

“oBIX - R2 to AX Integration”

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OASIS and oBIX Background

- OASIS is a not-for-profit, international consortium dedicated to the development, convergence, and adoption of e-business standards.
- OASIS Standards are developed through an open process, one that provides for fairness, transparency and full participation from the entire community.
- oBIX is a standard that was developed by an OASIS Technical committee developing for standardizing communication between building controls and the enterprise
- V 1.0 Specification has completed Public Review and has been approved as a committee specification

oBIX Normalization

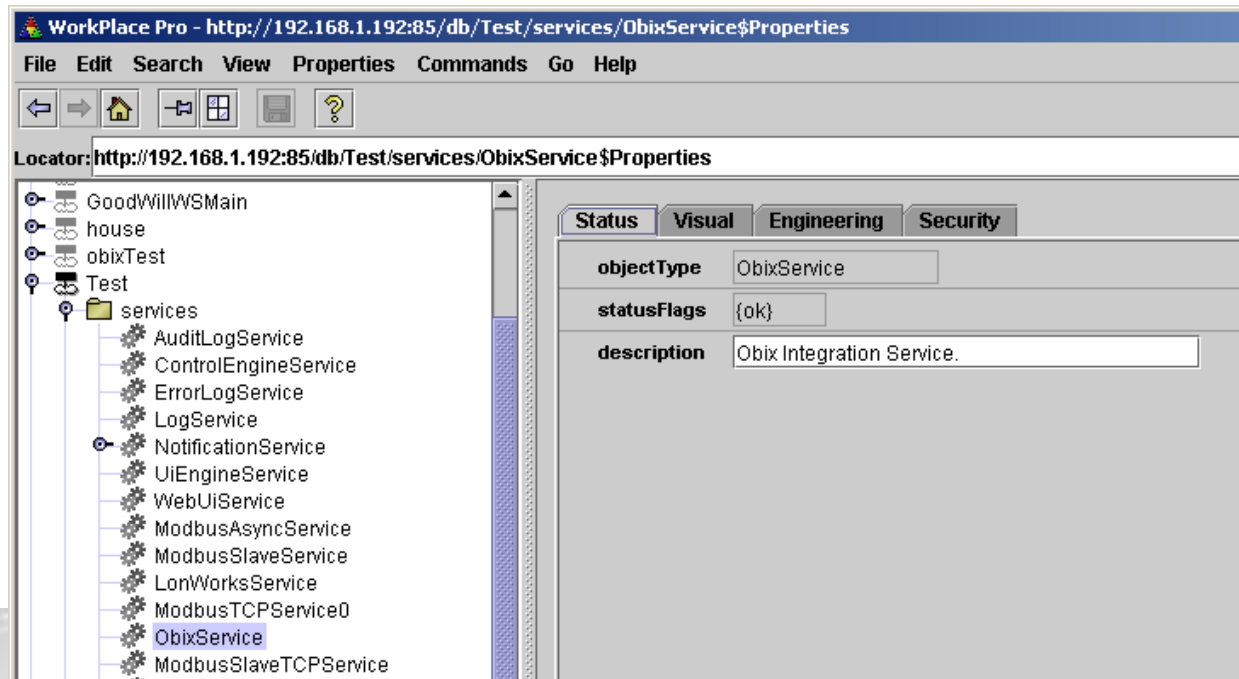
- Version 1.0 of oBIX provides a normalized representation for three broad concepts:
- **Points:**
 - representing a single scalar value and it's status
 - sensors, actuators, or configuration variables like a setpoint
- **Histories:**
 - Modeling and querying of time sampled point data (trend logs).
 - Edge devices collect a time stamped history of point values which can be feed into higher level applications for analysis;
- **Alarming:**
 - Modeling, routing, and acknowledgment of alarms.
 - Alarms indicate a condition which requires notification of either a user or another application.

R2 System Requirements

- Each R2 host (Jace or Web Supervisor) must be running Niagara 2.301.522 or later build.
- The obix.jar file must be installed
- The license file must have the “obix” feature enabled.

