

NOVEMBER 2022

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# How (not) to Fail at Collecting Data

An Adapter Failover Installation and Configuration Deep Dive

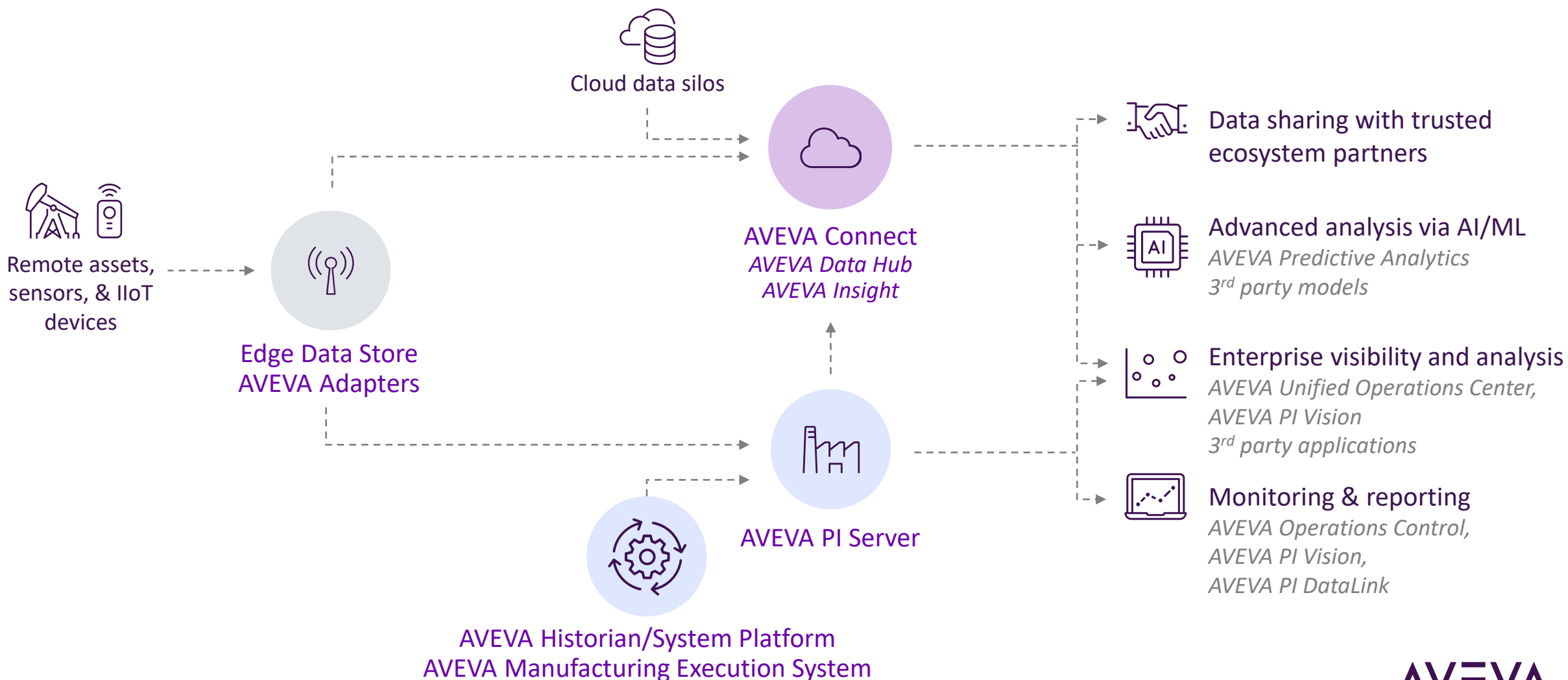
