



CONNECTING
THE WORLD



NF
25

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Developer Day Introduction

Amod Kamat
CTO - Tridium

Logistics

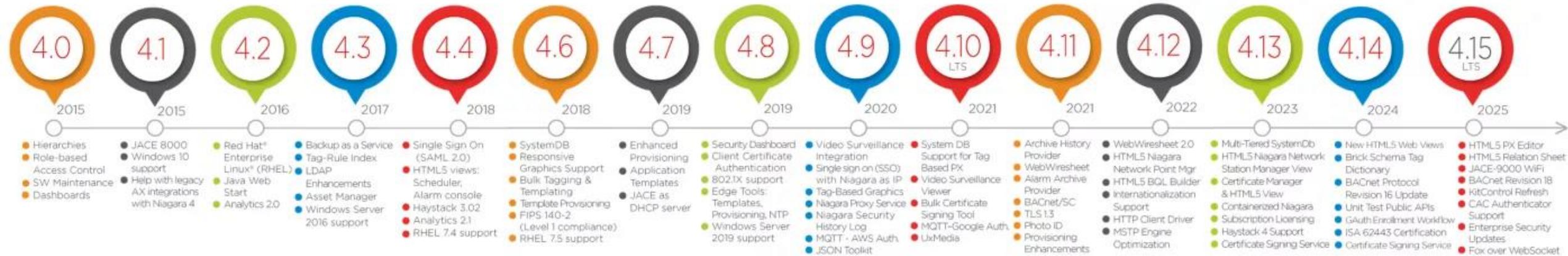
- Q&A Session
tsupportap@tridium.com
- Accessibility – please ask the team
- Slides, code, and videos will be published later

- Photography allowed 

- Fire exit 

- Electronic Devices 

Niagara 4 Timeline





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Developer Updates

Uday Kumar Rapuru
Tridium



Niagara Product Updates

- Breaking Changes



- Product Features



- API Updates



niagara 4.14



niagara 4.15

Breaking changes – where to find?

- Included in Niagara Release Notes
- Release Notes live on: niagara **community**
- *See also: [Lexicon Differential Summaries](#)*

+ niagara 4.14

DEPLOYMENT



- Provisioning Web Views
- Category Service Views
- GAAuth Enrollment Workflow
- Added JACE 9000 features
 - DHCP on secondary port
 - 802.1x Support

INTEROPERABILITY



- Core Driver Views
- Niagara Network History Views
- Brick Schema Tag Dictionary
- OnCall Service Views

CONNECTIVITY



- Rdb History Views
- Weather Service Views
- Unit Test Public APIs
- OPC-UA Driver Refresh

CYBER DEFENSE



- Certificate Signing Service
- Multi-Tiered Security Dashboard
- SAML Authentication
- WindowsAuth for msSQL

COMPLIANCE



- BACnet Protocol Revision 16 Update
- ISA 62443 Process Certification

+ Sync Nav tree in Browser

Sync Nav Tree with the Active View

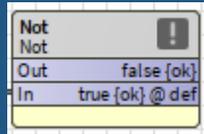
The image illustrates the process of syncing a navigation tree with the active view in a browser. It consists of two side-by-side screenshots of a web application interface, connected by a double arrow indicating a transition.

Left Screenshot: The navigation tree on the left shows a hierarchy of services. 'Tag Rules' is selected, indicated by a blue vertical bar and an orange arrow. The active view on the right shows a table with columns 'Info' and 'Timestamp'. The entry 'ConsoleRecipient' is highlighted with an orange box. An orange arrow points to the refresh icon in the top right corner of the active view.

Right Screenshot: The navigation tree is expanded to show 'ConsoleRecipient' selected, indicated by a blue vertical bar and an orange arrow. The active view on the right shows the details for 'ConsoleRecipient', including a table with columns 'Info' and 'Timestamp'. The entry 'ConsoleRecipient' is highlighted with a blue bar.

