

# OPC UA Applications for File Sharing and History Database



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7.10.2014

Microsoft Partner

**ORACLE** PARTNER



www.prosysopc.com



# About Prosys OPC

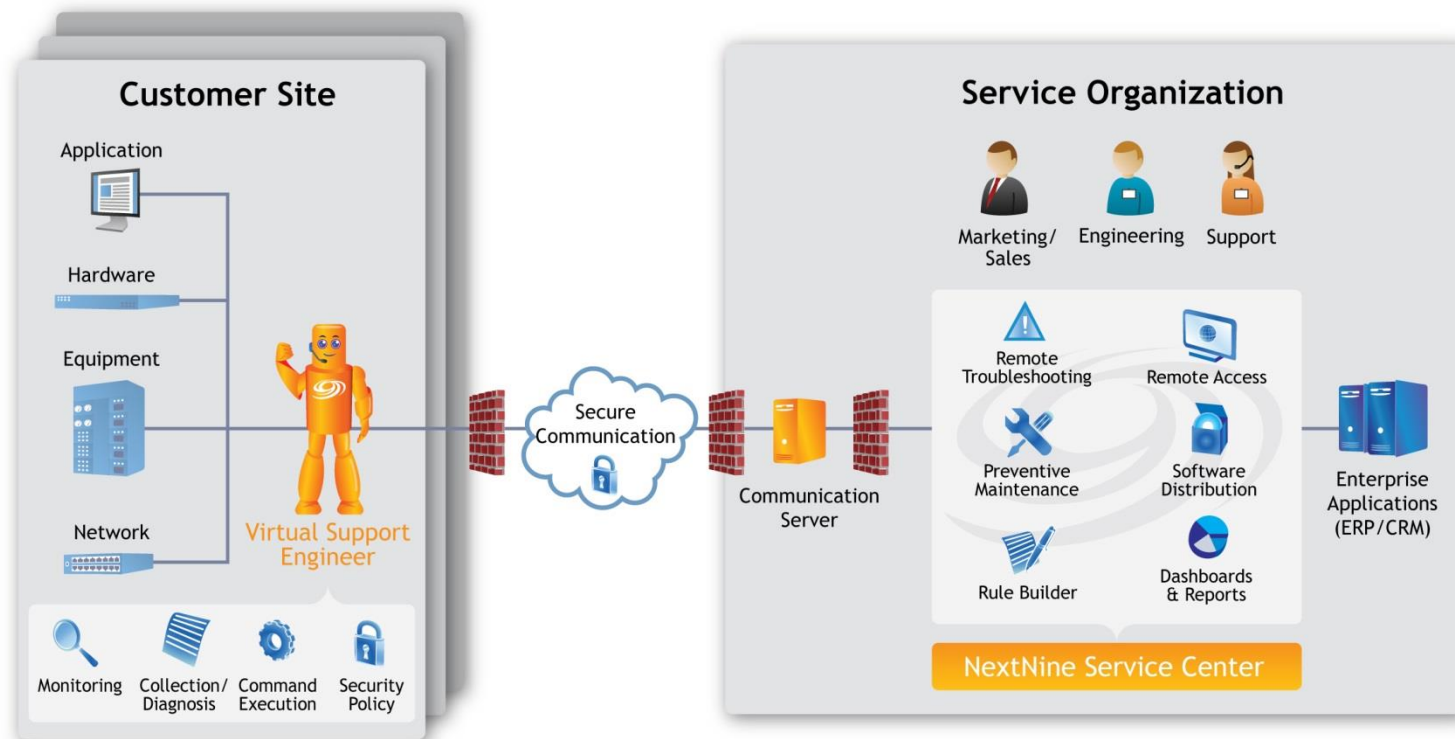
- Prosys OPC is a leading provider of professional OPC software and services with over 10 years of experience in the field
- Our major product is Prosys OPC UA Java SDK, which brings full OPC UA Client, Server and Application development capabilities to the standard Java environment
- Our OPC products are used globally from large multi-national companies to single local specialists
- We are not only a product company, but also provide Support and Professional Services to our customers and partners
- We provide maintenance and support services of Java Stack to OPC Foundation and are **the de facto standard for Java based OPC UA development**





# Customer case

- NextNine is a technology company located in Israel and USA
- NextNine solution enables system vendors and equipment manufacturers to remotely monitor and service their products at the customer site








# Case continued

- To better address the requirements in the field of Process Control and Industrial Automation, NextNine added OPC UA to its suite of network protocols
- The most important reasons why NextNine chose Prosys OPC UA Java SDK
  - An easy to use Java API that abstracts the complexities of the OPC Foundation's UA Java Stack
  - Prosys has a long track record in the OPC development community and has been dominant working around the Java stack within the OPC Foundation
  - The Prosys Product support team was outstanding in their response time when dealing with various concerns and enquiries that we sent to them