Ellery Murdock

Jane Matheson

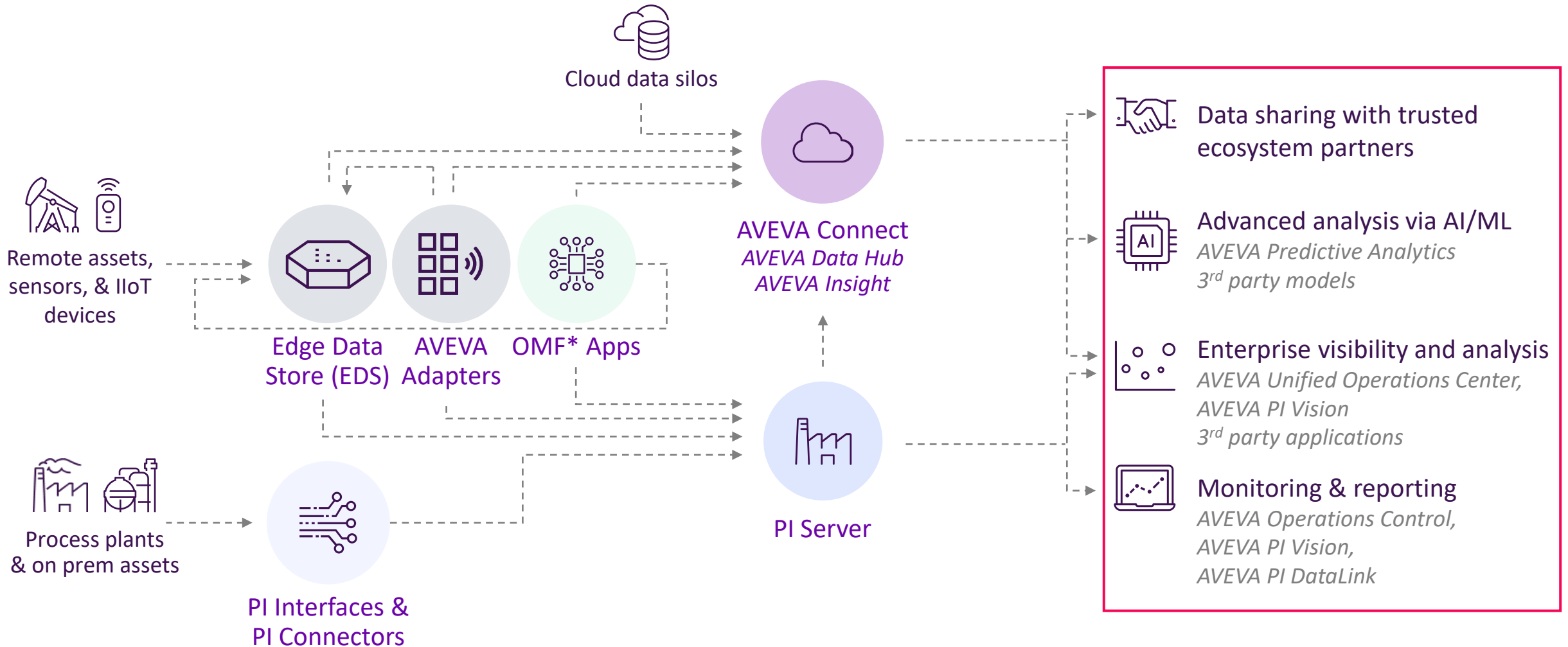
**AVEVA**

No matter where your operational data resides,  
AVEVA has the technologies available to collect  
and store that data