+ Tagging Enhancements

- Added: "Not" Condition
- *Should not be mistaken with kitControl: Not*



Display Name	Value	Commands
BooleanOccNotSimulated	BooleanOccNotSimulated	
Condition	And	
And	And	
NameOcc	Boolean Filter	
Filter	n:name like "Occupied"	
IsTypeBoolean	<u>Is control:BooleanPoint</u>	
Object Type	control	BooleanPoint
Not	Not	
IsTypeMultiVib	<u>Is kitControl:MultiVibrator</u>	
Tag List	Tag Info List	
OccMarker	Marker	
Validity	Always	
Default Value	Marker	



Gradle Upgrades

- **4.13** upgraded from Gradle 4 ⇒ 7 (.kts)
 - Use the new module wizard for this upgrade
- 4.14 → 4.15 Fixed via changes in **settings.gradle.kts**

```
val gradlePluginVersion: String = 4.14 "7.6.17" 4.15 "7.6.20"
```



BI SecurityDashboardItemProvider

- Use hooks to **display/hide** your security dashboard card to prevent 'clutter':
 - boolean **isItemProviderEnabled()**
 - SecurityDashboardItem **getDisabledSecurityDashboardItem(Context cx)**
 - String **getItemProviderName(Context cx)**



Unit Test API: BTestNgStation

```
import javax.baja.test.BTestNgStation;

@NiagaraType
public class BMyComponentTest extends BTestNgStation
{
    @Test
    public void myComponentWorksInARunningStation ()
    {
        BExample myExampleComp = new BExample();
        stationHandler.getStation().add("MyExample", myExampleComp);
    }
}
```



Configuring The Test Station

// Configure **Once** and **share** between all your Test methods.

```
@Override
protected void configureTestStation(BStation station, String stationName,
                                     int webPort, int foxPort)
{
    super.configureTestStation(station, stationName, webPort, foxPort);

    station.getServices().add("MyService", new BMyService());
}
```



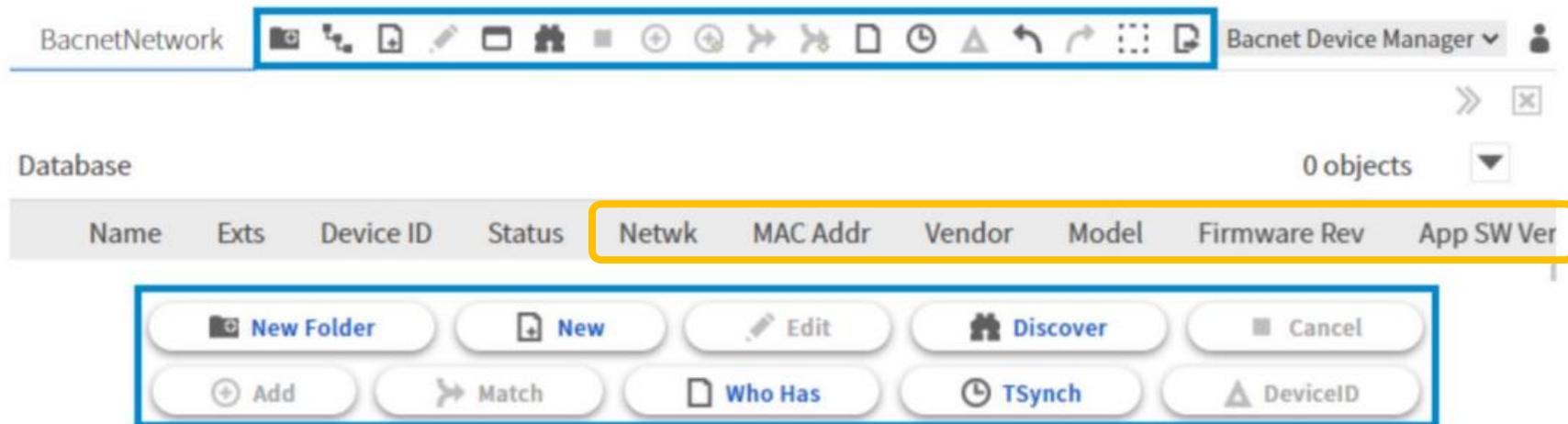
Testing User Permissions

```
@Test(expectedExceptions = PermissionException class)
public void throwsIfUserDoesNotHaveAdminReadPermissions()
throws Exception
{
    userPermissionsScenario(
        withOrd("station:slot:/MyComponent").onlyInCategory(3),
        withPermissions("rwi").onCategory(3)
    )
    actAsUser((user) -> {
        doRpc("station:|slot:/MyComponent", user);
    });
}
```



