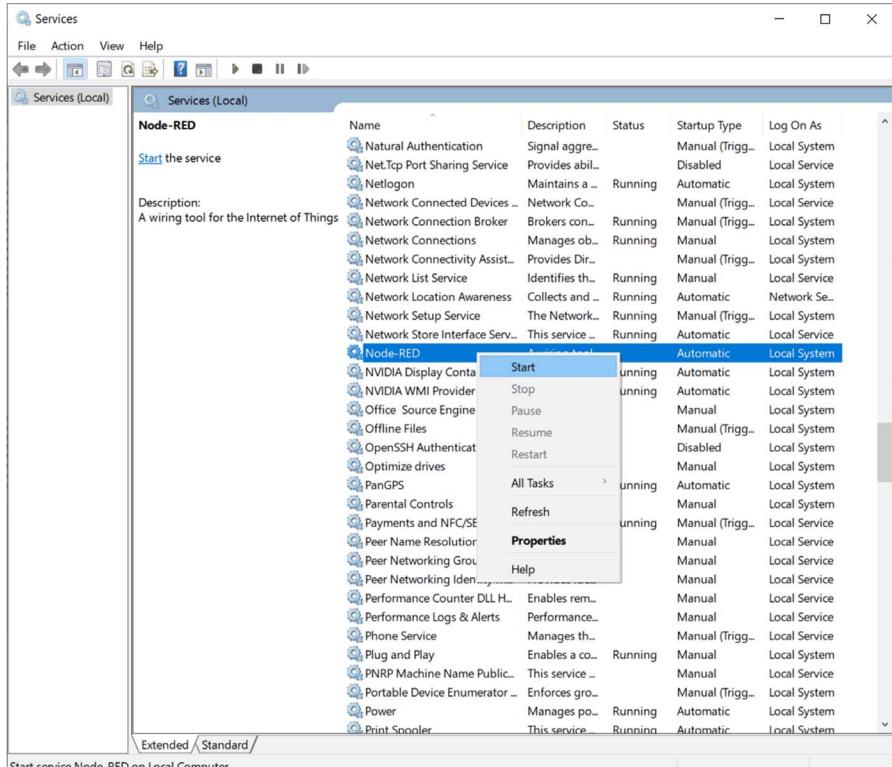
Step	Action
11	Type Services in search bar and click Services.  <p>Result: Services window appears.</p>

Step	Action
12	 <p>The screenshot shows the Windows Services window. A context menu is open over the 'Node-RED' service, which is listed in the Services (Local) table. The service details pane on the left shows the description: 'A wiring tool for the Internet of Things'. The service status is 'Running'. The context menu options include 'Start', 'Stop', 'Restart', 'Properties', 'Mark as Started', 'Mark as Stopped', 'Mark as Paused', 'Mark as Resumed', 'Mark as Paused (for all users)', 'Mark as Resumed (for all users)', 'Mark as Failed', 'Mark as Success', 'Mark as Warning', 'Mark as Critical', 'Mark as Unknown', 'Mark as Paused (for current user)', 'Mark as Resumed (for current user)', 'Mark as Failed (for current user)', 'Mark as Success (for current user)', 'Mark as Warning (for current user)', 'Mark as Critical (for current user)', and 'Mark as Unknown (for current user)'.</p>
13	Restart your computer.

Step	Action
14	<p>Type the https://127.0.0.1:1880/ in a supported browser. Type the Username and Password in related fields and click Login.</p>  The image shows a screenshot of a web browser displaying the Node-RED login page. The background is white with a large red 'Node-RED' logo on the right side. On the left, there is a small graphic of three white rectangular nodes connected by lines. Below the logo, there are two input fields: 'Username:' and 'Password:', each with a placeholder text area. To the right of these fields is a 'Login' button.
15	<p>Result: Node-RED factory editor appears.</p>  The image shows a screenshot of the Node-RED web application. The title bar says 'Node-RED'. The address bar shows the URL '127.0.0.1:1880/#flow/f19e44cc.4d19f8'. The main interface is a grid workspace for building flows. On the left, there is a sidebar with a tree view of available node categories: 'Input', 'Output', 'Cloud Storage', and 'modbus'. On the right, there are two panels: 'info' which shows 'Flow f19e44cc.4d19f8', 'Name Flow 1', and 'Status Enabled'; and 'Description' which is currently empty.

Step	Action										
16	<p>When you install/uninstall any node in your system, Stop using Node-RED in Services.</p>  <p>The screenshot shows the Windows Services application window. The title bar says "Services". The main pane is titled "Services (Local)". A context menu is open over the "Node-RED" service, with the "Stop" option highlighted. Other options in the menu include "Start", "Properties", and "Restart". The "Node-RED" service is listed in the table with the following details:</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Description</th> <th>Status</th> <th>Startup Type</th> <th>Log On As</th> </tr> </thead> <tbody> <tr> <td>Node-RED</td> <td>A wiring tool for the Internet of Things</td> <td>Running</td> <td>Automatic</td> <td>Local System</td> </tr> </tbody> </table> <p>At the bottom of the Services window, there is a status message: "Stop service Node-RED on Local Computer".</p>	Name	Description	Status	Startup Type	Log On As	Node-RED	A wiring tool for the Internet of Things	Running	Automatic	Local System
Name	Description	Status	Startup Type	Log On As							
Node-RED	A wiring tool for the Internet of Things	Running	Automatic	Local System							

Step	Action
17	Once installation/uninstallation process is completed in your system, Start Node-RED in Services to launch Node-RED application.



The screenshot shows the Windows Services window. In the center pane, there is a list of services. One service, "Node-RED", is selected. A context menu is open over this service, with the "Start" option highlighted. Other options visible in the menu include "Stop", "All Tasks", "Properties", and "Help". The "Description" field for the Node-RED service is visible, stating "A wiring tool for the Internet of Things". The "Log On As" column for the Node-RED service shows "Local System".

To disable Node-RED as a service follow the steps given below:

- Navigate to NSSM folder in command prompt.
- Type `nssm remove <service-name>` confirm and press **Enter**.

Part II

Installation and Uninstallation - SE Aveva Insight Node

What Is in This Part?

This part contains the following chapters:

Chapter	Chapter Name	Page
2	Prerequisites	29
3	Installation and Uninstallation of SE Aveva Insight Node - Windows Platform	31
4	Installation and Uninstallation of SE Aveva Insight Node - Linux Platform	69

Chapter 2

Prerequisites

System Requirements

Operating System

The SE Aveva Insight node V2.0.0 is supported on the following operating systems:

- Microsoft Windows 10
 - Standard Image and IIoT One Image (RC7 and above)
- Linux Linaro - V1.00.009
 - IIoT One Image (V1.00.009)

NOTE: Magelis HMIBMP - User has to install the Node.js, Node-RED and Python software in the **Magelis HMIBMP** box (Standard Image) manually.

- NOTE: Magelis HMIBSC** - The required softwares like Node.js, Node-RED and Python are pre-installed in the **Magelis HMIBSC** box.

Hardware Requirements

NOTE: The SE Aveva Insight node is supported in **Magelis HMIBMP** and **Magelis HMIBSC** only. Other **Magelis Edge Box** and **Magelis iPC** will be supported in future versions of the node.

IIoT Edge Box	PC hardware	Specification
Magelis HMIBMP	Processor	Reference HMIBMPHI74D4801 HMIBMP with 4 expansion slots, Intel Core I7
	RAM	8 GB
	Hard disk space	500 GB HDD
	Operating system	Microsoft Windows 10
Magelis HMIBSC	Processor	Reference HMIBSCEA53D1L0T HMIBSC with ARM
	Hard disk space	eMMC and TPM for hardware encryption
	Operating system	Linux Yocto

Software Requirements

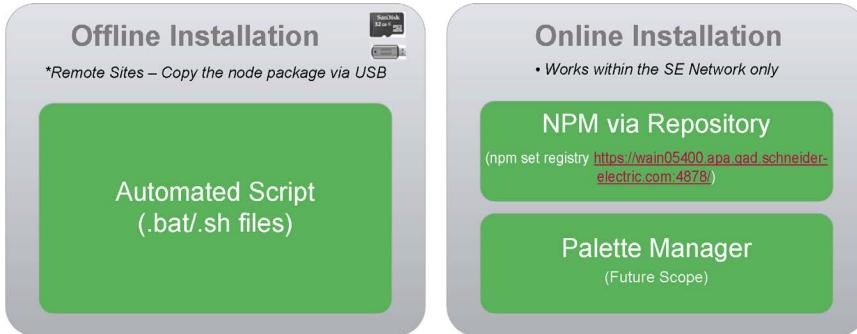
- Node.js V10.15.3 (*see page 33*)
- Node-RED server V0.20.7 (*see page 40*)
- Npm (Node package manager) V6.4.1

- Python V2.7 (online installation for Windows only)
- Supported browser: Node-RED application is supported in any browser with V8 engine or similar (for instance: Google chrome V73.0, Firefox V66.0)

NOTE: The software versions mentioned above support the SE Nodes installation. Other versions do not support it.

Accessing the SE Aveva Insight Node

You can perform two modes of installation (online/offline):



You can perform the nodes installation on the modes given below:

- Install the node - Window platform (*see page 31*)
- Install the node - Linux platform (*see page 69*)

Chapter 3

Installation and Uninstallation of SE Aveva Insight Node - Windows Platform

What Is in This Chapter?

This chapter contains the following sections:

Section	Topic	Page
3.1	Install SE Aveva Insight Node - Windows Platform	32
3.2	Uninstall SE Aveva Insight Node - Windows Platform	63

Section 3.1

Install SE Aveva Insight Node - Windows Platform

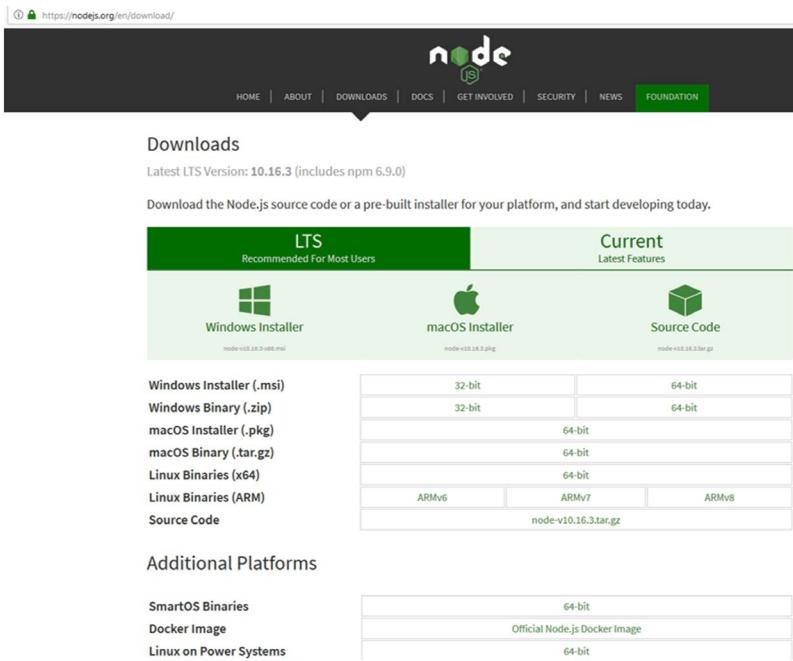
What Is in This Section?

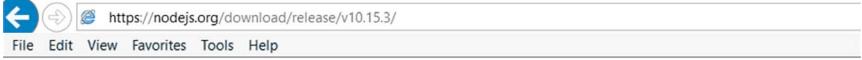
This section contains the following topics:

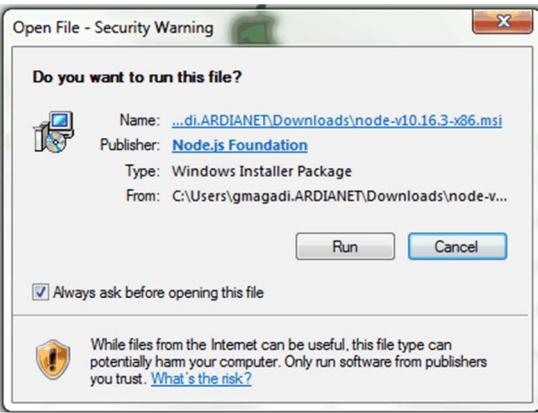
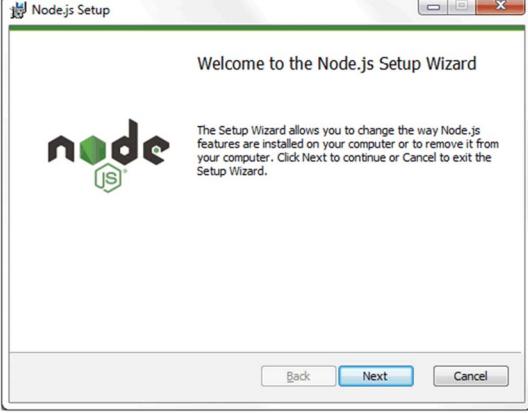
Topic	Page
Installing Node.js	33
Installing Node-RED	40
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Installing SE Aveva Insight Node - Offline Installation Mode	58
Installing SE Aveva Insight Node - Online Installation Mode	60

Installing Node.js

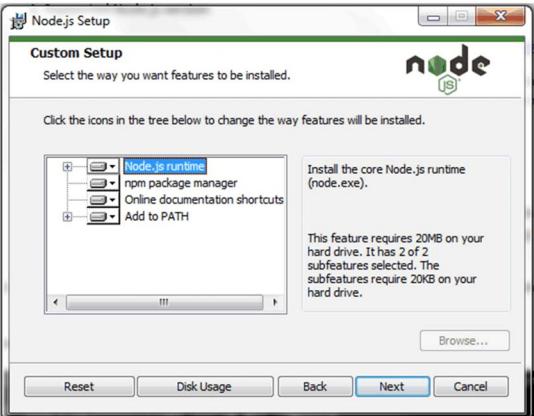
This table shows the installation procedure for Node.js:

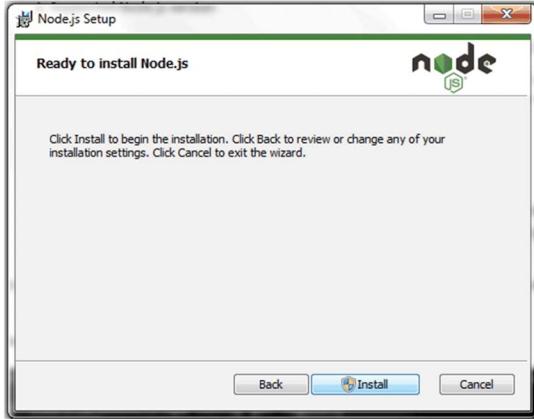
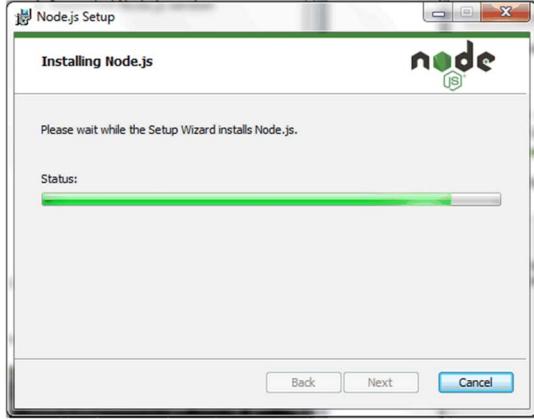
Step	Action
1	<p>Open the Node.js® for Windows from the below link: https://nodejs.org/en/download/</p>  <p>The screenshot shows the Node.js download page. At the top, there's a navigation bar with links for HOME, ABOUT, DOWNLOADS, DOCS, GET INVOLVED, SECURITY, NEWS, and FOUNDATION. Below the navigation bar, there's a heading 'Downloads' and a note about the latest LTS version (10.16.3). A sub-headline says 'Download the Node.js source code or a pre-built installer for your platform, and start developing today.' The page is divided into two main sections: 'LTS' (Recommended For Most Users) and 'Current' (Latest Features). Under 'LTS', there are links for Windows Installer (.msi), Windows Binary (.zip), macOS Installer (.pkg), macOS Binary (.tar.gz), Linux Binaries (x64), Linux Binaries (ARM), and Source Code. Under 'Current', there are links for 32-bit and 64-bit versions of the Windows, macOS, and Linux installers, as well as ARMv6, ARMv7, and ARMv8 binary files. At the bottom, there's a section for 'Additional Platforms' with links for SmartOS Binaries, Docker Image, and Linux on Power Systems.</p>

Step	Action																																																																																																												
2	<p>Use the node-v10.15.3-x64.msi version. Download the Node.js® from the link given below: https://nodejs.org/download/release/v10.15.3/</p>  <p>The screenshot shows a browser window with the URL https://nodejs.org/download/release/v10.15.3/. The page title is "Index of /download/release/v10.15.3/". Below the title is a table listing various Node.js packages with their file names, last modified dates, and sizes. The table includes rows for win-x64, win-x86, and various Linux and macOS architectures.</p> <table border="1"> <thead> <tr> <th>File</th> <th>Last Modified</th> <th>Size</th> </tr> </thead> <tbody> <tr><td>..../</td><td>05-Mar-2019 15:21</td><td>-</td></tr> <tr><td>docs/</td><td>05-Mar-2019 15:50</td><td>-</td></tr> <tr><td>win-x64/</td><td>05-Mar-2019 15:14</td><td>-</td></tr> <tr><td>win-x86/</td><td>05-Mar-2019 15:46</td><td>-</td></tr> <tr><td>SHASUMS256.txt</td><td>05-Mar-2019 17:15</td><td>3347</td></tr> <tr><td>SHASUMS256.txt.asc</td><td>05-Mar-2019 17:15</td><td>3884</td></tr> <tr><td>SHASUMS256.txt.sig</td><td>05-Mar-2019 17:15</td><td>310</td></tr> <tr><td>node-v10.15.3-aix-ppc64.tar.gz</td><td>05-Mar-2019 15:31</td><td>22800142</td></tr> <tr><td>node-v10.15.3-darwin-x64.tar.gz</td><td>05-Mar-2019 15:21</td><td>16363752</td></tr> <tr><td>node-v10.15.3-darwin-x64.tar.xz</td><td>05-Mar-2019 15:15</td><td>11076732</td></tr> <tr><td>node-v10.15.3-headers.tar.gz</td><td>05-Mar-2019 15:21</td><td>447024</td></tr> <tr><td>node-v10.15.3-headers.tar.xz</td><td>05-Mar-2019 15:21</td><td>336764</td></tr> <tr><td>node-v10.15.3-linux-arm64.tar.gz</td><td>05-Mar-2019 15:10</td><td>18603100</td></tr> <tr><td>node-v10.15.3-linux-arm64.tar.xz</td><td>05-Mar-2019 15:11</td><td>11777924</td></tr> <tr><td>node-v10.15.3-linux-armv6l.tar.gz</td><td>05-Mar-2019 15:11</td><td>17548409</td></tr> <tr><td>node-v10.15.3-linux-armv6l.tar.xz</td><td>05-Mar-2019 15:12</td><td>10767892</td></tr> <tr><td>node-v10.15.3-linux-armv7l.tar.gz</td><td>05-Mar-2019 15:07</td><td>17398229</td></tr> <tr><td>node-v10.15.3-linux-armv7l.tar.xz</td><td>05-Mar-2019 15:08</td><td>10686088</td></tr> <tr><td>node-v10.15.3-linux-ppc64le.tar.gz</td><td>05-Mar-2019 15:08</td><td>18627922</td></tr> <tr><td>node-v10.15.3-linux-ppc64le.tar.xz</td><td>05-Mar-2019 15:08</td><td>11530044</td></tr> <tr><td>node-v10.15.3-linux-s390x.tar.gz</td><td>05-Mar-2019 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3	Select node-v10.15.3-x64.msi for download.																																																																																																												
4	Double-click the downloaded file to start the installation process. Result: Open File dialog box appears.																																																																																																												

Step	Action
5	<p>Click Run.</p>  <p>Result: Node.js Setup Wizard dialog box appears.</p>
6	<p>Click Next.</p>  <p>Result: End-User License Agreement dialog box appears.</p>

Step	Action
7	Select I accept the terms in the License Agreement and click Next .
8	Click Next .