# More OPC and OPC UA cases

 <p>Monitoring and alerting in tunnels or sections of the highway network</p>	<p>EXCELLENCE IN ENGINEERING <b>NESTEJACOBS</b></p> <p>Advanced process control system and real-time process database</p>	 <p>OPC and OPC UA technology training for an energy company</p>	 <p>Intelligent decision support and optimization system for energy utilities</p>
 <p>Integration of automation and MES systems in dairy and food industry</p>	 <p>Process data acquisition system for testing process of styrene evaluation device</p>	 <p>Recipe handling and reporting system for chemical process industries</p>	 <p>Application software for management of intelligent valve controllers</p>
 <p>Real-time monitoring system that operates in rugged environments</p>	 <p>Smart energy management solution with reports and in-built control methods</p>	 <p>Remotely monitoring and service of products at the customer site</p>	 <p>Integration of Dispatcher Training Simulator to SCADA system</p>



# New product versions



OPC UA  
**Java SDK**

- Released on Q3/2014
- OPC UA 1.02 compatible
- Cross-platform!



OPC UA  
**Simulation Server**



OPC UA  
**Client**



OPC UA  
**Client for Android**



# New products



OPC UA  
**File Transfer**



OPC UA  
**Historian**

- Available Q4/2014



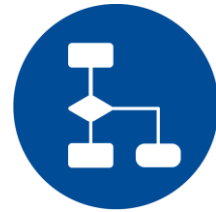
# Services



QuickStart



Training & Workshops



Design & Development



Consulting & Life Cycle Services

**PROSYS OPC**  
DEVELOP ONCE, DEPLOY ANYWHERE

**OPC UA  
WORKSHOP**  
For industry experts & software developers

4.-6.11.2014  
Espoo, Finland

[www.prosysopc.com](http://www.prosysopc.com)

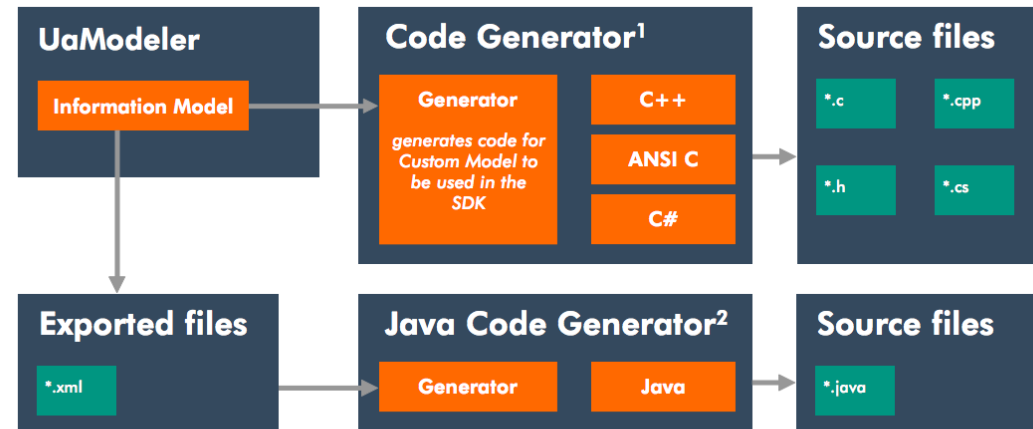






# Java SDK 2.0

- New: Code generation!
  - Use any UA type in Java application code
  - Standard types
  - Your own types



```
AnalogItemType node = nodeManagerUaNode.createInstance(  
    AnalogItemType.class, "AnalogItem");
```

Server code

```
AnalogItemType node = client.getAddressSpace().getNode(NodeId,  
    AnalogItemType.class);
```

Client code

```
//returns the InstrumentRange UaProperty  
UaProperty property = node.getInstrumentRangeNode();  
  
//direct return for the value of the InstrumentRange Property  
Range instrumentRange = node.getInstrumentRange();
```

