



## **SmartDiagnostics® Application Note**

### **OPC DA Server Version 1.3.1 Installation Instructions**

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## **Overview**

The SmartDiagnostics OPC DA Server allows OPC DA-compliant clients to retrieve current values in near real-time from SmartDiagnostics.

## **Requirements**

Windows 7 or later or Windows Server 2008 R2 or later

Minimum 2GB of RAM



The OPC DA Server will install the following dependencies if they are not already available on the system:

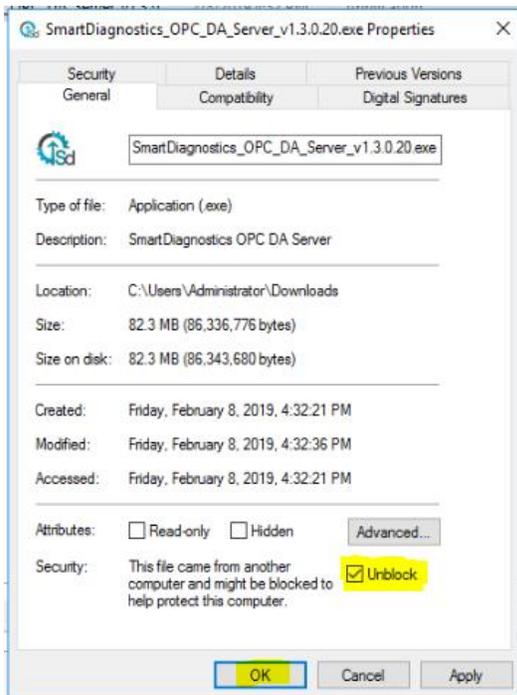
- Microsoft .NET Runtime 4.6.2
- Microsoft Visual C++ 2010 and 2013 redistributables
- OPC Foundation OPC Core Components - [more info](#)

The system running the OPC DA Server must be able to communicate with the SmartDiagnostics server (cloud or on-premises, depending on your application). This may require firewall configuration changes. For cloud customers, you must permit outbound HTTPS (port 443) to [sd.kcftech.com](https://sd.kcftech.com). For on-premises customers, you must permit outbound HTTP on port 52000 to your SmartDiagnostics server. Note that web filtering proxies are not supported. Contact your IT department for assistance.

## Installation Procedure

Download the OPC DA Server installer here:

- <https://kcftech.com/smartdiagnostics/resources/software/SmartDiagnostics OPC DA Server v1.3.1.0.exe>



If the installer does not run, it may be blocked by Windows SmartScreen. From the installer file properties dialog, check the “Unblock” box.



Once the installation completes, configure the service by editing this fi (default installation directory assumed):

- C:\Program Files\KCF Technologies\Smart Diagnostics OPC DA Server\customOPC.config

Edit the following keys:

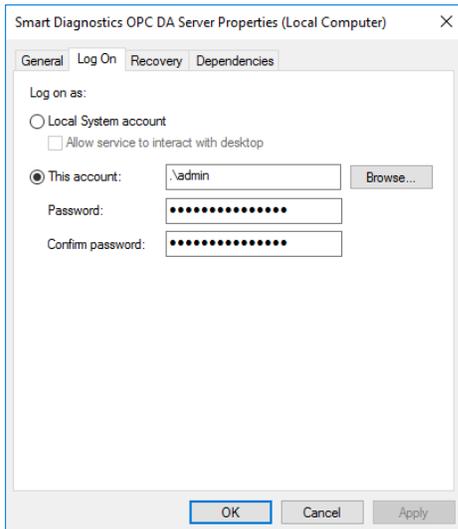
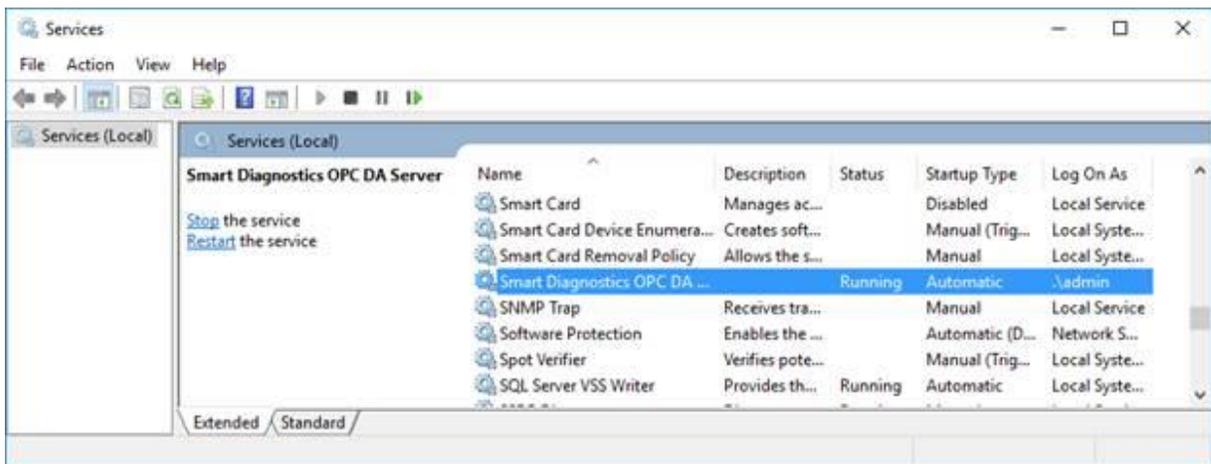
1. Set **apiKey** to the OPC API key that KCF support will give to you.
2. For cloud-based SmartDiagnostics installations, leave **sdUrl** as “https://sd.kcftech.com”. For on-premises applications, change **sdUrl** to “http://<server\_ip>:52000” (note “http” rather than “https”).
3. Set **updateRate** to your desired rate in seconds. This determines how frequently the OPC DA Server will update its item cache from SmartDiagnostics.
4. Set **tempUnits** to “F” for Fahrenheit or “C” for Celsius.