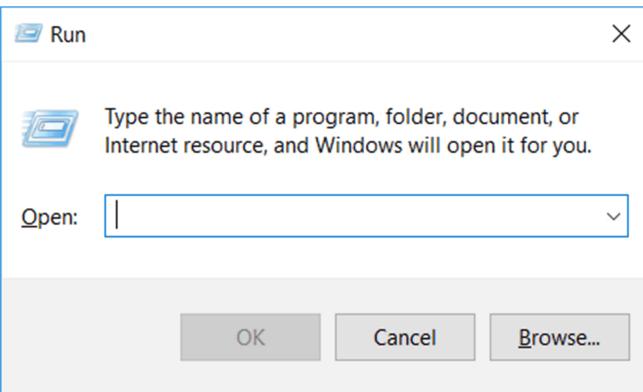
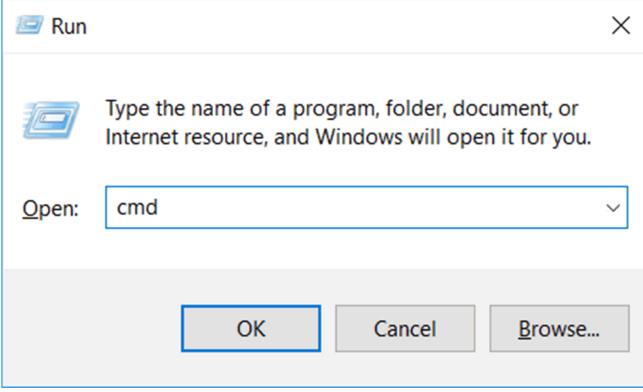
Step	Action
9	<p>Click Next.</p>  <p>The screenshot shows the 'Custom Setup' window of the Node.js Setup. The title bar says 'Node.js Setup'. The main area is titled 'Custom Setup' with the sub-instruction 'Select the way you want features to be installed.' Below this is a tree view with the following structure:</p> <ul style="list-style-type: none">Node.js runtime (selected)npm package managerOnline documentation shortcutsAdd to PATH <p>To the right of the tree view, there is a detailed description of the selected feature: 'Install the core Node.js runtime (node.exe)'. It notes that this feature requires 20MB on the hard drive and has 2 subfeatures selected, totaling 20KB. At the bottom of the window are buttons for 'Reset', 'Disk Usage', 'Back', 'Next', and 'Cancel', with 'Next' being the active button.</p>

Step	Action
10	<p>Click Install.</p>  

Step	Action
11	Click Finish .
12	Node.js installation is completed.

Installing Node-RED

This table shows the installation procedure for Node-RED:

Step	Action
1	<p>Click  and type Run in the search bar and press Enter.</p> 
2	<p>Type the <code>cmd</code> in the Run dialog box and press OK.</p>  <p>Result: Command prompt window appears.</p>
3	<p>With Schneider network connected, type the text given below in the command prompt and press Enter.</p> <pre>npm config set registry=https://registry.npmjs.org/</pre>

Step	Action
4	Type the valid proxy with respect to your organization or country (for instance, <code>http://yourproxy:XXXX</code>) and press Enter . <code>npm config set proxy=http://yourproxy:XXXX/</code>
5	Type <code>npm install -g --unsafe-perm node-red@0.20.7</code> and press Enter .
6	Node-RED application is installed.

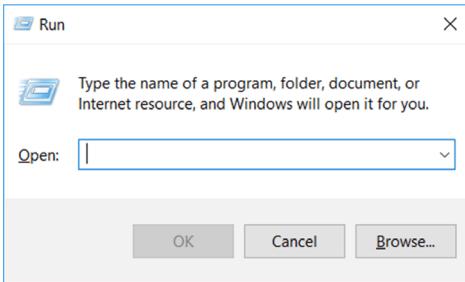
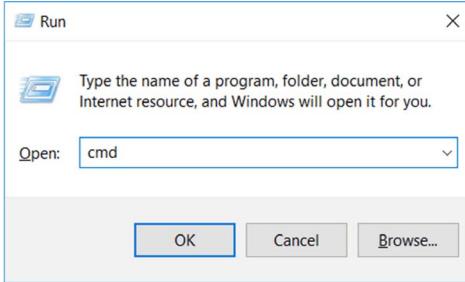
Commissioning of Node-RED server

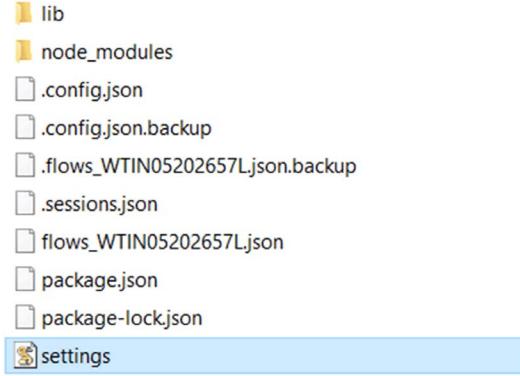
Overview

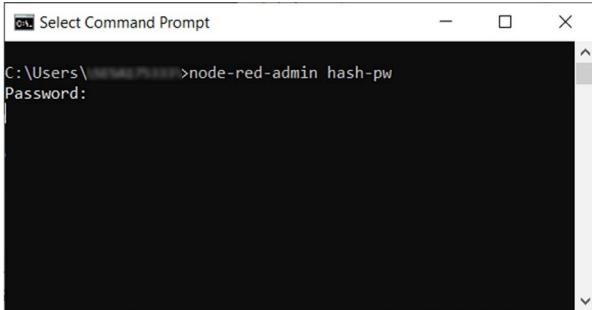
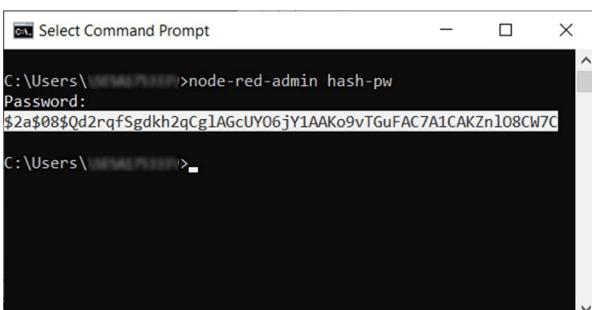
Before enabling login credentials you need to install the Node-RED software. It has to be a secured platform to be compliant with cybersecurity.

Securing Node-RED - Enable Login Credentials

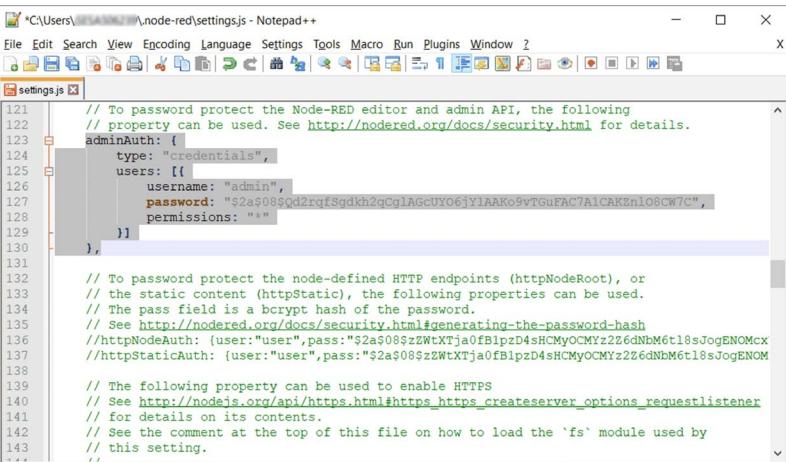
The following steps explains the enabling of user authentication when accessing the Node-RED Editor.

Step	Action
1	<p>Click  and type Run in the search bar and press Enter.</p> 
2	<p>Type the <code>cmd</code> in the run dialog box and click OK.</p>  <p>Result: Command prompt window appears.</p>
3	<p>Type <code>npm config set registry https://registry.npmjs.org</code> in the command prompt and press Enter.</p>

Step	Action
4	Type <code>npm set proxy http://yourproxy:XXXX/</code> in the command prompt and press Enter . NOTE: Type the valid proxy with respect to your organization or country.
5	Type <code>node-red</code> in the command prompt and press Enter . Result: <code>.node-red</code> folder is created in Local Disk (C:) /Users/SESAXXXXXX/.
6	In <code>.node-red</code> folder open <code>settings.json</code> file in the Notepad++. NOTE: Download Notepad++ software if not available in your windows system.  <pre> lib node_modules .config.json .config.json.backup .flows_WTIN05202657L.json.backup .sessions.json .flows_WTIN05202657L.json package.json package-lock.json settings </pre>
7	Type <code>npm i -g node-red-admin</code> in the command prompt and press Enter .  <p>Result: Node-RED admin is installed globally.</p>

Step	Action
8	<p>Type <code>node-red-admin hash-pw</code> in the command prompt and press Enter.</p> 
9	<p>Type the Password and press Enter.</p>  <p>Result: The password is encrypted.</p>

Step	Action
10	Copy the encrypted text (password), search for <code>adminAuth</code> in <code>settings.js</code> file and paste encrypted text as password. Uncomment (remove <code>//</code>) <code>adminAuth</code> credential details.

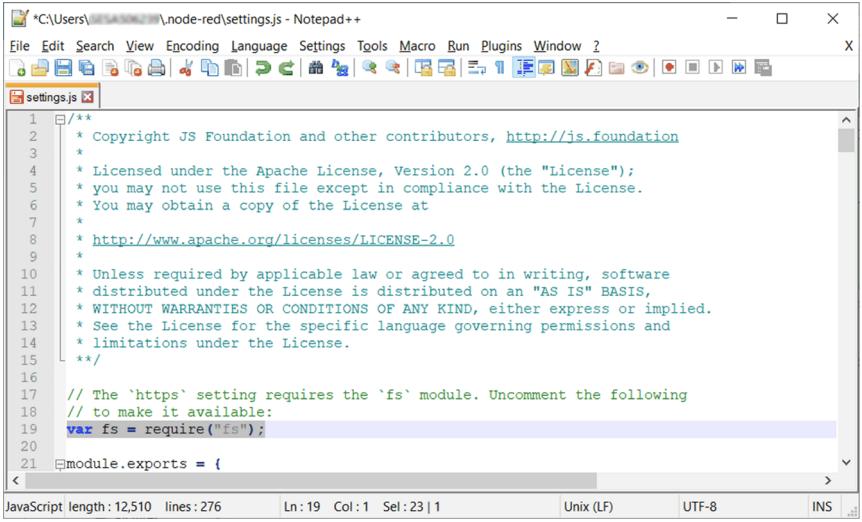
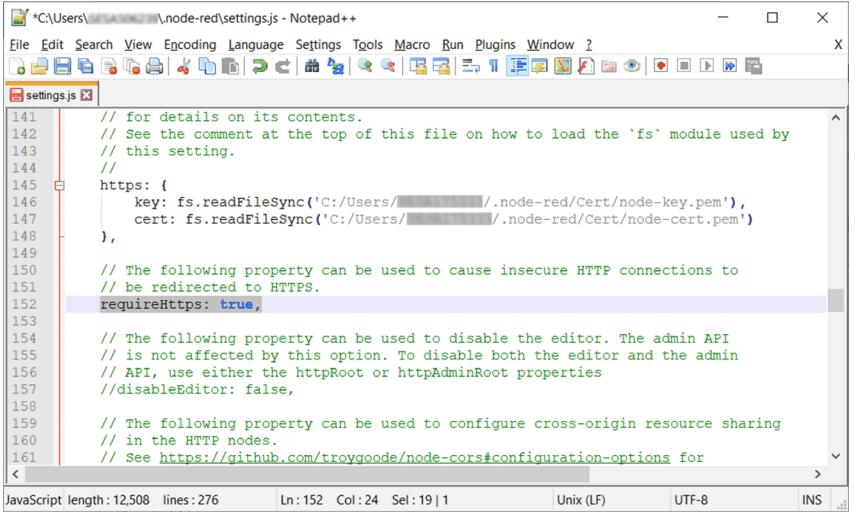


```
C:\Users\[REDACTED]\node-red\settings.js - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
settings.js
121 // To password protect the Node-RED editor and admin API, the following
122 // property can be used. See http://nodered.org/docs/security.html for details.
123 adminAuth: [
124   type: "credentials",
125   users: [
126     username: "admin",
127     password: "52a$08$Zw$XTja0FB1pZD4sHCMYOCM7z226dNbM6t18sJogENOMcx",
128     permissions: ""
129   ],
130 ],
131
132 // To password protect the node-defined HTTP endpoints (httpNodeRoot), or
133 // the static content (httpStatic), the following properties can be used.
134 // The pass field is a bcrypt hash of the password.
135 // See http://nodered.org/docs/security.html#generating-the-password-hash
136 // httpNodeAuth: { user:"user",pass:"52a$08$Zw$XTja0FB1pZD4sHCMYOCM7z226dNbM6t18sJogENOMcx
137 // httpStaticAuth: { user:"user",pass:"52a$08$Zw$XTja0FB1pZD4sHCMYOCM7z226dNbM6t18sJogENOM
138
139 // The following property can be used to enable HTTPS
140 // See http://nodejs.org/api/https.html#https\_createServer\_options\_requestlistener
141 // for details on its contents.
142 // See the comment at the top of this file on how to load the 'fs' module used by
143 // this setting.
144
<*
JavaScript file length: 12,454 lines: 276 Ln: 130 Col: 7 Sel: 223 | 8 Unix (LF) UTF-8 INS
```

Securing Node-RED - Enabling SSL

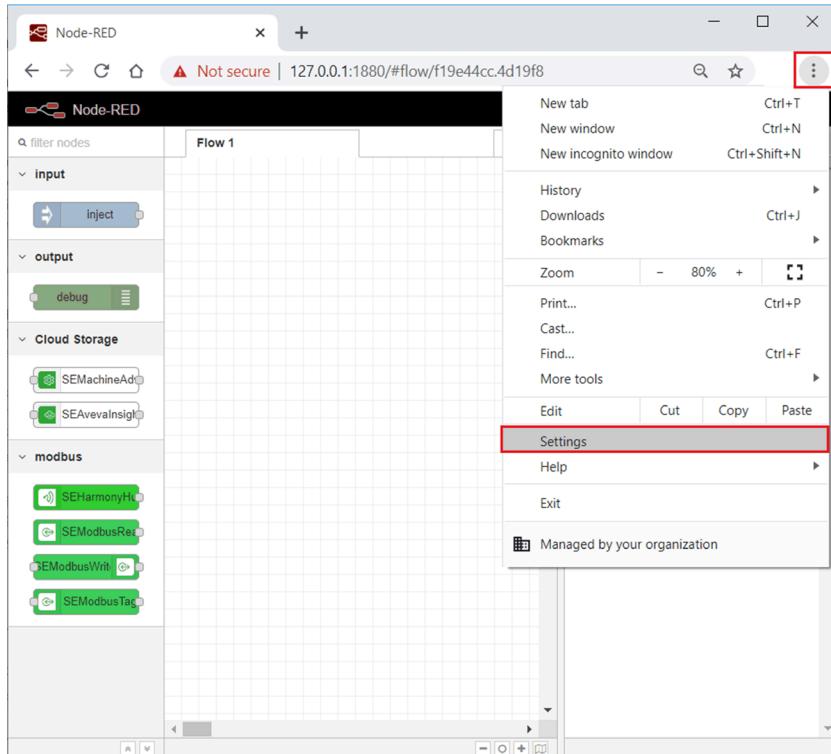
Follow the steps below to enable SSL (Secure Socket Layer) on Node-RED - Editor:

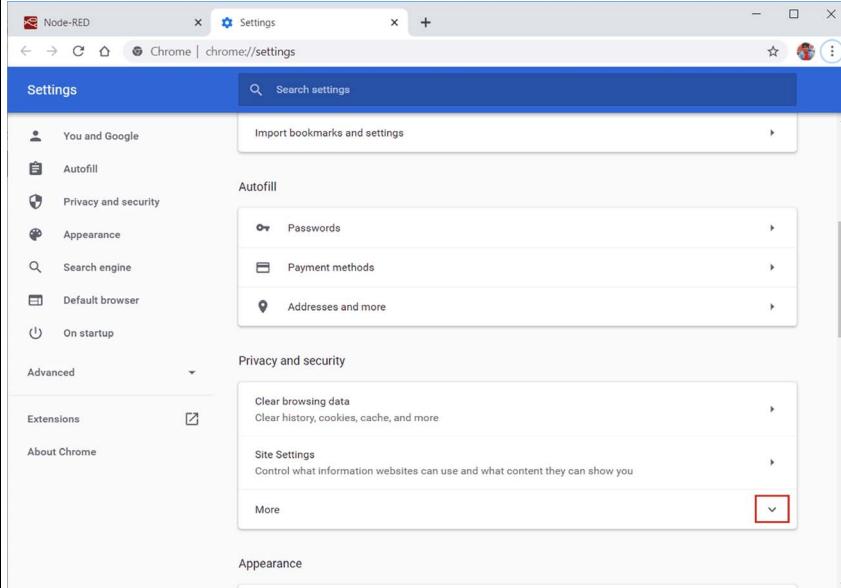
Step	Action
1	Create a new folder called Cert in .node-red folder. For instance, C:/Users/SESAXXXXX/.node-red
2	Copy the SSL certificate files (for instance, node-key.pem and node-cert.pem) and paste them in the path given below: For instance, C:/Users/SESAXXXXX/.node-red/Cert
3	Open settings.js file in Notepad++ . The settings.js file will be located in the path given below: C:/Users/SESAXXXXX/.node-red/

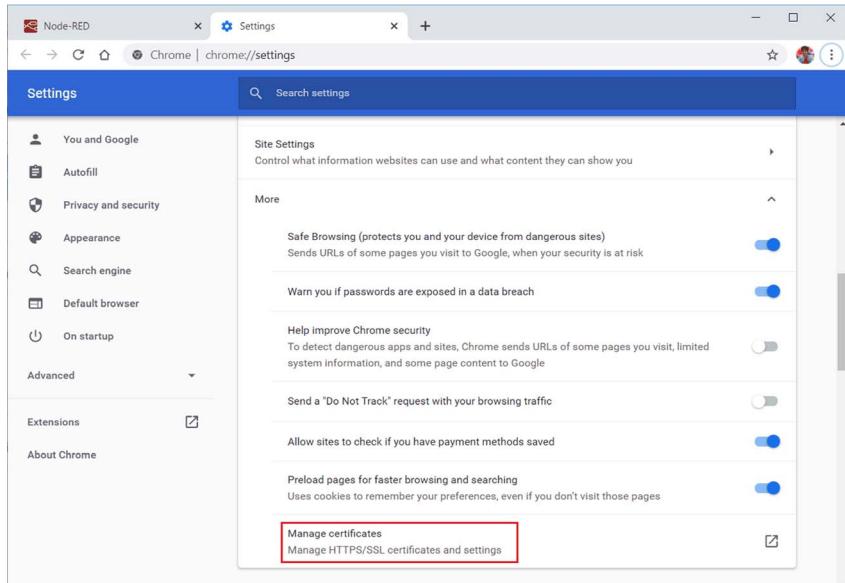
Step	Action
4	<p>Search for the <code>var fs</code> and uncomment (remove <code>//</code>) the statement.</p>  <pre data-bbox="325 246 1187 768"> 1 /** 2 * Copyright JS Foundation and other contributors, http://js.foundation 3 * 4 * Licensed under the Apache License, Version 2.0 (the "License"); 5 * you may not use this file except in compliance with the License. 6 * You may obtain a copy of the License at 7 * 8 * http://www.apache.org/licenses/LICENSE-2.0 9 * 10 * Unless required by applicable law or agreed to in writing, software 11 * distributed under the License is distributed on an "AS IS" BASIS, 12 * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. 13 * See the License for the specific language governing permissions and 14 * limitations under the License. 15 */ 16 17 // The 'https' setting requires the 'fs' module. Uncomment the following 18 // to make it available: 19 var fs = require("fs"); 20 < module.exports = </pre>
5	<p>Search for <code>https</code> in <code>settings.js</code> file and edit the key and cert files path and uncomment (remove <code>//</code>) <code>https</code> details.</p> <p>Search for the <code>requireHttps</code> and uncomment (remove <code>//</code>) the statement.</p>  <pre data-bbox="325 915 1187 1437"> 141 // for details on its contents. 142 // See the comment at the top of this file on how to load the 'fs' module used by 143 // this setting. 144 // 145 https: { 146 key: fs.readFileSync('C:/Users/[REDACTED]/.node-red/Cert/node-key.pem'), 147 cert: fs.readFileSync('C:/Users/[REDACTED]/.node-red/Cert/node-cert.pem') 148 }, 149 150 // The following property can be used to cause insecure HTTP connections to 151 // be redirected to HTTPS. 152 requireHttps: true, 153 154 // The following property can be used to disable the editor. The admin API 155 // is not affected by this option. To disable both the editor and the admin 156 // API, use either the httpRoot or httpAdminRoot properties 157 // disableEditor: false, 158 159 // The following property can be used to configure cross-origin resource sharing 160 // in the HTTP nodes. 161 // See https://github.com/troygoode/node-cors#configuration-options for < </pre>

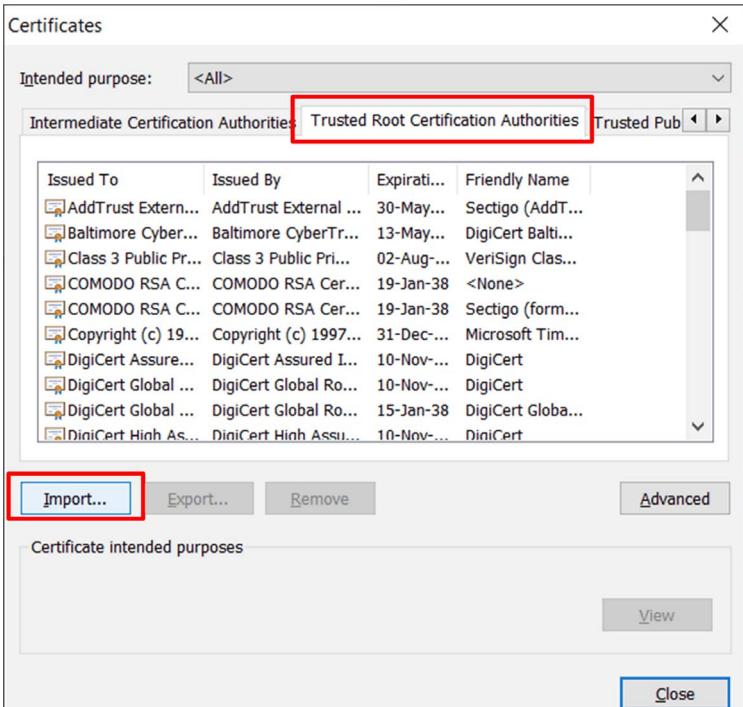
Step	Action
6	Save the settings.js file and close.
7	Restart the node-red server.

