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Codabix Web Configuration

Starting the Codabix Application

- 1. Install Codabix, see Codabix Installation.
- 2. Make the necessary adjustments Codabix Setup and First Start.
- 3. Double-click the icon Codabix® Compact on the Desktop to start Codabix, or run the following command on the command line (e.g. on Windows Server Core):

"%ProgramFiles%\Traeger\Codabix\codabix-ui.exe"

4. The Codabix Login dialog will show.

Configuration

Codabix can be configured using a web-based GUI. On Windows, Codabix uses an embedded web browser to display the Web Configuration.

You can also open the Web Configuration with your own browser (e.g. Edge, Chrome, Firefox, Safari). By default, Codabix uses a local HTTP binding (default port 8181), so you can use the following URL:

http://localhost:8181/config/

Example:



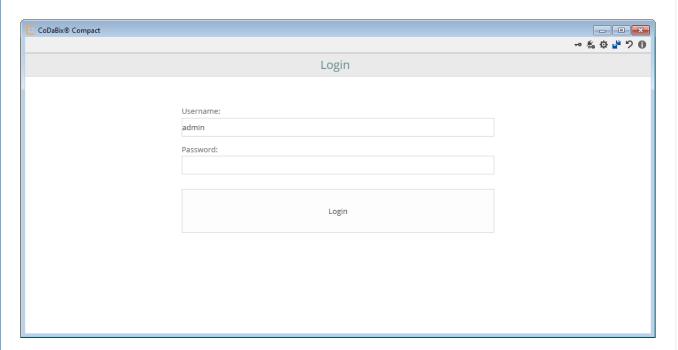
Please note: If you want to access the Codabix Web Configuration from a **remote computer**, you must add a remote HTTP binding in the Codabix Settings (for Codabix for Linux this already done by default).

To access Codabix with a browser from a remote computer using HTTP, you can use the following URL:

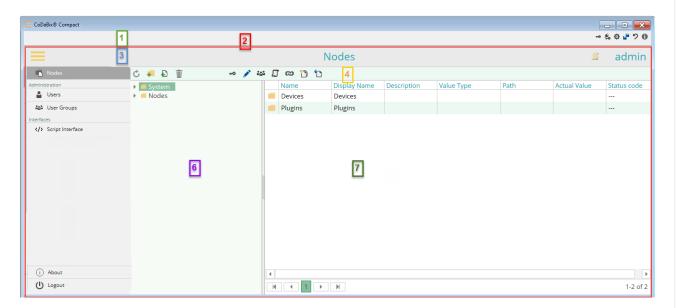
http://<hostname>:<port>/config/

General

After starting or calling the URL the login dialog is displayed:



After the login you reach the Codabix main window.



The Codabix Web Configuration is separated in different parts:

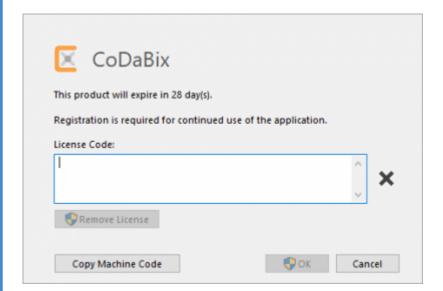
(1) Codabix Toolbar

This toolbar is only visible if you use the Codabix application for the configuration. So this bar is only referring to the Codabix application.

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Icon	Description
π0	Opens the license dialog, in which you can insert, change or delete the license
ø	See Codabix Settings
0	Shows all information on the license and application

Licence Dialog



Field	Description	
License Code:	Insert your license key here	
Remove License		
Copy Machine Code Copies the machine code to the clipboard. This is required for the lic creation.		
ОК	The entered license is stored on the computer. If "grayed out" no valid license key was entered.	

About



Left area: Information on the application

Right area: Information on the last installed license

(2) Working Area

The working area consists of an embedded browser (red border).

This area is divided into 3 to 4 areas, depending on the choice of menu.