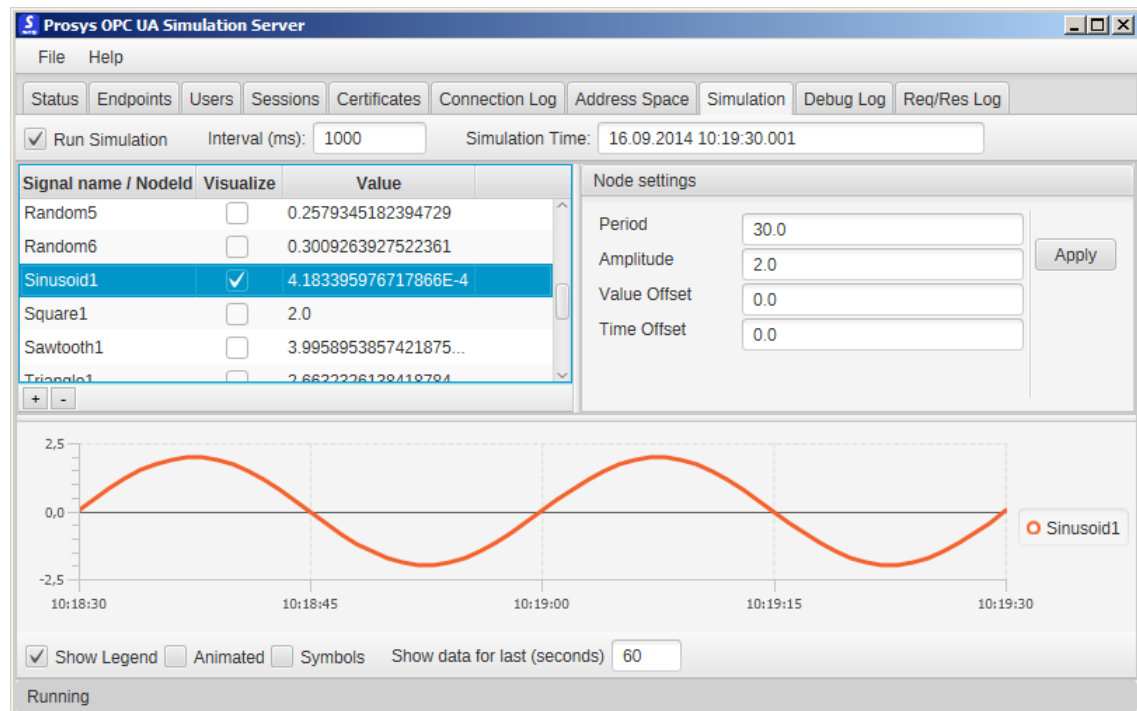
1. UaModeler functionality
2. Prosys OPC UA Java SDK functionality





# Simulation Server 2.0

- FREE!
- Stand-alone server with user interface
- Learning and demonstrating OPC UA
- Validating UA clients
- Configurable Simulation Signals
- Data History
- Events
- Event history
  
- JavaFX application:  
no preinstalled  
Java required!





# OPC UA Client 2.0



- FREE!
- Connect securely
- Browse address space
- Data View
- Event View
- History View
- Event History
- Java Swing application



Prosys OPC UA Client

Simulation Server

Running `opc.tcp://uademo.prosysopc.com:53530/OPCUA/SimulationServer -- urn:uademo.prosysopc.com:OPCUA:S`

Attributes and References | Data View | History View | Event View | Event History View

Forward

Attribute	Value
NodeId	ns=2;s=MyLevel
NodeClass	Variable
BrowseName	2:MyLevel
DisplayName	(en) MyLevel
Description	
WriteMask	NONE (0)
UserWriteMask	NONE (0)
Value	80.0
DataType	Double
ValueRank	Scalar
ArrayDimensions	null
AccessLevel	CurrentRead, CurrentWrite, Hi...
UserAccessLevel	CurrentRead, CurrentWrite, Hi...
MinimumSamplingInterval	-1.0
Historizing	true

Reference	TargetDisplayName
HasCondition	MyLevelAlarm
HasTypeDefinition	MyLevelType