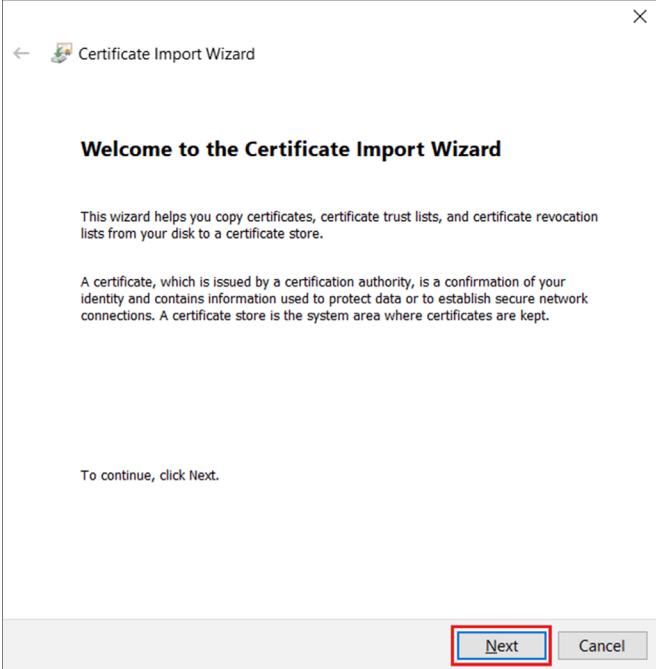
If your Node-RED server (<https://127.0.0.1.1880>) is showing Not-secure then follow the steps given below to make the server secure:

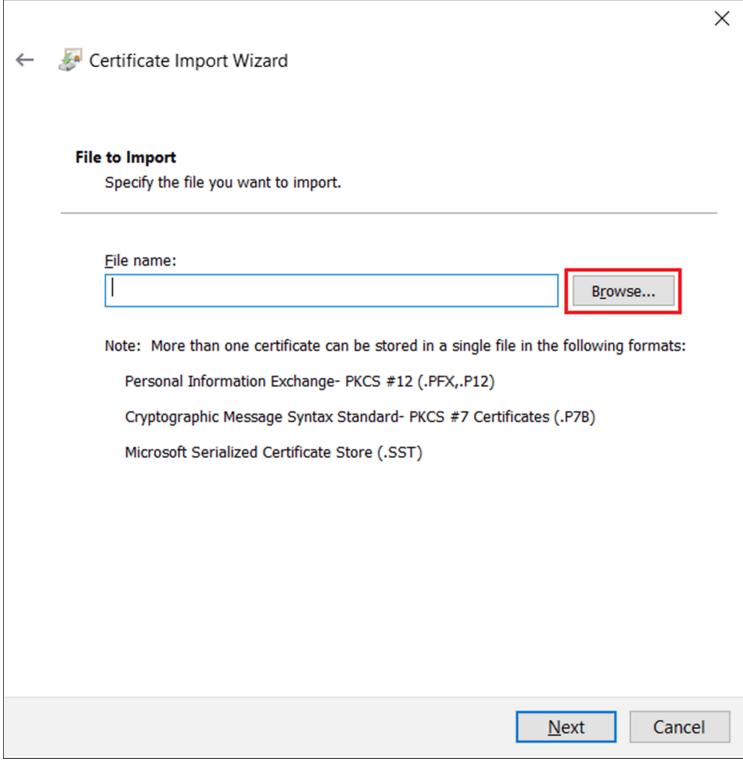
Step	Action
1	<p>Open Node-RED application in a specified browser. Click Kebab Menu → Settings as shown in the image below.</p>  <p>Result: Settings window appears.</p>

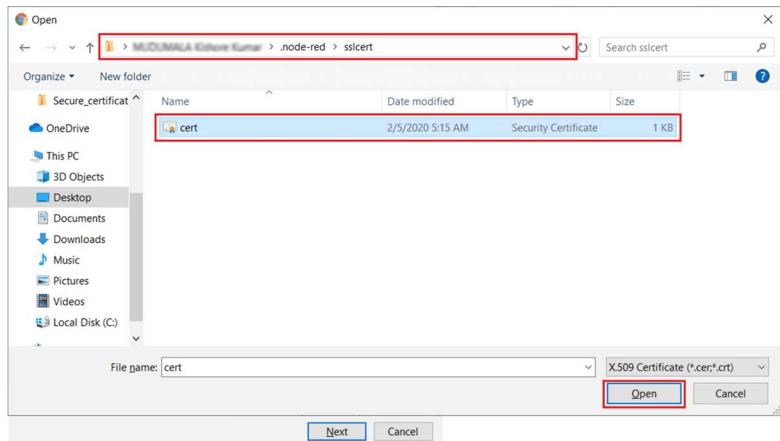
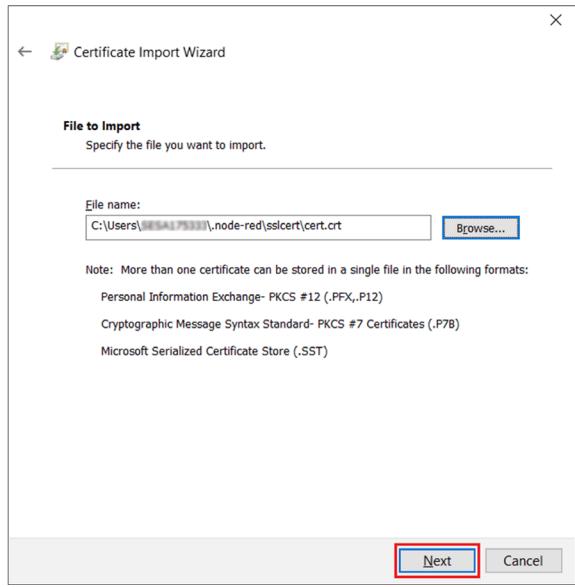
Step	Action
2	<p>Click More drop-down.</p>  <p>The screenshot shows the Chrome Settings page. At the top, there's a search bar labeled 'Search settings'. Below it, the main menu has several sections: 'You and Google', 'Autofill', 'Privacy and security', 'Appearance', 'Search engine', 'Default browser', and 'On startup'. A dropdown menu is open under 'More', containing 'Import bookmarks and settings', 'Passwords', 'Payment methods', and 'Addresses and more'. Further down, there are sections for 'Advanced', 'Extensions', and 'About Chrome'. The 'More' dropdown menu is highlighted with a red box around its scroll bar.</p>

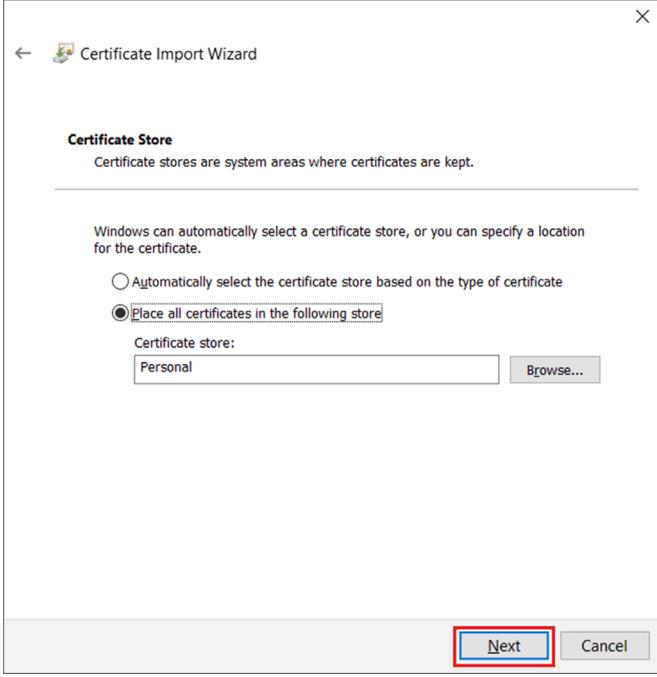
Step	Action
3	<p>Click Manage certificates.</p> 

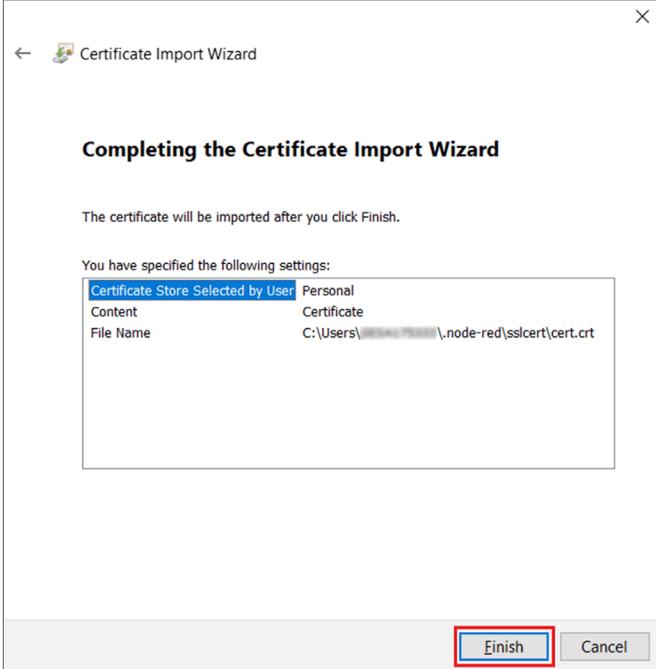
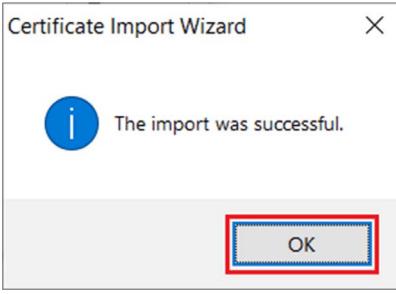
Step	Action
4	<p>Click Trusted Root Certification Authorities and Import....</p>  <p>The screenshot shows the Windows Certificates dialog box. The 'Trusted Root Certification Authorities' tab is selected. Below it, there is a list of certificates with columns for Issued To, Issued By, Expiration Date, and Friendly Name. At the bottom of the dialog box, there are buttons for Import..., Export..., Remove, Advanced, View, and Close. The 'Import...' button is highlighted with a red box.</p>

Step	Action
5	<p>Click Next.</p>  <p>The screenshot shows the 'Welcome to the Certificate Import Wizard' screen. At the top right is a close button (X). Below it is a back arrow and the title 'Certificate Import Wizard'. The main text reads: 'Welcome to the Certificate Import Wizard' and 'This wizard helps you copy certificates, certificate trust lists, and certificate revocation lists from your disk to a certificate store.' A detailed description follows: 'A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.' At the bottom, the text 'To continue, click Next.' is displayed above a button bar containing 'Next' and 'Cancel' buttons. The 'Next' button is highlighted with a red rectangular box.</p>

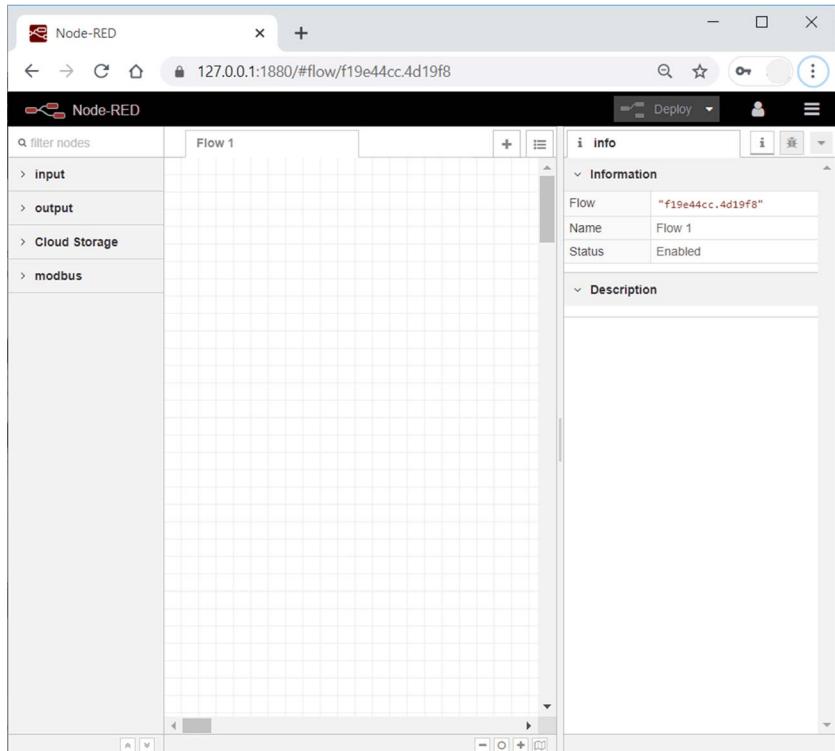
Step	Action
6	<p>Click Browse....</p>  <p>← Certificate Import Wizard</p> <p>File to Import Specify the file you want to import.</p> <p>File name: <input type="text"/> Browse...</p> <p>Note: More than one certificate can be stored in a single file in the following formats:</p> <ul style="list-style-type: none">Personal Information Exchange- PKCS #12 (.PFX,.P12)Cryptographic Message Syntax Standard- PKCS #7 Certificates (.P7B)Microsoft Serialized Certificate Store (.SST) <p>Next Cancel</p>

Step	Action
7	<p>Select the location of the certificates which are available in the .node-red folder. Select cert and click Open. For example, C:/Users/SESAXXXXX/.node-red/sslcert</p> 
8	<p>Click Next.</p> 

Step	Action
9	<p>Click Next.</p> 

Step	Action
10	<p>Click Finish.</p> 
11	<p>Click OK.</p> 
12	<p>Reload the browser, and restart your computer if required.</p>

Step	Action
13	<p>Copy https://127.0.0.1.1880 and paste the link in a supported browser. Type the Username and Password in related fields and click Login.</p> 

Step	Action
14	Secured Node-RED application is launched successfully. 

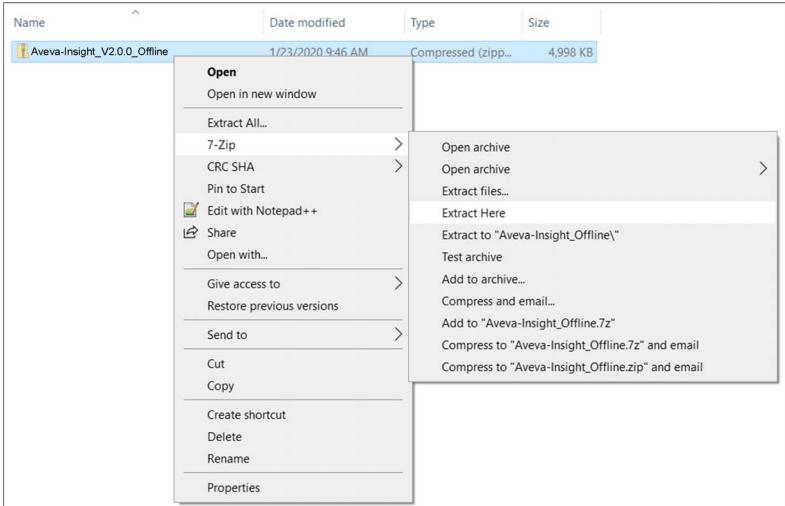
Installing SE Aveva Insight Node - Offline Installation Mode

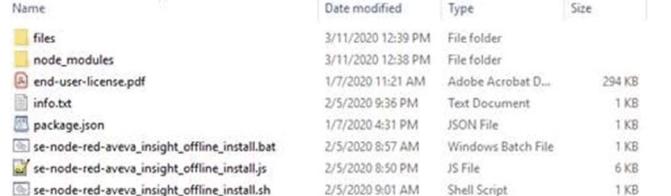
Overview

You should install the software below in your system before proceeding with the offline installation mode:

- Node.js (*see page 33*)
- Node-RED (*see page 40*)

Installing SE Aveva Insight Node

Step	Action
1	<p>Download the Aveva-Insight_V2.0.0_Offline.zip file from the link given below: https://schneider-electric.box.com/s/xsmgvjhjo4km8jwlsn8qyprgb0gy8bv6</p> <p>NOTE: Make sure that unzip software is available in your device, if not available, download it from the given link: https://www.7-zip.org/download.html.</p>
2	<p>Right-click the downloaded Aveva-Insight_V2.0.0_Offline file and select 7-Zip → Extract Here</p>  <p>Result: The selected file is unzipped.</p>

Step	Action
3	<p>Open Aveva-Insight_V2.0.0_Offline folder. Double-click on the se-node-red-aveva_insight_offline_install.bat file for installing the node.</p> <p>This PC > Windows (C:) > Users > SESAxxxxxx > Documents > Node-Factory > aveva > Aveva-Insight_V2.0.0_Offline</p>  <p>Result: The below license document and statement appears:</p> <ul style="list-style-type: none"> ● EULA (End User Licensing Agreement) document will appear in PDF format. Read it carefully and go back to command prompt window. ● Please read the Terms & Conditions carefully. Do you agree to our Terms & Conditions? (yes/no) :
4	<p>Type yes and press Enter to agree the terms and conditions and install SE Aveva Insight node.</p>  <p>Result: SE Aveva Insight node is successfully installed.</p> <p>NOTE: The node package is saved in the Users folder (for example: C:\Users\SESAxxxxxx\se-node-red-aveva_insight\).</p> <p>NOTE: If you type no, the installation is canceled.</p>
5	<p>Launch the SE Aveva Insight Node (see page 88).</p>

Installing SE Aveva Insight Node - Online Installation Mode

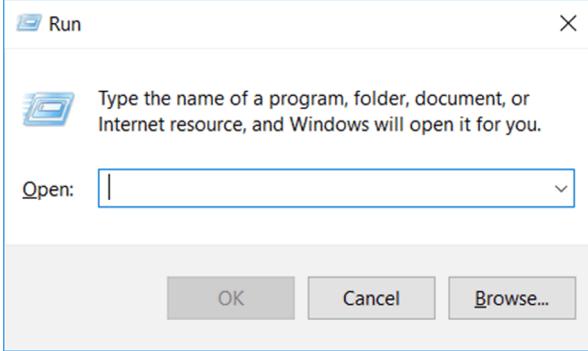
Overview

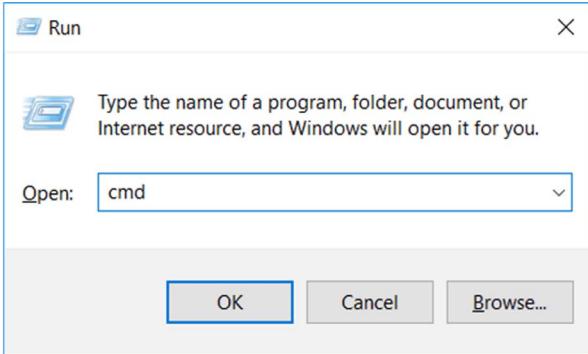
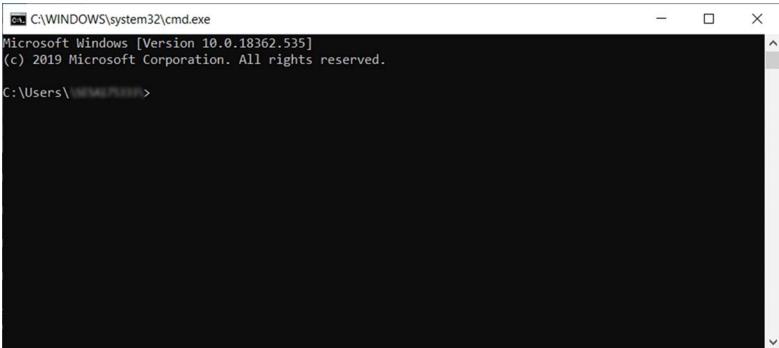
You should install the software below in your system before proceeding with the online installation mode.:

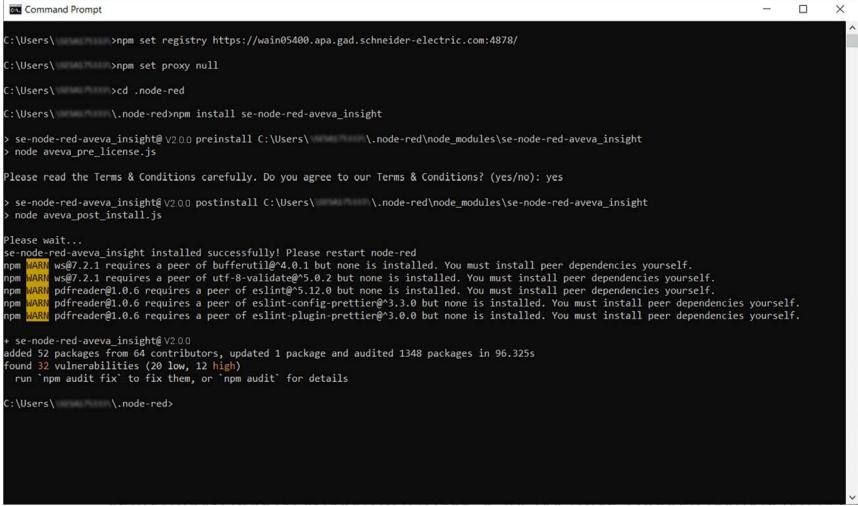
- Node.js (*see page 33*)
- Node-RED (*see page 40*)
- Python v2.7.x

Installing SE Aveva Insight Node

The following table shows the installation procedure of the SE Aveva Insight node:

Step	Action
1	<p>Click  and type Run in the search bar and press Enter.</p> 

Step	Action
2	<p>Type the cmd in the Run dialog box and click OK.</p>  <p>Result: Command prompt window appears.</p>
3	
4	<p>Type the text given below in the command prompt and press Enter:</p> <pre>npm set registry https://wain05400.apa.gad.schneider-electric.com:4878/</pre>
5	<p>Type the text given below in the command prompt and press Enter:</p> <pre>npm set proxy null</pre> <p>Note: If set proxy null command is not working, remove proxy for respective types as follows:</p> <ul style="list-style-type: none"> ● npm config rm proxy ● npm config rm http-proxy ● npm config rm https-proxy
6	<p>Type the text given below in the command prompt and press Enter.</p> <pre>cd .node-red</pre>

Step	Action
7	<p>Type <code>npm install se-node-red-aveva_insight</code> and press Enter.</p> <p>Result: The below license document and statement appears:</p> <ul style="list-style-type: none"> • EULA (End User Licensing Agreement) document will appear in PDF format. Read it carefully and go back to command prompt window. • Please read the Terms & Conditions carefully. Do you agree to our Terms & Conditions? (yes/no) :
8	<p>Type <code>yes</code> and press Enter to agree the terms and conditions and install SE Aveva Insight node.</p> <p>Result: Installation is successfully completed.</p>  <pre> C:\Users\...>npm set registry https://wain05400.apa.gad.schneider-electric.com:4878/ C:\Users\...>npm set proxy null C:\Users\...>cd .node-red C:\Users\...>.\node-red>npm install se-node-red-aveva_insight > se-node-red-aveva_insight@V2.00 postinstall C:\Users\...\node-red\node_modules\se-node-red-aveva_insight > node aveva_pre_license.js Please read the Terms & Conditions carefully. Do you agree to our Terms & Conditions? (yes/no): yes > se-node-red-aveva_insight@V2.00 postinstall C:\Users\...\node-red\node_modules\se-node-red-aveva_insight > node aveva_post_install.js Please wait... se-node-red-aveva_insight installed successfully! Please restart node-red npm WARN ws@7.2.1 requires a peer of bufferutil@^4.0.1 but none is installed. You must install peer dependencies yourself. npm WARN ws@7.2.1 requires a peer of utf-8-validate@^5.0.2 but none is installed. You must install peer dependencies yourself. npm WARN pdfreader@0.1.0 requires a peer of eslint@^5.12.0 but none is installed. You must install peer dependencies yourself. npm WARN pdfreader@0.1.0 requires a peer of eslint-config-prettier@^3.3.0 but none is installed. You must install peer dependencies yourself. npm WARN pdfreader@0.1.0 requires a peer of eslint-plugin-prettier@^3.0.0 but none is installed. You must install peer dependencies yourself. + se-node-red-aveva_insight@V2.00 added 52 packages from 64 contributors, updated 1 package and audited 1348 packages in 96.325s found 32 vulnerabilities (20 low, 12 high) run 'npm audit fix' to fix them, or 'npm audit' for details C:\Users\...\node-red> </pre>
9	<p>NOTE: If you type <code>no</code>, the installation is canceled.</p>

NOTE: The online installation process sometimes does not work due to Schneider proxy issue. If you face proxy issue, follow the offline installation process as a workaround ([see page 58](#)).

Section 3.2

Uninstall SE Aveva Insight Node - Windows Platform

What Is in This Section?

This section contains the following topics:

Topic	Page
Uninstalling SE Aveva Insight Node - Offline Uninstallation Mode	64
Uninstalling SE Aveva Insight Node - Online Uninstallation Mode	66

Uninstalling SE Aveva Insight Node - Offline Uninstallation Mode

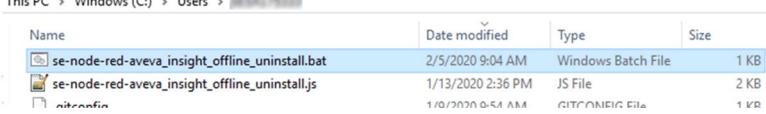
NOTICE

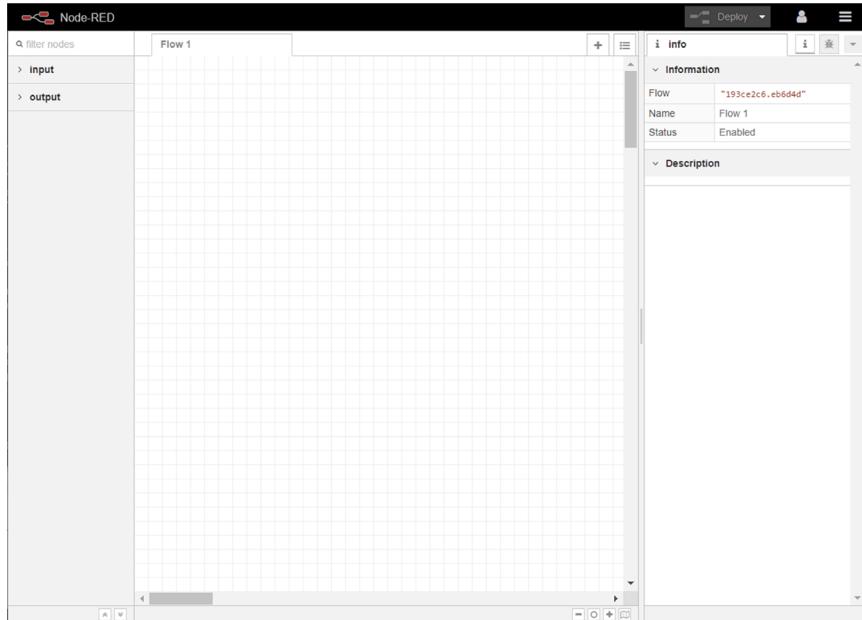
LOSS OF DATA

Backup the data before uninstalling SE Aveva Insight node.

Failure to follow these instructions can result in equipment damage.

This procedure explains how to uninstall the SE Aveva Insight node:

Step	Action																
1	Delete the SE Aveva Insight node from the flow.																
2	Stop the Node-RED server.																
3	Open users folder. For example: C:\Users\SESAXXXXX																
4	Double click se-node-red-aveva_insight_offline_uninstall.bat file to uninstall the SE Aveva Insight node. This PC > Windows (C:) > Users > SESAXXXXX  <table border="1"><thead><tr><th>Name</th><th>Date modified</th><th>Type</th><th>Size</th></tr></thead><tbody><tr><td>se-node-red-aveva_insight_offline_uninstall.bat</td><td>2/5/2020 9:04 AM</td><td>Windows Batch File</td><td>1 KB</td></tr><tr><td>se-node-red-aveva_insight_offline_uninstall.js</td><td>1/13/2020 2:36 PM</td><td>JS File</td><td>2 KB</td></tr><tr><td>niteconfig</td><td>1/10/2020 9:41 AM</td><td>GITCONFIG File</td><td>1 KB</td></tr></tbody></table> Result: SE Aveva Insight node is successfully uninstalled.	Name	Date modified	Type	Size	se-node-red-aveva_insight_offline_uninstall.bat	2/5/2020 9:04 AM	Windows Batch File	1 KB	se-node-red-aveva_insight_offline_uninstall.js	1/13/2020 2:36 PM	JS File	2 KB	niteconfig	1/10/2020 9:41 AM	GITCONFIG File	1 KB
Name	Date modified	Type	Size														
se-node-red-aveva_insight_offline_uninstall.bat	2/5/2020 9:04 AM	Windows Batch File	1 KB														
se-node-red-aveva_insight_offline_uninstall.js	1/13/2020 2:36 PM	JS File	2 KB														
niteconfig	1/10/2020 9:41 AM	GITCONFIG File	1 KB														

Step	Action
5	<p>To restart the Node-RED server, follow the steps:</p> <ol style="list-style-type: none">1. Type <code>node-red</code> in the command prompt and press Enter. Result: Node-RED server starts.2. Copy the IP address https://127.0.0.1:1880/ in which the Node-RED server is running.3. Open a browser.4. Paste the IP address in the URL field in the browser and press Enter.5. Type the Username and Password in related fields and click Login. Result: Node-RED factory window reappears.  <p>The screenshot shows the Node-RED interface. On the left, there's a sidebar with 'filter nodes' and categories for 'input' and 'output'. The main area is titled 'Flow 1' and contains a single node. On the right, there's a sidebar titled 'info' with sections for 'Information' and 'Description'. Under 'Information', it shows 'Flow' as "193ce2c6.eb6d4d", 'Name' as 'Flow 1', and 'Status' as 'Enabled'. There's also a 'Description' section which is currently empty.</p>

Uninstalling SE Aveva Insight Node - Online Uninstallation Mode

NOTE: You can uninstall the SE Aveva Insight node using the command prompt.

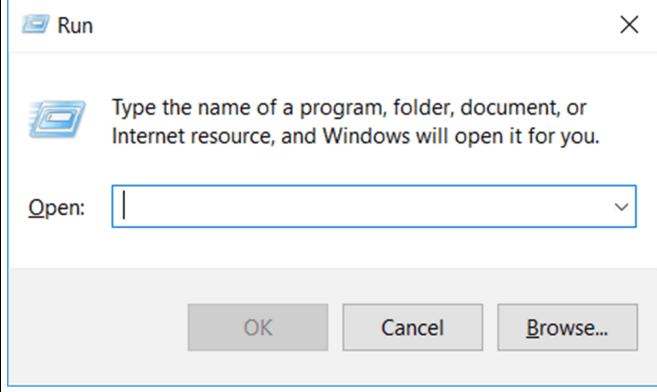
NOTICE

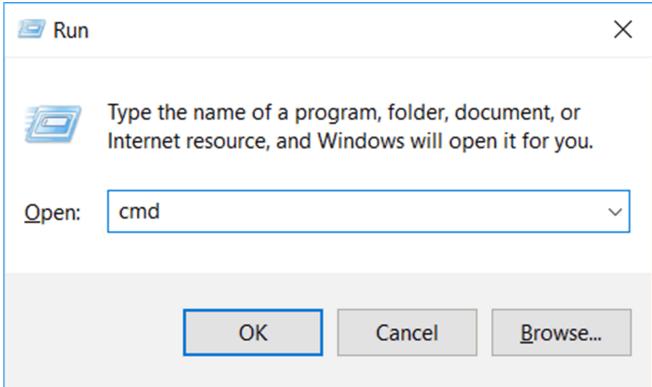
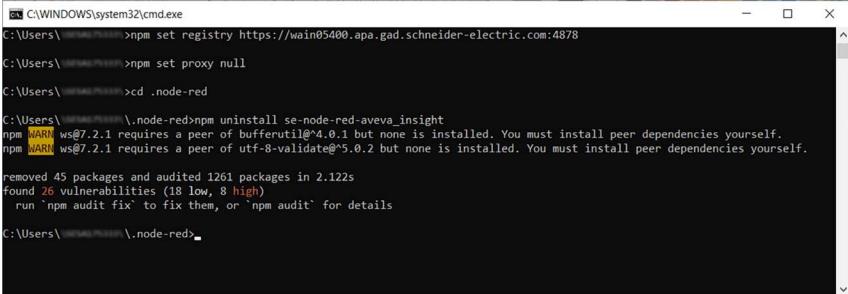
LOSS OF DATA

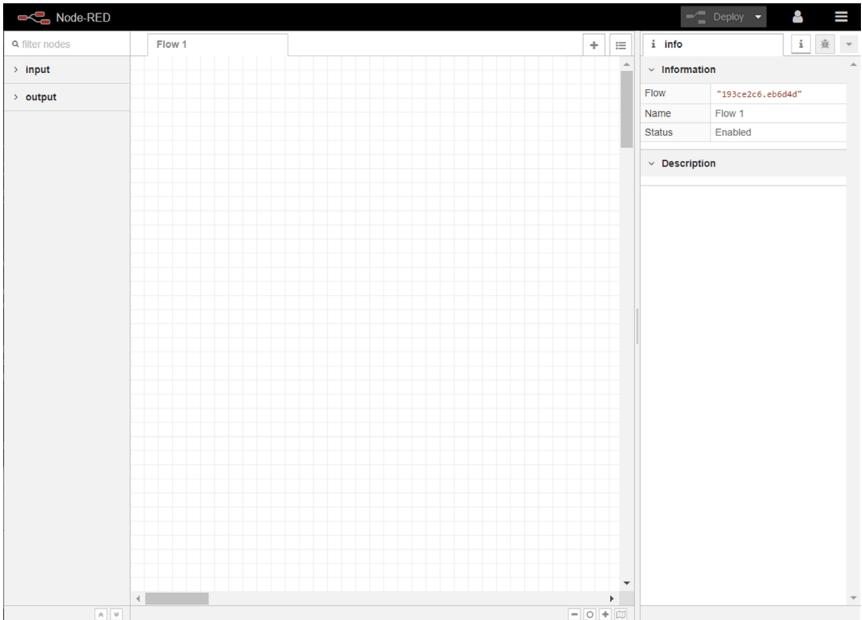
Backup the data before uninstalling SE Aveva Insight node.

Failure to follow these instructions can result in equipment damage.

This procedure explains how to uninstall the SE Aveva Insight node:

Step	Action
1	Delete the SE Aveva Insight from the flow.
2	Stop the Node-RED server.
3	Click  and type Run in the search bar and press Enter 

Step	Action
4	<p>Type the cmd in the Run dialog box and press Enter.</p> 
Result:	Command prompt window appears.
5	Type cd .node-red and press Enter .
6	Type npm uninstall se-node-red-aveva_insight .
7	<p>Press Enter to uninstalling SE Aveva Insight node.</p>  <pre data-bbox="357 845 1205 1139"> C:\WINDOWS\system32\cmd.exe C:\Users\[REDACTED] >npm set registry https://wain05400.apa.gad.schneider-electric.com:4878 C:\Users\[REDACTED] >npm set proxy null C:\Users\[REDACTED] >cd .node-red C:\Users\[REDACTED] \.node-red>npm uninstall se-node-red-aveva_insight npm WARN ws@7.2.1 requires a peer of bufferutil@^4.0.1 but none is installed. You must install peer dependencies yourself. npm WARN ws@7.2.1 requires a peer of utf-8-validate@^5.0.2 but none is installed. You must install peer dependencies yourself. removed 45 packages and audited 1261 packages in 2.12s Found 26 vulnerabilities (18 low, 8 high) run `npm audit fix` to fix them, or `npm audit` for details C:\Users\[REDACTED] \.node-red> </pre>
Result:	SE Aveva Insight node is successfully uninstalled.

Step	Action
8	<p>To restart the Node-RED server, follow the steps:</p> <ol style="list-style-type: none">1. Type <code>node-red</code> in the command prompt and press Enter. Result: Node-RED server starts.2. Copy the IP address https://127.0.0.1:1880/ in which the Node-RED server is running.3. Open a browser.4. Paste the IP address in the URL field in the browser and press Enter.5. Type the Username and Password in related fields and click Login. Result: Node-RED factory window reappears. 

Chapter 4

Installation and Uninstallation of SE Aveva Insight Node - Linux Platform

NOTE: Linux version of SE Aveva Insight node will be supported in the future updates.

NOTE: Magelis HMIBSC - The required softwares like Node.js, Node-RED and Python are pre-installed in the **Magelis HMIBSC** box.

Hardware requirements for Linux - Linaro - V1.00.009

IIoT Edge Box	PC hardware	Specification
Magelis HMIBSC	Processor	Reference HMIBSCEA53D1L0T HMIBSC with ARM
	Hard disk space	eMMC and TPM for hardware encryption
	Operating system	Linux Yocto

What Is in This Chapter?

This chapter contains the following sections:

Section	Topic	Page
4.1	Installing SE Aveva Insight Node - Linux Platform	70
4.2	Uninstalling SE Aveva Insight Node - Linux Platform	74

Section 4.1

Installing SE Aveva Insight Node - Linux Platform

What Is in This Section?

This section contains the following topics:

Topic	Page
Installing SE Aveva Insight Node - Offline Installation Mode	71
Installing SE Aveva Insight Node - Online Installation Mode	73

Installing SE Aveva Insight Node - Offline Installation Mode

The Linux based Edge Boxes (for example, HMIBSC) have in-built Node-RED-as-a-Service. This provides Node.js, Node-RED and python are pre-installed in the OS image.

The SE Aveva Insight node is installed by the user from the portable disk.

The below procedure is applicable for the Edge Boxes running on Linux Yocto (for example, HMIBSC):

Step	Action
1	Download the Aveva-Insight_V2.0.0_Offline.Zip file from the link given below: https://schneider-electric.box.com/s/xsmgvjhjo4km8jwlsn8qyprgb0gy8bv6
2	Extract the downloaded file Aveva-Insight_V2.0.0_Offline.Zip and transfer the extracted folder (Aveva-Insight_V2.0.0_Offline) into a portable disk. Example: Pendrive.
3	Connect the portable device to IIoT Edge Box.
4	<ul style="list-style-type: none"> ● Navigate to the directory of the portable device (for instance, cd mount/media/<disk name>) and press Enter. ● Type cd Aveva-Insight_V2.0.0_Offline and press Enter to go to the directory where the offline files for SE Aveva Insight node are placed.
5	Type sh se-node-red-aveva_insight_offline_install.sh and press Enter to install the SE Aveva Insight node. Result: Please read the Terms & Conditions carefully! press any key to continue... statement appears.
6	Press any key to read the Terms & Conditions. <pre>root@hmibsc:~/mount/sda1/Aveva-Insight_V2.0.0_Offline ls se-node-red-aveva_insight_offline_install.sh root@hmibsc:~/mount/sda1/Aveva_Insight# sh se-node-red-aveva_insight_offline_install.sh Please wait ... Please read the Terms & Conditions carefully! press any key to continue ... -</pre>
	NOTE: Press any key to continue until the result appears below. Result: Do you agree to our Terms & Conditions? (yes/no) :.
7	Read the entire license document and press any key to continue... at the end of each page. Result: Do you agree to our Terms & Conditions? (yes/no):

Step	Action
8	<p>Type yes and press Enter to agree the terms and conditions and install SE Aveva Insight node.</p> <pre>in both cases, for the sole and restricted purpose of exercising the concurrent use license right granted to You under said Corporate License within the limits set forth hereinabove. This Appendix forms an integral part of this EULA, and all terms and conditions of this EULA which are not expressly deviated under this Appendix, shall apply to You in accordance with the foregoing in addition to the terms and conditions set forth in this Appendix. As used herein and for the purposes of Corporate Licenses only, the following terms shall have the following meaning : -the term ■Group of Companies■ means any company or corporation: a)in which You directly or indirectly own or control the voting rights attached to more than 50% of the issued ordinary share capital, or (ii) control directly or indirectly the appointment of a majority of directors (or equivalent) of its board of directors (or equivalent body); or b)which directly or indirectly (i) owns or controls the voting rights attached to more than 50% of Your issued ordinary share capital, or (ii) controls the appointment of a majority of directors (or equivalent) of Your board of directors (or equivalent body); or c)which is directly or indirectly owned or controlled by the same company or corporation as You in accordance with sub-case b) above. -the term ■Authorized Users■ means any end-users at the Sites who use the Software Product; -the term ■Sites■ means Your facility to which Schneider Electric Initially supplied the Software Product as well as all of Your facilities and the facilities of Your Group of Companies, irrespective whether said facilities are located within the same country or several countries. 22 Press any key to continue Do you agree to our Terms & Conditions? (yes/no): Please wait ... Successfully copied se-node-red-aveva_insight files Running: cd /home/root/se-node-red-aveva_insight && npm link Done: cd /home/root/se-node-red-aveva_insight && npm link se-node-red-aveva_insight installed successfully! Please restart node-red root@hmibsc:~/mount/sda1/Aveva_Insight_V2.0.0_Offline</pre> <p>Result: se-node-red-aveva_insight installed successfully. Please restart node-red by rebooting Magelis HMIBSC Edge box.</p> <p>NOTE: If you type no, the installation is canceled.</p>
9	<p>Open a browser from system (Laptop or Desktop) connected in same network as the Linux Edge box:</p> <ul style="list-style-type: none"> ● Go to <code>https://<ip address>:1880</code> <p>NOTE: To know your IP address, type <code>ifconfig</code> in your Linux Edge box.</p> <ul style="list-style-type: none"> ● Login window appears. <p>Note: Use your Node-RED login credentials to operate Linux Edge box through your system.</p> <p>NOTE: As the browser is not accessible in the Linux Edge box, you can connect to another system (Laptop or Desktop) using the Linux Edge box IP address.</p>

Installing SE Aveva Insight Node - Online Installation Mode

NOTE: Linux operating system can not be configured with Schneider proxy network in few locations. Due to this limitation, online installation is not documented.