# Bridging engineering, operations, and business domains



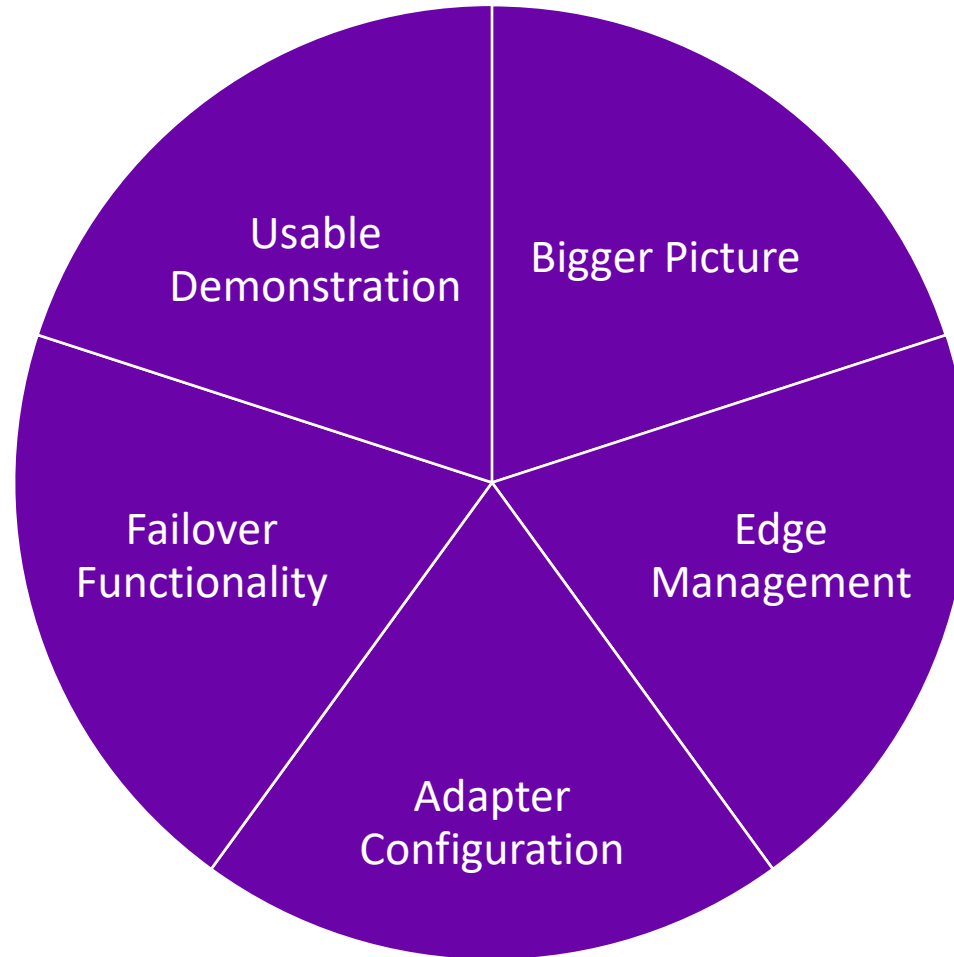
# PI Adapters extended real-time connectivity to remote assets and increased the variety, velocity and volume of data



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# Presentation Goals

What will we discuss?

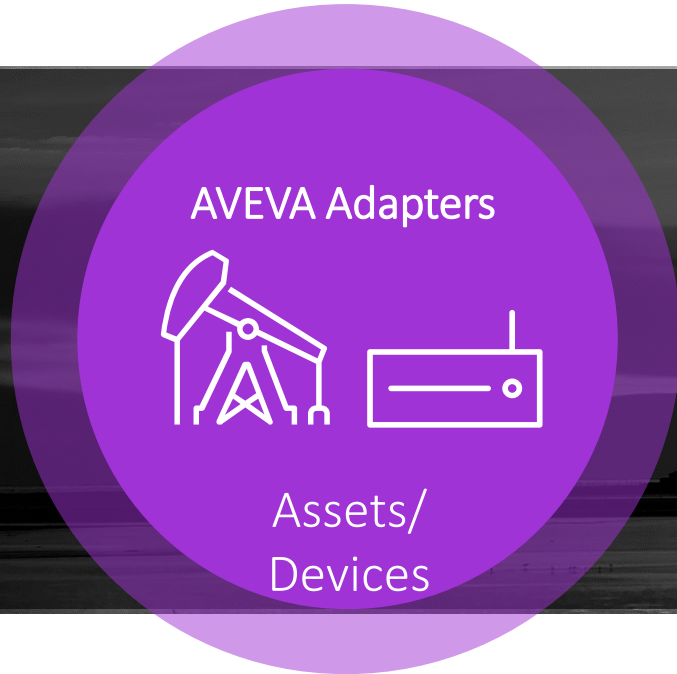


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# Data Collection on the Edge and Beyond