(3) Title Bar



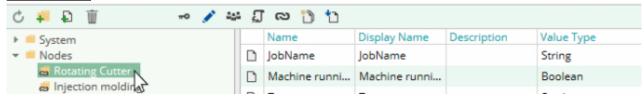
In the title bar the following actions are possible and the following data is displayed:

Field	Description	
\equiv	Opens and closes the menu	
Nodes	Display of the title of currently selected menu	
admin Display of the name of the user logged in		

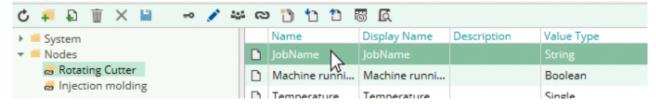
(4) Toolbar

Below the title bar is the toolbar. It is automatically adjusted depending on which menu you are in and which item you have selected.

Folder Node:



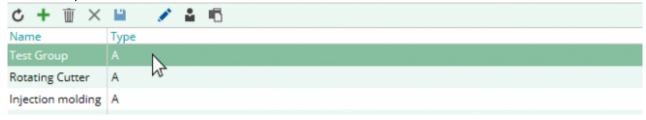
Datapoint Node:



User:



User Group:



Script Plugins:

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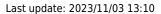


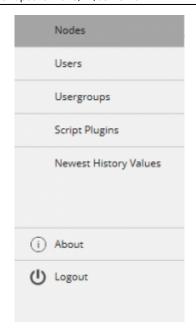
General:

Grayed out icons are not applicable to the selected item.

lcon	Description	Visible in
Ç	Refresh view	all menu
	Codabix Folder Node	Folder Node, Datapoint Node
	Codabix Datapoint Node	Folder Node, Datapoint Node
8	Codabix-linked Folder Node	Folder Node, Datapoint Node
	Codabix-linked Datapoint Node	Folder Node, Datapoint Node
+	All icons with this symbol add a new item on the basis of an input dialog	Folder Node, Datapoint Node, User, User Group, Script Plugins
Ŵ	Delete selected item	Folder Node, Datapoint Node, User, User Group, Script Plugins
×	Cancel action	Datapoint Node, User, User Group, Script Plugins
ш	Saves the edited record or records	Folder Node, Datapoint Node, User, User Group, Script Plugins
₩0	Access to the selected Folder Node or Datapoint Node	Folder Node, Datapoint Node
	Edit selected item	Datapoint Node, User, User Group, Script Plugins
•	Add or delete user	User Group
	Add or deselect Folder Node or Datapoint Node	User Group
e e	Select or deselect the user group for the selected item	Folder Node, Datapoint Node
ଡ	create or delete a link	Folder Node, Datapoint Node
*3	Duplicate the selected item	Folder Node, Datapoint Node
†	If you click on a Folder Node, all values of the Datapoint Node are updated. If a Datapoint Node is selected, only this value is updated	Folder Node, Datapoint Node
	Set Datapoint Node value	Datapoint Node
Ö	If available, the historical data of the Datapoint Node is displayed	Datapoint Node
	Edit script	Script Plugin
	Log view of the selected script	Script Plugin

(5) Menu

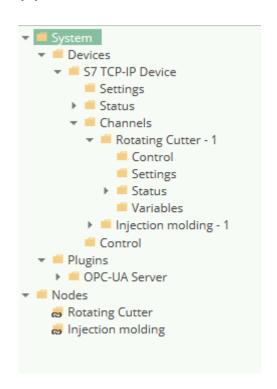




By default, the menu is displayed permanently.

Field	Description	
Nodes	Current start page. Edit Folder Nodes and Datapoint Nodes	
Users	Edit user	
User Groups	Edit user groups	
Script Plugins Lightweight JavaScript (TypeScript) plugin that Codabix extends on cust functions. Executed in a secure environment		
Newest History Values View the of the last registered and stored historical values. Data will be displayed if a Folder or Datapoint Node has enabled storing historidata		
About	Information about the configuration page and, when appropriate, Codabix	
Logout	Logout user	

(6) Node Tree



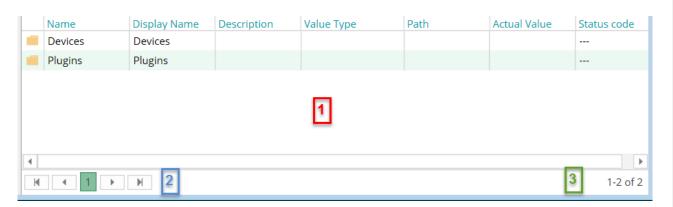
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The available Folder Nodes are displayed in a tree structure.