Save the customOPC.config file.



After editing and saving the file, start the Windows service:

1. Open the Windows Services console (you can search for “Services” in the Start Menu).
2. Find **SmartDiagnostics OPC DA Server** in the list. Right-click and select “Start” (or “Restart” if it’s already running). Note that any future changes to the customOPC.config file will require a restart of the service to take effect.



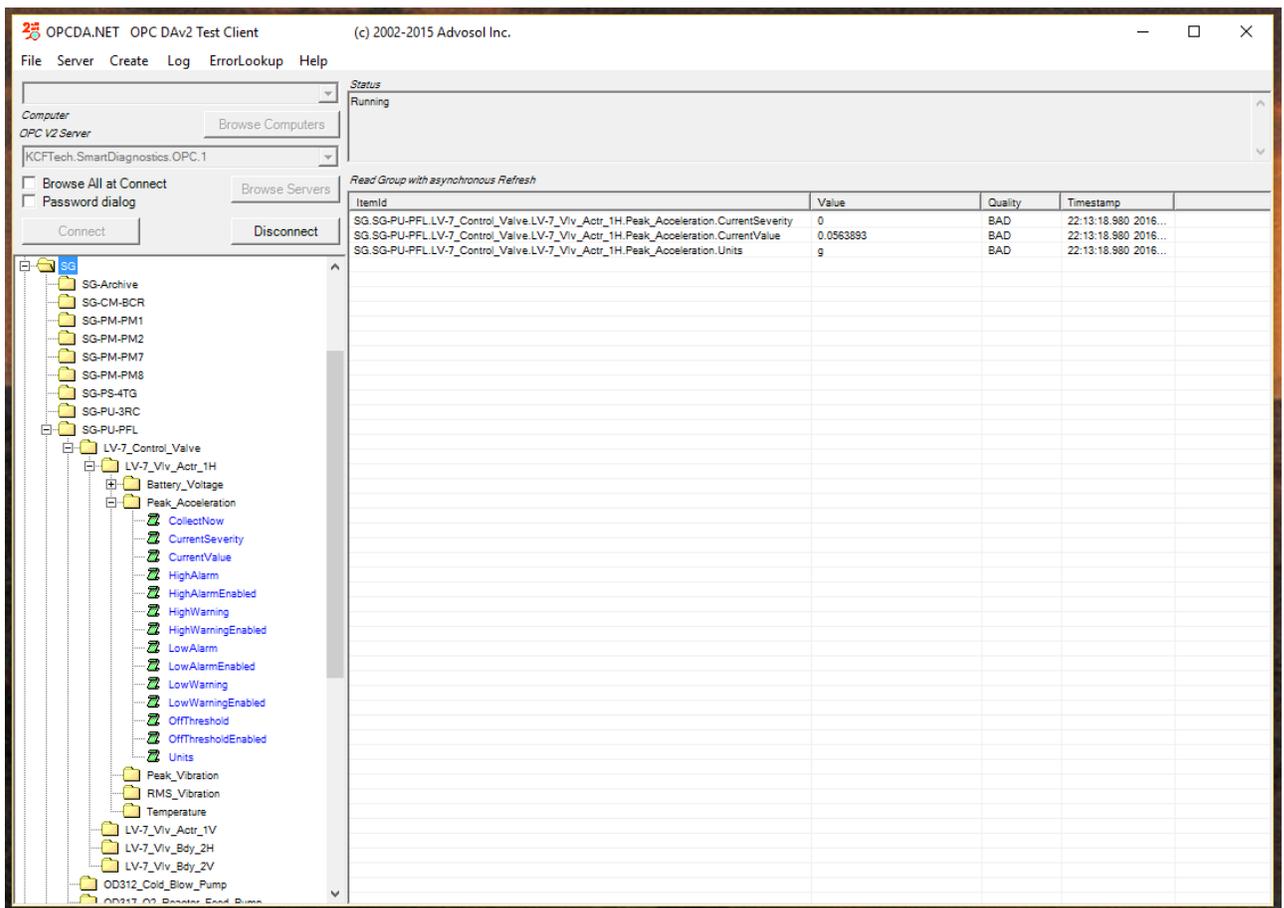
Depending on your Windows version, the Local System or Local Service accounts may not have the necessary permissions to access DCOM. In this case, it may be necessary to modify the service configuration to run under a different account that is a member of the Administrators group.



