TRIDIUMtalk

RELATION MANAGER & TAGGING IN niagara 4.15

niagara 4.15
FEATURE PREVIEW

TRIDIUM talk

JUN
26

2025

Relation Manager & Tagging in Niagara 4.15

Learn about Niagara 4.15's enhanced support for Project Haystack 4 and how small, intentional actions within the Niagara Framework can significantly improve the metadata quality of your applications.

Zoom

Jun 26 - Jun 26, 2025 / 11 AM ET

Kevin Mamajek, *Product Offering Manager*
Tridium, Inc.

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Housekeeping

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TRIDIUM talk

Questions should be submitted via the Q&A tab

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TRIDIUM talk

We are recording this session

Will share the example station In about 2 Weeks (I'm still working on it, I'm always still working on it)

www.tridium.com/en/resources/events

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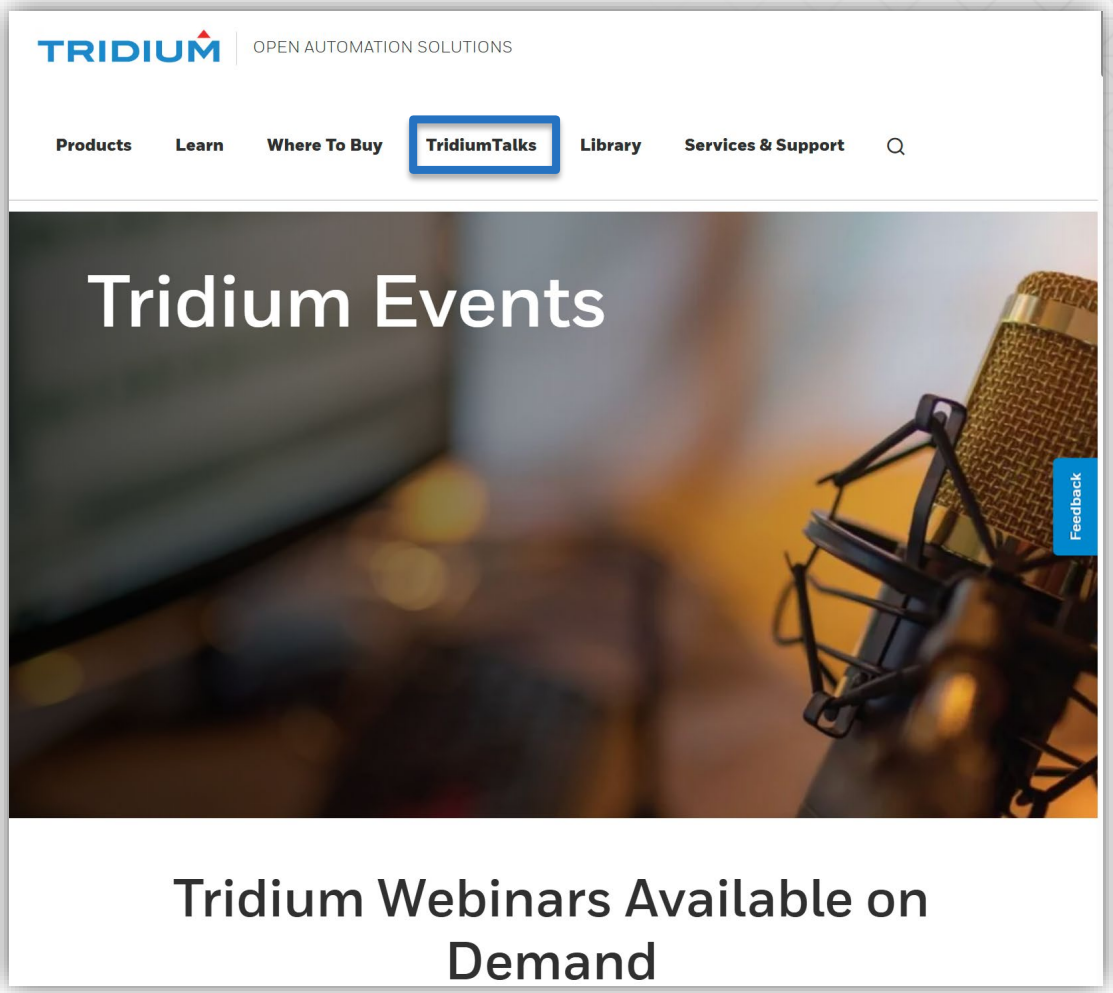
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Before We Begin

Quick Review and a technical word from our sponsors

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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

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Services

Tag Dictionary Service
- Tag Dictionaries

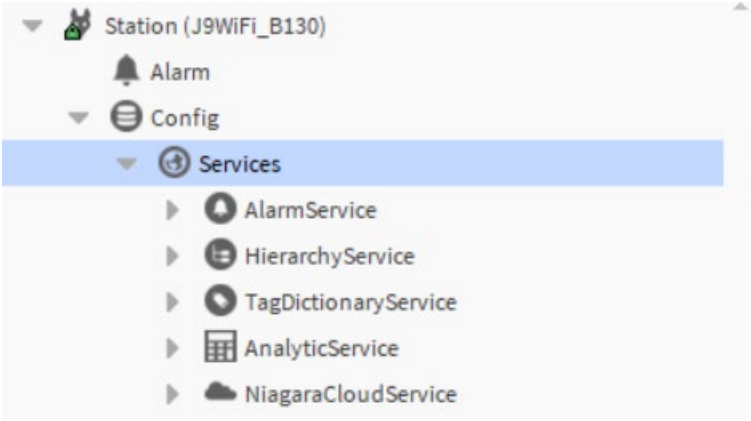
Hierarchy Service
- Hierarchies

Analytic Service
- Alerts
- Definitions
- Pollers

Search Service

Px Pages

Niagara Cloud Service



Fun Fact: Niagara 4 from the inception uses tags internally

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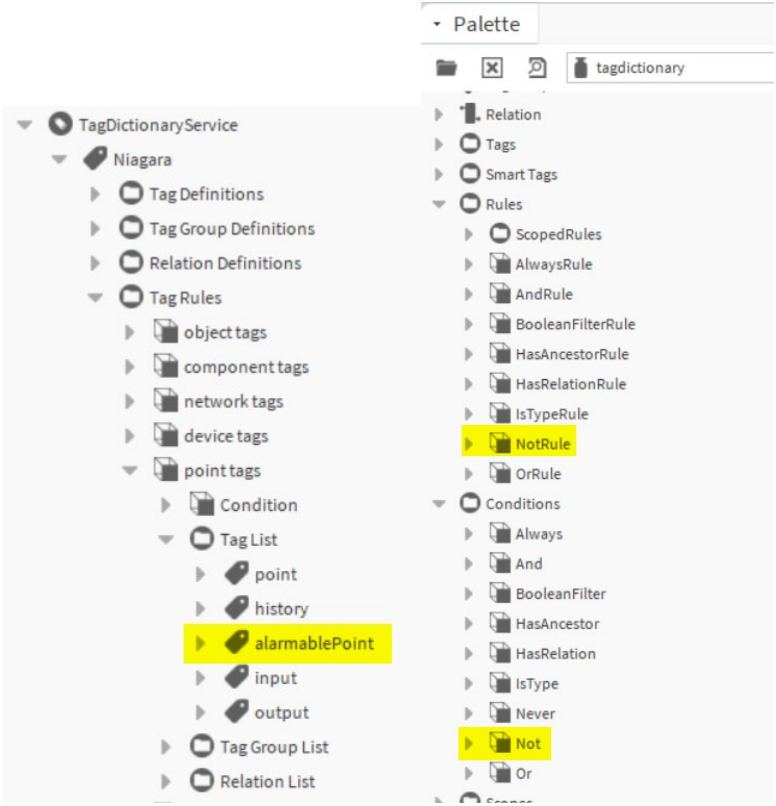
What's new in the n: tag dictionary

n:alarmablePoint

- An implied tag added to a control:ControlPoint with an Alarm:AlarmSourceExt

Not Condition

- Rules/ScopedRules : ScopedNotRule
- Rules : NotRule
- Conditions : Not



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Haystack 4 | h4:

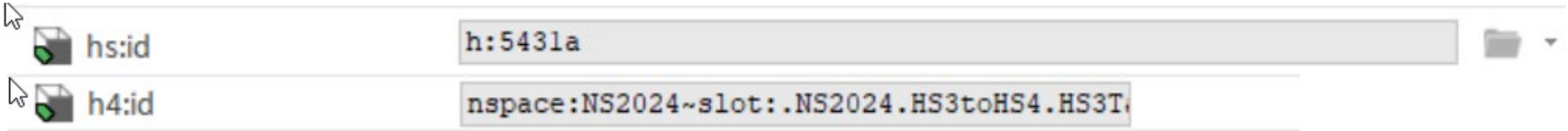
Changes from Haystack 3 to Haystack 4

- 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



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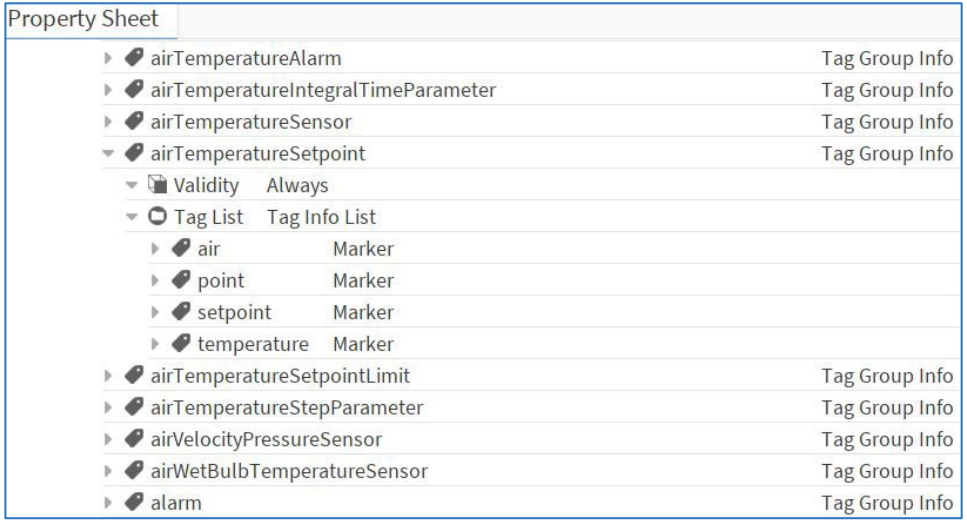
Brick Tag Dictionary

Niagara 4.14 release

- Derived from Brick 1.3.0
  - 486 tags
  - 1137 tag groups
  - 16 relations

Niagara 4.15 release

- Derived from Brick 1.4.0
  - 430 tags
  - 1345 tag groups
  - 17 relations



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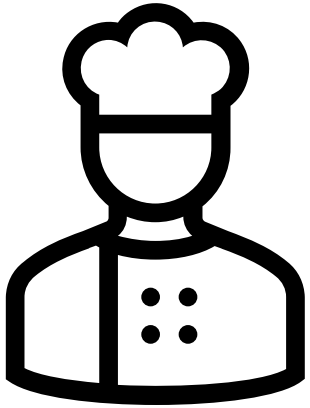
Ability