Structure of the Node tree:

Node	Description	Purpose		
System	System Nodes	Contains all Nodes that are necessary for the operation of Codabix. Most Nodes and variables are not editable here. Fixed Folder Nodes are: -System -Device -Plugins -Settings -Status -Channels -Variables -Control		
Device	Device Nodes	Contains all Nodes of the devices registered in Codabix		
S7 TCP-IP Device	S7 Device Plugin Container	Contains all dataa of the plugins required for Codabix and the user, for example status, channels, etc.		
Settings	Settings of the plugin	Possible Settings of the device		
Status	Status of the plugin	General information on the plugin, for example error, plugin started		
Channels	Node for all channels	Contains all defined channels of the plugin		
Channel e.g. Rotating Cutter - 1	Defined channel in the plugin	Contains - general settings of the channel - Status of the channel - all defined Datapoint Nodes		
Plugin	Plugin Nodes	Root node for all plug-ins, similar to Devices		
Nodes	Root node for user defined nodes	Contains all user defined nodes and variables		

(7) Data Area



Number Description	
1	Data of the selected menu or Folder Node is displayed here

en:config

Number	Description		
2	Navigation bar, here you switch views of the respective data. Possible navigation: top of page previous page next page bottom of page		
3	Number of all records		

Nodes

What are Nodes?

"The OPC information model is a so-called Full Mesh Network based on nodes. These Nodes can include any kind of meta information, and are similar to the objects of object-oriented programming (OOP). A Node can have attributes for read access (DA, HDA) [...]. Nodes hold process data as well all other types of metadata. The OPC namespace contains the type model."

Source: wikipedia.org

Codabix is similarly structured as specified in the OPC UA. Depending on the Node type, a Node has different functions and properties.

A distinction is made between:

- Folder Node
- Datapoint Node
- Link Node
- Directory Node

Folder Nodes

A Folder Node can also be referred to as a root node, since it may provide additional Folder or Datapoint Nodes but it itself may may not provide any value.

Set properties are automatically applied to the Child Nodes, except when they define a separate condition.

Datapoint Nodes

A Datapoint Node in Codabix is like a variable with additional attributes (properties).

A Datapoint Node must not contain Child Nodes.

Link Nodes

Link Nodes have only the properties they have in common.

A Link Node points to another Node that has already been created. This way it is possible to be assemble an individual record from several devices, Folder and Datapoint Nodes.

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Directory Nodes

The Directory Node is a Folder Node that directly points to a physical directory and automatically represents the substructure.

Node Properties

Common Properties

Field	Description	Data type
Lokal ID	Unique ID in the Codabix System e.g. used in access through the REST interface	
Global ID	Unique ID across Codabix	GUID
Name	Unique name within the Parent Node, for example for the OPC UA addressing, JSON Interface e.g. job number	
Display Display name for the user Name e.g. job number		String
Path	e.g.: PLC address (according to S7 Syntax, DB1000.DBB 500, Word) OPC UA Node (3:AirConditioner_1.State) File path (R:\\MachineData) NOTE: The path is not dealt with at the Folder type	
Relevant for a synchronous read. When a synchronous read operation doesn't specify a time to live , this value (in milliseconds) is used instead. This means that if the currently set node value is not older than this age, it will be returned directly; otherwise, the value will be read from the device.		Integer

Node Types

When creating a Folder Node you can decide between the types:

- Folder
- Directory

Type: Folder

The Node is a regular Folder Node with no further special properties.

Type: Directory

The Node is a Folder Node an represents a physical registry in the data system. The Path property of the Node states the registry path (it can contain environmental variables). When browsing Nodes (e.g. via the web configuration) subdirectories are automatically created and aligned in the path property as corresponding Folder Nodes(type **directory**) and Datapaint Nodes (type **file**) with the related file path.

