Establishing a communication from a WinCC OA application to an OPC UA server

The following document describes how a WinCC OA application can be configured to establish a connection to a remote external OPC UA server. The following example has been done using WinCC OA version 3.11, but it should be valid for version 3.15 as well.

Configuring WinCC OA (as a client) to connect to the OPC UA server

To create the OPC UA client configuration, the "OPC UA Client" option should be opened from the "System management" window, accessible from the "Gedi". This should open a window where the server to be connected must be indicated. An example of this configuration is shown in the image below. To create a new server configuration, the option "Create" must be selected, and the name of the datapoint where this configuration is stored must be specified. This name should then be used to fill the OPCUA client datapoint configuration.
If the values are going to be read from the server, it may be necessary to create one or several subscriptions, which define the type of data (raw data, events or alarms) to be read out, the frequency of this reading and other parameters. This configuration can be reached through the "Manage" button available in the "Subscriptions" area of the previous window.

Configuring the OPC UA client
In the first place it is necessary to create a new OPC UA manager (driver) to run the client that will be connected to the server. This OPC UA Client manager (WCCOAopcua) is assigned a number, using the option `-num <ManagerNumber>`.

The data points for the manager numbers 1 to 3 are created by default by the WinCC OA project. In case any other manager number needs to be created, it is necessary to create its data-point with the name `_OPCUA<ManagerNumber>`. Finally, the data point of the manager to be used must be filled to be connected to the proper server, as shown in the image below (This is an omission or a bug in WinCC OA, but it is easy to fix). The field `.Config.Servers` has been filled with the name of the server (the servername as in part opc.tcp://<servername>.cern.ch:4840 ) that describes the OPC UA server to which the project is connected.
If the connection has been properly established, this should now be visible in the "OPC UA Client" configuration shown in the server configuration section of this document, where the state of the server should be "Connected", as shown in the first image.

## Configuring the devices

Once the client and the server have been configured, it is possible to configure the devices as to use this communication to get/set values in the OPC UA server. To do so, the user must select the "Address" field in the "DPE configs" tab of the "Device Configuration". This should open a window like the one shown below. In this window the "Server" and, if necessary, the "Subscription" fields must be filled with the ones previously configured for the particular device. The device number must be the one configured for the OPC UA client manager. Finally the rest of the fields should be filled with the desired behaviour for the particular object to be checked, which is specified in the "Item" field using the NodeId of the data to acquire. This NodeId can also be consulted in the OPC UA server using the "Get Item ID" button and navigating through the available data.