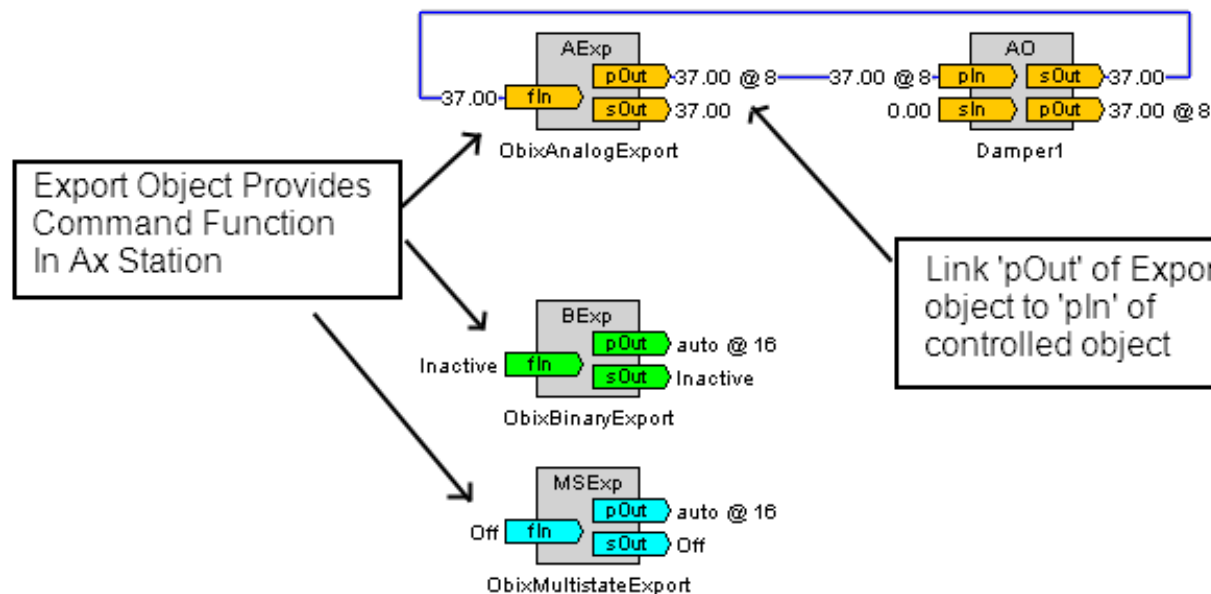
Installing oBIX Service in an R2 Station

- From the remote library, copy the oBIX Service and paste it into the stations services.
- There are no properties which require configuration on the oBIX service to make it function properly; however, the station must be restarted for the service to actually be available.



R2 oBIX Export Objects

- The three "export" objects in the tridiumx/obix jar are available if you need to allow "link control" writes from Ax to R2 objects, for example to the "priority array" input of an AnalogOutput, BinaryOutput, or MultistateOutput object.
- If controlling an AnalogOutput, BinaryOutput, or MultistatOutput, another link is also required from the statusOutput of the controlled object back to the "feedbackValue" input (fln) of the export object.



ObixNetwork and ObixClient Devices

- In the AxSupervisor you add a single ObixNetwork under Drivers, then manually add ObixClient devices, where each represents an R2 station. For each new ObixClient, you enter a few properties in the New dialog

The screenshot displays the AxSupervisor configuration window. The main window shows a tree view on the left with 'ObixNetwork' selected under 'Drivers'. The 'Database' table on the right lists a 'Test' entry with 'http://192.168.1.192:85/obix' as the lobby and 'true' as the enabled status.

Two 'New' dialog boxes are overlaid. The first dialog shows 'Type to Add' set to 'Obix Client' and 'Number to Add' set to 1. The second dialog shows the configuration for a new ObixClient device:

Name	Lobby	Auth User	Auth Pass	Enabled
R2DemoSta	http://niagara.tridium.net	demo	--password--	true

Below the table, the following fields are visible:

- Name:** R2DemoStation
- Lobby:** http://niagara.tridium.net
- Auth User:** demo
- Auth Pass:** [masked]
- Enabled:** true

Ax ObixClient Points

- The Points extension of the ObixClient device is where most Ax engineering is anticipated. Using the Point Manager view, click the Discover button. In the discovered pane of the Obix Point Manager, the root "lobby" you'll see the tree organization. Items of practical interest for proxy points are mostly under the "config" branch.