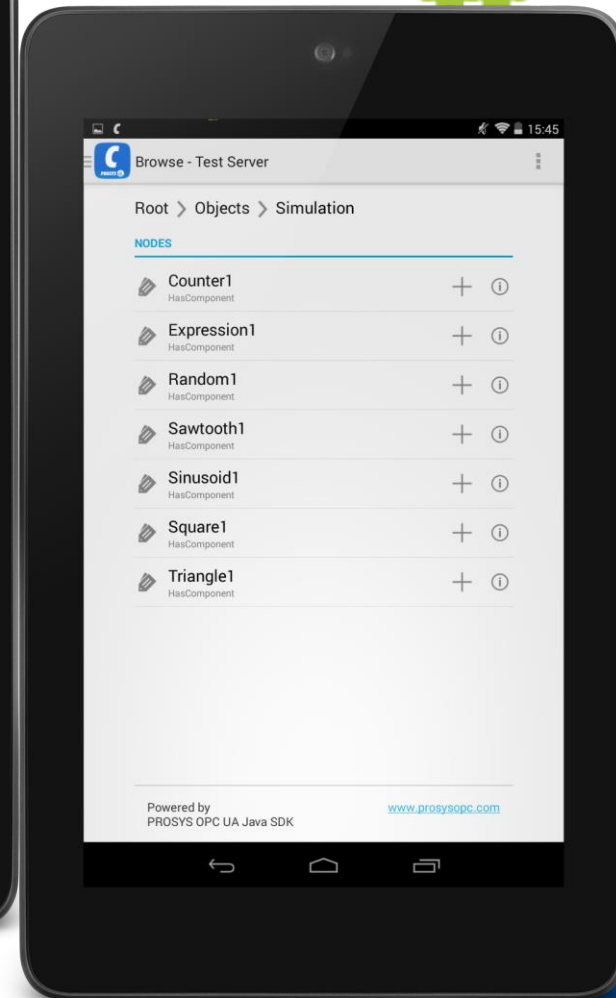
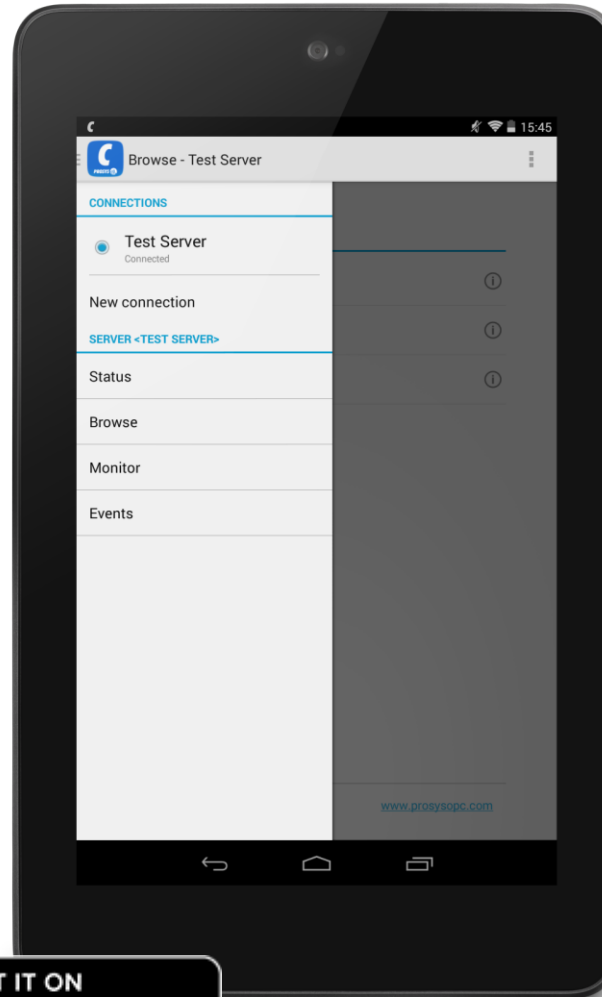