Note: The specified path is subject to the **Access Security** restrictions that have been

defined in the Codabix Project Settings.

Note: On Windows 10 Version 1511 and older (and Windows Server 2012 R2 and older), e.g. on Windows 7, the maximum file path length is limited to 260 characters (MAX_PATH). On Windows 10 Version 1607 and higher (as well as Windows Server 2016 and higher) longer path names can be used. However, for this you will need to enable the setting "Enable Win32 long paths" in the Windows Group Policy, see Enabling Win32 Long Path Support.

Datapoint Nodes

Additionally to the previously mentioned properties the Datapoint Node has the following properties:

Name	Description	Data Type
Description	Description of the datapoint	
Location	Used during evaluation of conditions. Used to display e.g. of the origin of the message. Arbitrarily assignable	
Value Types	Data type of the node, further information see table Value Types	enum
Min Value	Minimum value, is required for the evaluation of conditions	Double
Max Value	Maximum value, is required for the evaluation of Conditions	Double
Hysteresis	Threshold value used in the evaluation of conditions when e.g. minor temperature fluctuations are to be compensated.	Double
Scaling Factor	Factor that is added to the currenty read value	Double
Scaling Offset	The value is added to the currently read value	Double
Unit	Unit of the value e.g. °C	String
Precision	Number of decimal digits	Number
Specifies how history values are to be captured and written into the database for this node. No: No history values are being captured for this node. Yes; only on Value Change: When a History Interval is set for the node, history values are being captured by the History Timer for this node from the actual value at the specified history interval; otherwise, history values are being captured when writing a value to the node. A captured value is inserted into the database only if it differs from the last written history.		Enum
History Interval	The interval at which history values shall be captured.	Enum
History Resolution	Specifies the resolution to which numeric historic values are rounded when being captured.	Double

Note:

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- To determine if a captured history value differs from the last history value (for the setting Yes; only on Value Change) only properties Value and Status are considered, but not property Timestamp (CreationTimestamp).
- When the **History Options** of a node are changed from **No** to **Yes; only on Value Change** while Codabix is running, the first captured history value after this change will be written to the database in every case, even when it is not different from the last written history value for that node.
- When the **History Options** of a node are set to **Yes; only on Value Change** and Codabix is shut down and later restarted, the first captured history value of the node after the restart will be written into the database **in every case**, even when it is not different from the last written history value for that node.
- When the **History Options** of a node are set to **Yes; only on Value Change** (or no **History Interval** is specified), the *Creation Timestamp* of the actual value will be kept when capturing the history value; otherwise, the *Creation Timestamp* will be set to the current time.
- In a Script, the setting Yes; only on Value Change corresponds to the value codabix.NodeHistoryOptions.Subscription | codabix.NodeHistoryOptions.ValueChange (contains codabix.NodeHistoryOptions.Active), and the setting Yes corresponds to the value codabix.NodeHistoryOptions.Subscription (contains codabix.NodeHistoryOptions.Active)
- History Values are inserted into the database asynchronously in the background by the
 History Value Dispatcher. This means that when you write a value to a node (where no
 History Interval is set), even though the write operation finished, the captured history
 value might not yet be in the database. This is especially true if you set the DB Update
 Mode to Restricted in the Codabix Settings, because captured history values are then
 inserted into the database only every 5 seconds.