Discovered			
Obix Name	Value	Mode	Href
[-] <input checked="" type="radio"/> lobby		RO	/obix/
<input type="radio"/> watchService		RO	/obix/watch/
<input type="radio"/> about		RO	/obix/about/
+ <input type="radio"/> ObixService		RO	/obix/config/services/ObixService/
[-] <input type="radio"/> config		RO	/obix/config/
<input type="radio"/> objectType	Station	RO	/obix/config/.property/objectType
<input type="radio"/> statusFlags		RO	/obix/config/.property/statusFlags
<input type="radio"/> description	Niagara station.	RW	/obix/config/.property/description
<input type="radio"/> currentTime	2007-02-22T20:31:09.000-05:00	RW	/obix/config/.property/currentTime
<input type="radio"/> bootTime	2007-02-22T09:42:37.660-05:00	RO	/obix/config/.property/bootTime
<input type="radio"/> lastDownTime	2007-02-22T09:40:25.260-05:00	RO	/obix/config/.property/lastDownTime
<input type="radio"/> lastAliveTime	2007-02-22T20:30:39.030-05:00	RO	/obix/config/.property/lastAliveTime
<input checked="" type="radio"/> httpPort	85.0	RW	/obix/config/.property/httpPort
<input checked="" type="radio"/> httpsPort	443.0	RW	/obix/config/.property/httpsPort
<input checked="" type="radio"/> enableSSL	false	RW	/obix/config/.property/enableSSL

Ax ObixClient Histories

- The Histories extension of an ObixClient is where you can import data from the R2 station's log objects, as well as existing archives from its appdb (if it has the DatabaseService). The ObixHistoryManager is where you specify which discovered logs and archives you want to import, using the familiar oBIX "lobby" tree in the discovered pane.

The screenshot shows the Obix History Manager interface. The top menu bar includes Config, Drivers, ObixNetwork, Test, Histories, and Obix History Manager. The main window displays a success message for 'Obix History Discovery' and two tables: 'Discovered' and 'Database'.

Discovered (5 objects)

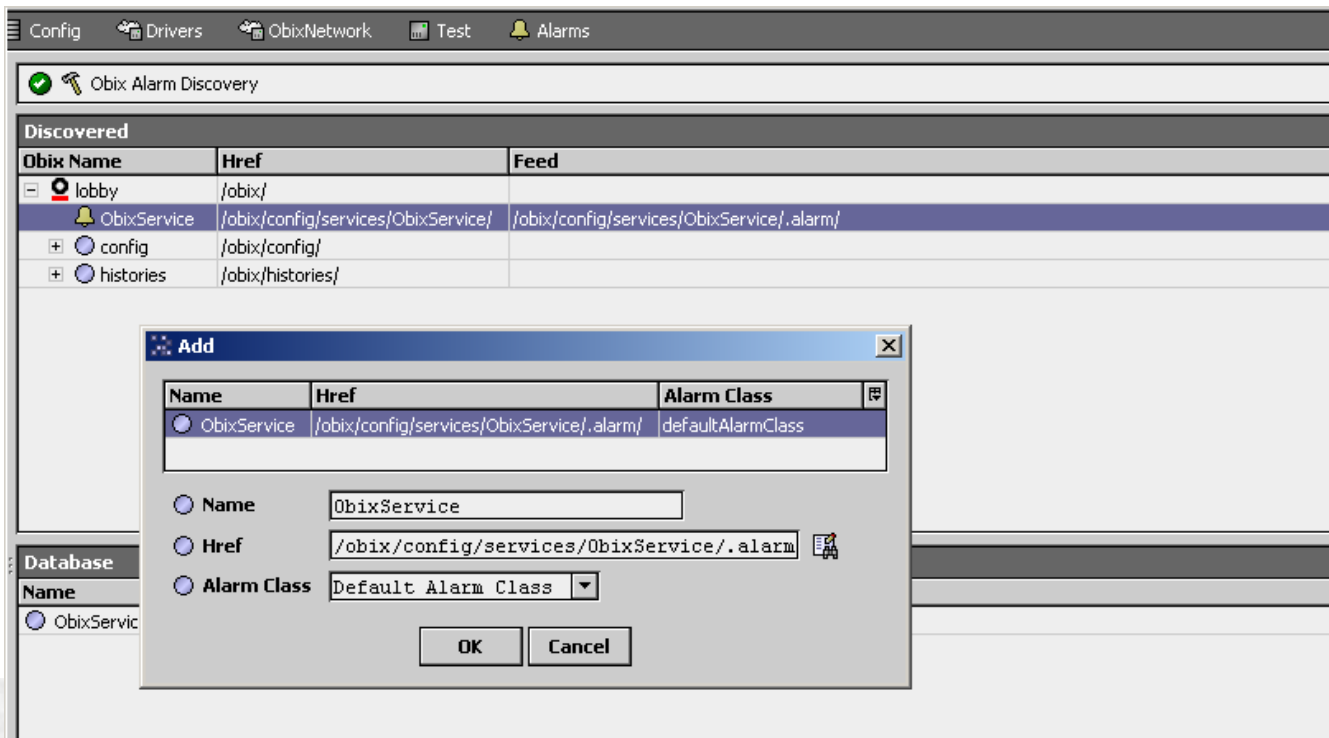
Obix Name	Href	Start	End	Count	Query
lobby	/obix/				
config	/obix/config/				
histories	/obix/histories/				
ZoneTempAHU_2	/obix/config/LonTrunk/AHU_2/ZoneTempAHU_2/	2007-02-17T14:00:02.560-05:00	2007-02-22T22:15:00.383-05:00	500	/obix/config/LonTrunk/AHU_2/Z
ZoneTempAHU_1	/obix/config/LonTrunk/AHU_1/ZoneTempAHU_1/	2007-02-17T14:00:02.560-05:00	2007-02-22T22:15:00.383-05:00	500	/obix/config/LonTrunk/AHU_1/Z

