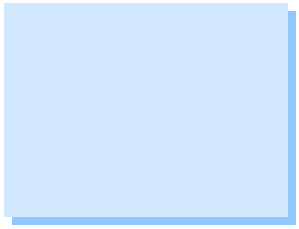
Setting up an @ptitude Analyst / OPC Connection



Quick Start Guide

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Purpose

This document identifies the typical steps required to configure and use the @ptitude Analyst (@A) OPC interface tool. It assumes a working knowledge of @A and Operating Systems. It is by no means designed to be a complete field service or trouble shooting guide.

Before You Get Started

The @A OPC interface tool is an OPC Client. It is not designed nor intended to serve as an OPC Service. Please ensure that the customer has an OPC Server available to transfer data to and from @A.

Requirements:

- @A OPC interface (CMSW 7473) installation CD (or image).
- Purchase four (4) hours of Engineering Support Services (ESS-7801) from SKF CMC San Diego (Recommended).
- Download the Matrikon OPC Simulation Server: http://www.matrikonopc.com/products/opc-drivers/opc-simulation-server.aspx (Recommended).
- Have the customer's IT department on-call to address any issues of OPC configuration that are due to their network security.
- Verify whether the customer's OPC Server is OPC DA 2.0 or OPC DA 3.0 compliant.

Step One – Install the Utility

The installation of the utility is pretty straightforward. The utility uses the registry to store many of its configuration parameters, so the Windows account used during installation should have access rights to modify the registry.

A typical installation is assigned to directory `C:\Program Files\SKF\MAOPCMGR.`

A subdirectory named **Database** is created to store the @A POINT / OPC Tag link information.

There are two components of the OPC link – a User Interface to configure the service and create the link (MAOPCMGR.EXE), and a service (MAOpcSrv.Exe) that periodically transfers data from our @A database to a tag on the OPC Server and from a tag on the OPC Server to a POINT in our @A database. This .EXE can be run either as a process or as a service.

Step Two – Install the Matrikon OPC Simulator Server

Installing the Matrikon OPC Simulator Server is highly recommended and will make the process easier. It is straightforward and simple to do.

Step Three – Prepare the @ptitude Analyst Database

Two users must be created in @A in order for the interface to work. One user (usually called MAOPCMGR) is used for the UI to be able to access the database to establish the links; the other user (usually called MAOPCSRV) is used by the service to connect to the database in order to transfer data.

There is a script in the MAOPCMGR directory called `MAOPC_Create_Users.sql` that can be run to add these users. If this script fails to run, the users can be created manually in @A using the following procedure:

1. Start @ptitude Analyst with a Field Service account.

2. Using Customize \ Administrator, create the two new @A accounts. Assign each account a level of Field Service.

3. Log out of @A with the current account and then log into @A using each of the new accounts in order to configure the password for each. Exit out of @A for the second OPC account (MAOPCSRV) and log back into @A using a standard @A account.

4. Create a Machine called “OPC Test”.

5. Create two POINTs under “OPC Test”. These POINTs can be based on a Manual DAD type. Name one POINT as “OPC Source”, and the other POINT as “OPC Destination”.

Step Four – Run OPC Manager to Configure the System

There should be an option on the [Start] menu to run the @A OPC Manager. If not, you can double-click on the EXE from Explorer.

@A Database Connection

Select **Tools → @A Connection Settings** to configure the two applications. The @A account name for the @A OPC Manager will be MAOPCMGR and the password will be what was set up as in section 1.4. The user name for the @A Database Account is normally 'skfuser1' while the password is normally 'cm'. The Host string is the database instance name – for Oracle, it is the instance name (CMServer, for instance); For Microsoft SQL, it is usually the host computer name. For Express, it is typically COMPUTERNAME\SQLEXPRESS.

Run Microsoft SQL Management Studio and copy the string from the initial connection dialog.

After setting up the @A OPC Manager, click the radio button and do the same for the @A OPC Service.

Press [OK] and return to the dialog. If you do not see the configuration information that was just entered, there is a registry security issue that needs to be resolved before you can continue. The registry keys concerned are [HKEY_LOCAL_MACHINE] \ SOFTWARE \ SKF \ SKFMAOPC – specifically the Manager and Service branches.

Now that the @A database connection is established, select **Tools → Preferences**. For initial testing purposes, click 'Enable event log for data transferring' and set the option for *Transfer data every (x) minutes* to '1'. Press [OK]. At this time, exit the Manager and restart it to verify the @A database connection is open.

Review the Event Log (select View Event Log). If there is a message stating that the program failed to establish a connection to the @A database, the issue must be resolved before continuing. Otherwise, proceed to the next section.

Establishing a Link

Minimize the Event Log window.

Open the @A hierarchy (**View → @ptitude Analyst**). You should see a list of all the hierarchies, including the one containing the two new OPC POINTs.