Synonyms: potential, knack, **aptitude**, **power**, facility, competence, **skill**, **proficiency**



Use our Niagara Tagging cooking skills

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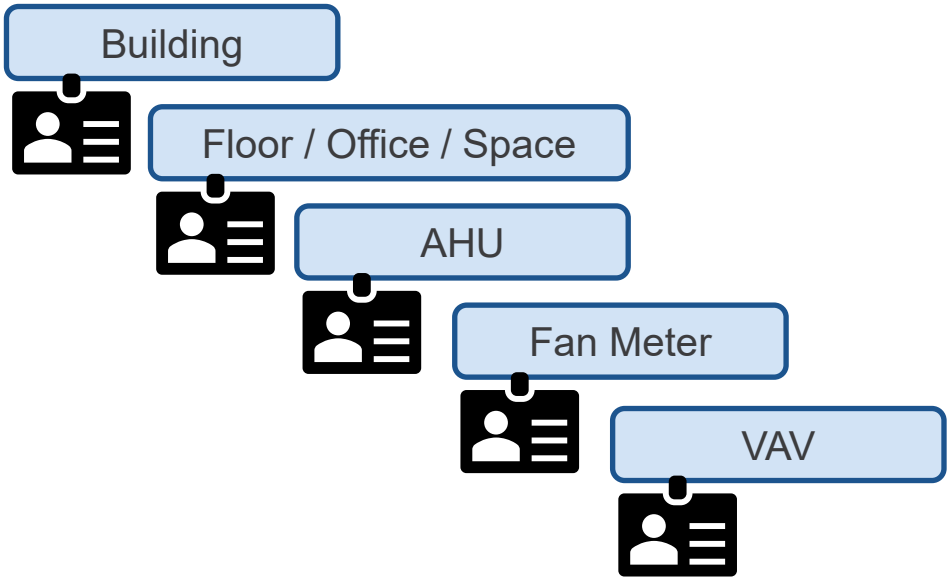
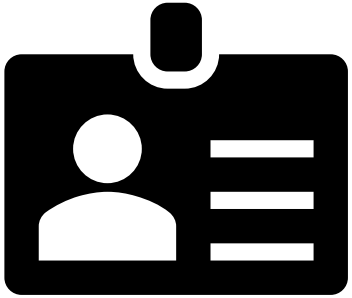
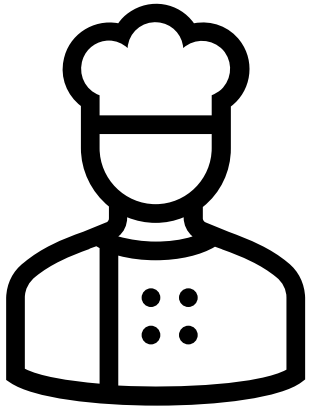
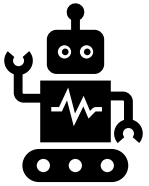






Tag Rules



Ability

Synonyms: ***potential***, knack, **aptitude**, **power**, facility, competence, **skill**, **proficiency**

Identify

Synonyms: **classify**, **recognize**, **describe**, **label**, determine, designated, **mark**

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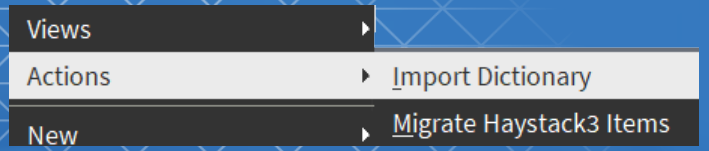
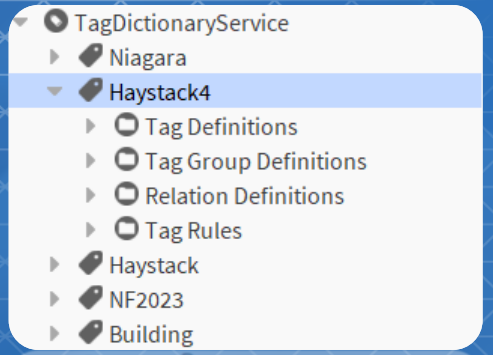
project-haystack.org/doc

Using Haystack 4 for tagging

Niagara 4.13 =>

https://project-haystack.org/doc/lib-phIoT/vav





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project-haystack.org/doc

def

vav

Variable air volume terminal unit. VAV systems use a constant air temperature with a variable air flow rate. See VAVs chapter.

meta

children	See below
def	vav
doc	See above
is	airTerminalUnit
lib	lib:phIoT
wikipedia	https://en.wikipedia.org/wiki/Variable_air_volume

usage

vav **equip**

supertypes

marker	Marker labels a dict with typing information
entity	Top-level dicts with a unique identifier
equip	Equipment asset
airTerminalUnit	Equipment in air distribution systems which terminate at the space
input	Entity inputs a substance which flows from another entity
air-input	Entity inputs air which flows from another entity
elec-input	Entity inputs electricity which flows from another entity
output	Entity outputs a substance with flows to other entities
air-output	Entity outputs air to other entities

project-haystack.org/doc

tags

airRef	Air flows from the referent to this entity
dis	Display name for an entity
ductConfig	Ductwork configuration
elecRef	Electricity flows from the referent to this entity
equipRef	Reference to equip which contains this entity
heatingProcess	Processed used to heat a substance
id	Defines the unique identifier of an entity in system using a `ref` value type
siteRef	Reference to site which contains the entity
spaceRef	Reference to space which contains this entity
systemRef	Reference to system
vavAirCircuit	How does the VAV pull in air
vavModulation	How does VAV modulate the temp based on duct pressure

children

- **discharge duct equip**
- **ductArea sp point**
- **hvacMode sp point**
- **inlet duct equip**
- **perimeterHeat cmd point**
- **reheat cmd point**
- **thermostat equip**

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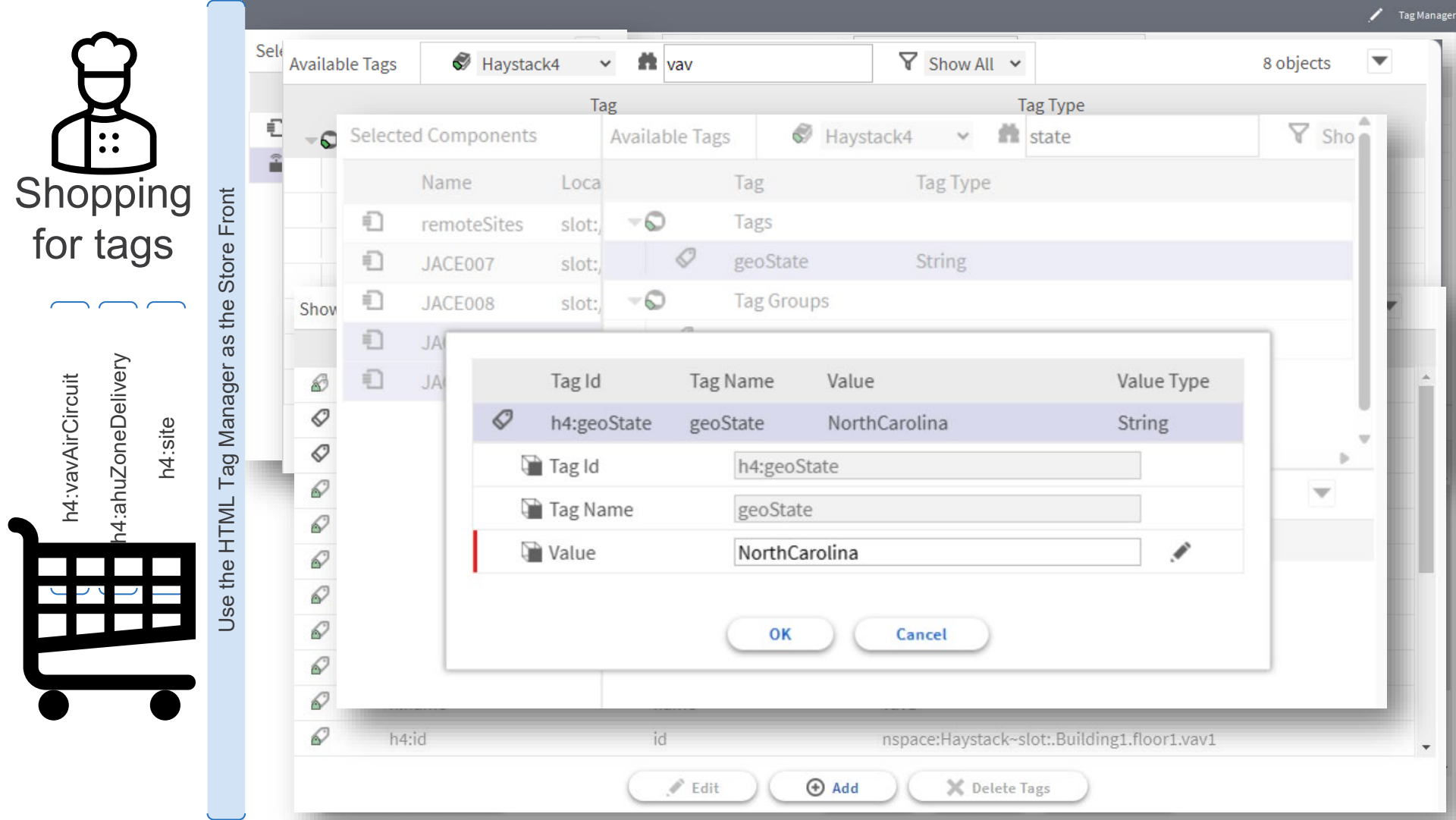
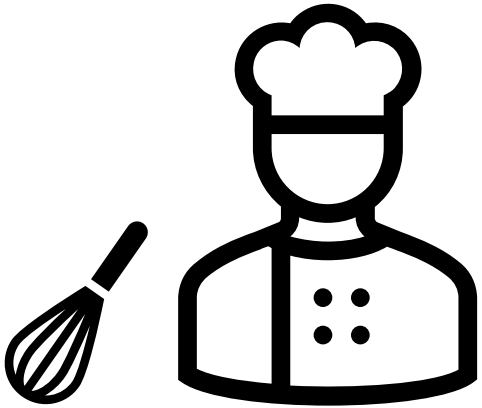

Shopping for tags
h4:vavAirCircuit
h4:ahuZoneDelivery
h4:site
Use the HTML Tag Manager as the Store Front
Available Tags
Haystack4
vav
Show All
8 objects
Tag
Tag Type
Selected Components
Available Tags
Haystack4
state
Name
Tag
Tag Type
remoteSites
Tags
JACE007
geoState
String
JACE008
Tag Groups
Tag Id
Tag Name
Value
Value Type
h4:geoState
geoState
NorthCarolina
String
Tag Id
h4:geoState
Tag Name
geoState
Value
NorthCarolina
OK
Cancel
h4:id
id
nspace:Haystack~slot:.Building1.floor1.vav1
Edit
Add
Delete Tags

Building

h4:site	Value
h4:geoAddr	3951 Westerre Pkwy
h4:geoCity	Richmond
h4:geoState	VA
h4:geoPostalCode	23233