**AVEVA**

# AVEVA Adapters



Cross Platform



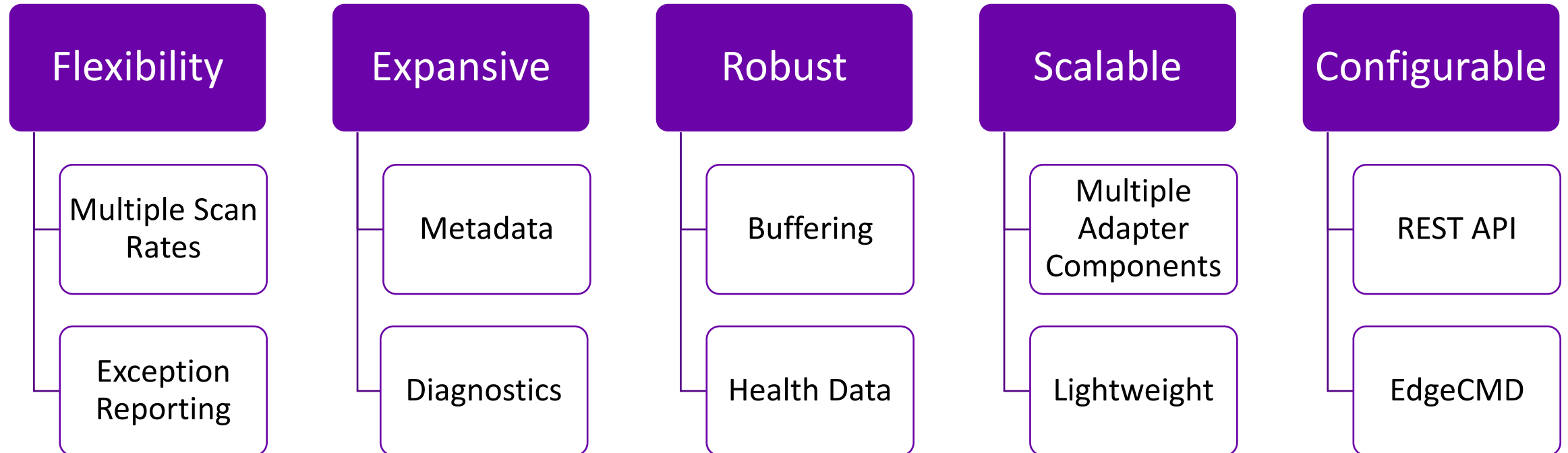
Lightweight Footprint



Ready Off-The-Shelf

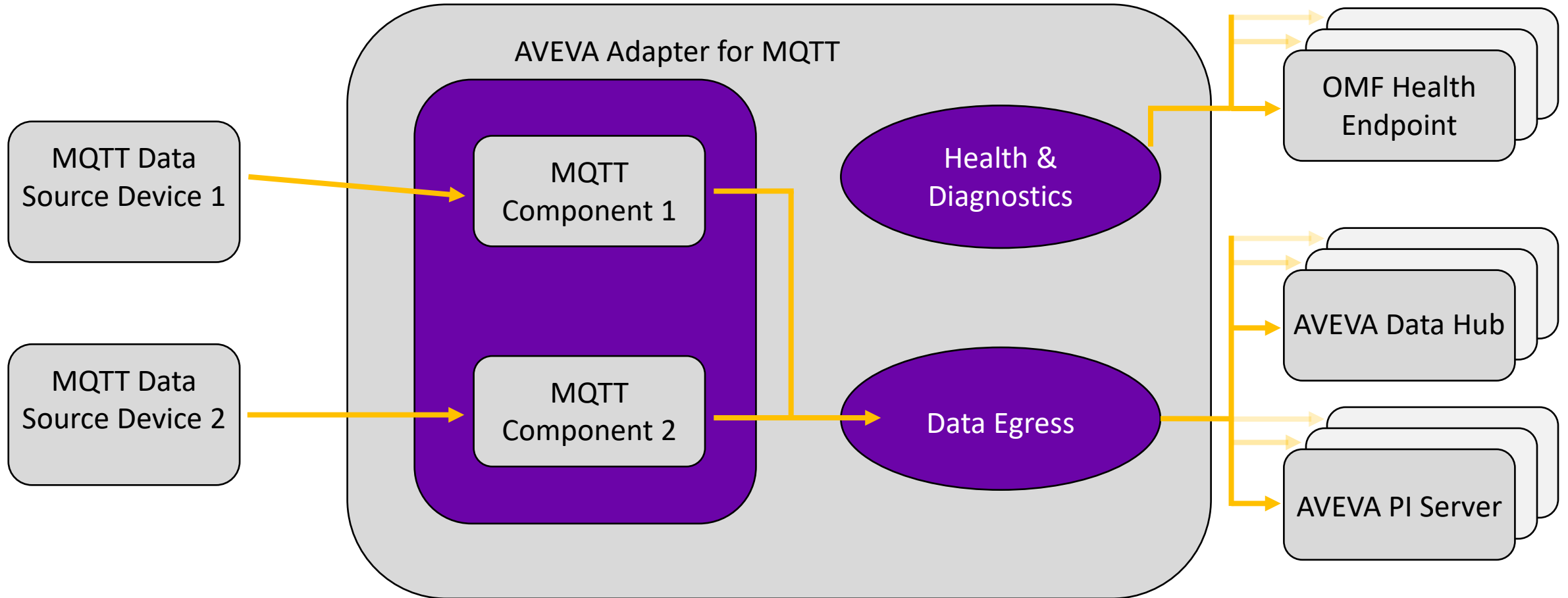
- Windows and Linux device interoperability
- Scalable architecture
- Connectivity to:
  - Edge Data Store
  - AVEVA PI Server
  - AVEVA Data Hub