Section 4.2

Uninstalling SE Aveva Insight Node - Linux Platform

What Is in This Section?

This section contains the following topics:

Topic	Page
Uninstalling SE Aveva Insight Node - Offline Uninstallation Mode	75
Uninstalling SE Aveva Insight Node - Online Uninstallation Mode	76

Uninstalling SE Aveva Insight Node - Offline Uninstallation Mode

The below procedure is applicable for the Edge Boxes running on Linux Yocto (for example, **HMIBSC**):

Step	Action
1	Type <code>ls</code> and press Enter . Result: Installed nodes appears.
2	Type <code>sh se-node-red-aveva_insight_offline_uninstall.sh</code> and press Enter to uninstall the SE Aveva Insight node. <pre>root@hmibsc:~# ls se-node-red-aveva_insight_offline_uninstall.sh root@hmibsc:~# sh se-node-red-aveva_insight_offline_uninstall.sh Running: cd /home/root/se-node-red-aveva_insight && npm unlink Done: cd /home/root/se-node-red-aveva_insight && npm unlink Running: cd /home/root && rm -rf se-node-red-aveva_insight Done: cd /home/root && rm -rf se-node-red-aveva_insight root@hmibsc:~#</pre>
3	NOTE: After uninstalalation restart Node-RED by rebooting Magelis HMIBSC Edge box. Open a browser from system (Laptop or Desktop) connected in same network as the Linux Edge box: <ul style="list-style-type: none"> Go to <code>https://<ip address>:1880</code> NOTE: To know your IP address, type <code>ifconfig</code> in your Linux Edge box. <ul style="list-style-type: none"> Login window appears. Note: Use your Node-RED login credentials to operate Linux Edge box through your system. NOTE: As the browser is not accessible in the Linux Edge box, you can connect to another system (Laptop or Desktop) using the Linux Edge box IP address.

Uninstalling SE Aveva Insight Node - Online Uninstallation Mode

NOTE: Linux operating system can not be configured with Schneider proxy network in few locations. Due to this limitation, online uninstallation is not documented.

Part III

Node Usage

What Is in This Part?

This part contains the following chapters:

Chapter	Chapter Name	Page
5	About the SE Aveva Insight Node	79
6	SE Aveva Insight Node Configuration	93
7	Context Monitoring Use Case	95

Chapter 5

About the SE Aveva Insight Node

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Introduction	80
Creating Aveva Insight Account	81
Launching the Node-RED Server and SE Aveva Insight Node	88

Introduction

Overview

SE Aveva Insight node is a publishing node that collects data in **CMS** format (*see page 116*) from collection node (for example, SE Harmony Hub which collects data from Harmony Hub gateway), it converts data into SE Aveva Insight node appropriate data format and pushes the data to the Aveva Insight cloud.

You must **Sign-Up** to AVEVA cloud and create a **Data Source**.

If the user network is behind the firewall, give the **Proxy** address in **Proxy** input field of the node, so that it sends the data to the cloud.

SE Aveva Insight node pushes the data properties from the **CMS** format (*see page 116*) to the Tag name in the **Data Source**. If the Tag name does not exist in the **Data Source**, new Tag name is created.

NOTE: You should have Aveva Insight account to push the data to Aveva Insight cloud.

Node Description

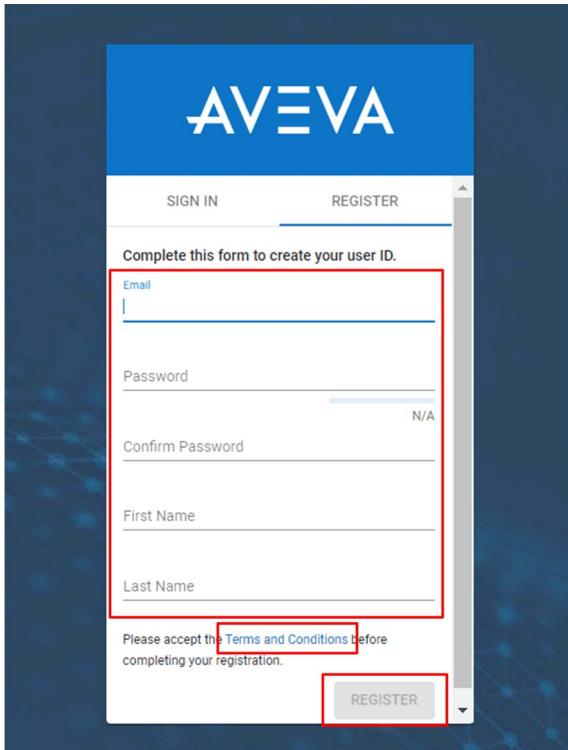
SE Aveva Insight node consists of:



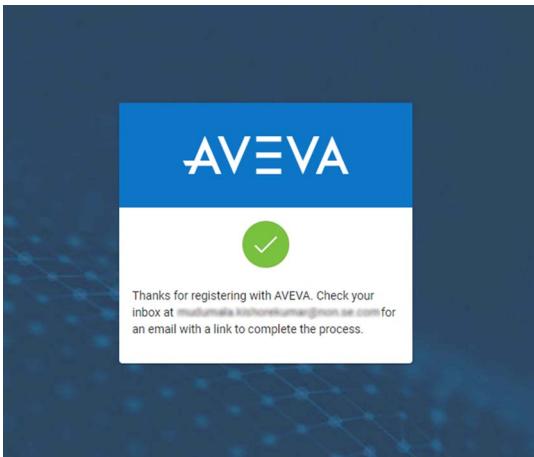
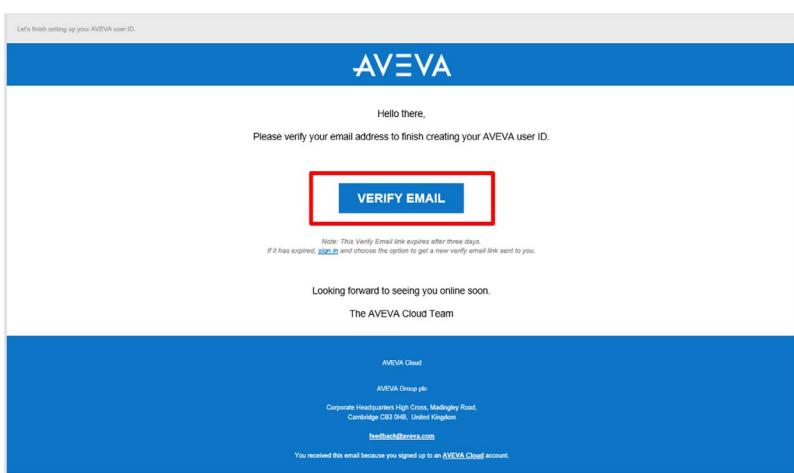
Item number	Item name	Description
1	Link node - Input	Connects the SE Aveva Insight node with collection node.
2	Connection status	Indicates the following connection status: <ul style="list-style-type: none">● Configured: Node is configured.● Success: The data is pushed successfully to Aveva Insight cloud.● Invalid Input: No valid data from the input.● ConfigError: Node is not configured.

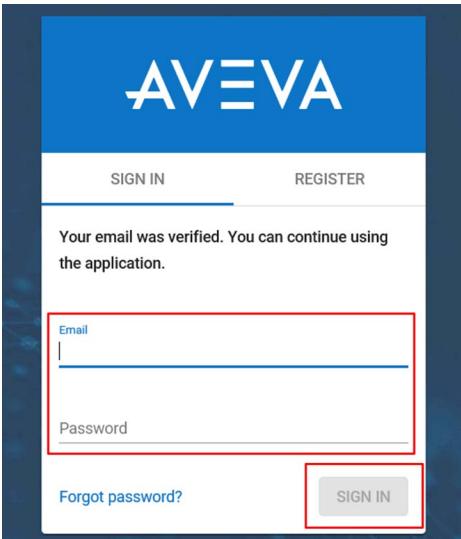
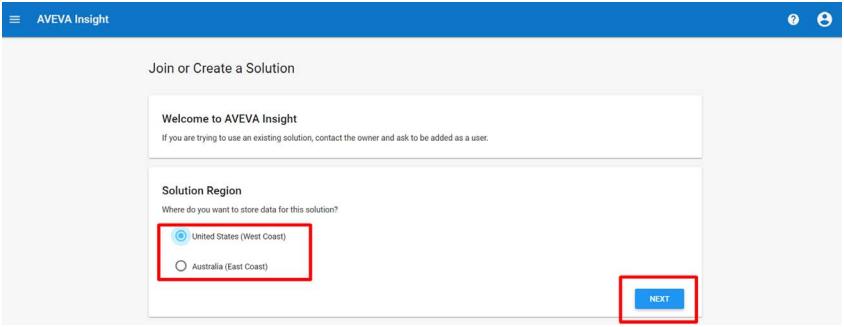
Creating Aveva Insight Account

Before you access the Aveva Insight, you should create a login account.

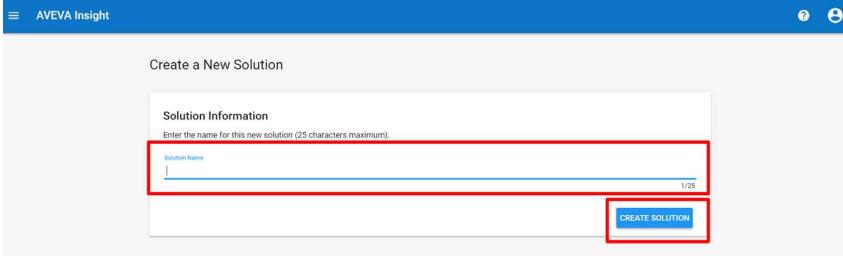
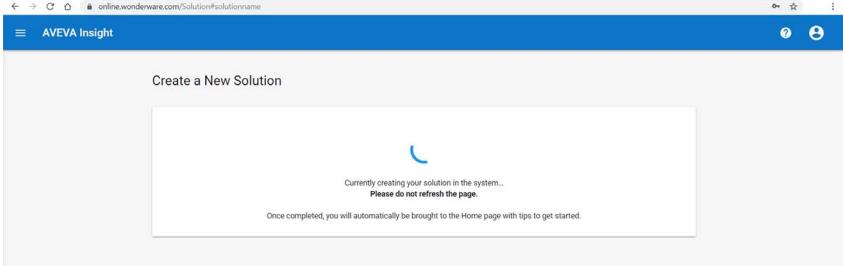
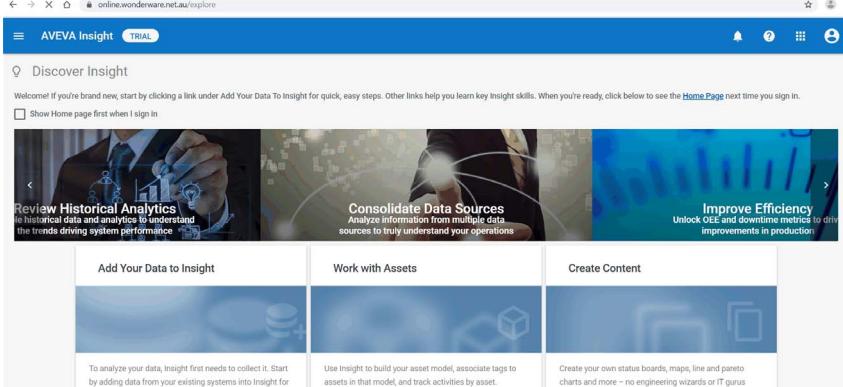
Step	Action
1	<p>Click on the link given below: https://online.wonderware.com/Authentication/Signup</p> <p>Result: Sign up dialog box appears.</p>
2	<p>To create a user ID, type the below details in the required fields:</p> <ol style="list-style-type: none">1. Click Terms and Conditions and accept before completing your registration.2. Click REGISTER.  <p>Result: You will receive an e-mail with a link to complete the registration process.</p>

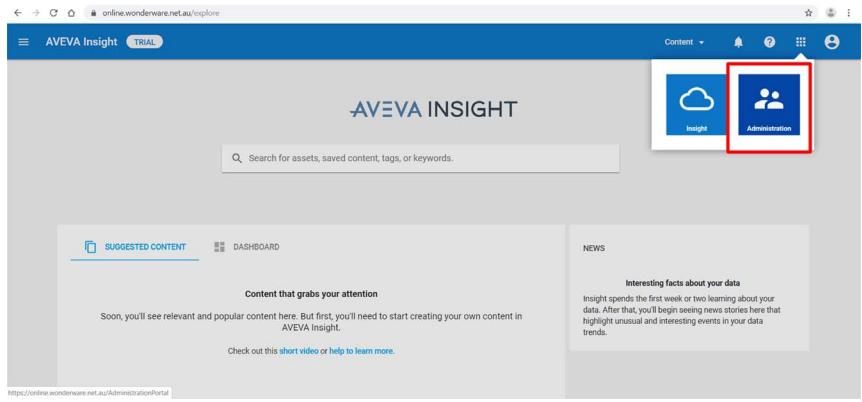
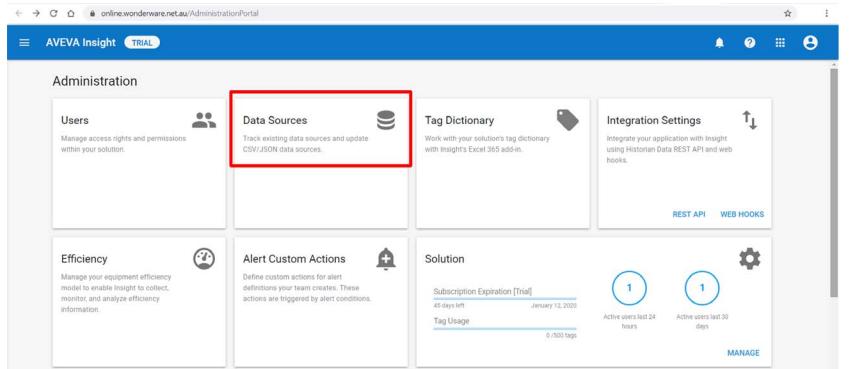
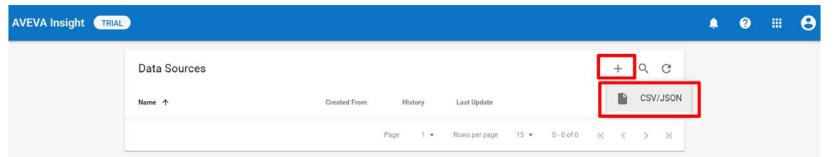
About the SE Aveva Insight Node

Step	Action
3	 A screenshot of an email from AVEVA. The subject line is "Welcome to AVEVA". The body of the email says: "Thanks for registering with AVEVA. Check your inbox at <mailto:muthukumar.kumaran@mon.ac.uk> for an email with a link to complete the process." There is a green circular icon with a checkmark.
4	<p>Open your e-mail inbox folder and click VERIFY EMAIL.</p>  A screenshot of an email verification page. The top bar says "Let's finish setting up your AVEVA user ID." Below it is the AVEVA logo. The main text says "Hello there," and "Please verify your email address to finish creating your AVEVA user ID." A red box highlights the "VERIFY EMAIL" button. Below the button, a note says "Note: This Verify Email link expires after three days. If it has expired, sign in and choose the option to get a new verify email link sent to you." At the bottom, it says "Looking forward to seeing you online soon." and "The AVEVA Cloud Team". The footer includes the AVEVA Cloud logo, "AVEVA Group plc", "Corporate Headquarters High Cross, Madingley Road, Cambridge CB2 0RH, United Kingdom", "feedback@aveva.com", and "You received this email because you signed up to an AVEVA Cloud account."

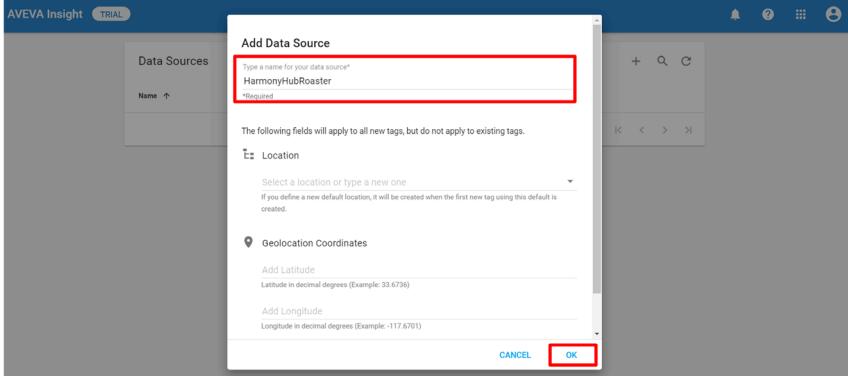
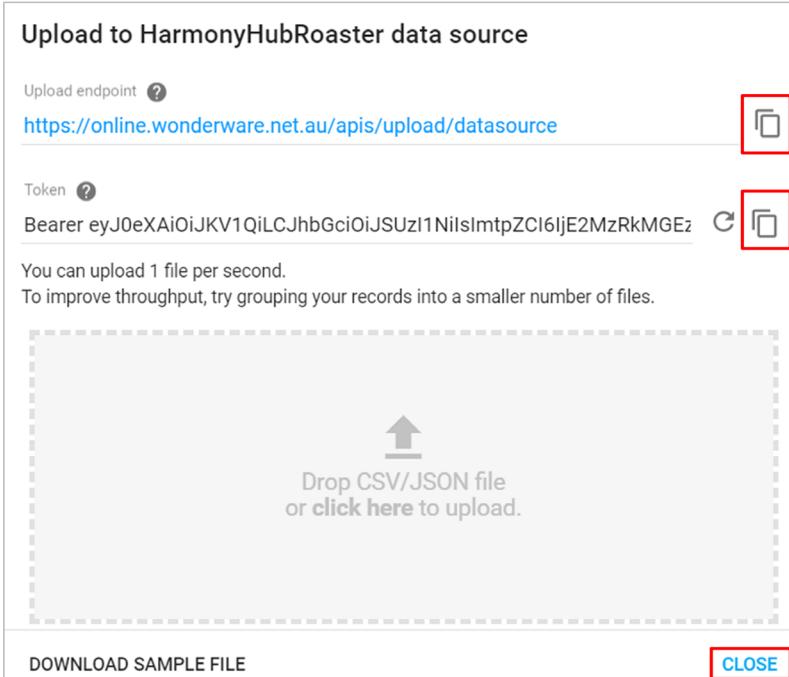
Step	Action
5	<p>Type the Email and the Password details and click SIGN IN.</p> 
6	<p>Result: AVEVA Insight welcome page appears.</p> <p>Select any one option to store the data and click NEXT.</p> 

About the SE Aveva Insight Node

Step	Action
7	<p>Type a Solution Name and click CREATE SOLUTION.</p>  
8	<p>Result: Aveva Insight Home Page appears.</p> <p>Click Home Page.</p>  <p>Result: Aveva Insight page appears.</p>

Step	Action
9	<p>Click Menu → Administration</p> 
Result: Administration page appears.	
10	<p>Click Data Source.</p> 
11	<p>Click Add Button → CSV/JSON.</p> 

About the SE Aveva Insight Node

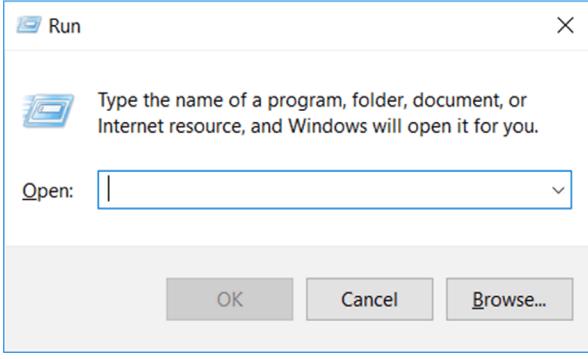
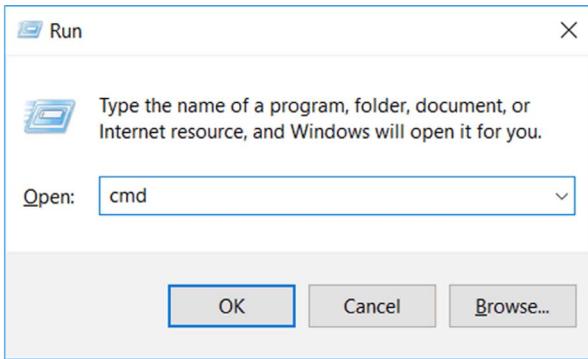
Step	Action
12	<p>Add Data Source in the Type a name for your data source* field and click OK.</p> 
13	<p>Click buttons to copy the URL and Token.</p>  <p>Result: The URL and Token are copied to the clipboard.</p>

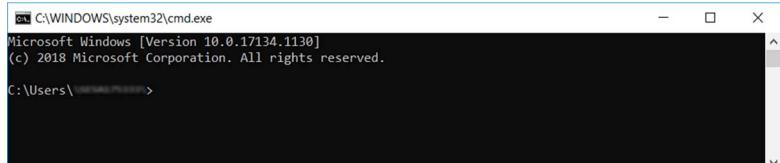
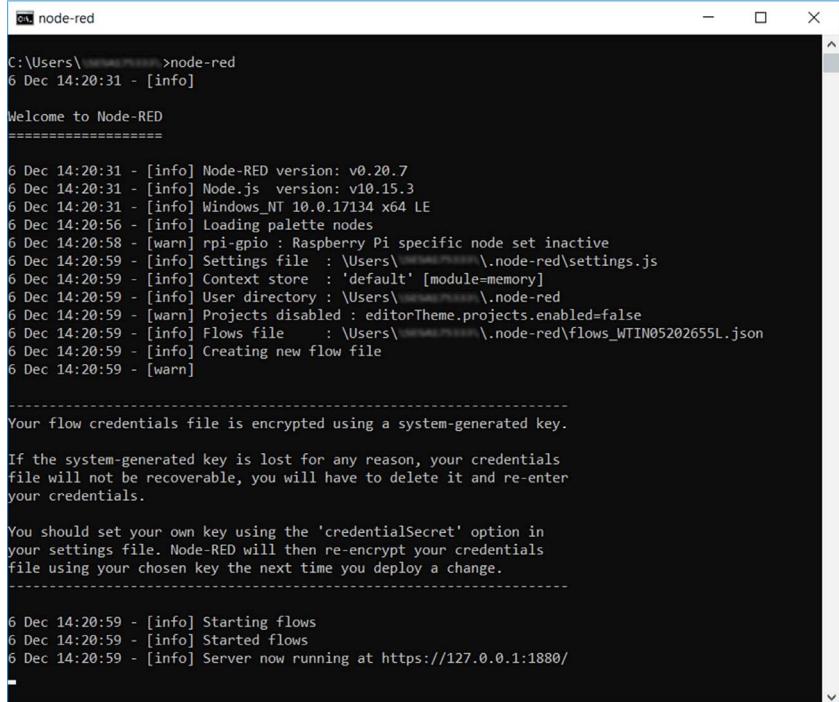
Step	Action
14	Click CLOSE .