Floor / Office / Space

h4:hvacZoneSpace	h4:space
	h4:hvacZonePoints
	h4:hvac
	h4:airQualityZonePoints

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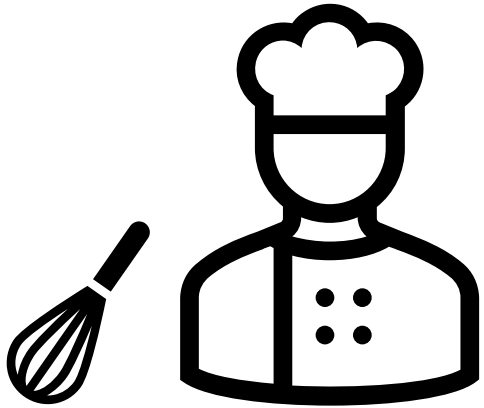
AHU

h4:ahu
h4:air
h4:ahuZoneDelivery
chilledBeamZone
h4:directZone
h4:multiZone
h4:vavZone

h4:airHandlingEquip
h4:gas
h4:multiZone
h4:equip

h4:id nspace:Haystack~slot:.Building1.AHU1



airHandlingEquip HVAC equipment that conditions and delivers air via one or more fans

Fan Meter

h4:acElecMeter
h4:submeter

h4:equip
h4:elec
h4:ac
h4:meter
h4:phenomenon

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VAV

h4:vavAirCircuit

h4:air

h4:airTerminalUnit

h4:gas

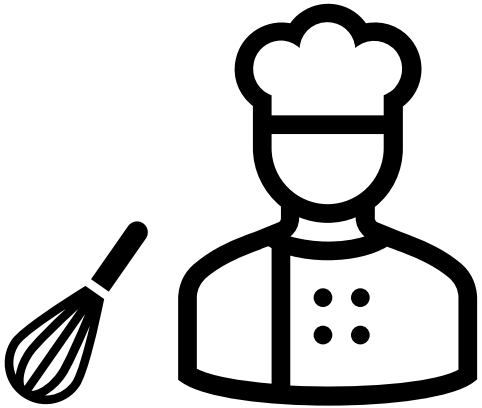
h4:vav

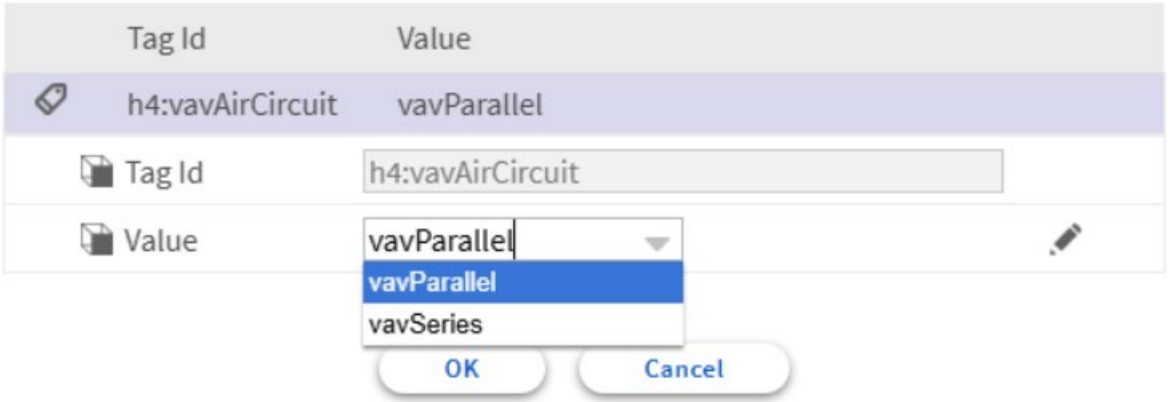
h4:equip

h4:vavParallel

h4:parallel

h4:id nspace:Haystack~slot:.Building1.floor1.vav1





airTerminalUnit Equipment in air distribution systems which terminate at the space

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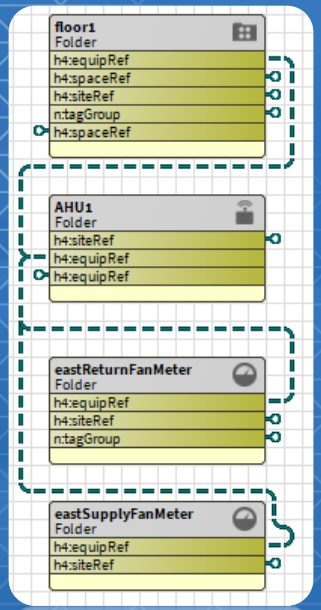
Using Relations and References