Manager API Changes

- More control over **Commands** to target location
 - **makeCommands()**
 - **MgrCommand.flags**



- i18N improvements – **lexicon** support for **Columns**



Provisioning jobs

- Java: **BIUxJobStepFactory**
- JS: **UxJobStepFactory**

ProvisioningNwExt Niagara Network Job Builder

Generate an alarm when any step fails or is canceled
 Generate an alarm when job completes successfully

Job timeout h m [0 ms - +inf]

Provisioning steps to run

- Backup Stations
- Copy "PxFile.px" to "^"
- Add Station User (areaManager, admin = false)

Stations to include in the job

- servlet
- supervisor

Run Now Refresh



BajaScript Widget Properties

// Old : Using String Encoding/Decoding

```
properties: {  
  myEnum: {  
    value:      'myPoint',  
    typeSpec: 'your:EnumPoint'  
  }  
}
```

// New : Direct instance of TypeSpec

```
properties: {  
  myEnum: baja.$( 'your:EnumPoint', 'myPoint')  
}
```

+ JACE-9000 Features

- 4.14:
 - DHCP Server (secondary port)
 - 802.1x support (port security)
- 4.15:
 - Firewall
 - Wi-Fi



JACE-9000 Firewall

- Enabled in 4.15 for the JACE-9000
- Use **BServerPort** to inject firewall rules
 - Already Included by the ndriver wizard
 - Available since 4.0
- Workaround
 - From the “**net**” palette **Firewall Port Helper:**

FirewallPortHelper	
Display Name	Value
 Public Server Port	<input type="text" value="0"/> [1 - 65535]
 Ip Protocol	TCP <input type="button" value="v"/>
 Adapter	<input type="text" value="any"/>



Station Bog File Encryption

- User passwords – System passphrase
- Options to encrypt in New station wizard
 - System passphrase
 - Custom passphrase
- Tool to retain passwords
 - Station copier
 - Workbench Bog File

New Station Wizard

New Station Wizard

Station Admin Password Configuration

Username	Role(s)	Modified?
admin	admin	

Set Password

Station Encryption Options ?

Encrypt passwords in station in user home

Use the system passphrase

Use a custom passphrase (enter below)

Password for Station BOG File

Confirm password for Station BOG File

Final Actions

When 'Finish' is pressed, save the station and

open it in user home

copy it to secure platform for "localhost" with Station Copier

close the wizard

Back Next Finish Cancel

4.15 – “RDB” Permission

- This change ensures that a **JDBC Connection** is only supplied to trusted code.

- `module-permissions.xml` →

```
<req-permission>
  <name>RDB</name>
  <purposeKey> Access JDBC via RDB </purposeKey>
</req-permission>
```

- **`javax.baja.rdb.BRdbms`**
 - `getConnection()`
 - `getConnection(String, BPassword)`
 - `getPrivilegedConnection(Context)` - *new for Niagara 4.15*
 - `getNonPrivilegedConnection(Context)` - *new for Niagara 4.15*



Niagara Mobile – Profile Removal

- Deprecated since 4.6 (Introduced 3.7)
- In 4.6 the Responsive Pane allowed Px to support smaller layouts via Html5HxProfile
- Handled gracefully as possible for end users





niagara 4.15

DEPLOYMENT



- HTML5 Px Editor
- HTML5 Relation Manager
- JACE-9000 WiFi Support
- Access Control Badge Printing