Now, open the Matrikon OPC Simulator. If a connection has not been established to an OPC Server in a previous session, the first time you access the OPC option in View \ OPC, a dialog containing all Local OPC Servers will be displayed along with a control to choose DA 2.0 or DA 3.0 servers. For

this test, any option may be selected, however when connecting to the customer's server, the choice should match what the Server supports. In addition, there is a node for "Local Network" that can be browsed later for the customer's OPC Server. For now, choose Matrikon.OPC.Simulation.1 and press [Connect]. A window with the Matrikon.OPC.Simulation.1 on a Computer Name tree structure will appear. It will show **Simulation Items** as one branch and **Configured Aliases** as another, and perhaps 2 other tags: MonitorACLFile and @Clients.

Open the @A hierarchy to locate the two OPC POINTs. Now, open the "Simulation Items \ Bucket Brigade" to locate the destination OPC tag to connect to. Drag the @A POINT "OPC Source" over the OPC Tag called "Real4". The cursor will turn into a link cursor as you drive over the tag.

Open the 'Simulation Items \ Triangle Wave' branch. Drag the OPC Tag called "Real4" over the @A POINT called "OPC Destination".

To simplify the view, right-click on the Taskbar and select 'Tile Windows Horizontally'.

A Note on OPC Data Types:
@A process data POINTs can accept Int2, Int4, Real4, Real8, UInt2 and UInt4 links. MARLIN Inspection data are linked to specific results and can only be linked to Int2, Int4, UInt2 and UInt4 data types.
MCD data are linked by channel Env, Vel, or Temp, with each being treated as a process POINT.

If a tag appears containing a red circle with a slash through it, it might be that the quality property of the tag is bad. Sometimes, this can be the initial state of a newly created tag. Using a tool supplied by the vendor to write a value to the tag will often clear this state.

If there are problems getting the link icon to show while hovering over an OPC Tag or @A POINT, verify that the @A POINT is compatible with the OPC Tag data type.

A Note on New @A POINTs / OPC Tags:
The tree controls do not automatically refresh when new data is added. If a new @A POINT is added, then the @A window must be closed and re-opened. This is also the case for OPC Tags. New OPC Tags added to the system (or a change in the TAG filter) will require the OPC window to be closed and re-opened.

Once a link pointing out of @ptitude Analyst is established, it is time to test the transfer service.

Testing the service

Maximize the Event Log window.

The @A OPC Service can be configured to run as a service by typing the following in the command line: MAOPCSRV –Service. Open the Window Services viewer and confirm that 'SKF OPC to @A Service' is listed. Also verify what the 'Log On As' option is set for. This may have to be changed under the **Log On** tab of the service properties in order to allow this service to be started and stopped properly. If the service fails to start, check the Windows Event Viewer for clues as to what problems are being encountered.

Assuming the service starts up correctly, there will be a message in the event log stating, "@P OPC Data Transfer Service started". Take note of the 'seconds' of the message. The Service thread will kick off every minute at this second mark. (For example, if the service starts up at 4:26:37 PM, the first transfer will occur at 4:27:37 PM). At this time, bring up @A and manually place a reading in the OPC Source data POINT. Looking at the Event Log in the Manager, after the first minute, there will be 2 messages that show up: "@A to OPC data transferred successfully" and "OPC to @A data transferred successfully." The new data can be viewed in the OPC Server with an OPC Client or through the Manager (open the OPC Window and highlight the Real4 Tag that is linked). The incoming data can also be viewed by opening up @A and viewing the POINT "OPC Destination".

A Note on DA 2.0 vs. DA 3.0 Servers:
*When writing @A data to DA 2.0 servers, the timestamp of the measurement is **always** the time the data was written to the server, not the timestamp of the measurement in @A. DA 2.0 servers are incapable of accepting the measurements date time stamp. When writing to DA 3.0 servers, it is important to confirm with the vendor that the server supports VQT (Value Quality Time) data items. Our DA 3.0 interface writes data out using this format, but unless the OPC DA 3.0 Server accepts this format, the timestamp of the data in the OPC Tag will not reflect that of our @A system.*

Going Live

Now it is time to find the OPC Server the customer wishes to link to. Theoretically, it should be as simple as hooking up to the Matrikon Simulator. There may be problems with this such as finding the server listed in our tool (in which case the customer's IT department or support from the OPC vendor will be necessary); problems with initialized tags (tools provided by the vendor may be needed to initialize the tags); problems with writing data to the OPC Server (which may relate to permission rights); or other types of issues.

A key point to remember is that it must be proven that you can write to an OPC Server first (which is why having the Matrikon Simulator is highly recommended). We are not experts in every OPC Server out there, nor are we experts in the customer's computer network security. There are limits to what we can accomplish on our own, and what we need help on from the customer and the vendor.