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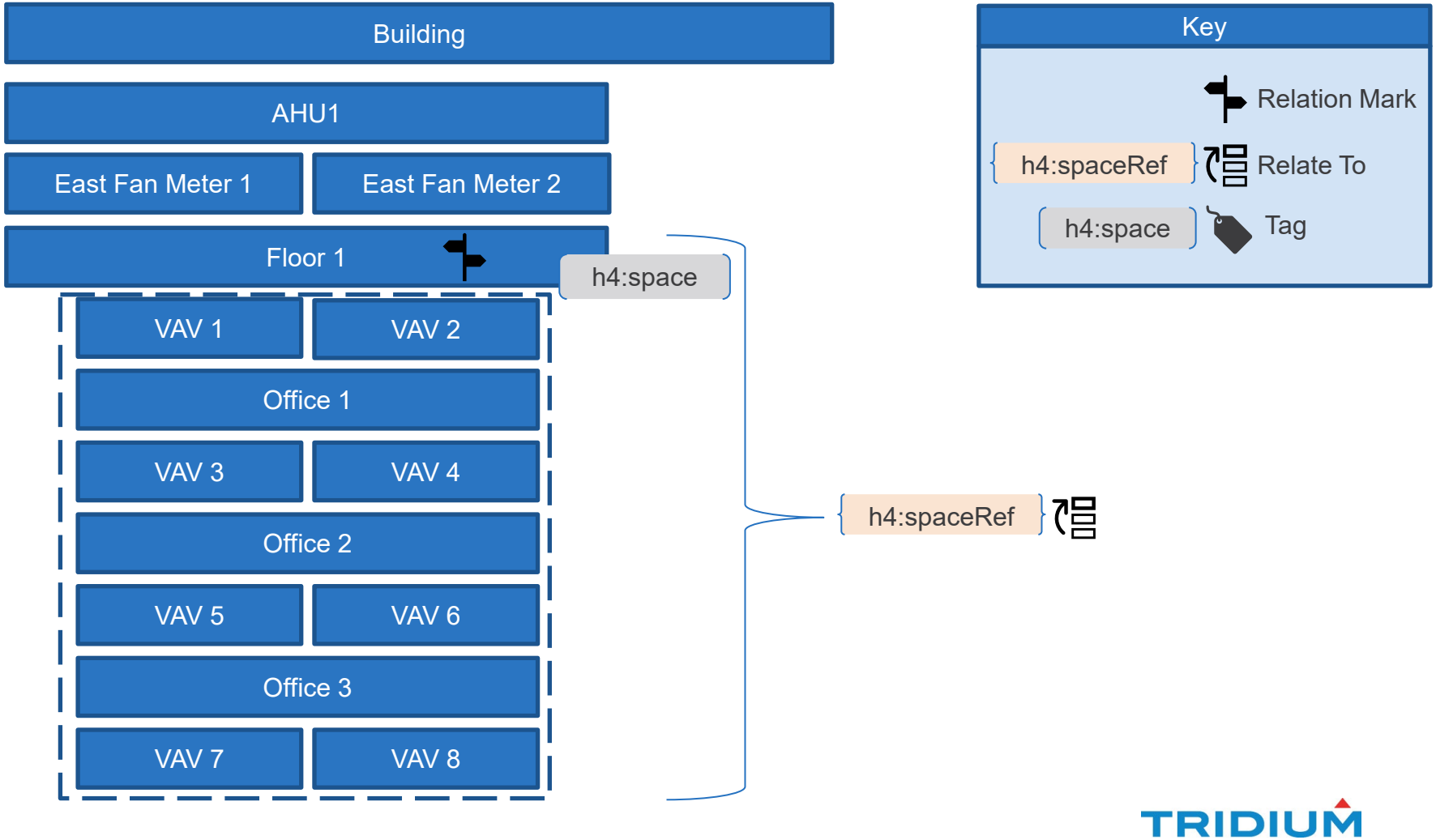
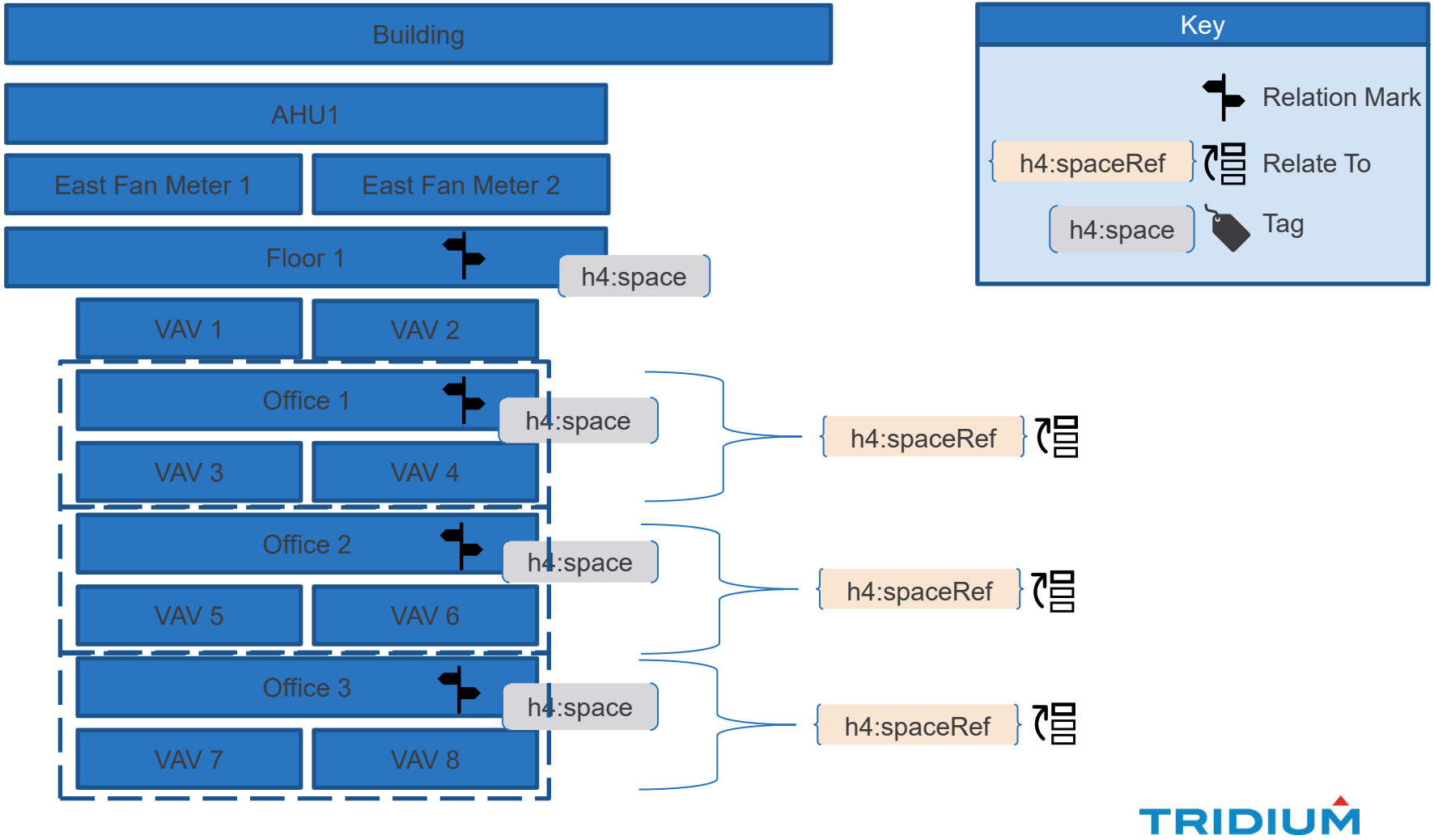
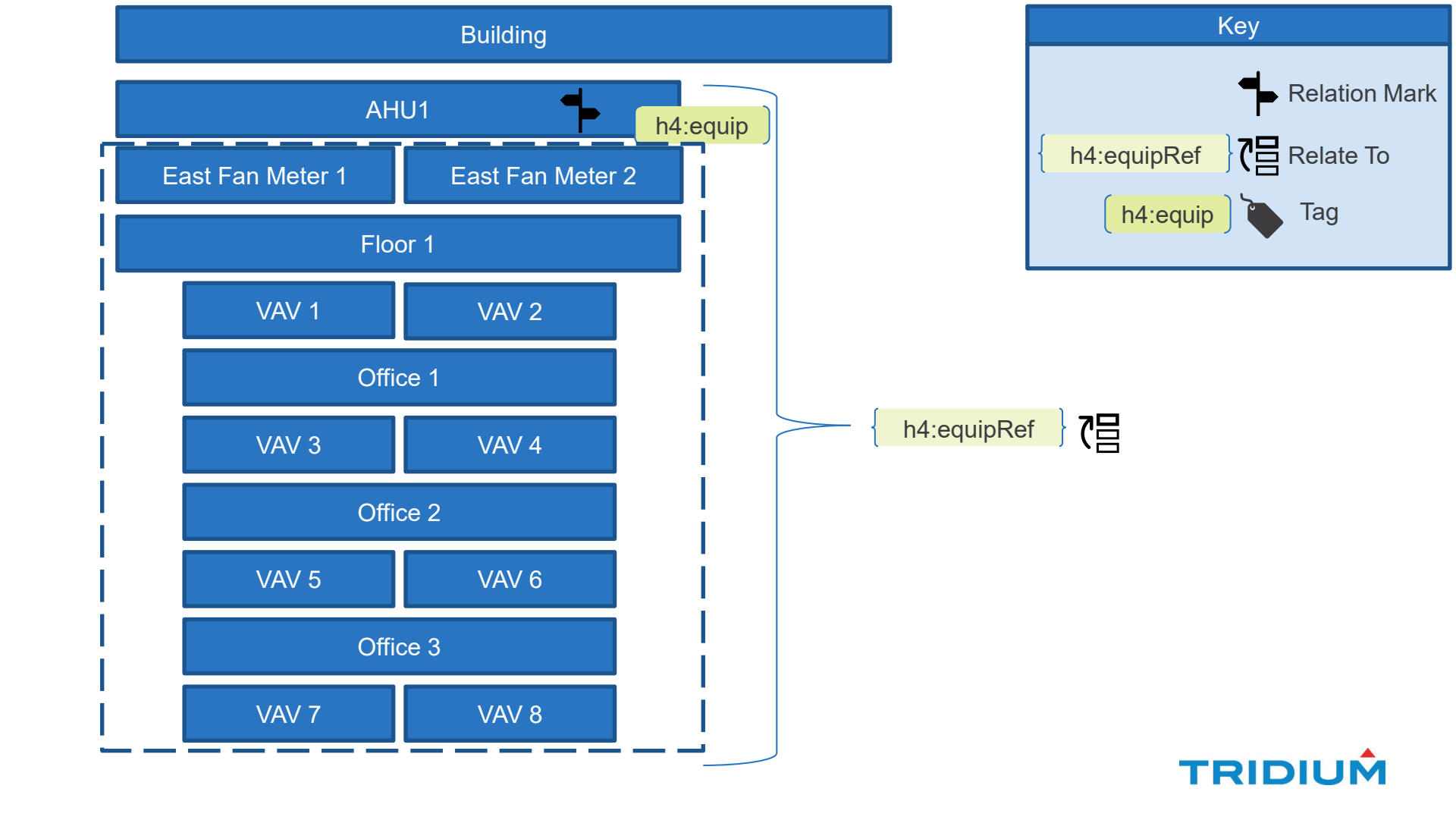
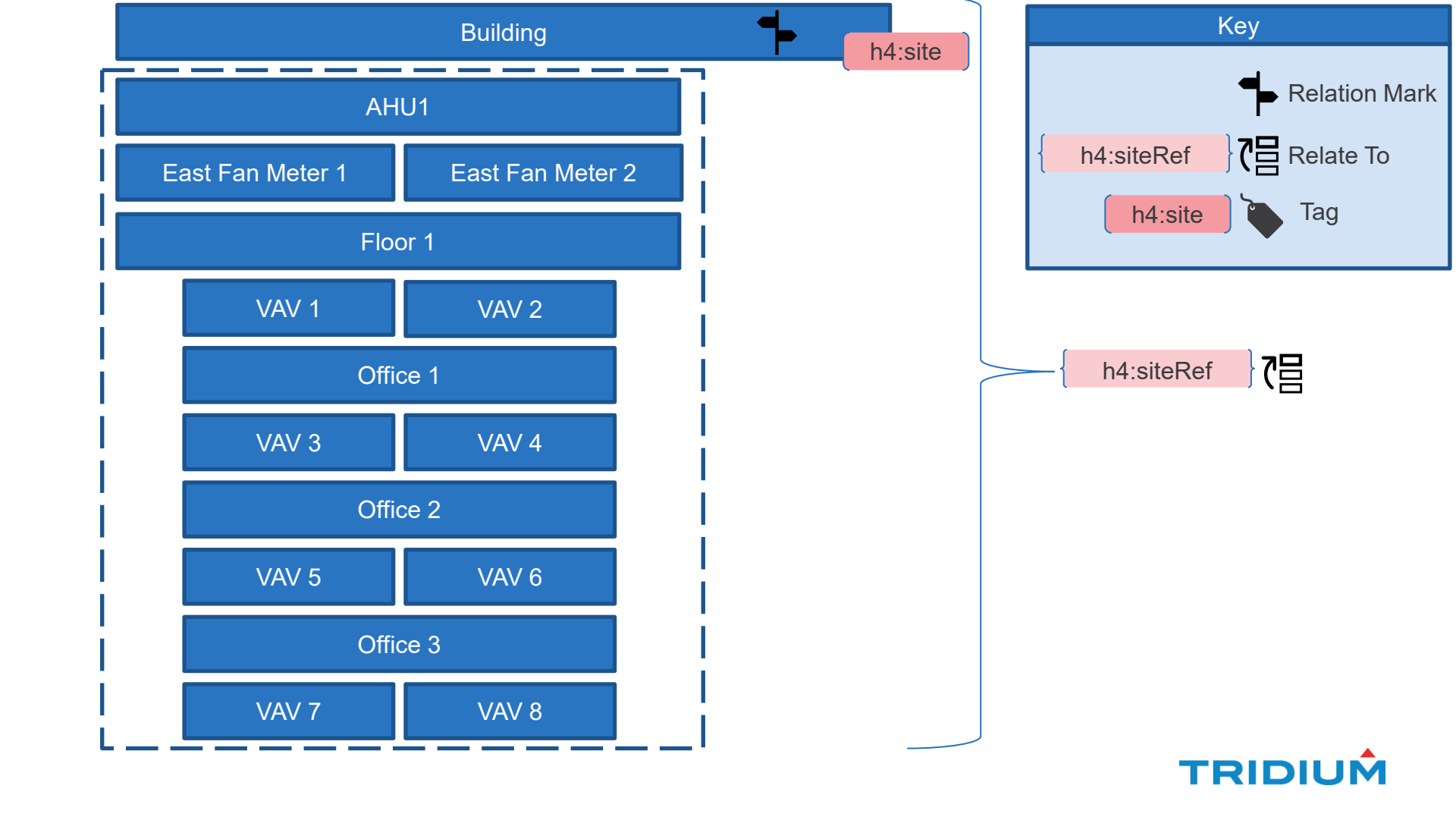

Building
AHU1
East Fan Meter 1
East Fan Meter 2
Floor 1
h4:space
VAV 1
VAV 2
Office 1
VAV 3
VAV 4
Office 2
VAV 5
VAV 6
Office 3
VAV 7
VAV 8
h4:spaceRef
Key
Relation Mark
h4:spaceRef
Relate To
h4:space
Tag

TRIDIUM


Building
AHU1
East Fan Meter 1
East Fan Meter 2
Floor 1
h4:space
VAV 1
VAV 2
Office 1
h4:space
VAV 3
VAV 4
Office 2
h4:space
VAV 5
VAV 6
Office 3
h4:space
VAV 7
VAV 8
h4:spaceRef
h4:spaceRef
h4:spaceRef
Key
Relation Mark
h4:spaceRef
Relate To
h4:space
Tag
TRIDIUM


Building
AHU1
h4:equip
East Fan Meter 1
East Fan Meter 2
Floor 1
VAV 1
VAV 2
Office 1
VAV 3
VAV 4
Office 2
VAV 5
VAV 6
Office 3
VAV 7
VAV 8
h4:equipRef
Key
Relation Mark
h4:equipRef
Relate To
h4:equip
Tag
TRIDIUM