# Robust Features that enable consistent data collection





# Example Architecture of an Adapter for MQTT



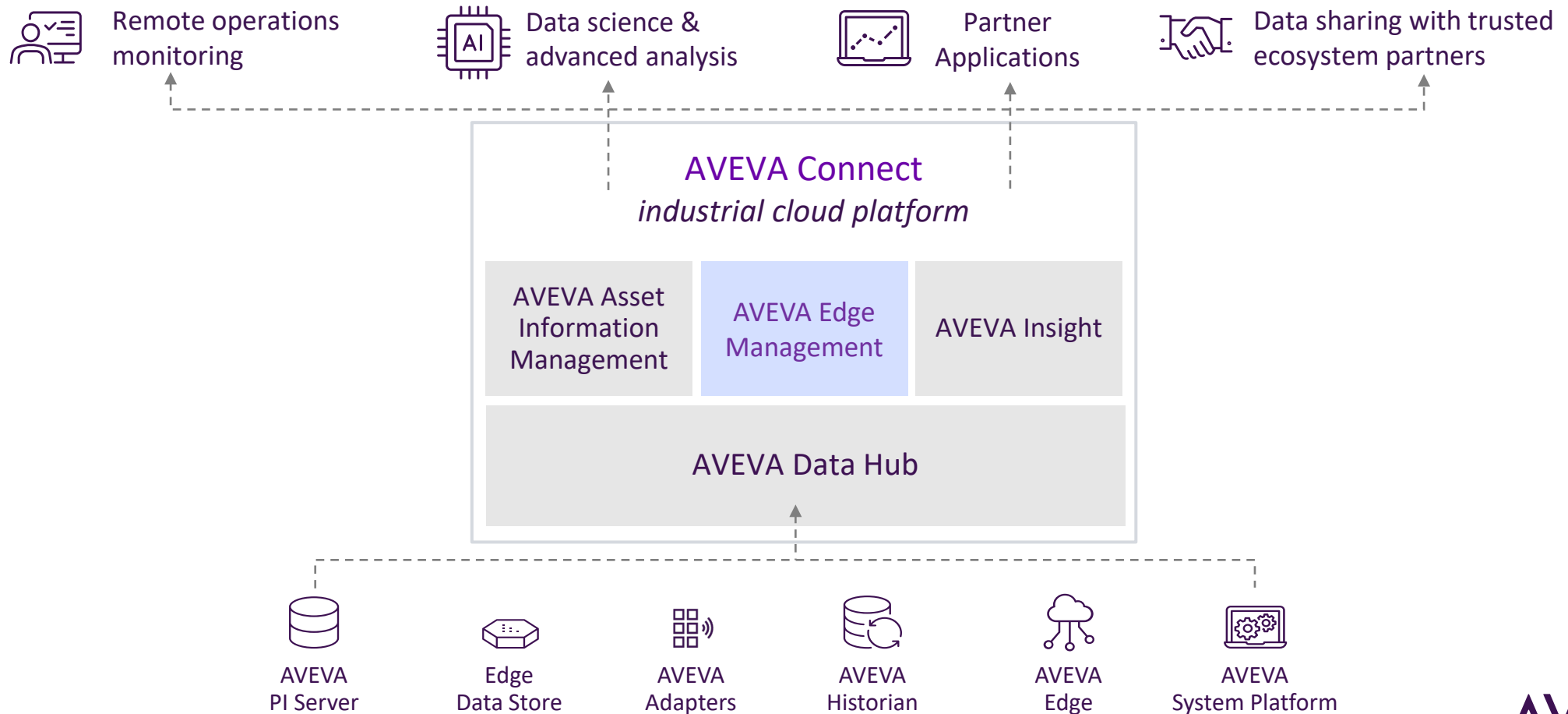


# Expanding to the Edge

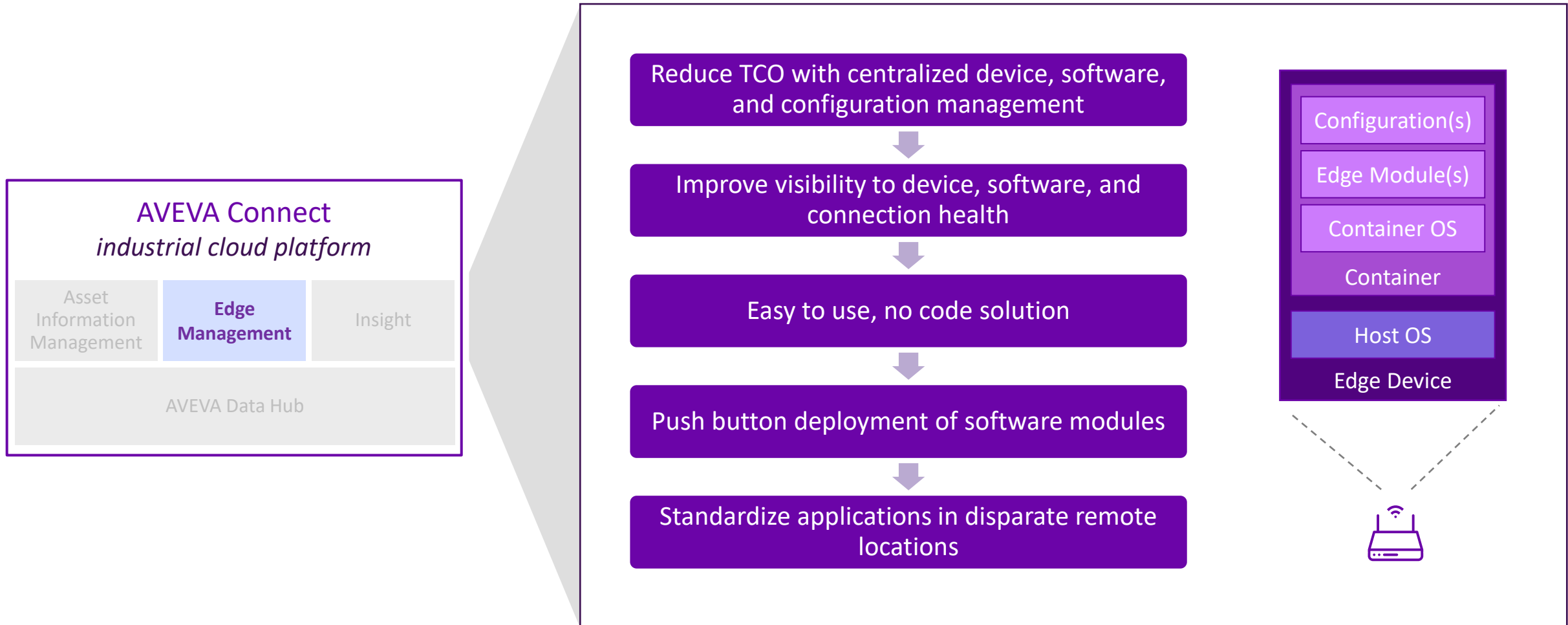
**AVEVA**

# AVEVA Edge Management provides remote management for AVEVA software modules running on edge devices

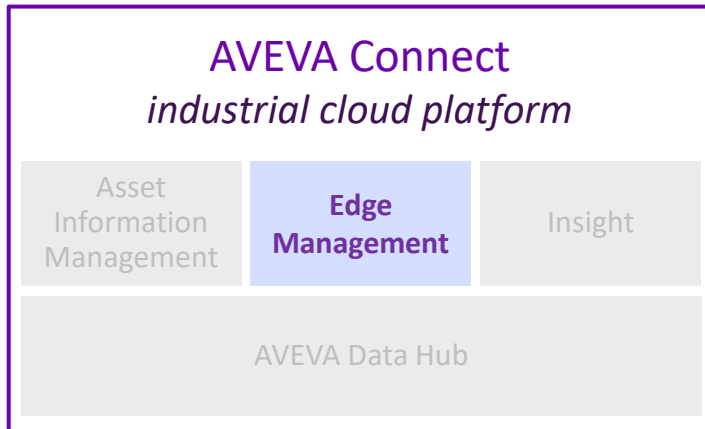
AVEVA Connect enables a hybrid data architecture through cloud offerings