Database (2 objects)

History Id	Status	State	Last Success	Href
/Test1/ZoneTempAHU_1	{alarm,unackedAlarm}	In Progress	22-Feb-07 4:38 PM EST	/obix/config/LonTrunk/AHU_1/ZoneTempAHU_1/.log
/Test/ZoneTempAHU_2	{unackedAlarm}	Idle	22-Feb-07 10:20 PM EST	/obix/config/LonTrunk/AHU_2/ZoneTempAHU_2/.log

Ax ObixClient Alarms

- The Alarms extension of an ObixClient for an R2 station allows you to add an "alarm feed" source, such that native R2 events (alarms and alerts) in the station can be visible in the Ax station's AlarmService.



Ax ObixClient

R2 Schedule Imports

- You can add an additional device extension for exporting local Ax Boolean Schedule events to remote R2 Schedule objects. Find this extension in the obixDriver palette, the R2ScheduleDeviceExt, and copy it into the R2 station ObixClient

The screenshot shows the Niagara AX software interface with the 'Obix Schedule Discovery' window open. The window title bar includes 'Config', 'Drivers', 'ObixNetwork', 'Test', and 'R2ScheduleDeviceExt'. The main area is divided into two sections: 'Discovered' and 'Database'.

Discovered

Obix Name	Href
lobby	/obix/
config	/obix/config/
services	/obix/config/services/
ModbusAsyncNetwork	/obix/config/ModbusAsyncNetwork/
ModbusSlaveNetwork	/obix/config/ModbusSlaveNetwork/
Logic	/obix/config/Logic/
LonTrunk	/obix/config/LonTrunk/
AHU_1	/obix/config/LonTrunk/AHU_1/
AHU_2	/obix/config/LonTrunk/AHU_2/
LonTemp	/obix/config/LonTrunk/LonTemp/
WeeklySchedule	/obix/config/LonTrunk/WeeklySchedule/
ModbusTCPNetwork	/obix/config/ModbusTCPNetwork/
ModbusSlaveTCPNetwork	/obix/config/ModbusSlaveTCPNetwork/

Database

Name	Subordinate	Supervisor	Enabled	Execution Time	Fa
WeeklySchedule	/obix/config/LonTrunk/WeeklySchedule/	station:/slot:/Schedules/WeeklySchedule	true	2:00 AM {Sun Mon Tue Wed Thu Fri Sat }	

Live Demonstration



More Information

- http://www.niagara-central.com/ord?portal:/dev/file/Niagara_R2_to_NiagaraAX_via_oBIX
 - Engineering Notes publication on Niagara-Central
- <http://www.oasis-open.org/committees/obix>
 - Download the spec and learn more about how to participate in the development effort and OASIS oBIX Technical Committee
- <http://sourceforge.net/projects/obix>
 - Download the open source Java oBIX Toolkit which is designed to help you incorporate oBIX into your software quickly and easily.

Question and Answer Session

- Select the Q&A icon in the Netspoke menu bar to type your questions
- Feel free to speak up for further discussion
- Please introduce yourself, company name, and where you are calling from.

Thank you!

- We would like your feedback on today's TridiumTalk
- Please take a moment to answer our short survey
- If you have any further questions, comments or topic suggestions, please email them to SalesSupport@tridium.com



James Johnson



Marc Petock



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