Building
h4:site
AHU1
East Fan Meter 1
East Fan Meter 2
Floor 1
VAV 1
VAV 2
Office 1
VAV 3
VAV 4
Office 2
VAV 5
VAV 6
Office 3
VAV 7
VAV 8
h4:siteRef
Key
Relation Mark
h4:siteRef
Relate To
h4:site
Tag
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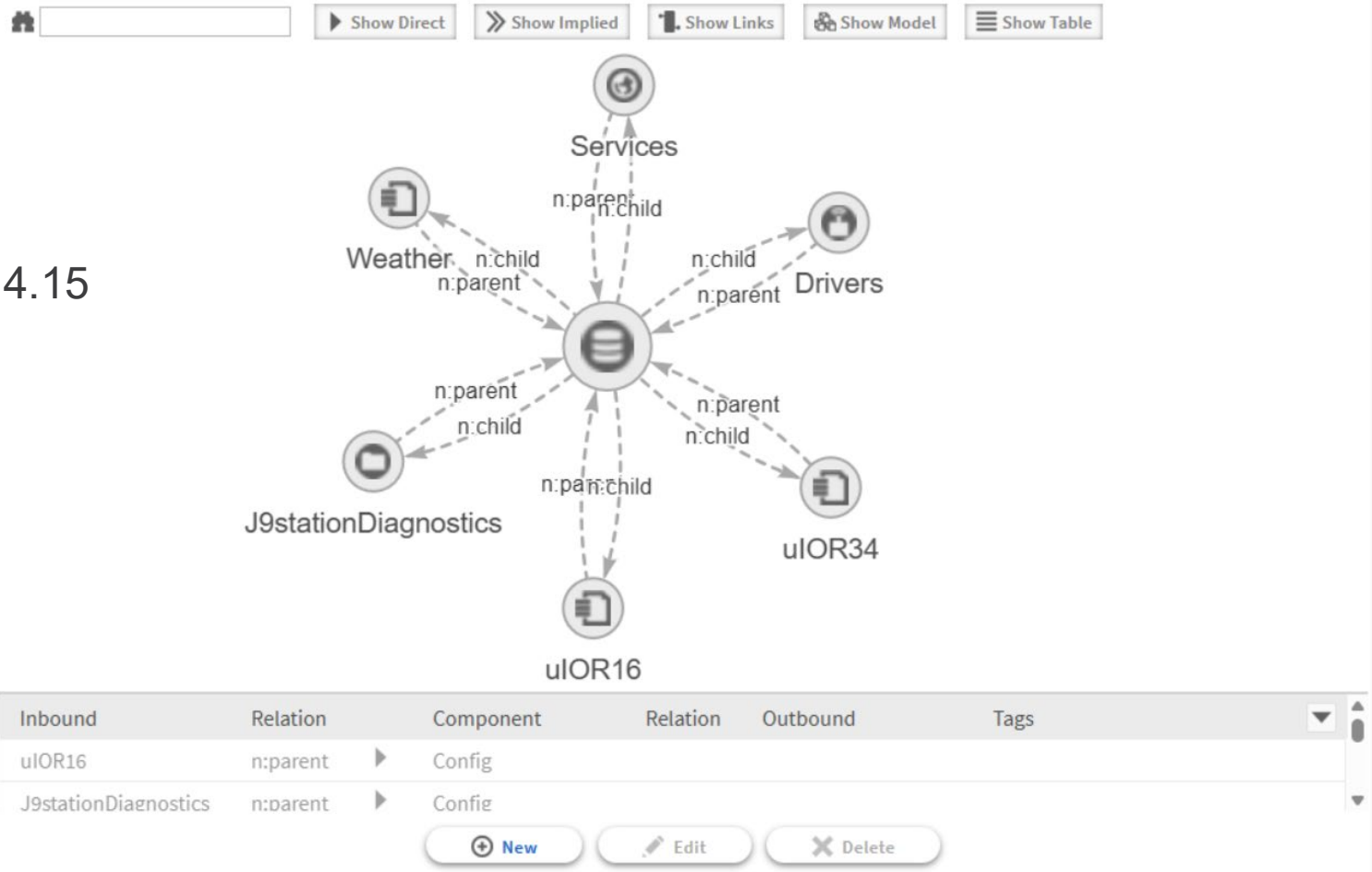
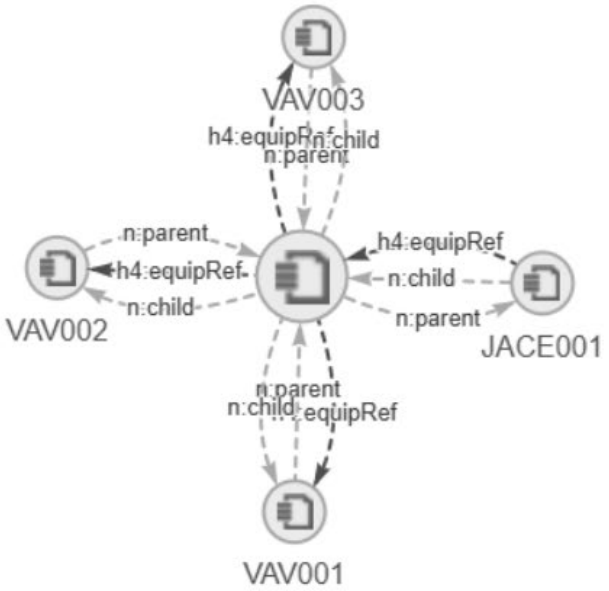
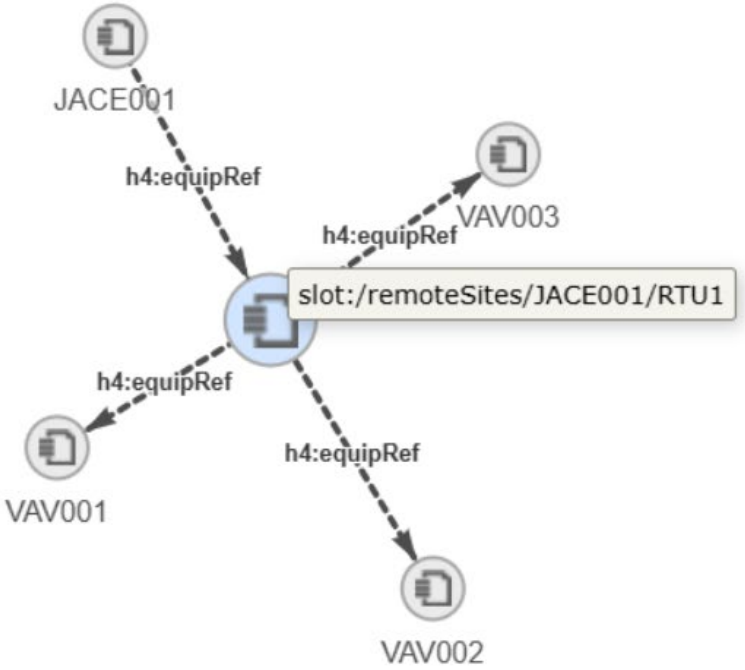
New to Niagara 4.15



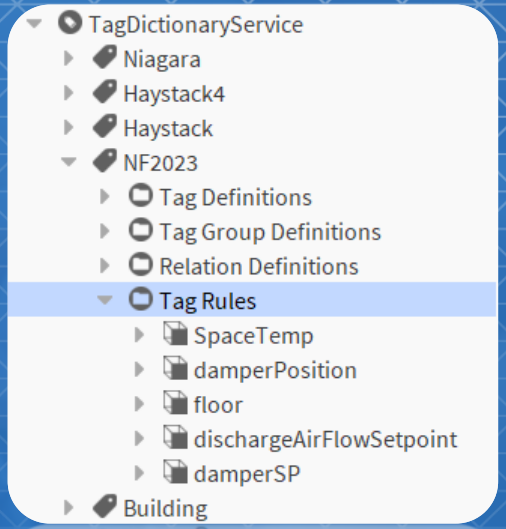
New to Niagara 4.15



New to Niagara 4.15



Using Tag Rules



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SpaceTemp

SpcTmp

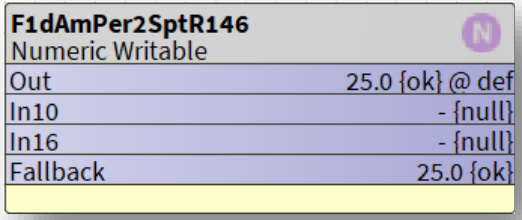
SpaceTmp

SpaceTemperature

spaceTemperature

spacetemperature

itIsAtemp



Space Temperature

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If the Name contains the letters roomtemp, all in a row, somewhere in the name itself

Regex Ignore Case	(?i)	
Wild Card open/close	.*	.*
tag name	n:name	
operator	like	
characters	roomtemp	

Filter `n:name like '(?i).*roomtemp.*'`

```
n:name like '(?i).*roomtemp.*'
```

local:|module://docJdk/doc/jdk-se/java/util/regex/Pattern.bajadoc

http://xenon.stanford.edu/~xusch/regexp/

If the Name contains the letters damper, AND spt OR cmd in any group of letters somewhere in the name itself

Regex Ignore Case	(?i)			
Wild Card open/close	.*	.*		
tag name	n:name			
operator	like	and	or	
characters	damper	spt	cmd	

Filter

n:name	like	‘	(?i)	.*	damper	.*	‘	and
n:name	like	‘	(?i)	.*	spt	.*	‘	or
n:name	like	‘	(?i)	.*	cmd	.*	‘	

```
(n:name like '(?i).*damper.*') and ((n:name like
'(?i).*spt.*') or (n:name like '(?i).*cmd.*'))
```

If the Name contains the letters damper and **NOT** *spt* or *cmd* in groups of letters somewhere in the name itself

Regex Ignore Case	(?i)									
Wild Card open/close	.*	.*								
tag name	n:name									
operator	like	and	or	not						
characters	damper	spt	cmd							

Filter	n:name	like	‘	(?i)	.*	damper	.*	‘	and	not
	n:name	like	‘	(?i)	.*	spt	.*	‘	or	
	n:name	like	‘	(?i)	.*	cmd	.*	‘		

```
(n:name like '(?i).*damper.*') and not((n:name like
    '(?i).*spt.*') or (n:name like '(?i).*cmd.*'))
```

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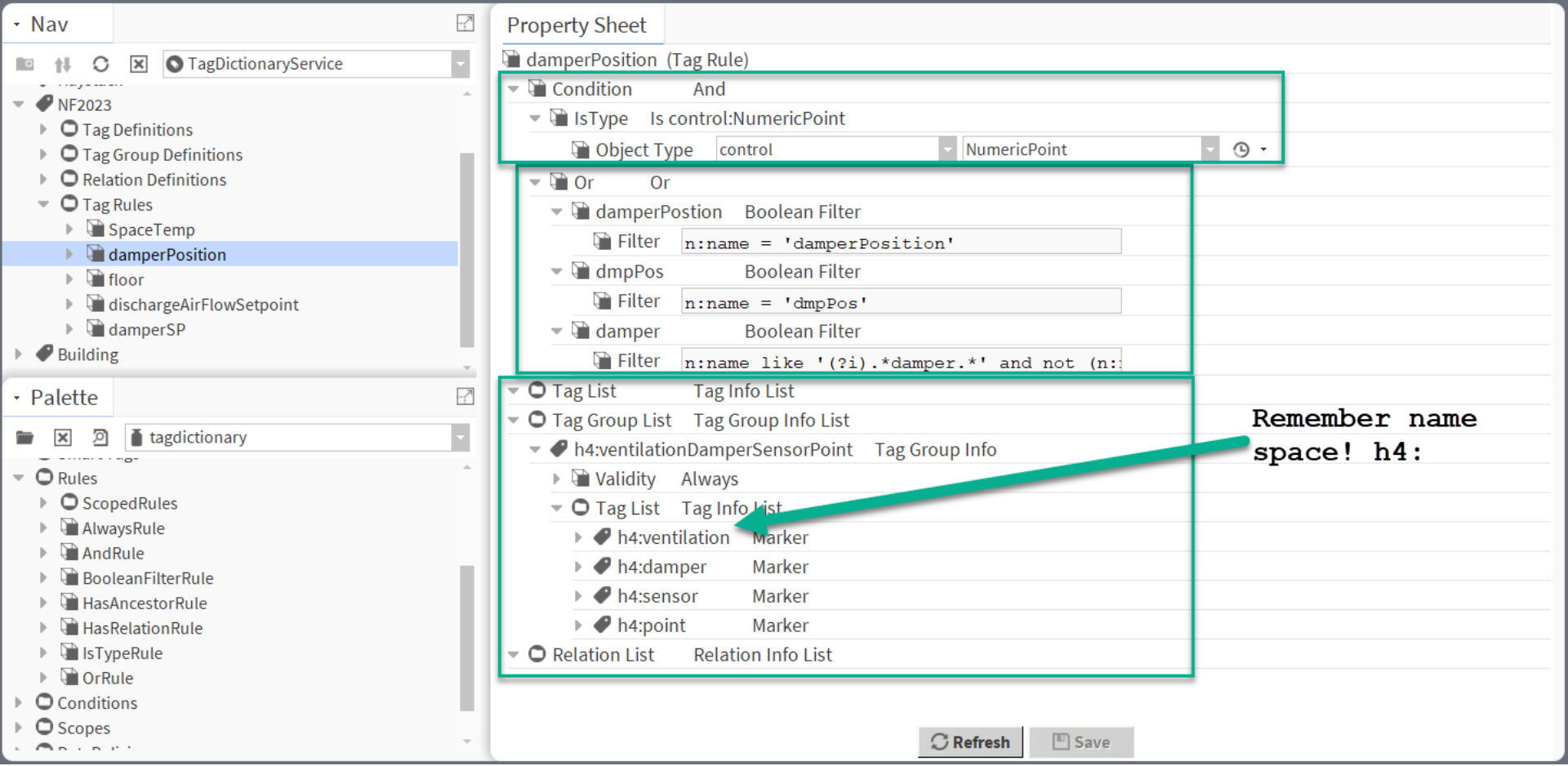
Nav
TagDictionaryService
NF2023
Tag Definitions
Tag Group Definitions
Relation Definitions
Tag Rules
SpaceTemp
damperPosition
floor
dischargeAirFlowSetpoint
damperSP
Building
Palette
tagdictionary
Rules
ScopedRules
AlwaysRule
AndRule
BooleanFilterRule
HasAncestorRule
HasRelationRule
IsTypeRule
OrRule
Conditions
Scopes
Property Sheet
damperPosition (Tag Rule)
Condition And
IsType Is control:NumericPoint
Object Type control NumericPoint
Or Or
damperPostion Boolean Filter
Filter n:name = 'damperPosition'
dmpPos Boolean Filter
Filter n:name = 'dmpPos'
damper Boolean Filter
Filter n:name like '(?i).*damper.*' and not (n:
Tag List Tag Info List
Tag Group List Tag Group Info List
h4:ventilationDamperSensorPoint Tag Group Info
Validity Always
Tag List Tag Info List
h4:ventilation Marker
h4:damper Marker
h4:sensor Marker
h4:point Marker
Relation List Relation Info List
Remember name space! h4:
Refresh
Save