# Client for Android 2.0

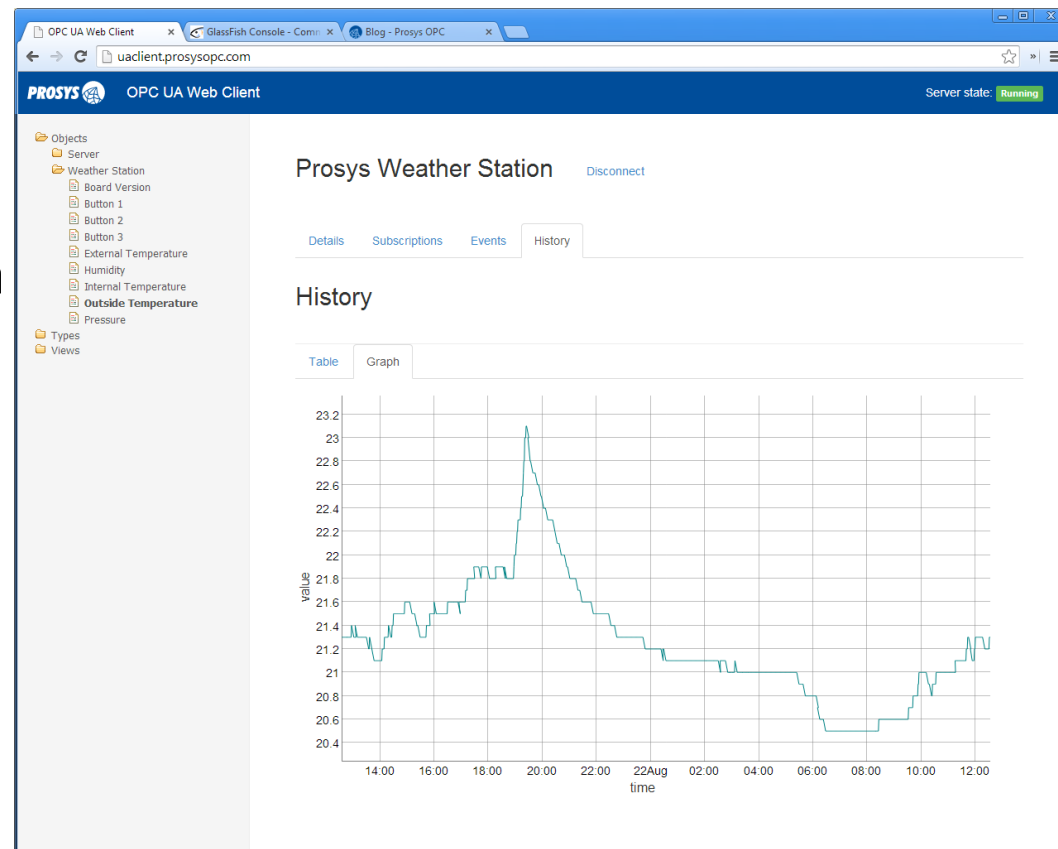


- FREE!
- Connect to any OPC UA server
- Browse address space on server
- Read and write values
- Monitor data changes on selected nodes
- Receive event notifications



# OPC UA Web Client

- Connect to UA servers from any web browser
- Uses intermediate web server
- Public demo: [uaclient.prosysopc.com](http://uaclient.prosysopc.com)
- Proof of concept for developing HTML5 client applications with OPC UA access

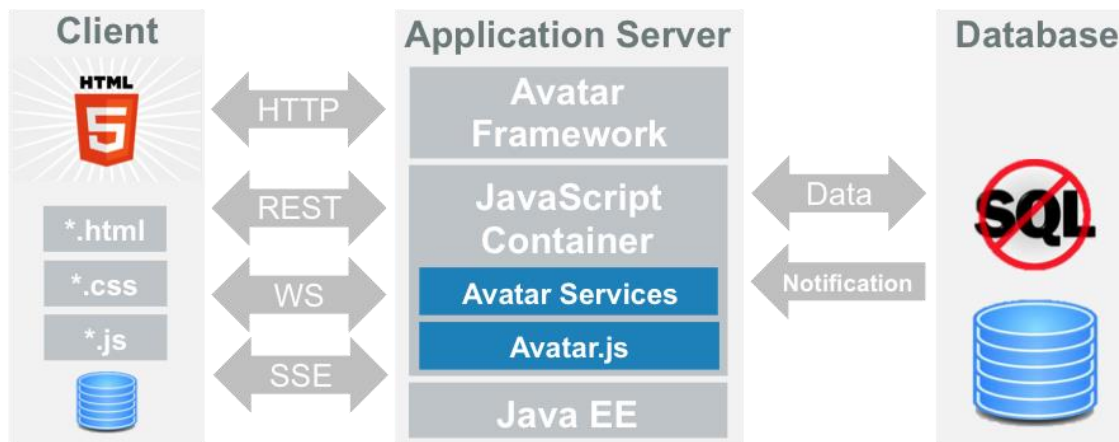


- <http://www.prosysopc.com/blog/prosys-opc-ua-web-client-released/>



# OPC UA Web Client

- Based on Project Avatar
  - Combines Java and JavaScript
  - Open-source, developed by Oracle
- Use all features of Prosys OPC UA Java SDK
  - Full OPC UA functionality
- Use all features of Node.js and other JavaScript libraries
  - Full HTML5 client application functionality





# OPC UA File Transfer

- Off-the-shelf cross-platform application for secure delivery and synchronization of files between different locations
- Automatically notifies when
  - New files are available
  - Files are modified
  - Files are removed (optional)
  - Triggers automatic file transfer



## Point-to-Point file transfer





# OPC UA File Transfer

- Case 1: Deliver production orders from the office network to the production network
  - ✓ Firewall easily configurable between network segments to enable file share only
- Case 2: Deliver production reports from the production network to company head-quarters
  - ✓ Securely through a public network with OPC UA encryption
- Case 3: Deliver recorded video sequences from production to office network for quality analysis
  - ✓ Any number and any size of files
  - ✓ OPC UA Application Instance Certificates used to control which applications may access the files
  - ✓ OPC UA Authentication used to control which users may access the files

