OPC UA Applications for File Sharing and History Database

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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

<table>
<thead>
<tr>
<th>Company</th>
<th>Description</th>
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<tbody>
<tr>
<td>Steria</td>
<td>Monitoring and alerting in tunnels or sections of the highway network</td>
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<tr>
<td>Excellence in Engineering Neste Jacobs</td>
<td>Advanced process control system and real-time process database</td>
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<td>Helsingin Energia</td>
<td>OPC and OPC UA technology training for an energy company</td>
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<td>Kalkitech</td>
<td>Intelligent decision support and optimization system for energy utilities</td>
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<td>Valio</td>
<td>Integration of automation and MES systems in dairy and food industry</td>
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<tr>
<td>Nihao</td>
<td>Process data acquisition system for testing process of styrene evaluation device</td>
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<tr>
<td>Adpap</td>
<td>Recipe handling and reporting system for chemical process industries</td>
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<tr>
<td>Metso</td>
<td>Application software for management of intelligent valve controllers</td>
</tr>
<tr>
<td>Symbioticware</td>
<td>Real-time monitoring system that operates in rugged environments</td>
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<tr>
<td>Kg Systel</td>
<td>Smart energy management solution with reports and in-built control methods</td>
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<tr>
<td>Next Nine</td>
<td>Remotely monitoring and service of products at the customer site</td>
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<tr>
<td>PowerSysLab</td>
<td>Integration of Dispatcher Training Simulator to SCADA system</td>
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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
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");
```

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

```
//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

http://prosysopc.com/blog/prosys-opc-ua-java-sdk-2.0-release-codegen/
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
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
- 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
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
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

Thank you!

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