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Now that we talked Tags and Relations

What can we do with it?

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Niagara **Hierarchy**

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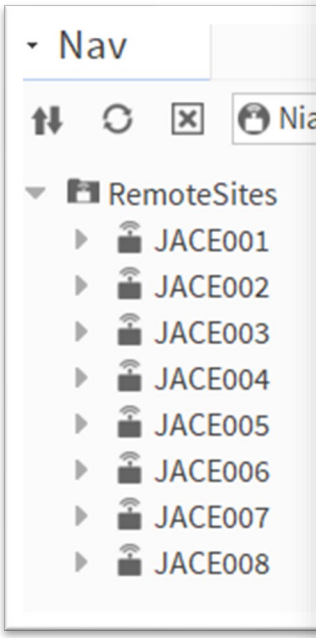
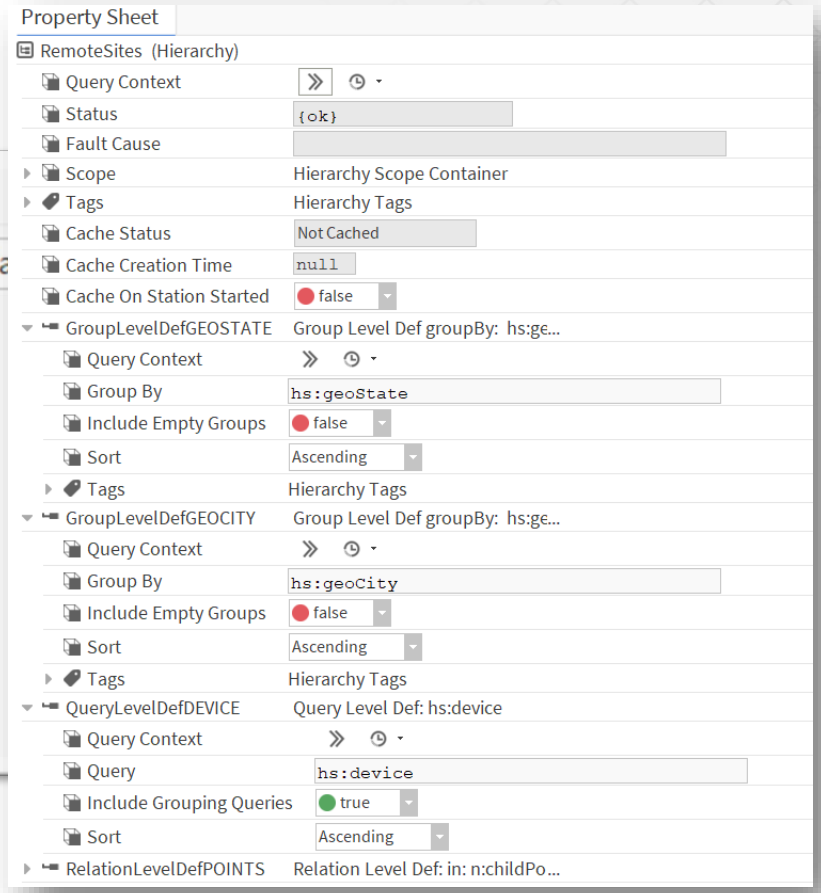
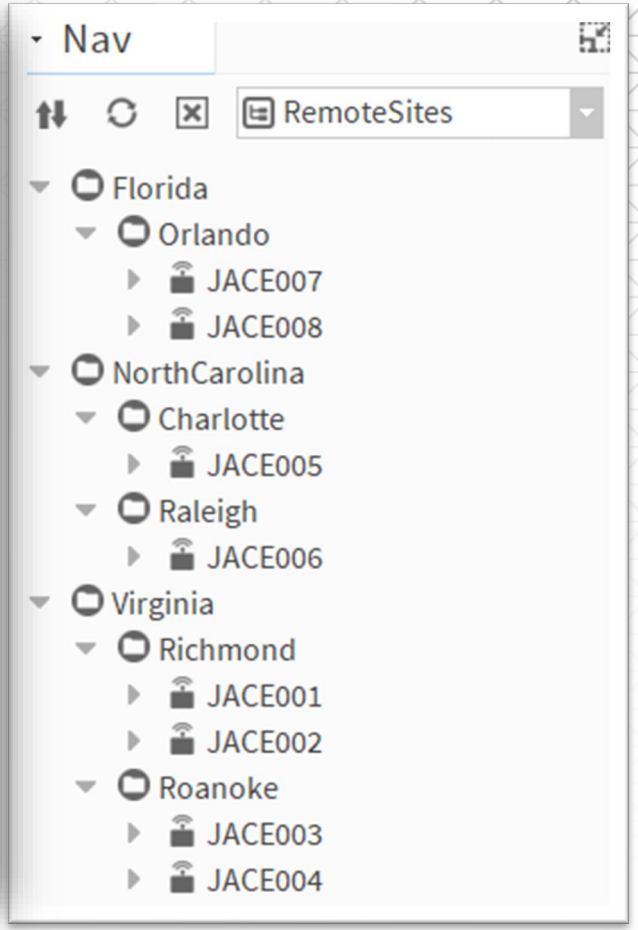

Nav
RemoteSites
JACE001
JACE002
JACE003
JACE004
JACE005
JACE006
JACE007
JACE008


Property Sheet
RemoteSites (Hierarchy)
Query Context
Status
{ok}
Fault Cause
Scope
Hierarchy Scope Container
Tags
Hierarchy Tags
Cache Status
Not Cached
Cache Creation Time
null
Cache On Station Started
false
GroupLevelDefGEOSTATE
Group Level Def groupBy: hs:ge...
Query Context
Group By
hs:geoState
Include Empty Groups
false
Sort
Ascending
Tags
Hierarchy Tags
GroupLevelDefGEOCITY
Group Level Def groupBy: hs:ge...
Query Context
Group By
hs:geoCity
Include Empty Groups
false
Sort
Ascending
Tags
Hierarchy Tags
QueryLevelDefDEVICE
Query Level Def: hs:device
Query Context
Query
hs:device
Include Grouping Queries
true
Sort
Ascending
RelationLevelDefPOINTS
Relation Level Def: in: n:childPo...


Nav
RemoteSites
Florida
Orlando
JACE007
JACE008
NorthCarolina
Charlotte
JACE005
Raleigh
JACE006
Virginia
Richmond
JACE001
JACE002
Roanoke
JACE003
JACE004

TRIDIUM

Analytics

Nav

National Site Plan

- Alarm Console
- Eastern US
  - Florida
    - Boca Raton
      - Florida Atlantic University
        - Athletic Center
  - Massachusetts
    - Boston
      - Mass Mutual
        - Admin Building
  - Virginia
    - Richmond
      - Westerre
        - Westerre I
        - Westerre II
        - Westerre III
        - Westerre IV
- Reports

Report Editor

Average Profile Report

Node

Westerre I *Area : 481000 per unit area*

Westerre II *Area : 421000 per unit area*

Westerre III *Area : 521000 per unit area*

Westerre IV *Area : 515000 per unit area*

Data Type

hs:power

Reporting Period

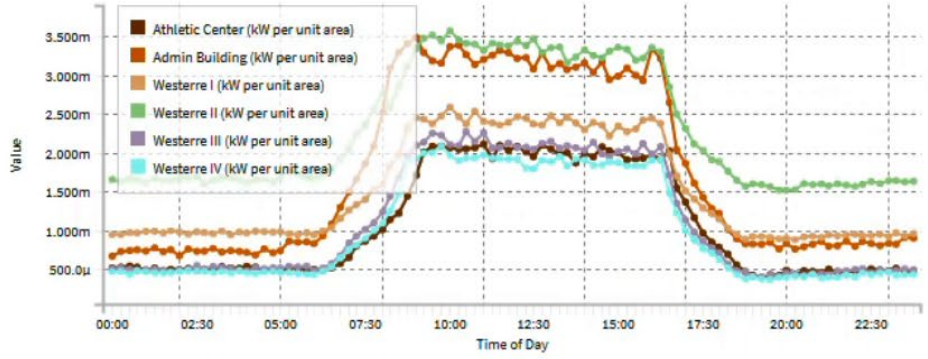
Yesterday : 1/7/19 12:00:00 am - 1/8/19 12:00:00 am

Sun Mon Tue Wed Thu Fri Sat

Baseline

No baseline

1/7/19 12:00:00 am - 1/8/19 12:00:00 am



Search Display: 100 1 - 96 of 96

Time Of Day	Athletic Center (kW per unit area)	Admin Building (kW per unit area)	Westerre I (kW per unit area)	Westerre II (kW per unit area)	Westerre III (kW per unit area)	Westerre IV (kW per unit area)
00:00:00	514.1µ	684.3µ	945.9µ	1.654m	505.0µ	464.5µ
00:15:00	521.8µ	726.5µ	945.5µ	1.629m	514.2µ	469.9µ
00:30:00	537.2µ	737.0µ	968.8µ	1.659m	497.5µ	428.5µ