INTEROPERABILITY



- Driver Updates | Modbus, Mbus, OPC-UA, SNMP, BACnet

CONNECTIVITY



- Fox over WebSocket
- kitControl Refresh
- Niagara Access

CYBER DEFENSE



- CAC Authenticator Support (Browser)
- User Login History
- Encrypted Hashed Passwords

COMPLIANCE



- BACnet Protocol Revision 18
- QNX 7.1 Upgrade for JACE-8000 + Edge-10



Foxs connectivity - Challenges

Connect

Open Station with TLS
Connect to station using fox over TLS.

Session

Type: Station TLS Connection

Host: IP 10.47.56.188

Port: 4911

OK Cancel

Name	Type	Address	Fox Port	Use Foxs
Station_4_14A	Niagara Station	ip:10.47.56.188	4911	true

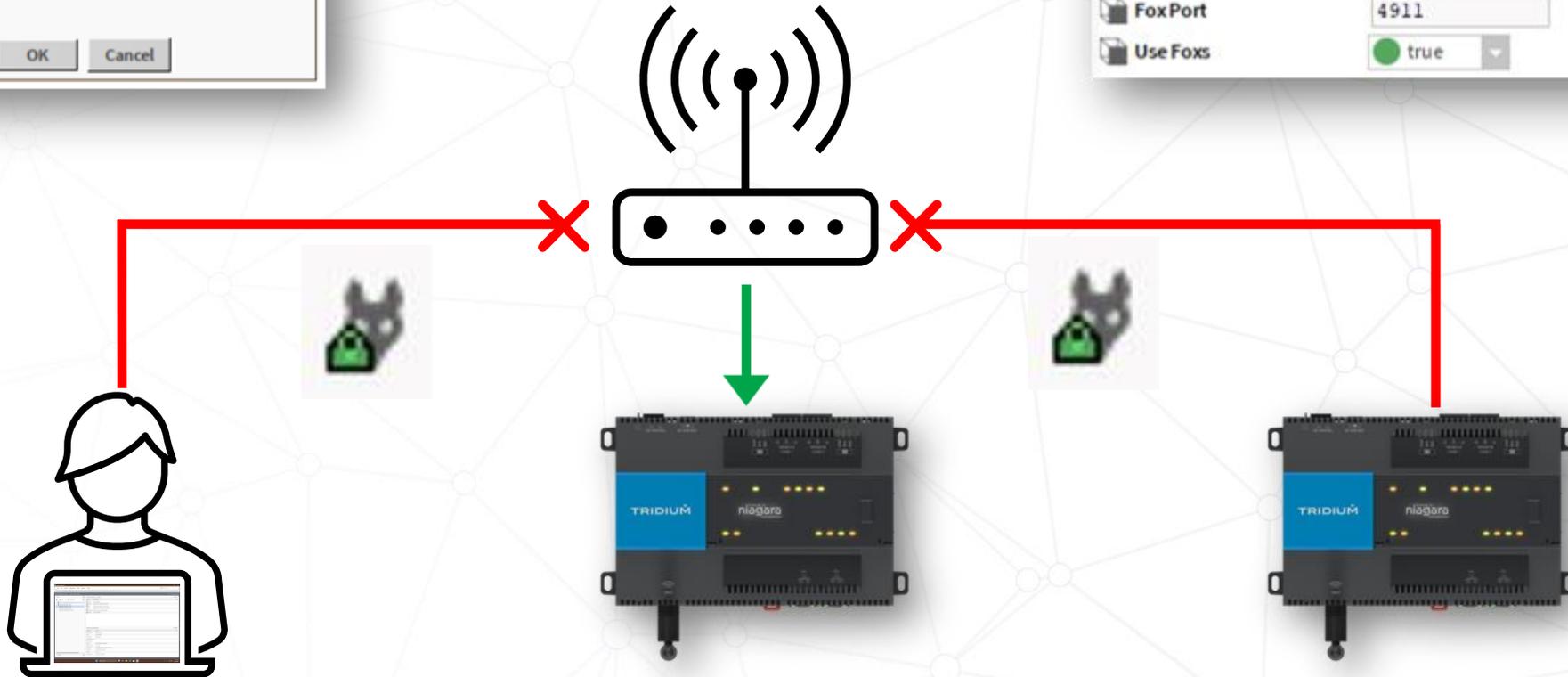
Name: Station_4_14A

Type: Cannot edit

Address: IP 10.47.56.188

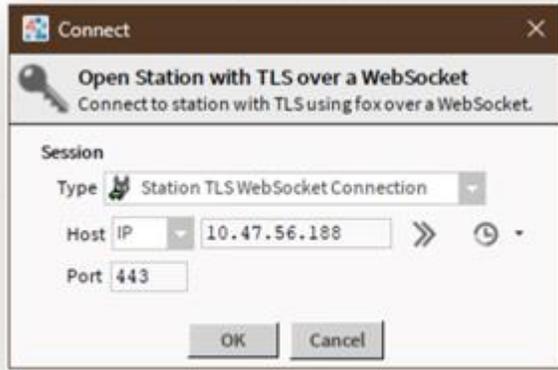
FoxPort: 4911

Use Foxs: true



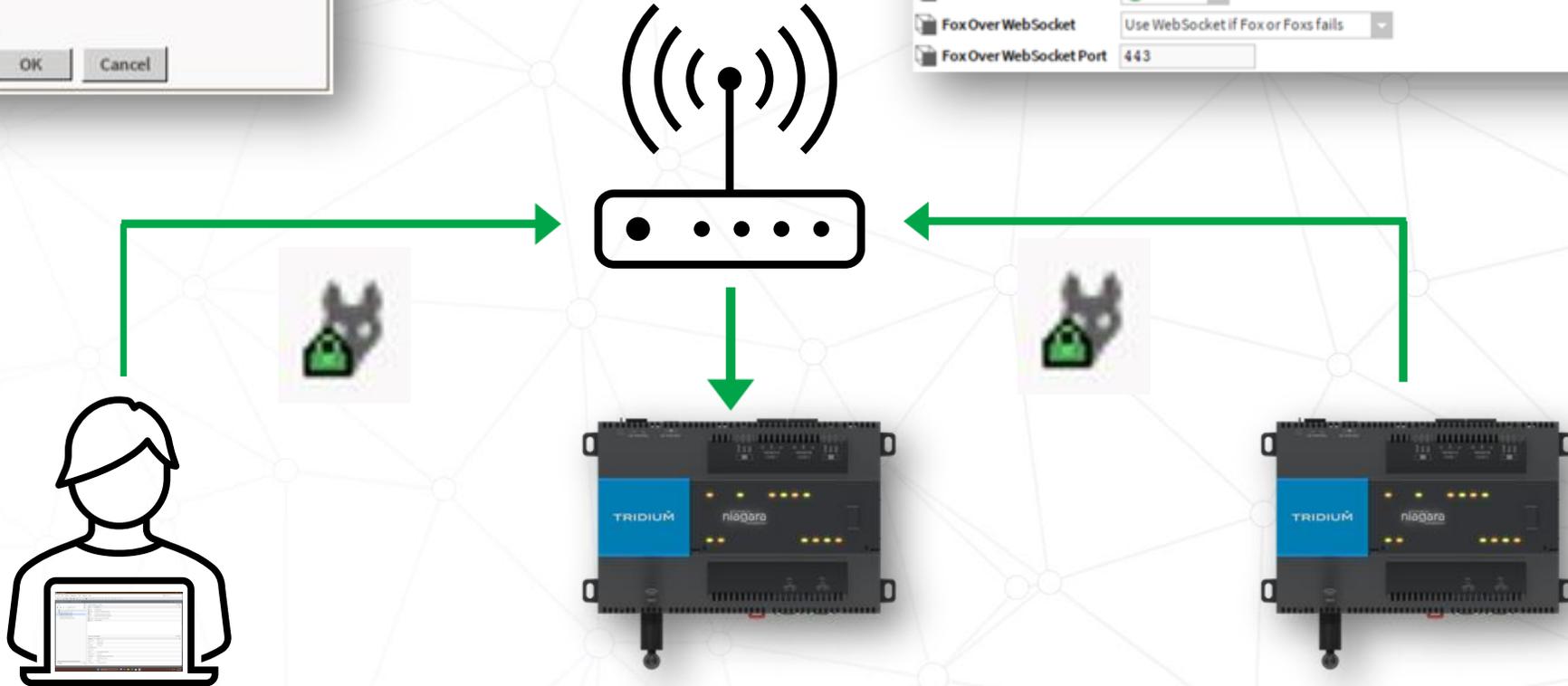


Fox over websocket



Name	Type	Address	Fox Port	Use Foxs	Fox Over WebSocket	Fox Over WebSocket Port