Launching the Node-RED Server and SE Aveva Insight Node

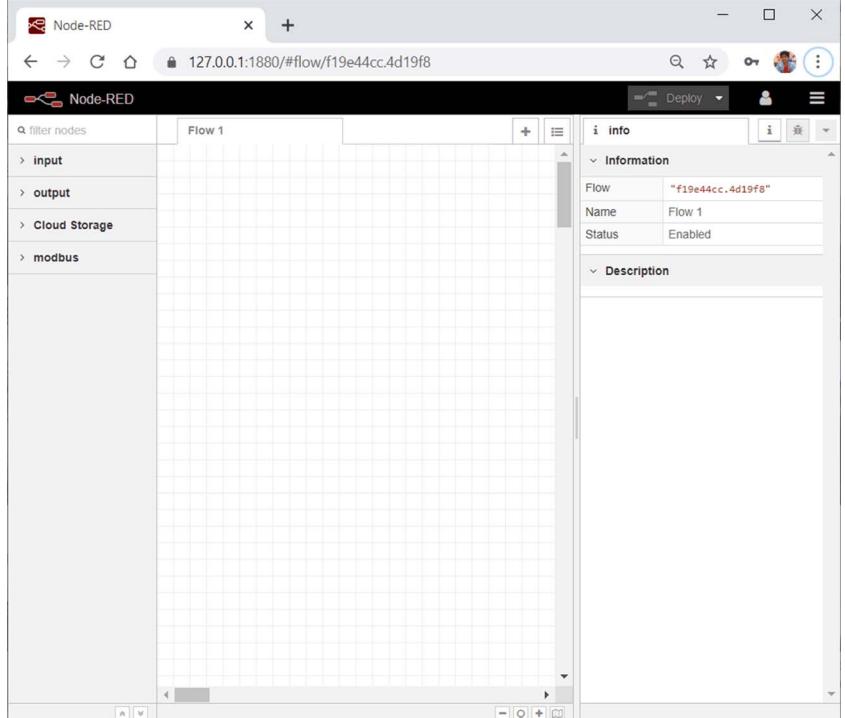
Node-RED

After the Node-RED and SE Aveva Insight node are installed, launch the Node-RED server.

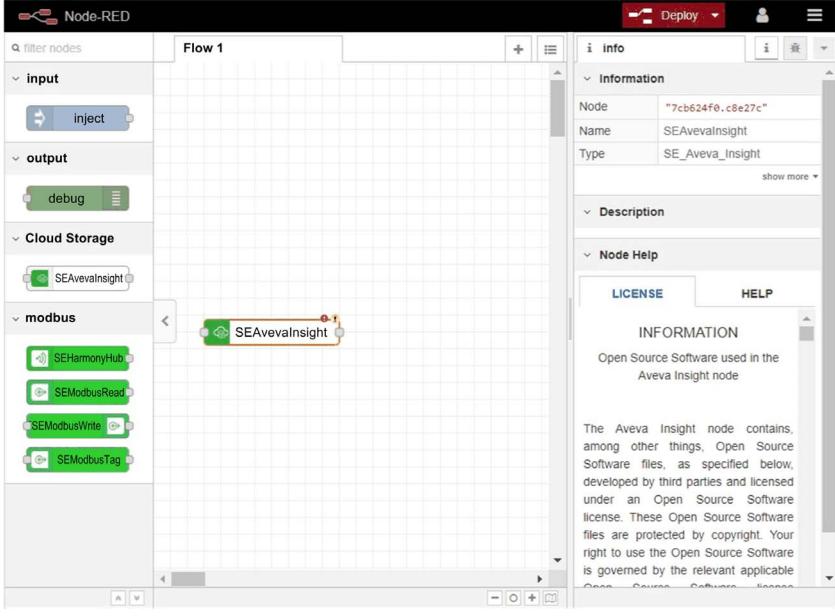
Step	Action
1	<p>Click  and type Run in the search bar and press Enter.</p> 
2	<p>Type the <code>cmd</code> in the Run dialog box and press Enter.</p>  <p>Result: Command prompt window appears.</p>

Step	Action
3	<p>Type <code>node-red</code> in the command prompt and press Enter.</p> 
4	<p>Node-RED server is now running at https://127.0.0.1:1880/.</p>  <pre data-bbox="352 507 1191 1209"> C:\Users\<username>>node-red 6 Dec 14:20:31 - [info] Welcome to Node-RED ===== 6 Dec 14:20:31 - [info] Node-RED version: v0.20.7 6 Dec 14:20:31 - [info] Node.js version: v10.15.3 6 Dec 14:20:31 - [info] Windows_NT 10.0.17134 x64 LE 6 Dec 14:20:56 - [info] Loading palette nodes 6 Dec 14:20:58 - [warn] rpi-gpio : Raspberry Pi specific node set inactive 6 Dec 14:20:59 - [info] Settings file : \Users\<username>\.node-red\settings.js 6 Dec 14:20:59 - [info] Context store : 'default' [module=memory] 6 Dec 14:20:59 - [info] User directory : \Users\<username>\.node-red 6 Dec 14:20:59 - [warn] Projects disabled : editorTheme.projects.enabled=false 6 Dec 14:20:59 - [info] Flows file : \Users\<username>\.node-red\flows_WTIN05202655L.json 6 Dec 14:20:59 - [info] Creating new flow file 6 Dec 14:20:59 - [warn] ----- Your flow credentials file is encrypted using a system-generated key. If the system-generated key is lost for any reason, your credentials file will not be recoverable, you will have to delete it and re-enter your credentials. You should set your own key using the 'credentialSecret' option in your settings file. Node-RED will then re-encrypt your credentials file using your chosen key the next time you deploy a change. ----- 6 Dec 14:20:59 - [info] Starting flows 6 Dec 14:20:59 - [info] Started flows 6 Dec 14:20:59 - [info] Server now running at https://127.0.0.1:1880/ </pre>

Step	Action
5	<p>Copy the URL in which the Node-RED server is running (https://127.0.0.1:1880) and open the link in a supported browser. Type the Username and Password in related fields and click Login.</p>  <p>Result: Node-RED factory editor appears.</p>

Step	Action
6	 <p>The screenshot shows the Node-RED interface running in a browser window at 127.0.0.1:1880. The left sidebar contains categories: input, output, Cloud Storage, and modbus. The main canvas is labeled 'Flow 1' and is currently empty. On the right, there is an 'info' panel with sections for 'Information' and 'Description'. The 'Information' section shows the Flow ID as "f19e44cc.4d19f8", Name as "Flow 1", and Status as "Enabled".</p> <p>Result: Node-RED editor appears.</p>

SE Aveva Insight Node

Step	Action
1	<p>In the Node-RED window, use the scroll bar to find the SE Aveva Insight node on the left side.</p> <p>NOTE: Alternatively, you can also search from the Filter Nodes search option available at the left side node palette area.</p>  <p>The screenshot shows the Node-RED interface with a flow titled "Flow 1". On the left, there's a node palette with categories like "input", "output", "Cloud Storage", and "modbus". In the "Cloud Storage" category, a green node labeled "SEAvevalnSight" is selected. To the right, the main canvas has a single node of the same type connected. On the far right, the "Info" tab of the sidebar is open, showing details for the selected node: Node ID is "7cb624f0.c8e27c", Name is "SEAvevalnSight", and Type is "SE_Aveva_Insight". Below this, the "Description" and "Node Help" sections are visible, along with a "LICENSE" tab which contains information about the node being open source software.</p> <p>Result: In Cloud Storage category, the SE Aveva Insight node is available.</p> <p>NOTE: SE Aveva Insight nodes license information is available in the LICENSE tab. Help manual is available in the HELP tab (right next to LICENSE tab).</p>
2	Drag-and-drop the SE Aveva Insight node on a flow page.

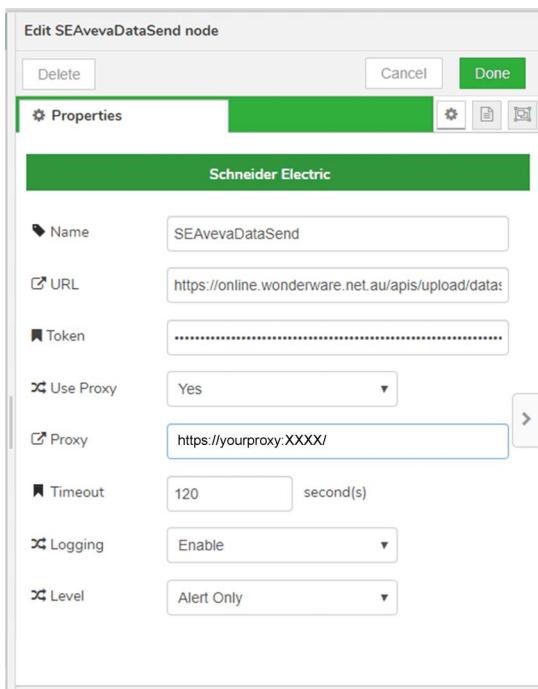
Chapter 6

SE Aveva Insight Node Configuration

SE Aveva Insight Node Configuration

SE Aveva Insight Node Configuration

Double-click the SE Aveva Insight node. The **Properties** screen of the node appears.



The **Properties** screen consists of the following:

Fields	Description
Name	Type the name to be displayed on the node.
URL	Click URL . NOTE: For successful communication, this field value should be same as the field value on Data Source menu of Aveva Insight web page (13 step) (<i>see page 81</i>).

Fields	Description
Token	<p>Click Token.</p> <p>NOTE: For successful communication, this field value should be same as the field value on Data Source menu of Aveva Insight web page (13 step) (<i>see page 81</i>).</p>
Use Proxy	<p>Select the required option from the list:</p> <ul style="list-style-type: none"> ● Yes: If you are in proxy network (for example: Schneider network), you should provide valid proxy. ● No: If you are not in proxy network (for example, Schneider network), you need not provide proxy. <p>NOTE: Proxy acts as a gateway primarily used for network restrictions.</p>
Proxy	<p>Use valid proxy with respect to your organization or country (for instance, <code>http://yourproxy:XXXX/</code>).</p> <p>NOTE: This field is enabled if you select Yes in Use Proxy field.</p>
Timeout	<p>Integer containing the number of seconds or minutes to wait for the server to send the response headers (and start the response body) before the request is canceled.</p>
Logging	<p>Select the Enable or Disable for logging the events. By default, Enable is selected. When enabled, the log events are recorded in the log file.</p> <p>The log files will be saved in the path given below: <code><Installed Node Directory>/nodes/log/</code></p> <p>For instance the location will be:</p> <ul style="list-style-type: none"> ● Offline installation <ul style="list-style-type: none"> ○ <code><User Directory>/se-node-red-avea_insight/nodes/log/</code> ● Online installation <ul style="list-style-type: none"> ○ <code><User Directory>/.node-red/node_modules/se-node-red-avea_insight/nodes/log/</code>
Level	<p>Select the logging level from the list:</p> <ul style="list-style-type: none"> ● Alerts Only Error messages are logged ● All Events Error, info, debug messages are logged <p>NOTE: By default, Alerts Only is selected.</p>

Chapter 7

Context Monitoring Use Case

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Context Monitoring	96
SE Aveva Insight Node Usage	98
Common Message Structure (CMS)	116

Context Monitoring

Overview

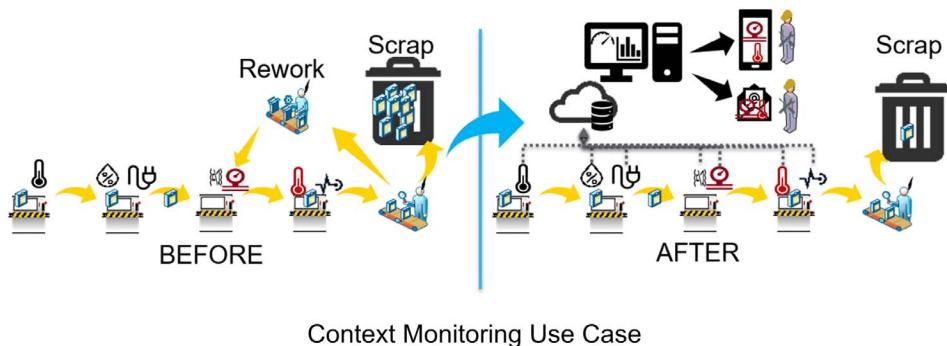
Imagine a production line in a plant with several devices that are subjected to drift. Such device drifts include scraps and rework. This means waste of time, waste of money and sometimes loss of consumers if they are not delivered on time and at a good quality standard.

Our value proposition is to provide a solution for monitoring process parameters from upstream to downstream. To do so, the solution proposed is as follows:

- Collects secondary sensing process parameters (wireless Zigbee sensors), hence the use of the SE Harmony Hub node.
- Use alert system to prevent quality issues based on supplier specifications or people experience.

SE Aveva Insight node collects data in CMS format ([see page 116](#)) from collection node (SE Harmony Hub), converts it into SE Aveva Insight data format and pushes the data to the Aveva Insight cloud. Enable the **SET ALERT** function in Aveva Insight cloud to receive the data in specific time intervals.

The following figure shows the context monitoring use case with before/after situation:



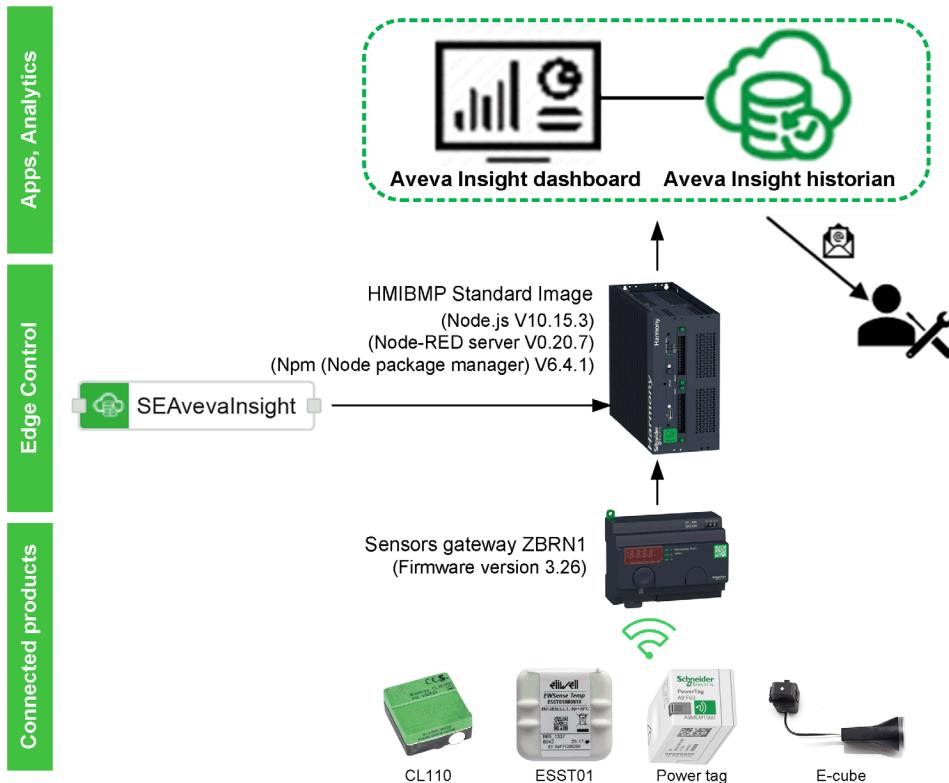
The pain is reduced by using a collection node (SE Harmony Hub) and a publishing node (SE Aveva Insight).

Below given are the steps performed by Engineers:

- **Automation Engineer:**
 - installs node.
 - installs sensors on the machine to be monitored and pair them to Harmony Hub gateway.
 - creates data flow.
- **Maintenance Engineer:**
 - creates an account in AVEVA Insight.
 - creates dashboard in AVEVA Insight.

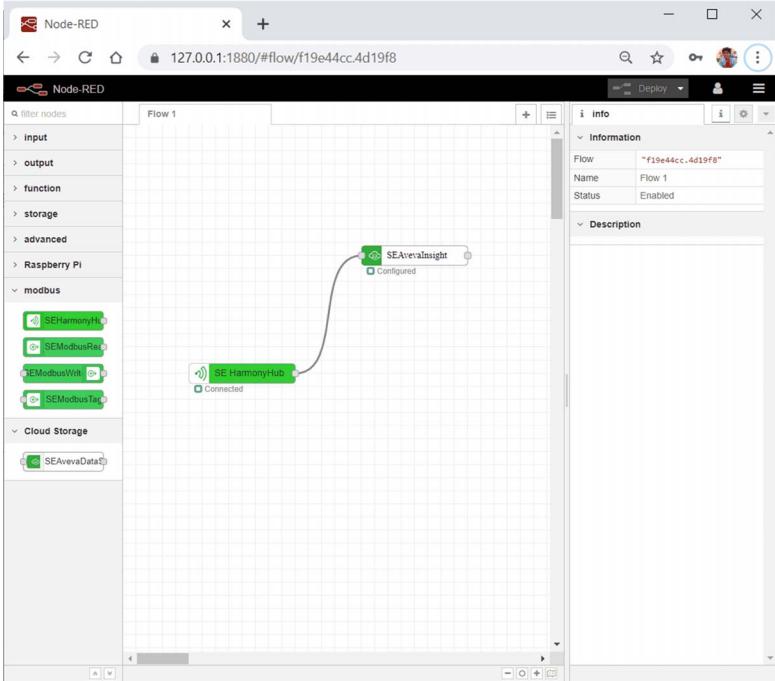
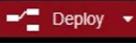
- logs in AVEVA Insight and configures the threshold for the collected variables.
- activate alerts triggering.