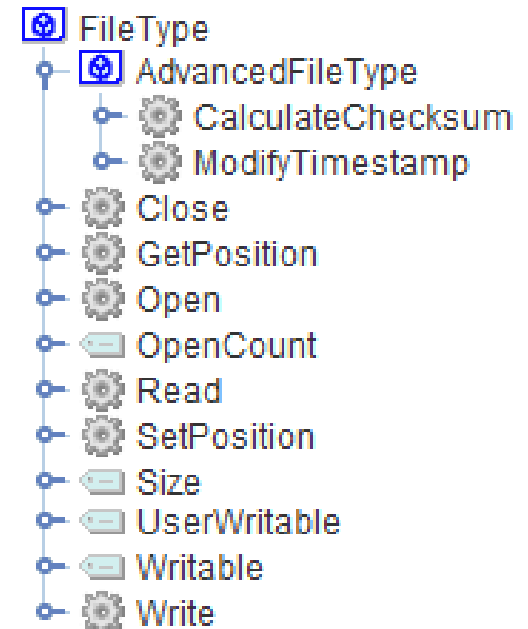






# OPC UA File Transfer

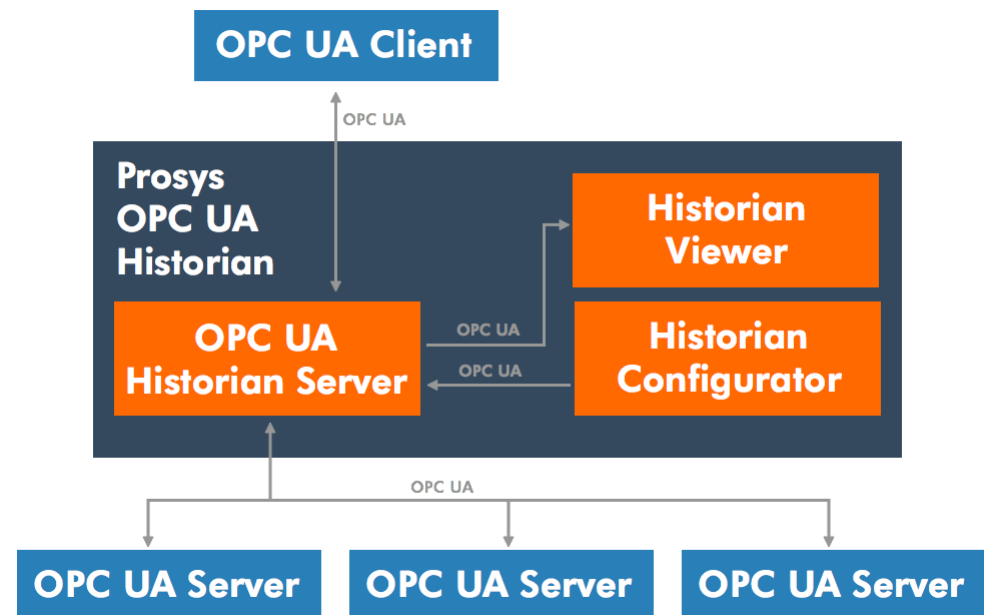
- Using OPC UA File Transfer specification
  - Standard OPC UA type: FileType
    - file access via UA methods
  - Extended type: AdvancedFileType
    - improved reliability and synchronization
  - Standard type for folders: FolderType
    - extended internally to monitor files in folders
  - Standard change notifications
    - GeneralModelChangeEvent
    - Used to detect new and deleted files
  - Monitoring Size (and SourceTimestamp)
    - Used to detect changes in existing files





# OPC UA Historian

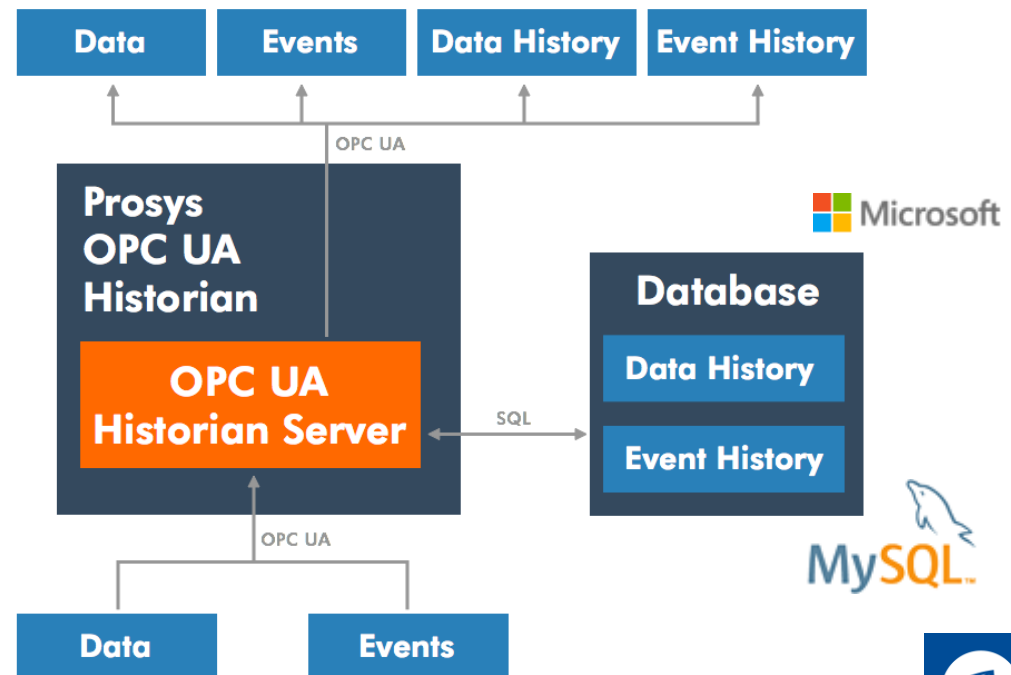
- Collect and store data from multiple OPC UA servers into one central location.
- Provide a gateway to underlying servers
  - Single point of access
  - Centralized control of communication security