Value Types

Codabix provides the following value types:

Name	According Data Type	Length in Bits
Blob	binary, optional statement of file name and MIME type possible	arbitrary
String	String	arbitrary
Null	without value	0
Boolean	Bool	1
SByte	signed Byte	8
Byte	unsigend Byte	8
Int16	signed Integer	16
UInt16	unsigned Integer	16
Int32	signed Integer	32
UInt32	unsinged Integer	32
Int64	signed Integer	64
UInt64	unsigned Integer	64
Single	single Floating Point	32
Double	double Floating Point	64

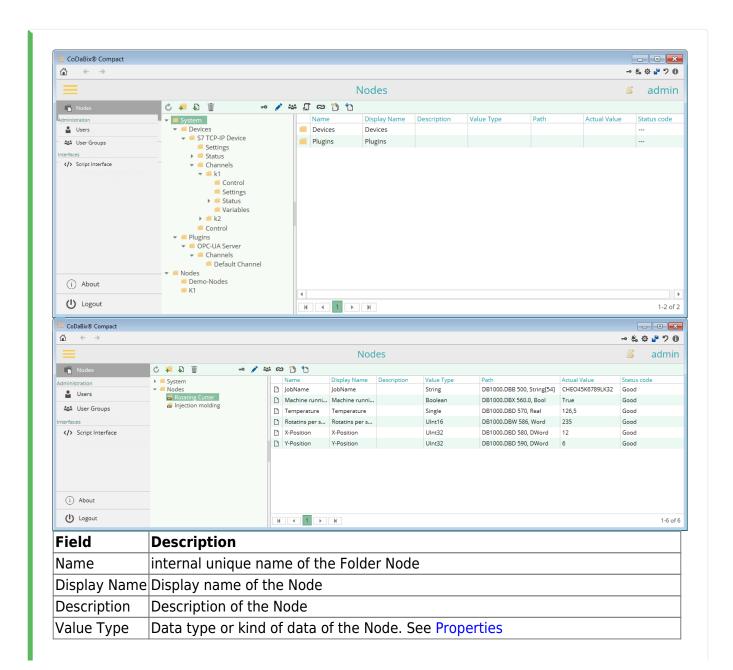
Name	According Data Type	Length in Bits			
	The Node represents a physical file that can be accessed via OPC UA Client or via				
	HTTP Access URL.				
File	The "Path" property of the Node contains a file path.				
	Note: The specified path is subject to the Access Security restrictions that have				
	been defined in the Codabix Project Settings.				

An array can also be created from each data type. Exceptions are the data types:

- Null
- File

The length of the array is decided during the writing of the Datapoint Node.

Node View



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Field	Description		
Path	e.g. PLC Address, OPC Node, data path to the node. See Properties		
Actual Value	Value after click on 1. Live data is not displayed automatically. See (4) Toolbar		
Status	Current status of the Node. Possible status: Good Bad		

Status at the device:



At System / Devices / Device Plugin / Channels / Channel / Status you will find the status for the selected channel with the associated message.

When the code is >= 0 the channel is running ok.

Node Structure

There are System Nodes and User Nodes.

System Nodes are fixed, predetermined structures that are necessary for the operation of Codabix and its plugins.

User Nodes are created and managed by the user according to his needs.

Structure of System Nodes:

- System
 - Devices
 - Device Plugin
 - Settings (settings of plugin)
 - Status (status of plugin)
 - Channels (defined channels)
 - Channel 1 (defined channel)
 - Control (Datapoint Nodes to control the channel)
 - Settings (settings of the channel)
 - Status (status informations of the channel)
 - Variables (defined variables)
 - ∘ Channel 2
 - Control ...
 - Control (Datapoint Nodes to control the plugin)
 - Plugins
 - Plugin
 - Settings
 - Status
 - Channels

- ∘ Channel 1
 - Control
 - Settings
 - Status
 - Variables
- o Channel 2
 - Control ...
- Control

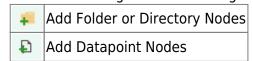
Structure of User Nodes:

- Nodes
 - User Folder Node
 - User Datapoint Node
 - User Folder Node
 - User Datapoint Node
 - User Linked Node
 - User Folder Node...

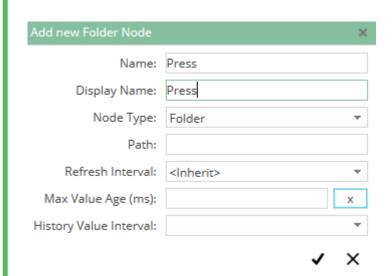
See also (6) Node Tree.