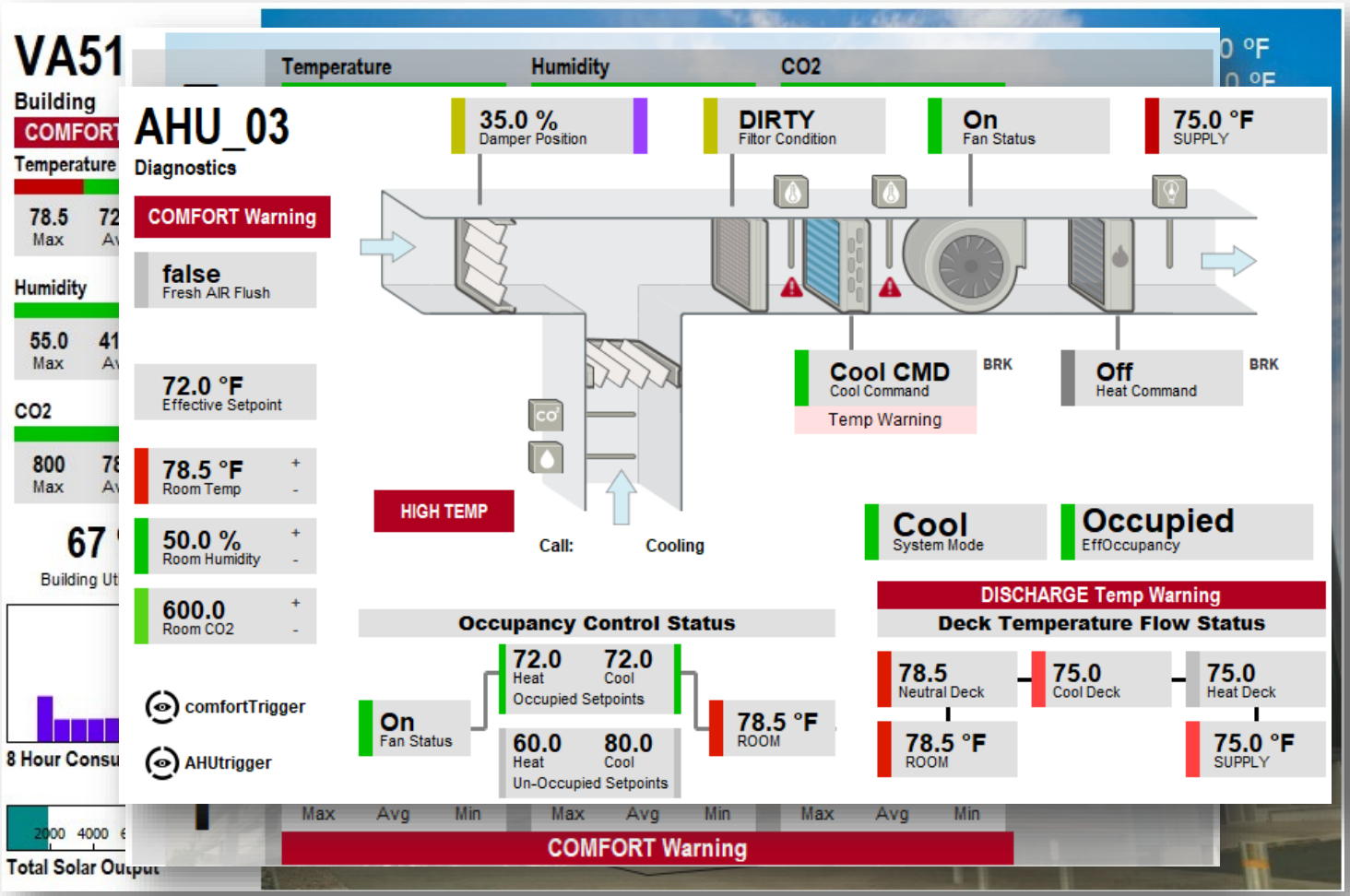
TRIDIUM

h4:temp
h4:humidity
h4:co2

75 Sensors

15 Sensors Per Floor

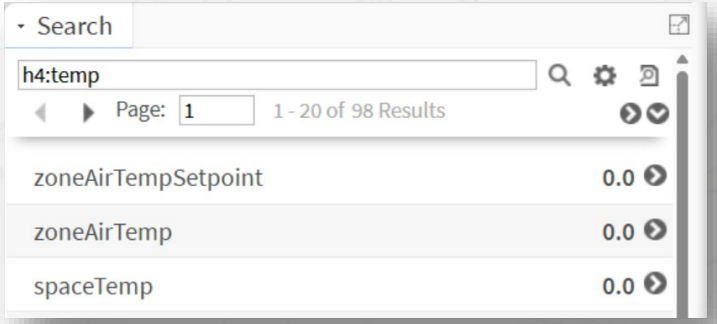
1 Sensor

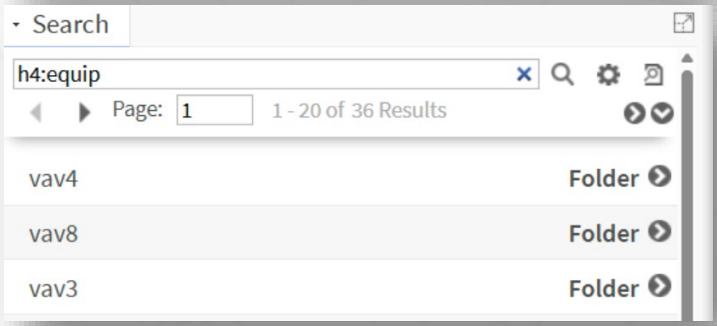


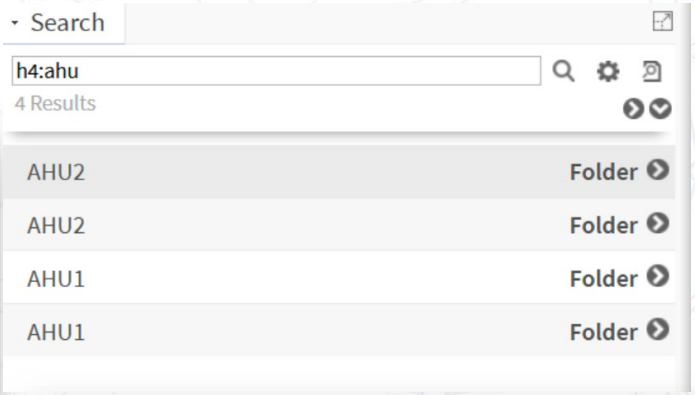
TRIDIUM

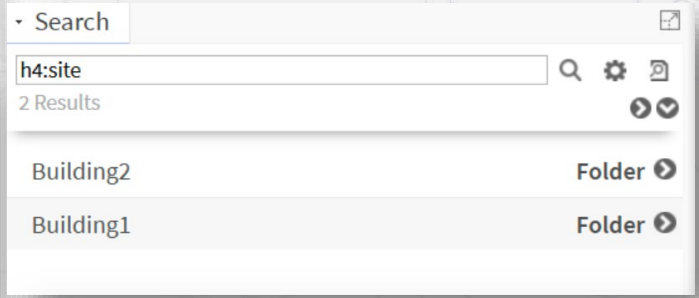
DON’T FORGET SEARCHING

TRIDIUM









NF 23

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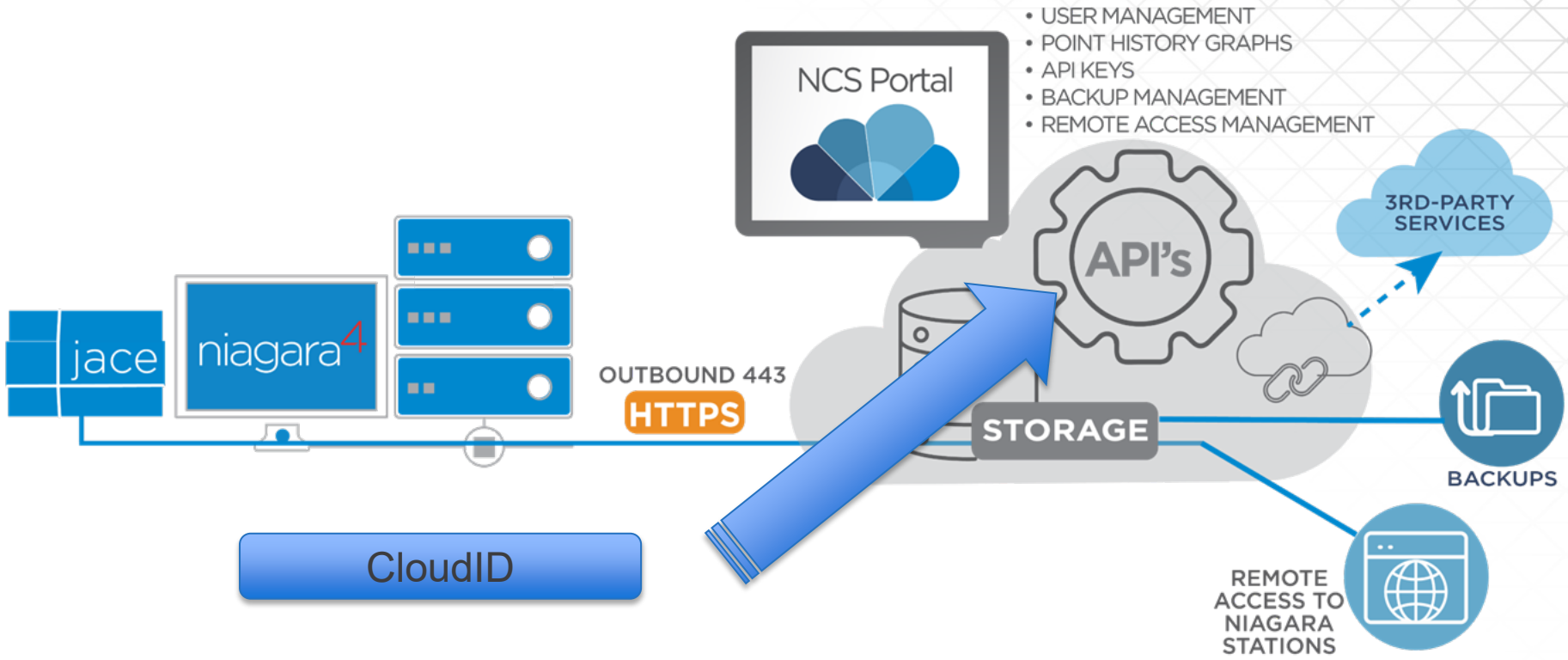
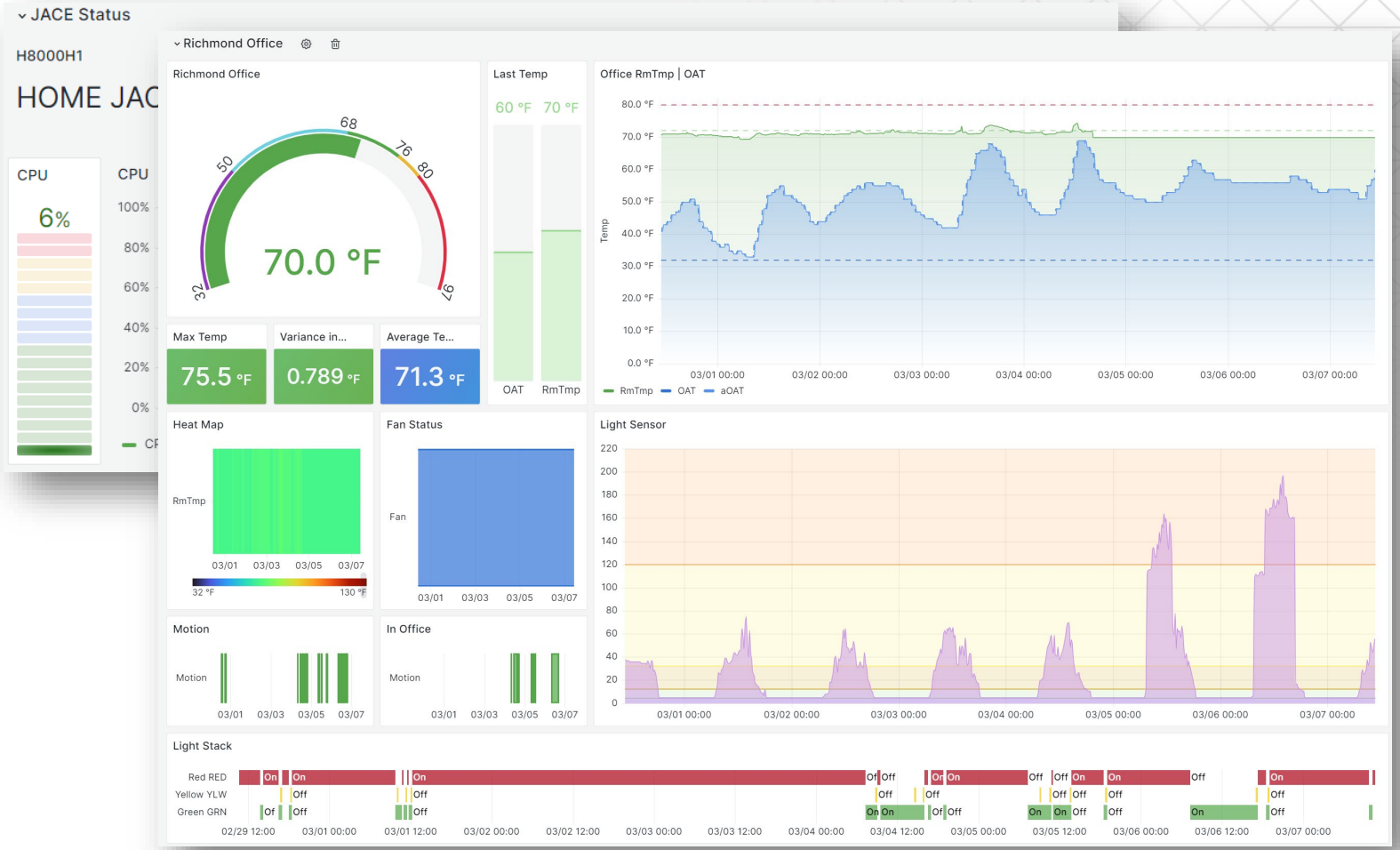
Niagara Cloud