# OPC UA Historian

- Store values and events to SQL database
  - Generate history to "any data"
  - Future: generate alarms!?
- Read data with any UA Client application
  - Data (Current Values)
  - Events
  - Data History
  - Event History
- Database support
  - Microsoft SQL Server
  - MySQL





# OPC UA Historian

- Configure and monitor history collection

The screenshot shows the Prosystech OPC UA Historian interface. On the left, a tree view displays the 'HISTORIAN SERVER' structure with various nodes like CounterWithHistory, DeviceSet, DiscreteTypes, etc. The right pane shows a table of collected items with columns for Server, NodeId: Identifier, Node Type, and Connected Status.

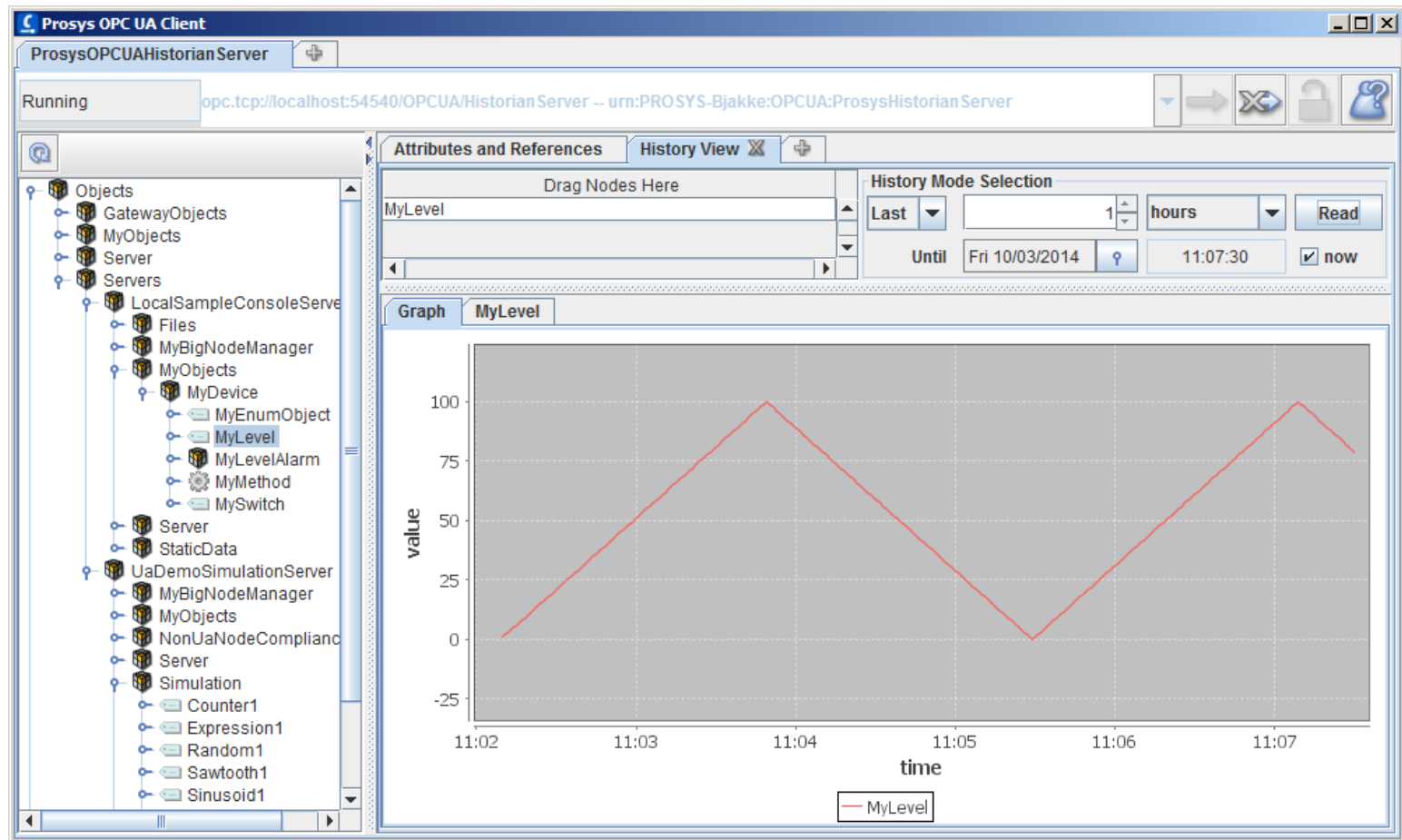
Server	NodeId: Identifier	Node Type	Connected Status
UaDemoServer	Counter1	Data	Collect in progress...
UaDemoServer	Counter2	Data	Collect in progress...
SimulationServer	DataItem_0002	Data	No Connection!
SimulationServer	DataItem_0865	Data	No Connection!
SimulationServer	DataItem_0866	Data	No Connection!
SimulationServer	DataItem_0867	Data	No Connection!
SimulationServer	DataItem_0868	Data	No Connection!
SimulationServer	DataItem_0869	Data	No Connection!
SimulationServer	DataItem_0870	Data	No Connection!
SimulationServer	DataItem_0871	Data	No Connection!
SimulationServer	DataItem_0872	Data	No Connection!
SimulationServer	DataItem_0873	Data	No Connection!
SimulationServer	DataItem_0874	Data	No Connection!
SimulationServer	DataItem_0875	Data	No Connection!
SimulationServer	DataItem_0876	Data	No Connection!
SimulationServer	DataItem_0877	Data	No Connection!
SimulationServer	DataItem_0878	Data	No Connection!
SimulationServer	MyLevel	Data	No Connection!
WeatherStation	All Events	Event	Collect in progress...
SimulationServer	MyDevice	Event	No Connection!