Create a Node

You can create your own Nodes in the *Nodes* view under <u>Nodes</u>. In order to be able to create a Node, you always have to select the superior Node first. You can find the following items for adding Nodes in the toolbar:



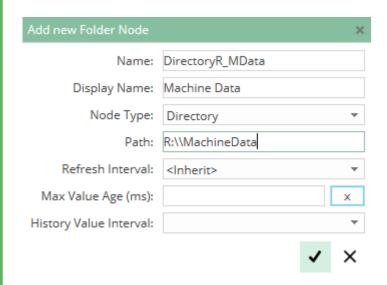
Add a Folder Node



- Enter name e.g. Press
- Enter display name e.g. Press

- Node type: select "Folder"
- when appropriate set intervals
- create a Node with

Add a Directory Node



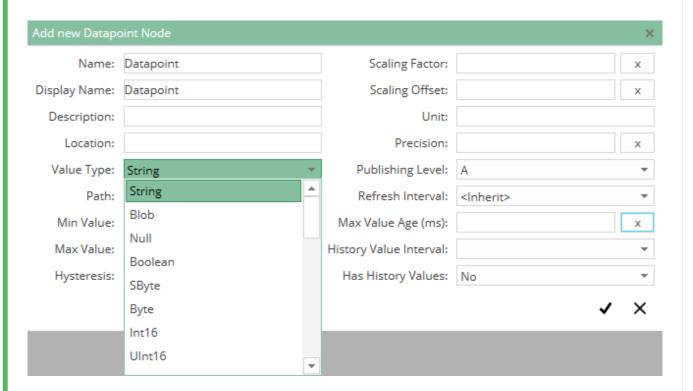
- enter name e.g. DirectoryR MData
- enter display name e.g. machine data
- path: enter directory path e.g. R:\\MachineData
- when appropriate set intervals
- create a Node with



In order for you to be shown folders and files you have to refresh the view, e.g. by clicking "User" and then clicking "Nodes".

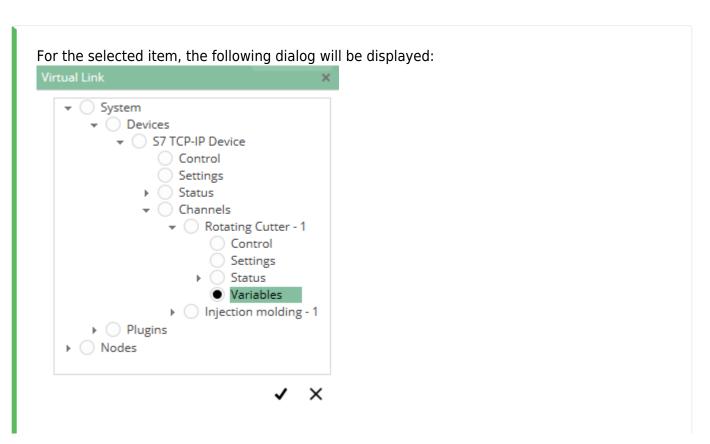
Depending on the directory size it is possible that you will not see all files and subdirectories at once.

Add a Datapoint Node



• enter name e.g. Pressure (bar) • enter display name e.g. Pressure (bar) • select value type e.g. Single • when appropriate enter boundaries, scales, historical data (as e.g. Min Value = 20,5, Scaling Factor = 2,398...) create a Node with The Node could look like this: Name: Pressure (bar) Scaling Factor: Display Name: Pressure (bar) Scaling Offset: Description: Unit: Location: Precision: х Node Type: Single Publishing Level: A Refresh Interval: <Inherit> Path: DB1000.DBD 670, Real Max Value Age (ms): Min Value: х x Max Value: History Value Interval: 100 ms * x Hysteresis: History Options: on Interval * X

