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Exploring the Value of Data Modeling

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Agenda

- *Review of tagging in Niagara*
- *What's new in the Niagara Tag Dictionary*
- *What's new in the Haystack 4 Dictionary*
- *Brick Dictionary*
- *Niagara Search Service & NEQL*
- *Niagara Hierarchies*
- *Tag Based PX*
- *Analytics*

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Data Modeling using tags

- Tags are simply meta data applied to Niagara components
- Applying dictionary tags to the components in the station's creates a data model.
- Tags can be implied via a smart dictionary or direct
- Tag components
  - Dictionary (xx:), Tag name (foo) combined Tag ID (xx:foo)
  - Can be a marker or value tag
- Data Modeling terms
  - Vocabulary = Naming
  - Taxonomy = Classification
  - Ontology = Relationships
  - Query = Search

Services

- Tag Dictionary Service
  - Tag Dictionaries
- Hierarchy Service
  - Hierarchies
- Analytic Service
  - Alerts
  - Definitions
  - Pollers
- Search Service
- Dashboard Service

Service Manager

Name	Status	Service Type
AnalyticService	{ok}	analytics:AnalyticService
DashboardService	{ok}	dashboard:DashboardService
HierarchyService	{ok}	hierarchy:HierarchyService
SearchService	{ok}	search:SearchService
TagDictionaryService	{ok}	tagdictionary:TagDictionaryService

Niagara Services

Video Demonstration

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Niagara Workbench

File Edit Search Bookmarks Tools Window Help

Quick Search

My Host : HONCLD20DLYD3 (NS2024) : Station (NS2024)

Station Summary

Nav

Station (NS2024)

- Alarm
- Config
  - Services
  - Drivers
  - NS2024
- Files
- Hierarchy
- History

Palette

Station (NS2024)

6 objects

Name	Description
Alarm	Alarm Database
Config	The station configuration database
Files	File System accessed over Fox session
Spy	Diagnostics information for remote VM
Hierarchy	Hierarchy views of remote station
History	History database

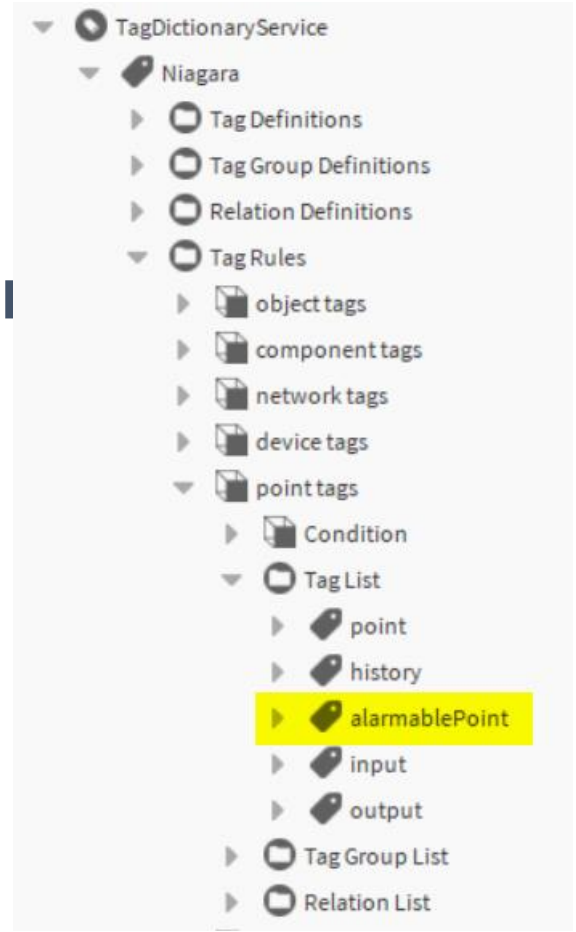
Summary Properties

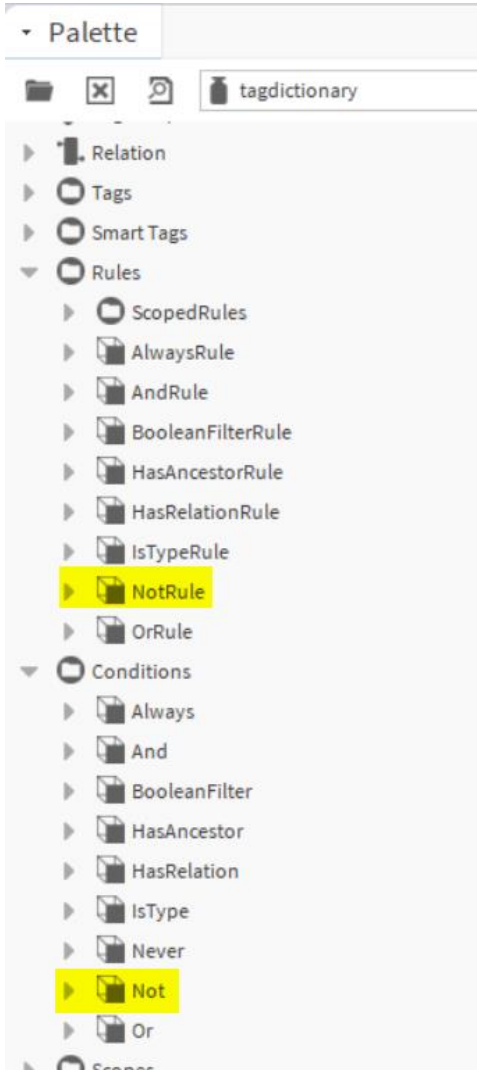
11 objects

Property	Value
Station Name	NS2024
Host	/192.168.3.15
Host Model	Workstation
Host Model Version	
Host Product	
Host Id	Win-3B17-6CEC-B2B5-FC22
Niagara Version	4.14.0.128
Java Version	OpenJDK 64-Bit Server VM 25.402-b06