## Usage

Once the OPC DA Server is running, use an OPC test client to verify that it is operating successfully. Connect to the **KCFTech.SmartDiagnostics.OPC.1** server.

**NOTE: There are two servers listed.** Connect to **...OPC.1**, not **...OPC**. You will be able to browse an OPC structure that will reflect the structure that exists in SmartDiagnostics.



The screenshot shows the OPCDA.NET OPC DA v2 Test Client interface. The left pane displays a tree view of the OPC structure, with the following nodes expanded:

- SG
  - SG-Archive
  - SG-CM-BCR
  - SG-PM-PM1
  - SG-PM-PM2
  - SG-PM-PM7
  - SG-PM-PM8
  - SG-PS-4TG
  - SG-PU-3RC
  - SG-PU-PFL
    - LV-7\_Control\_Valve
      - LV-7\_Viv\_Actr\_1H
        - Battery\_Voltage
        - Peak\_Acceleration
          - CollectNow
          - CurrentSeverity
          - CurrentValue
          - HighAlarm
          - HighAlarmEnabled
          - HighWarning
          - HighWarningEnabled
          - LowAlarm
          - LowAlarmEnabled
          - LowWarning
          - LowWarningEnabled
          - OffThreshold
          - OffThresholdEnabled
          - Units
        - Peak\_Vibration
        - RMS\_Vibration
        - Temperature
        - LV-7\_Viv\_Actr\_TV
        - LV-7\_Viv\_Bdy\_2H
        - LV-7\_Viv\_Bdy\_2V
      - OD312\_Cold\_Blow\_Pump

The right pane shows the status of the connection (Running) and a table of data for the selected node group:

ItemId	Value	Quality	Timestamp
SG.SG-PU-PFL.LV-7_Control_Valve.LV-7_Viv_Actr_1H.Peak_Acceleration.CurrentSeverity	0	BAD	22:13:18.980 2016...
SG.SG-PU-PFL.LV-7_Control_Valve.LV-7_Viv_Actr_1H.Peak_Acceleration.CurrentValue	0.0563893	BAD	22:13:18.980 2016...
SG.SG-PU-PFL.LV-7_Control_Valve.LV-7_Viv_Actr_1H.Peak_Acceleration.Units	g	BAD	22:13:18.980 2016...



Each indicator in SmartDiagnostics will expose the following list of items:

- **CurrentValue**
- **CurrentSeverity**
- **HighAlarm**
- **HighAlarmEnabled**
- **HighWarning**
- **HighWarningEnabled**
- **LowAlarm**
- **LowAlarmEnabled**
- **LowWarning**
- **LowWarningEnabled**
- **Units**
- **IndicatorId**
- **CollectNow**

When a “1” is written to **CollectNow**, the process of collecting data from the corresponding sensor is initiated. Please note that this may take up to several minutes to complete.

Additionally, an item named **OPCStatus.SecondsOfDay** is available to monitor the status of the server’s connection to SmartDiagnostics. After each successful connection to SmartDiagnostics, the item is updated with the number of seconds elapsed since midnight UTC. This can be useful to identify that the server is functioning properly even if the indicator items above are not getting updated values because of latency in SmartDiagnostics.



## Troubleshooting

The OPC server writes status information to a log file located at  
C:\ProgramData\KCF Technologies\Smart Diagnostics\logs\opc\OPCLog.txt:

```
2019-02-18 21:59:24.3846 NSPlugin.AppPlugin ----- Server starting...
2019-02-18 21:59:24.4315 NSPlugin.AppPlugin ----- API key: ABCABCABC
2019-02-18 21:59:24.4315 NSPlugin.AppPlugin ----- Domain: https://sd.kcftech.com
2019-02-18 21:59:24.4315 NSPlugin.AppPlugin ----- Temp units: F
2019-02-18 21:59:24.4471 NSPlugin.AppPlugin Getting indicators from server...
2019-02-18 21:59:25.7295 NSPlugin.AppPlugin Retrieved 2632 indicators in 1.29 seconds from server.
2019-02-18 21:59:26.3715 NSPlugin.AppPlugin Added 34217 items to the server cache in 0.62 seconds.
2019-02-18 21:59:26.3715 NSPlugin.AppPlugin Server started successfully.
```

If it appears that the server cannot connect and retrieve indicators, try verifying connectivity to <https://sd.kcftech.com> from a web browser on the server.

If the log file indicates the OPC server is successfully retrieving values from SmartDiagnostics, but you encounter errors in an OPC test client while connecting to or browsing the OPC server, double check the user/service account that is running the “SmartDiagnostics OPC DA Server” service. Make sure that account has proper permissions to use DCOM (see the installation section).