# OPC UA Historian

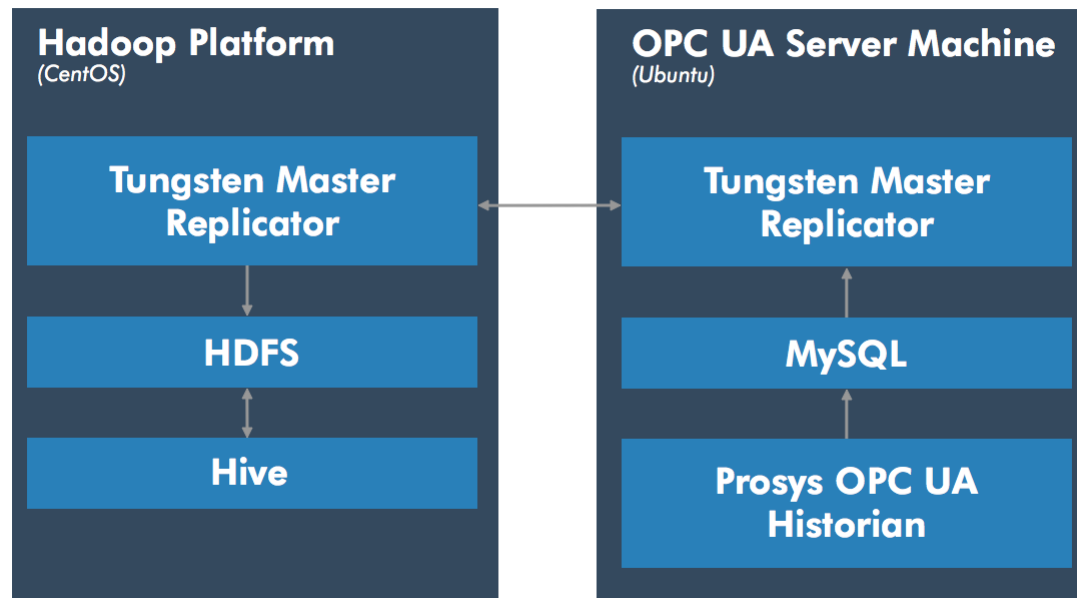
- Read original and history data from the historian with any OPC UA client application





# Big Data Replication

- Apache Hadoop (HDFS) and Hive! integrated with OPC UA Historian
  - Platform for Big Data



- <http://prosysopc.com/blog/hadoop-hive-integration-with-opc-ua/>



# Thank you!

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