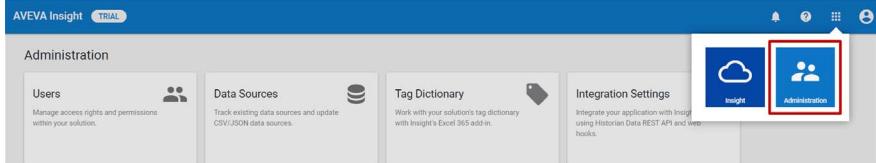
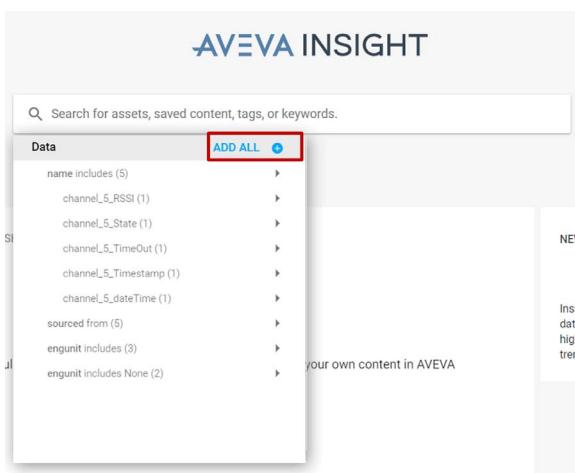
The following figure shows an architecture of context monitoring use case:



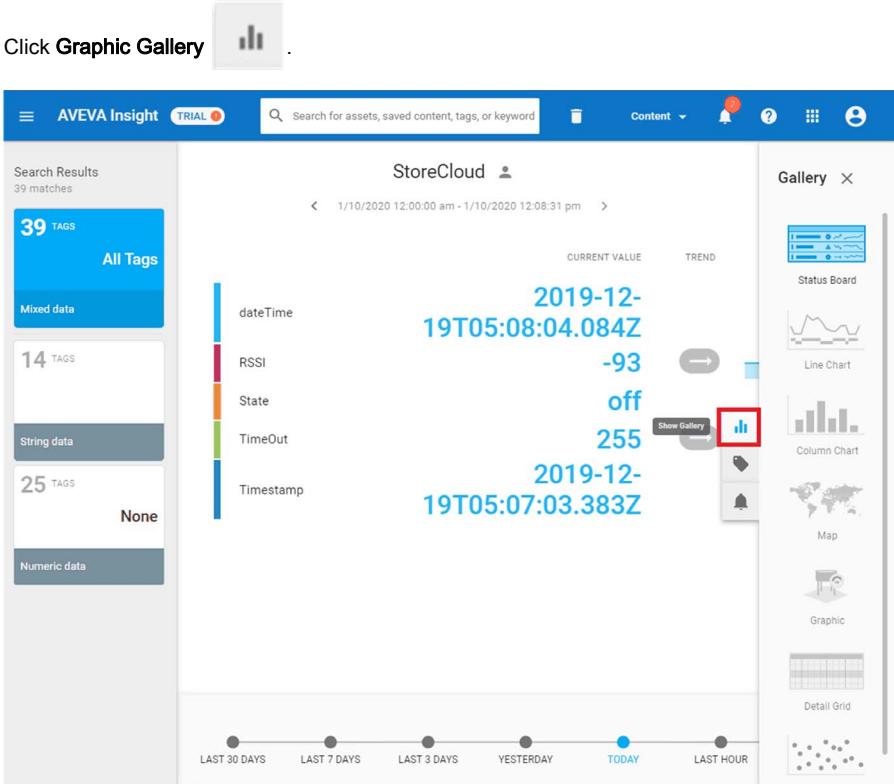
SE Aveva Insight Node Usage

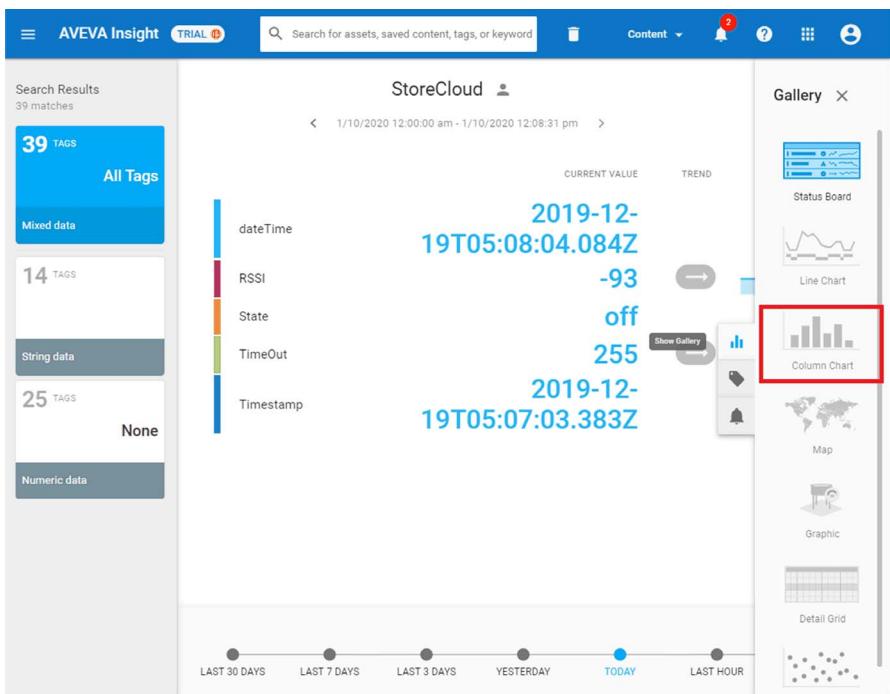
SE Aveva Insight Node Usage

Step	Action
1	Launch the Node-RED server and SE Aveva Insight node (see page 88).
2	Launch the SE Harmony Hub node (see Node-RED – SE Harmony Hub Node, User Manual).
3	Connect the two nodes by joining the output of SE Harmony Hub to input of SE Aveva Insight as shown below:
	 <p>The screenshot shows the Node-RED interface with a flow titled "Flow 1". On the left, there is a sidebar with categories like "input", "output", "function", "storage", "advanced", "Raspberry Pi", "modbus", "Cloud Storage", and "Cloud Storage". Under "modbus", there are four nodes: "SEHarmonyHub", "SEModbusRead", "SEModbusWrite", and "SEModbusTag". Under "Cloud Storage", there is one node: "SEAvevaData". In the center canvas, a green "SE Harmony Hub" node is connected to a green "SEAvevaInsight" node. A curved line connects the "Connected" output of the "SE Harmony Hub" to the "Configured" input of the "SEAvevaInsight" node. On the right side, there is a sidebar with sections for "info" (Flow: "f19e44cc.4d19f8", Name: "Flow 1", Status: "Enabled") and "Description".</p>
4	<p>Double-click SE Aveva Insight node.</p> <p>Result: Edit SEAvevaInsight node opens.</p>
5	<p>Configure SE Aveva Insight node (see page 93).</p> <p>NOTE: You need to configure the SE Aveva Insight node by copying the required details from Aveva Insight application and filling the remaining fields.</p>
6	<p>Click Done and Deploy  to save the changes.</p> <p>Result: The data is stored in the Aveva Insight application.</p>

Step	Action
7	Login to the Aveva Insight application to view the stored data.
8	<p>Click Menu → Insight.</p> 
9	<p>Click Search bar and click ADD ALL.</p> 

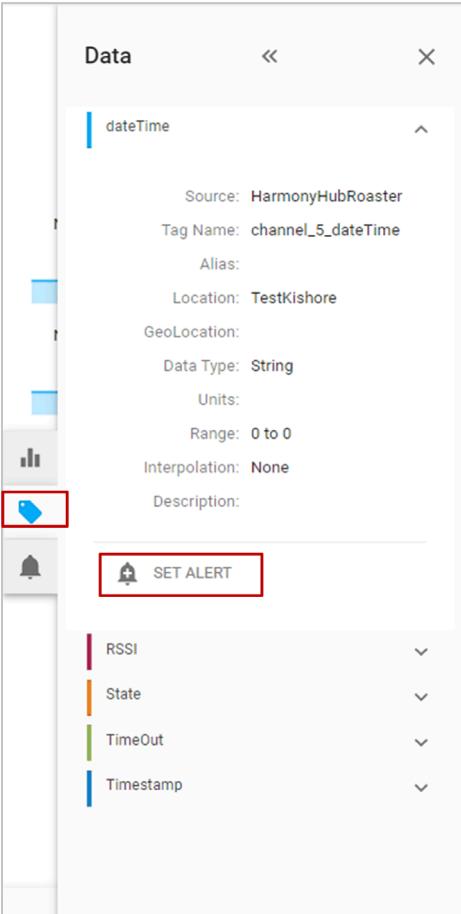
Context Monitoring Use Case

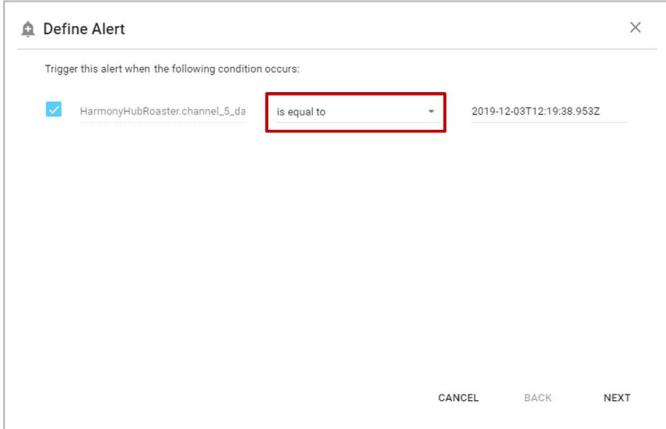
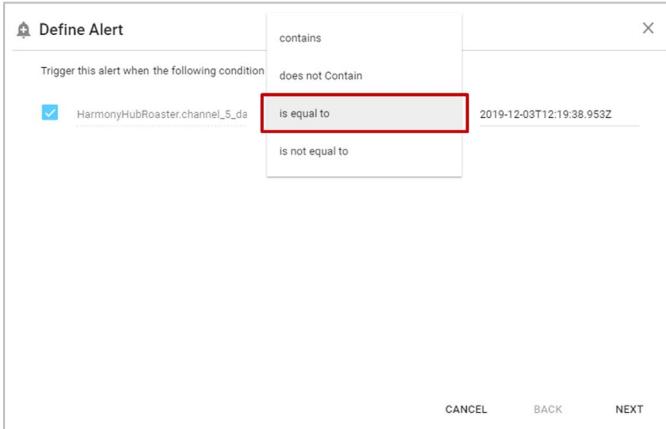
Step	Action
10	<p>Click Graphic Gallery</p> 

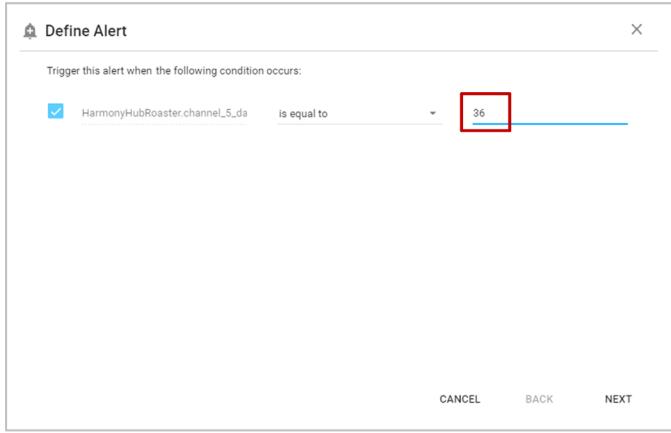
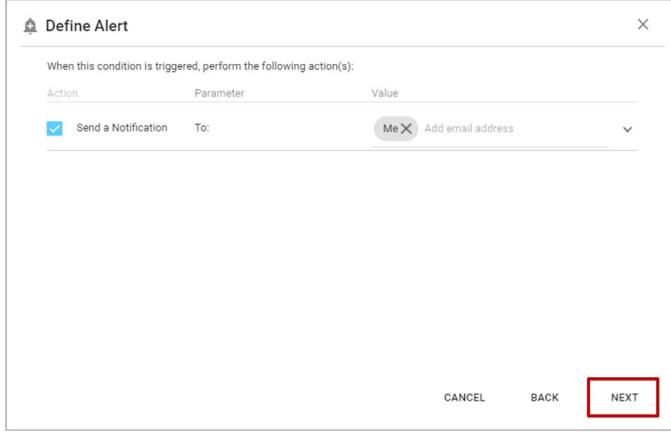
Step	Action
11	<p>Select the graphic type from Gallery.</p>  <p>The screenshot shows the AVEVA Insight interface with the 'Status Board' graphic selected in the 'Gallery' panel on the right. The central area displays data points: '2019-12-19T05:08:04.084Z', '-93', 'off', '255', '2019-12-19T05:07:03.383Z'. The left sidebar shows tag categories: All Tags (39 TAGS), Mixed data (14 TAGS), String data (None), Numeric data (25 TAGS). A legend on the left indicates data types: dateTime, RSSI, State, TimeOut, and Timestamp. A time range selector at the bottom includes options: LAST 30 DAYS, LAST 7 DAYS, LAST 3 DAYS, YESTERDAY, TODAY (highlighted in blue), and LAST HOUR.</p> <p>Result: The collected data is displayed based on the selected graphical representation.</p>

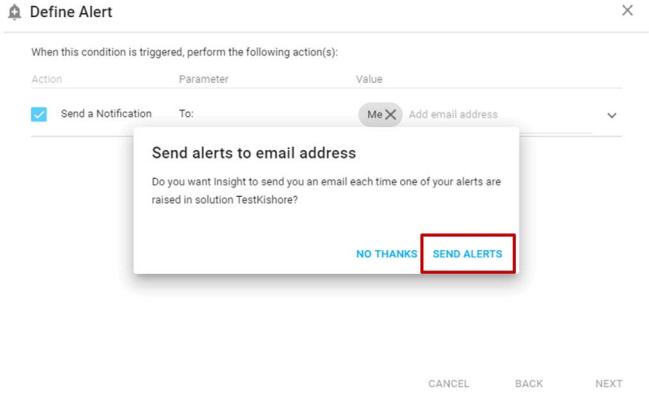
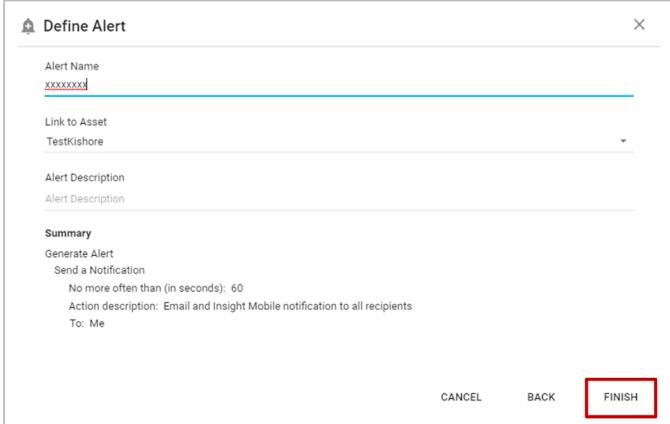
Context Monitoring Use Case

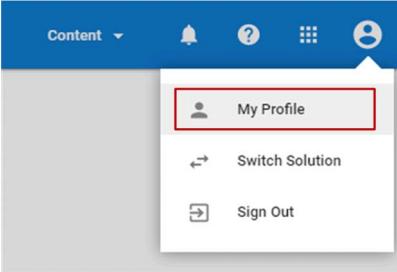
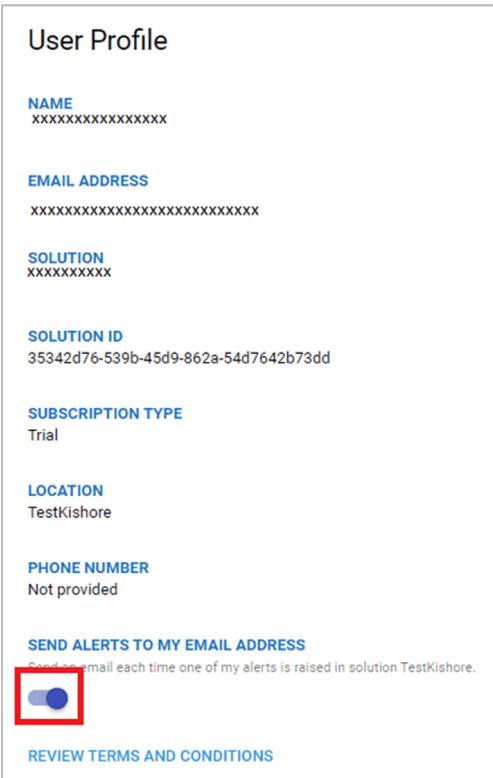
Step	Action
12	<p>Search Results 39 matches</p> <p>39 TAGS All Tags</p> <p>Mixed data</p> <p>14 TAGS</p> <p>String data</p> <p>25 TAGS None</p> <p>Numeric data</p> <p>Showing the Average per Hour</p> <p>LAST 30 DAYS LAST 7 DAYS LAST 3 DAYS YESTERDAY TODAY LAST HOUR CUSTOM</p> <p>NOTE: For more information, refer to Store and Forward Mechanism (see page 110).</p>

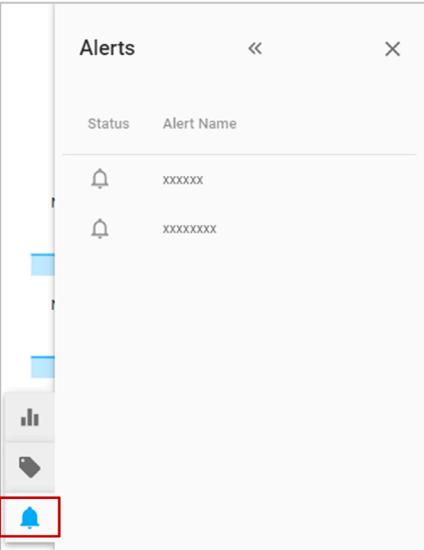
Step	Action
13	<p>Click Show data  → click down button → click SET ALERT.</p>  <p>The screenshot shows the 'Data' page for a tag named 'dateTime'. The 'SET ALERT' button is highlighted with a red box.</p> <p>Result: Define Alert page appears.</p>

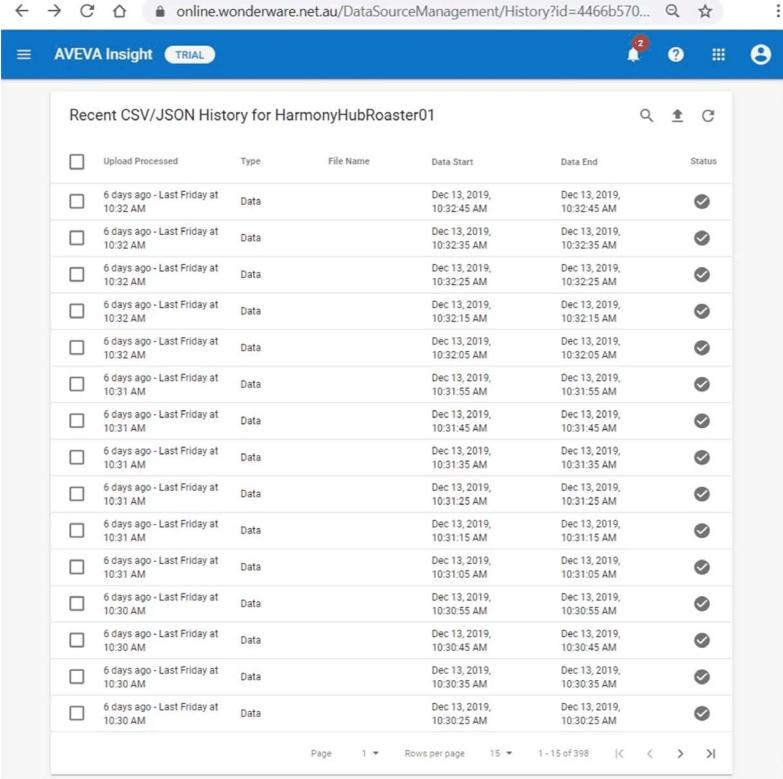
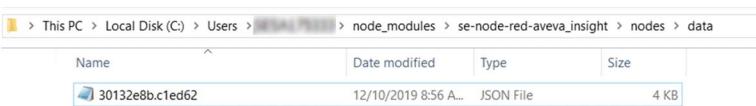
Step	Action
14	Define Alerts - Click drop-down list.  <p>The screenshot shows the 'Define Alert' dialog box. At the top, it says 'Trigger this alert when the following condition occurs:'. Below that is a dropdown menu with the following options: 'contains', 'does not Contain', 'is equal to', and 'is not equal to'. The 'is equal to' option is highlighted with a red box. To the right of the dropdown is a timestamp: '2019-12-03T12:19:38.953Z'. At the bottom of the dialog are three buttons: 'CANCEL', 'BACK', and 'NEXT'.</p>
15	Define Alerts - Choose any option.  <p>This screenshot is identical to the one above, showing the 'Define Alert' dialog box with the 'is equal to' option selected in the dropdown menu. The timestamp '2019-12-03T12:19:38.953Z' is also visible. The buttons at the bottom are 'CANCEL', 'BACK', and 'NEXT'.</p>

Step	Action
16	<p>Define Alerts - Set the parameter and click NEXT.</p> 
17	<p>Define Alerts - Click NEXT.</p> 