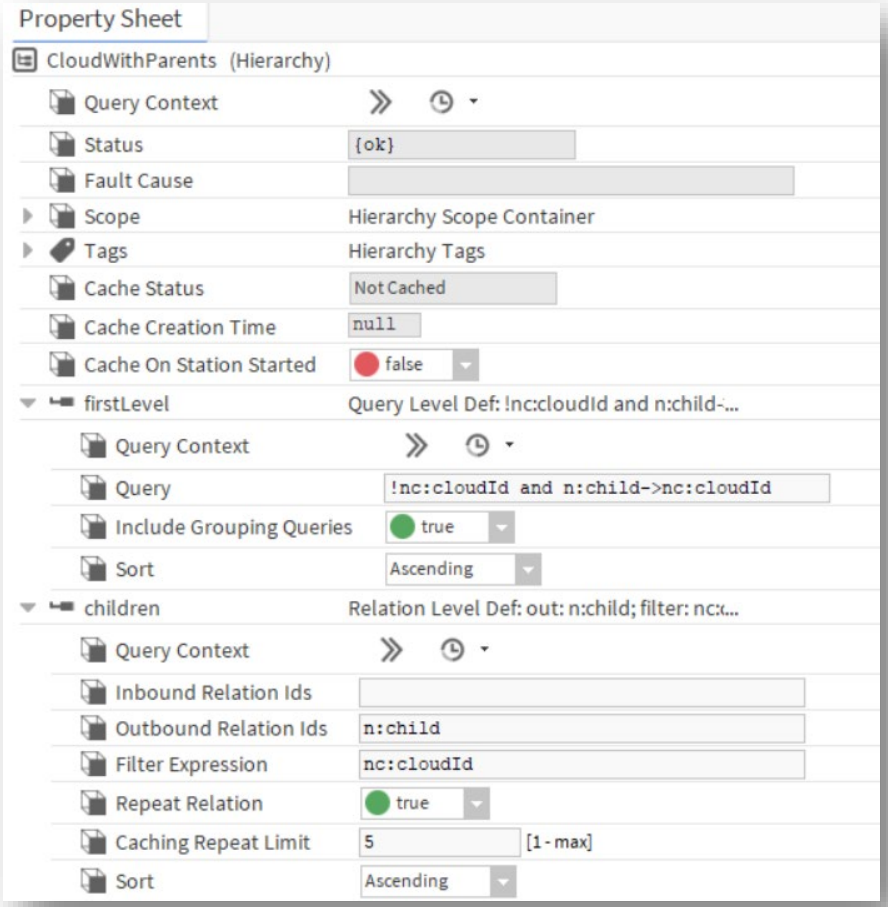
TRIDIUM

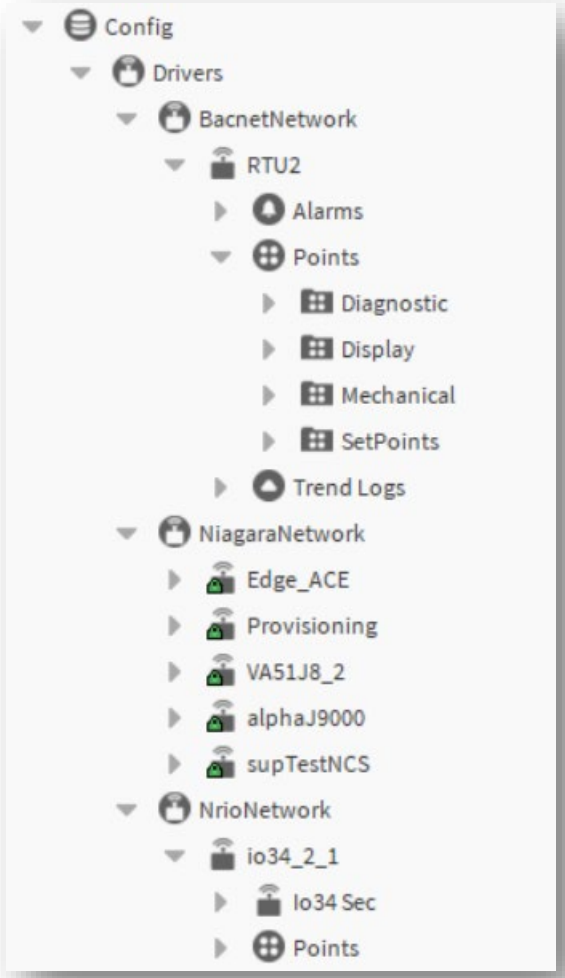

NCS Portal
• USER MANAGEMENT
• POINT HISTORY GRAPHS
• API KEYS
• BACKUP MANAGEMENT
• REMOTE ACCESS MANAGEMENT
jace
niagara4
OUTBOUND 443
HTTPS
API's
3RD-PARTY SERVICES
STORAGE
BACKUPS
CloudID
REMOTE ACCESS TO NIAGARA STATIONS

TRIDIUM


JACE Status
H8000H1
HOME JAC
CPU
6%
CPU
100%
80%
60%
40%
20%
0%
Richmond Office
Richmond Office
68
50
76
80
32
97
70.0 °F
Last Temp
60 °F
70 °F
OAT
RmTmp
Office RmTmp | OAT
80.0 °F
70.0 °F
60.0 °F
50.0 °F
40.0 °F
30.0 °F
20.0 °F
10.0 °F
0.0 °F
Temp
03/01 00:00
03/02 00:00
03/03 00:00
03/04 00:00
03/05 00:00
03/06 00:00
03/07 00:00
RmTmp
OAT
aOAT
Max Temp
75.5 °F
Variance in...
0.789 °F
Average Te...
71.3 °F
Heat Map
RmTmp
03/01
03/03
03/05
03/07
32 °F
130 °F
Fan Status
Fan
03/01
03/03
03/05
03/07
Light Sensor
220
200
180
160
140
120
100
80
60
40
20
0
03/01 00:00
03/02 00:00
03/03 00:00
03/04 00:00
03/05 00:00
03/06 00:00
03/07 00:00
Motion
Motion
03/01
03/03
03/05
03/07
In Office
Motion
03/01
03/03
03/05
03/07
Light Stack
Red RED
Yellow YLW
Green GRN
On
Off
02/29 12:00
03/01 00:00
03/01 12:00
03/02 00:00
03/02 12:00
03/03 00:00
03/03 12:00
03/04 00:00
03/04 12:00
03/05 00:00
03/05 12:00
03/06 00:00
03/06 12:00
03/07 00:00

TRIDIUM


Property Sheet
CloudWithParents (Hierarchy)
Query Context
Status
{ok}
Fault Cause
Scope
Hierarchy Scope Container
Tags
Hierarchy Tags
Cache Status
Not Cached
Cache Creation Time
null
Cache On Station Started
false
firstLevel
Query Level Def: !nc:cloudId and n:child-...
Query Context
Query
!nc:cloudId and n:child->nc:cloudId
Include Grouping Queries
true
Sort
Ascending
children
Relation Level Def: out: n:child; filter: nc:...
Query Context
Inbound Relation Ids
Outbound Relation Ids
n:child
Filter Expression
nc:cloudId
Repeat Relation
true
Caching Repeat Limit
5
[1 - max]
Sort
Ascending


Config
Drivers
BacnetNetwork
RTU2
Alarms
Points
Diagnostic
Display
Mechanical
SetPoints
Trend Logs
NiagaraNetwork
Edge_ACE
Provisioning
VA51J8_2
alphaJ9000
supTestNCS
NrioNetwork
io34_2_1
Io34 Sec
Points

TRIDIUM

Future Proof your data

Easy Searching

Easy Hierarchy

Analytics

- On Premise
- In Cloud

Prepare for Cloud

- Where the customer owns the data model

TRIDIUM

Very Quick Demo

Let's look what you just heard

JUN 26
2025

Relation Manager & Tagging in Niagara 4.15

Learn about Niagara 4.15's enhanced support for Project Haystack 4 and how small, intentional actions within the Niagara Framework can significantly improve the metadata quality of your applications.

Zoom

Jun 26 - Jun 26, 2025 / 11 AM ET

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