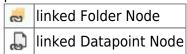
Link Nodes



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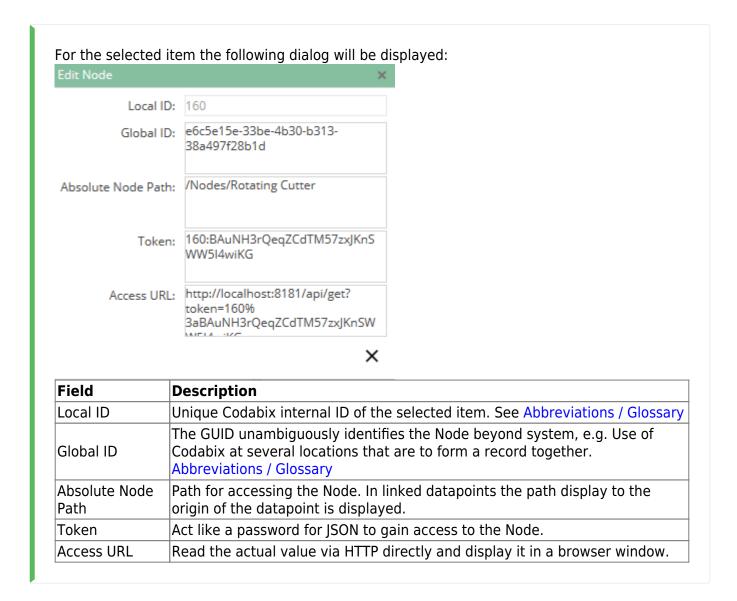
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The selected item will be linked to the selected Node in the Node tree. The following icons are possible:



If a Folder Node is linked onto a Datapoint Node, it is automatically converted to a Folder node.

Node Access



Add / Delete Node Access to a User

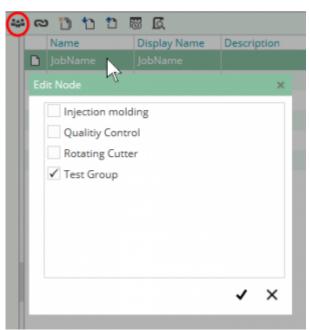
A node access can only be added or removed to / from a user group.

There are two ways to add a Node to the user via the user group:

via the Node view

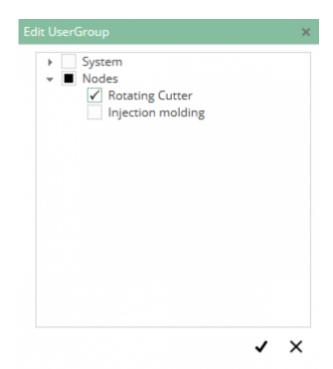
• via the user group directly

Add / Remove via the Node View



If a Folder Node is selected, automatically all the Nodes lying underneath inherit the selected user group.

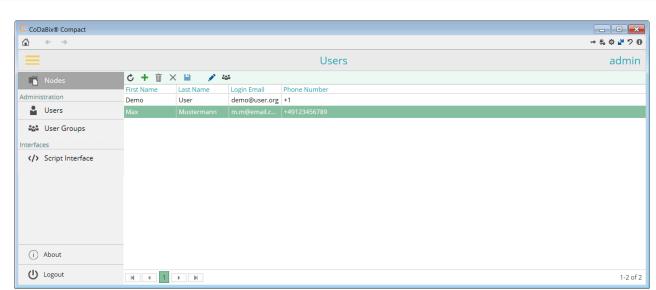
Add / Remove via the User Group



All previously selected Folder and Datapoint Nodes are displayed by hooks. When you select a Folder Node, all nodes below will be automatically selected or deselected.

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User

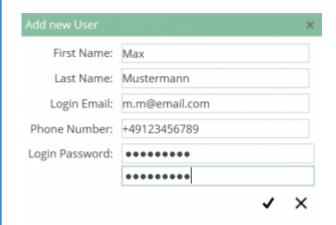


Here you create the users who shall have access to the dataa provided by Codabix. Only the administrator has the right to access the configuration page.