Station_4_14A	Niagara Station	ip:10.47.56.188	4911	true	Use WebSocket if Fox or Foxs fails	443

Name	Station_4_14A
Type	Cannot edit
Address	IP 10.47.56.188
Fox Port	4911
Use Foxs	true
Fox Over WebSocket	Use WebSocket if Fox or Foxs fails
Fox Over WebSocket Port	443





BUser related items

- `BUser.getLoginHistory()`
- Absolute Logoff (`BUserService`)
- Case Insensitive Usernames for LDAP supported

User Login History for admin

Previous login was at 30-Mar-25 11:29 AM BST from 127.0.0.1 as Chrome/134.0 (Windows).
You are connected as admin.

Time	Location	Successful	Secure	Client
30-Mar-25 12:14:04 PM BST	127.0.0.1	true	true	Workbench
30-Mar-25 11:29:32 AM BST	127.0.0.1	true	true	Chrome/134.0 (Windows)
29-Mar-25 9:42:51 PM GMT	127.0.0.1	true	true	Workbench
29-Mar-25 9:36:59 PM GMT	127.0.0.1	true	true	Chrome/134.0 (Windows)
29-Mar-25 3:13:55 PM GMT	127.0.0.1	true	true	Workbench
28-Mar-25 8:19:35 PM GMT	127.0.0.1	true	true	Chrome/134.0 (Windows)
26-Mar-25 4:30:53 PM GMT	127.0.0.1	true	true	Workbench
24-Mar-25 11:16:39 AM GMT	127.0.0.1	true	true	Workbench
24-Mar-25 10:35:55 AM GMT	127.0.0.1	true	true	Chrome/134.0 (Windows)
24-Mar-25 10:35:49 AM GMT	127.0.0.1	false	true	Chrome/134.0 (Windows)
24-Mar-25 10:35:41 AM GMT	127.0.0.1	false	true	Chrome/134.0 (Windows)
21-Mar-25 11:38:36 AM GMT	127.0.0.1	true	true	Workbench

OK



BUnit: QUDT Support

- Semantic specification for
 - **Q**uantity, **U**nit, **D**imension and **T**ype
 - <https://qudt.org>
- Exposed via neql as **n:QudtUnitTag**
- API: **BUnit.getQudtName()**

- Supports





OPC UA Server – User Permissions

- Solutions built on **OpcUaServer** require **users to have permissions on the network** in order to:
 - To subscribe a point
 - Create or edit a monitor
- Preventing 'abuse' by users without permissions in 4.15+

niagara5



Training Refresh

- Updated to Niagara 4.15, with new material for
 - Unit test for APIs and
 - Code Signing using a Hardware Security Module (HSM)



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