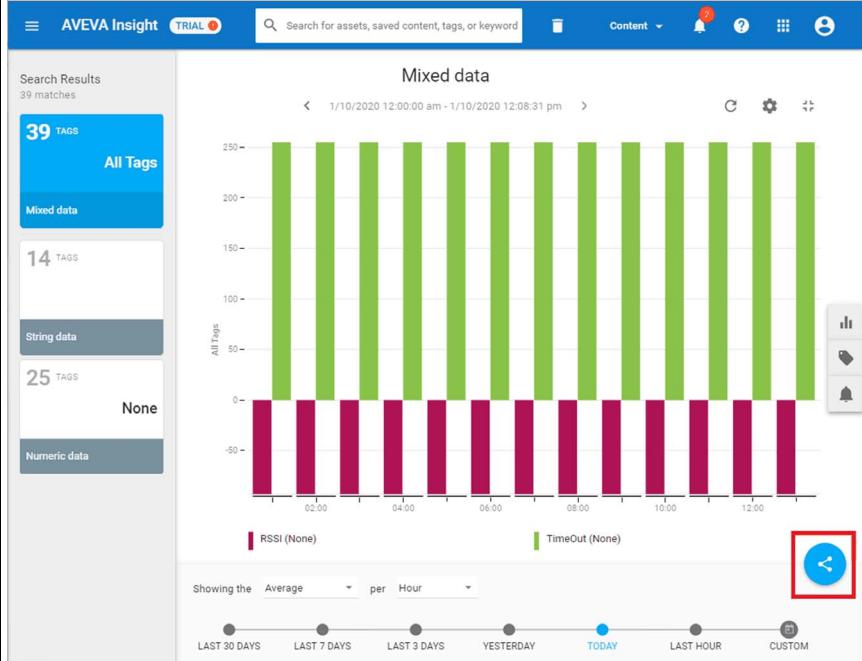
Step	Action						
18	<p>Define Alerts - Click SEND ALERTS.</p>  <p>When this condition is triggered, perform the following action(s):</p> <table border="1"> <thead> <tr> <th>Action</th> <th>Parameter</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> Send a Notification</td> <td>To:</td> <td>Me <input type="button" value="X"/> Add email address</td> </tr> </tbody> </table> <p>Send alerts to email address</p> <p>Do you want Insight to send you an email each time one of your alerts are raised in solution TestKishore?</p> <p>NO THANKS SEND ALERTS</p> <p>CANCEL BACK NEXT</p>	Action	Parameter	Value	<input checked="" type="checkbox"/> Send a Notification	To:	Me <input type="button" value="X"/> Add email address
Action	Parameter	Value					
<input checked="" type="checkbox"/> Send a Notification	To:	Me <input type="button" value="X"/> Add email address					
19	<p>Define Alerts - Type name in the Aler Name field and click FINISH.</p>  <p>Alert Name <u>xxxxxx</u></p> <p>Link to Asset TestKishore</p> <p>Alert Description Alert Description</p> <p>Summary</p> <p>Generate Alert Send a Notification No more often than (in seconds): 60 Action description: Email and Insight Mobile notification to all recipients To: Me</p> <p>CANCEL BACK FINISH</p>						

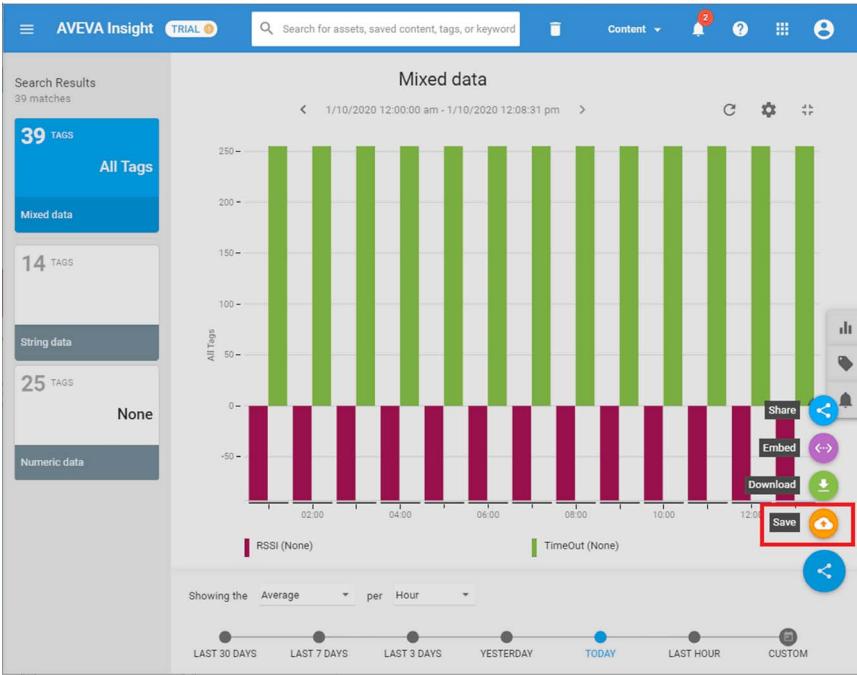
Step	Action
20	<p>Click My Profile.</p> 
21	<p>Check if SEND ALERTS TO MY EMAIL ADDRESS option is active.</p>  <p>User Profile</p> <p>NAME XXXXXXXXXXXXXX</p> <p>EMAIL ADDRESS XXXXXXXXXXXXXXXXXXXX</p> <p>SOLUTION XXXXXXX</p> <p>SOLUTION ID 35342d76-539b-45d9-862a-54d7642b73dd</p> <p>SUBSCRIPTION TYPE Trial</p> <p>LOCATION TestKishore</p> <p>PHONE NUMBER Not provided</p> <p>SEND ALERTS TO MY EMAIL ADDRESS Send an email each time one of my alerts is raised in solution TestKishore.</p> <p>REVIEW TERMS AND CONDITIONS</p>

Step	Action
22	<p>Click Show Alerts  to see the Alert Names.</p>  <p>The screenshot shows a user interface titled "Alerts". At the top right are navigation buttons: a double-left arrow and a close (X) button. Below the title is a header row with columns for "Status" and "Alert Name". Underneath this is a list of two items, each consisting of a small bell icon, the status "xxxxxx", and the alert name "xxxxxxxx". On the far left is a vertical sidebar containing four icons: a bar chart, a tag, and two more bell icons. The bottom-most bell icon is highlighted with a red rectangular box, indicating it is the target for Step 22.</p>

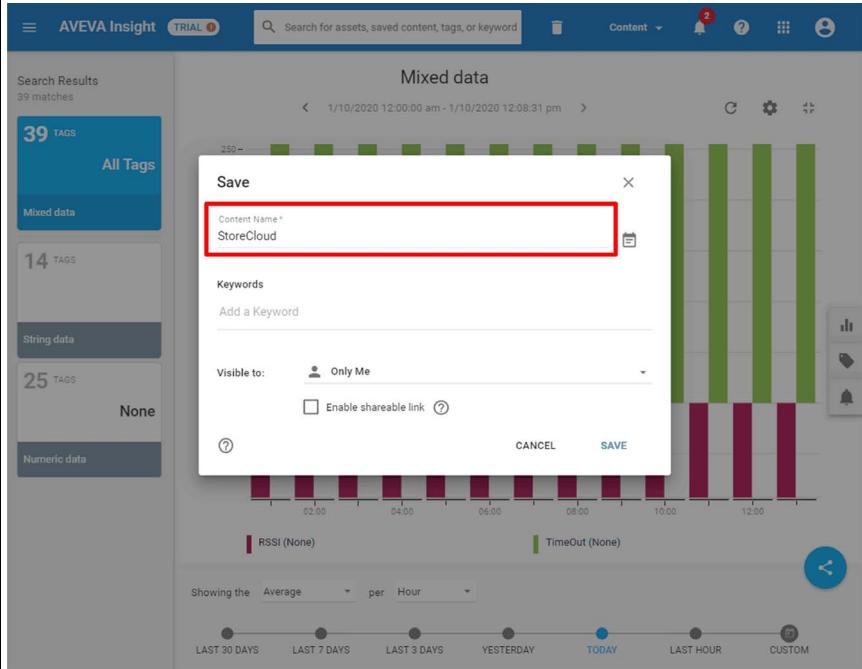
Step	Action
23	<p>Store and Forward Mechanism In case, network is broken data is saved in the storage file locally (based on the available disk space) and later pushed to the cloud as soon as the network is reestablished.</p>  <p>Locally storage file is available in the (NODE_RED_FOLDER); For example, C:\Users\SESAXXXXXX\node_modules\se-node-red-aveva_insight\nodes\data</p>  <p>Entire data stored in the store and forward file is pushed in chunks to the AVEVA Insight application in parallel with the data being sent at that instant.</p>

Store and Forward Mechanism

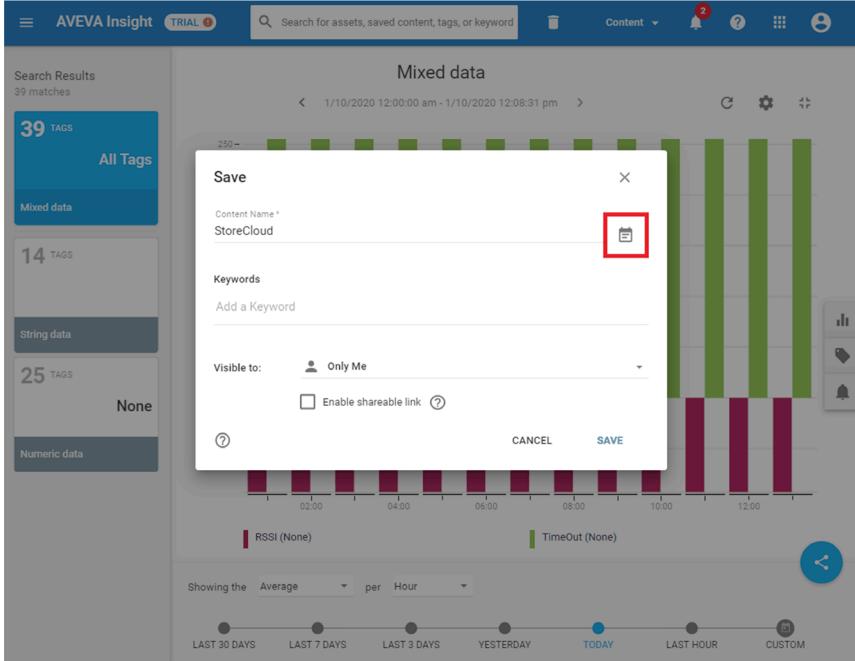
Step	Action
1	<p>Click Share .</p> 

Step	Action
2	<p>Click Save .</p> 

Context Monitoring Use Case

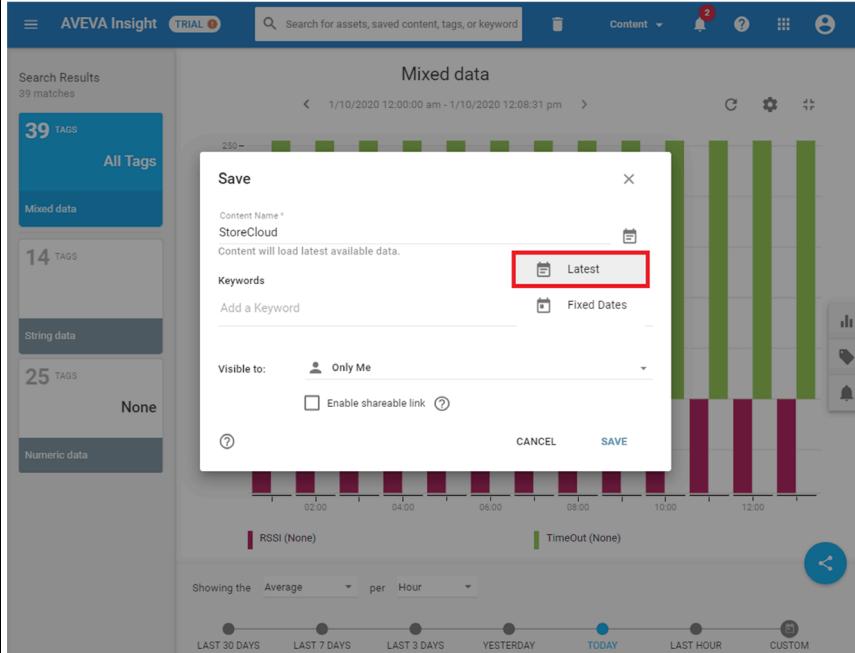
Step	Action
3	Type the Content Name in the respective field. For example: StoreCloud 

Step	Action
4	Click Timesheet 

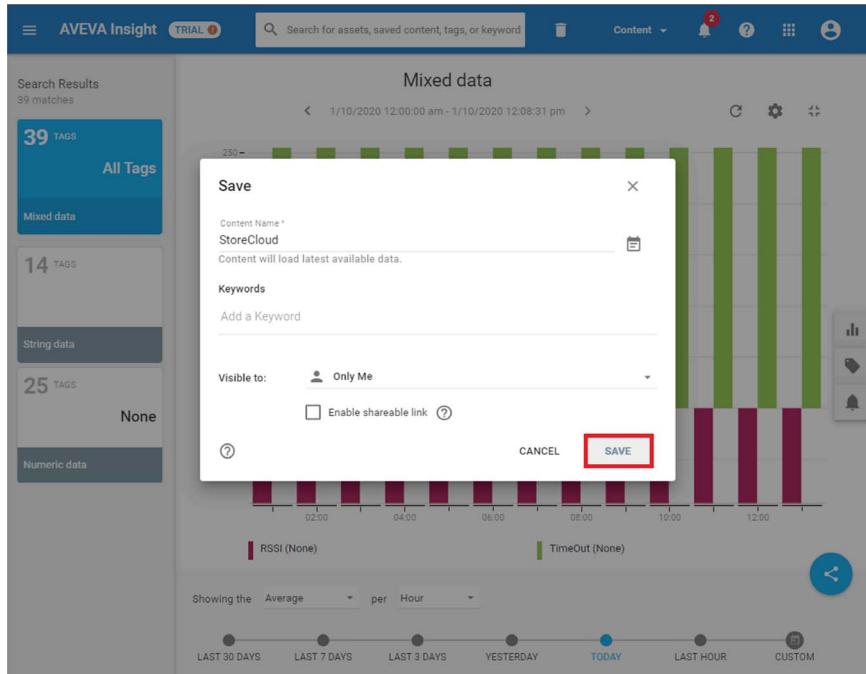


Context Monitoring Use Case

Step	Action
5	Click Latest .



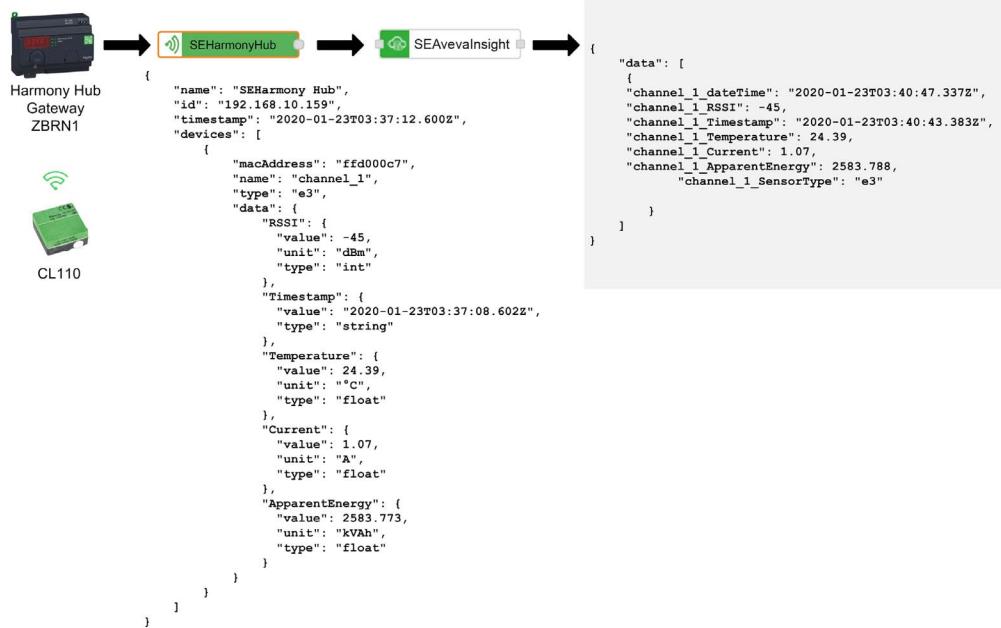
The screenshot shows the AVEVA Insight application interface. On the left, there's a sidebar with categories: 'Search Results' (39 matches), '39 TAGS' (All Tags), '14 TAGS' (String data), '25 TAGS' (None), and 'Numeric data'. The main area displays a 'Mixed data' chart with green and red bars over a timeline from 02:00 to 12:00. A 'Save' dialog box is overlaid on the chart. In the 'Save' dialog, under 'Content will load latest available data', the 'Latest' option is selected and highlighted with a red box. Other options include 'Fixed Dates' and 'RSSI (None)'. Below that, 'TimeOut (None)' is listed. At the bottom of the dialog are 'CANCEL' and 'SAVE' buttons.

Step	Action
6	<p>Click Save.</p>  <p>NOTE: When you save a chart with Latest (Relative time). The Store and Forward data is sent to Insight the Dashboard will show it as per the frequency. If you do a manual refresh in the DASHBOARD you would see the data right away.</p>

Common Message Structure (CMS)

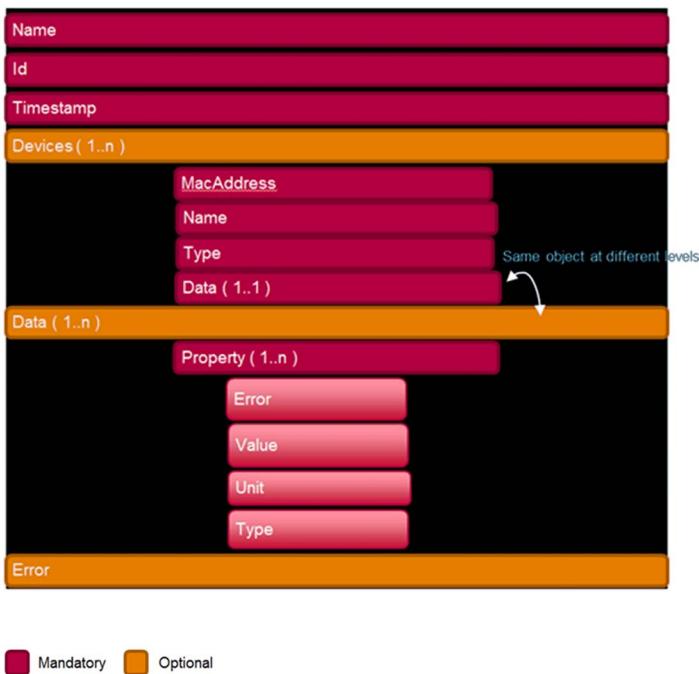
A Node-RED flow works by passing messages between nodes. All messages are conformed in a common message format to simplify the navigation of the message content. The messages are simple JavaScript objects that can have any set of properties.

The following graphic shows the flow of the data collected from the SE Harmony Hub node, which is pushed through SE Aveva Insight node in to the cloud:



To avoid any intermediate function nodes, CMS is standard JSON format between a connecting node and a publishing node. JSON is a standard way for representing a JavaScript object as a string. It is commonly used by web APIs to return data.

The following graphic shows the CMS structure:



Field	Description
Name	Name of the node.
Id	Unique Identifier of the device.
Timestamp	The exact time at which the read or write operation is performed by the node.
Devices	Applicable for Harmony Hub sensor. All nested objects consists of one or many Device objects.
Data	Object at root level and as a composite inside devices object. It contains at least one property object.
Error	Detected error at the root level, not tied to any parameter. <ul style="list-style-type: none"> ● Scenario 1: Gateway disconnected. ● Scenario 2: Gateway timed out. ● Scenario 3: Modbus port not opened. ● Scenario 4: Gateway connected. Read Error encountered.

Field	Description
Property	If data object exists, then atleast one property (value) is mandatory. This is mapped to the parameter details. It contains Error, Value, Unit, Type.
Error	Local detected error pertaining to the parameter. <ul style="list-style-type: none">● Scenario 1: No Radio (at a sensor level)● Scenario 2: Parameter Read Error encountered. (for example: FF, FFFF, FFFFFFFF)<ul style="list-style-type: none">○ Value: When mandatory, always in case of success. When optional, in case of detected error.○ Unit - optional field○ Type - optional field

Part IV

IIoT and Cybersecurity

Chapter 8

IIoT and Cybersecurity

Cybersecurity

Overview

Because of the IIoT design, industrial and control systems are increasingly vulnerable to cyber-attacks for the following reasons:

- Magelis Edge Box and Magelis iPC are commercially available in the market.
- Publishing nodes can be remotely accessible.
- IIoT designs are a strategic location in the industrial processes that is of interest to hackers.

To secure the industrial installation, the following fundamental characteristics should be considered:

- Availability of the system to help ensure that the system remains operational
- Integrity of the data to maintain the integrity of information
- Confidentiality to avoid information disclosure

General Practices

To keep the system as secured as possible, secure the environment where the Box is installed.

Unauthorized persons may gain access to the Magelis iPC and Magelis Edge Box as well as to other devices on the network/fieldbus of the machine and connected networks via insufficiently secure access to the software and networks.

Before creating user login details, cross-check again if it is necessary to give access to others. Users may have one of two permissions (*-full access/read-only access). Admin login and password details must be secured.

To avoid unauthorized access to the Magelis iPC and Magelis Edge Box, you must have the:

- Operating system, libraries, runtime environments, etc. are installed and correctly configured.
- Patch management controls to ensure that all software is kept up-to-date.
- Configuration change management controls.
- Malicious code detection and prevention controls, for example:
 - Anti-virus signature and pattern updates are applied in a timely fashion
 - Application whitelisting
- Access control and permission management.
- Backup and restore functionality.

Cybersecurity Certification

Schneider Electric developed cybersecurity guidelines based on the following recommendations:

- ISA Secure.