Functions:

- add / edit / delete users
- asign user group(s)

Add Users



Field	Description
First Name	First name
Last Name	Last name
Login Email	Email address: Can occur only once
Phone Number	Phone number: Can occur only once
Login Password	Password with repetition

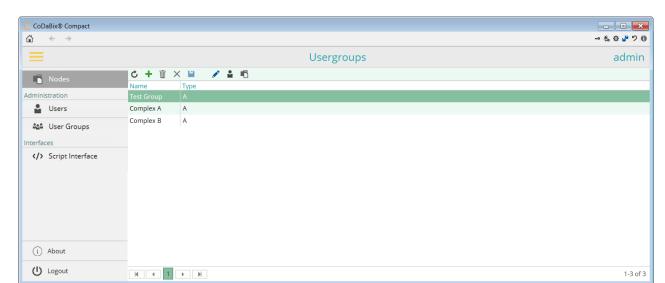
Edit Users

First Name:	Max	
Last Name:	Mustermann	
Login Email:	m.m@email.com	
Phone Number:	+49123456789	
Login Password:	*****	

	✓ ×	×
The serve sett:	ngs as in Add Users apply.	

User Group

Last update: 2023/11/03 13:10

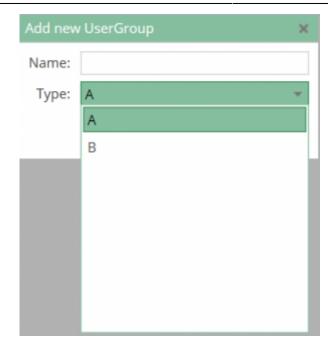


A Node cannot be directly assigned to a user. You always need a user group. This simplifies the adminsitration of the Node access.

Functions:

- Add / edit/ delete user group
- Add user to user group
- Add / delete Node

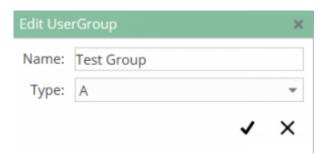
Add User Group



Field	Description
Name	Display name of the group
Type	A or B, currently not used

At the moment the usertype is not used.

Edit User Group



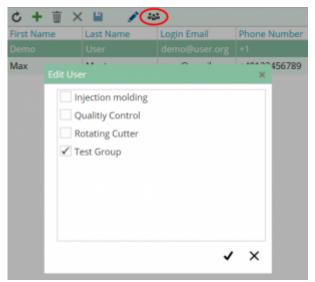
The same settings as in Add User Group apply.

Add User to User Group

There are two ways to add a user to user group:

Via the user menu:

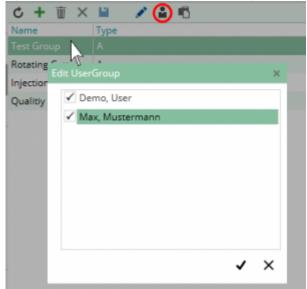
For the selected item the following dialog will be displayed:



Here you can add or deselect the user groups for the selected item.

Via the user group:

By clicking the user icon the following dialog is displayed for the selected user group:



All available users can be selected or deselected here.

Plugins

Codabix can be extended to add new functions by plugins. These plugins are grouped by their classification. Depending on the category, the plugin offers a special range of services, organizations and Nodes. Some plugins can provide configuration files and additionally, as required by the circumstances, include a configuration application.

Device Plugins

All device plugins are using the Codabix Device Model. Each device that is provided is registered and managed by the Codabix Device Manager.

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See Device Plugins.

S7Device

Connection to Siemens SIMATIC S7.

See S7 Device Plugin.

Exchange Plugins

All Exchange Plugins are using the Codabix Storage Model. Each Exchange Plugin that is provided is registered and managed by the Codabix Device Manager.

See Exchange Plugins.

Database

Codabix supports connections to databases.

More information can be found at Database Plugin.

CSV

For further information about the handling with CSV files see CSV Exchange Plugin.

Interface Plugins

Codabix contains an API interface.

For more informations see Interface Plugins.

REST

The REST interface allows access to the Node Codabix via HTTP request formatted as a JSON object.

For more informations see REST Interface Plugin

Scipt Plugins

Script plugins extend Codabix with additional functionalities via JavaScript editor. They are executed in a secure environment.

See Script Interface Plugin.

OPC UA Server Interface

Codabix contains an OPC UA Server for the exchange of data.

More information under OPC UA Server Interface Plugin.

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