What's new in the n: tag dictionary

- n:alarmablePoint
  - An implied tag added to a control:ControlPoint with an Alarm:AlarmSourceI
- Not Condition
  - Rules/ScopedRules : ScopedNotRule
  - Rules : NotRule
  - Conditions : Not





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What's new n: dictionary alarmablePoint

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Niagara Workbench

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What's new n: dictionary Not

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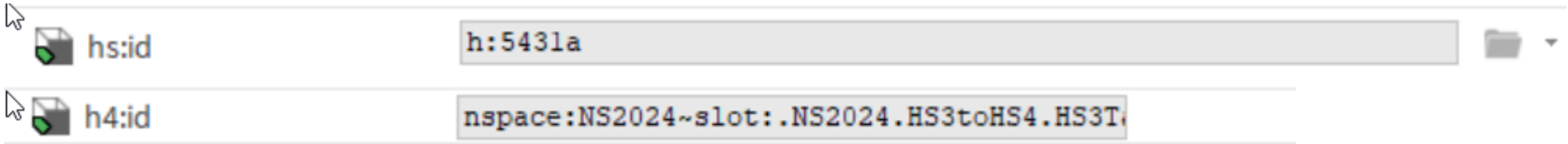
Haystack 4 | h4:

- Changes from Haystack 3 to Haystack 4
  - Of the 230 Haystack 3 tags 50 have been modified
  - https://project-haystack.org/doc/docHaystack/Changes3to4
- Direct Haystack 3 tags can be migrated to Haystack 4
  - These are only for direct tags, hs: tags remain in place
- The implied h4:id tags use the nspace ID vs the hs:id handle ord



Haystack 4 dictionary & hs: to h4 migration

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Brick tag dictionary | bk:

- Is an instance of the standard Niagara Smart Tag Dictionary
- Does not contain any custom properties or actions
- A Brick schema organizes entities of a building into a class hierarchy
- *NOTE*: The Haystack smart tag dictionary and the Brick tag dictionary can run simultaneously
- The Brick tag dictionary can be updated as needed
- *NOTE does not support the RDF model
- https://docs.brickschema.org/intro.html

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Brick Dictionary

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Niagara Workbench

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Niagara Entity Query Language (NEQL)

- NEQL provides a mechanism for querying tagged entities
- A NEQL search only queries for tags and relations
- NEQL supports traversing defined entity relationships
- Queries can resolve against system DB (Niagara 4.6 and later)
- Results can be used in a collection table on a PX Graphic
- BQL select query can be appended to a NEQL query (|BQL:select)
  - *not available in Search Service

Search Service

- Search for tags and relationships from numerous places
  - Quick Search in Workbench
  - Search sidebar in Workbench & WebView
  - Directly from Search Service
  - Embedded into a PX page
- Search results from sidebar have engineering advantages
  - Multi select and add to a batch edit job : Workbench
  - Multi select : Workbench & WebView
  - Multi select & link/relate : WebView
- *Can also use BQL to find entity but not projection

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Search Service

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Fast Engineering Search Workbench WebView

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Niagara Workbench

File Edit Search Bookmarks Tools Window Help

m:SpaceTemp

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Hierarchies

- Provide a dynamic navigation layer to the Niagara Framework
- Use NEQL to query for tags and relations
- Create custom navigation trees that are dynamic and not based on the file tree structure
- Can be assigned to different user roles (Admin, Operator, ESG Manager)
- Drag and drop points to create a quick history Chart View

Hierarchies

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Tag-Based NEQL Bindings

- Use NEQL queries to resolve Ords instead of using more traditional Ord types, such as slot PathOrds.
- The use of Regex and a custom dictionary to normalize disparate names (SpaceTemp, spaceTemp, SPACETMP, RoomTemp)
- Results can be located anywhere in the station (BACnetNetwork, LonNetwork)
- Use multiple tag dictionaries to active engineering goals

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Tag-based PxViews neqlize Ords

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Quick Search

My Host : HONCLD20DLYD3 (NS2024) : Station (NS2024) : Config

AX Property Sheet

Nav

Station (NS2024)

- Alarm
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Property Sheet

Config (Station)

Station Name	NS2024
Sys Info	
Services	Service Container
Drivers	Driver Container
NS2024	Folder

Refresh Save

Niagara Analytics Framework

- The Analytics tag dictionary is required
  - Direct a:a tags will be added to control points as needed or manually
- Where is data processed?
  - Local station (JACE, Edge Device, Supervisor)
  - *Virtual Ords are not supported*
- Processes historical trend data
  - Can perform Rollup and Aggregation
  - Missing data management
  - Baselining
- Real-time data processing
  - Sum, Min, Max, Avg

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Analytic Proxy Points

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Nav

Config

Property Sheet

Actions & Topics

Slot Details

- Config
- Files
- Histories
- Site
- AHUs
- hasPxView
- alarmablePoint
- NotBooleanPoint

Station Name

NS2024

Sys Info

Services

Service Container

Drivers

Driver Container

NS2024

Folder

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Analytics Web Chart

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Refresh Save

Q&A

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