# Remotely deploy and manage EDS & AVEVA Adapters



# Remotely deploy and manage EDS & AVEVA Adapters



The screenshot displays the AVEVA Edge Management interface, divided into three numbered steps:

- 1. Pair & bootstrap device:** The 'PIADAPTER2' details page shows the device description, type (Ubuntu 20.04), platform (Linux x64), and keywords (EDS, MQTT). The 'Pairing' section provides a terminal command to bootstrap the device: `sudo wget -O - https://connect.aveva.com/api/api/v1/devices/devicecode/bootstrap | bash`.
- 2. Deploy software:** The 'Modules' section shows a list of modules to be deployed, including 'Edge Data Store 0/mo' and 'PI Adapter for MQTT 0/mo'. The 'Deployment' section shows configuration options such as 'Deployment Name \*' (eds\_module\_linux\_x64), 'Configuration File \*' (PIADAPTER2-EDS.json), 'Connection Port \*' (5590), and 'Secret Store' (File Store).
- 3. Manage device and software:** The 'Device List' table shows a list of published devices with their status, connection, license, name, description, and keywords.

Status	Connection	License	Name	Description	Keywords
PUBLISHED	📶	✓	PIADAPTER1	Field device running Edge Data Store and PI Adapter for MQTT	EDS ...
PUBLISHED	📶	✓	PIADAPTER2	Field device running Edge Data Store and PI Adapter for MQTT	EDS ...
PUBLISHED	📶	✓	PIADAPTER3	Field device running Edge Data Store and PI Adapter for MQTT	EDS ...
PUBLISHED	📶	✓	PIADAPTER4	Field device running Edge Data Store and PI Adapter for MQTT	EDS ...
PUBLISHED	📶	✓	PIADAPTER5	Field device running Edge Data Store and PI Adapter for MQTT	EDS ...

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# How does Adapter Failover work?

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# Enabling Failover for Continuous Data Collection

How does the Client Failover Service work?

## Location

- AVEVA Data Hub Microservice
- Installable on-premises (Windows)

## Modes

- Cold
- Warm
- Hot

## Features

- Administrative capabilities
- Multiple failover groups
- OMF Health

# Supporting Different Failover Modes for All Scenarios

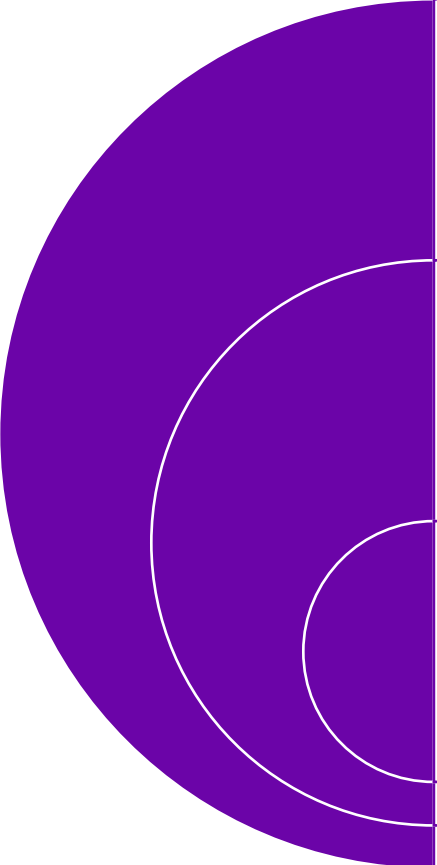
Which mode is right for you?

Number of Adapters:	Cold	Warm	Hot
Running	1	2	2
Connected to Data Source	1	2	2
Collecting Data	1	1	2
Buffering	0	0	1



# Installing the Client Failover Service

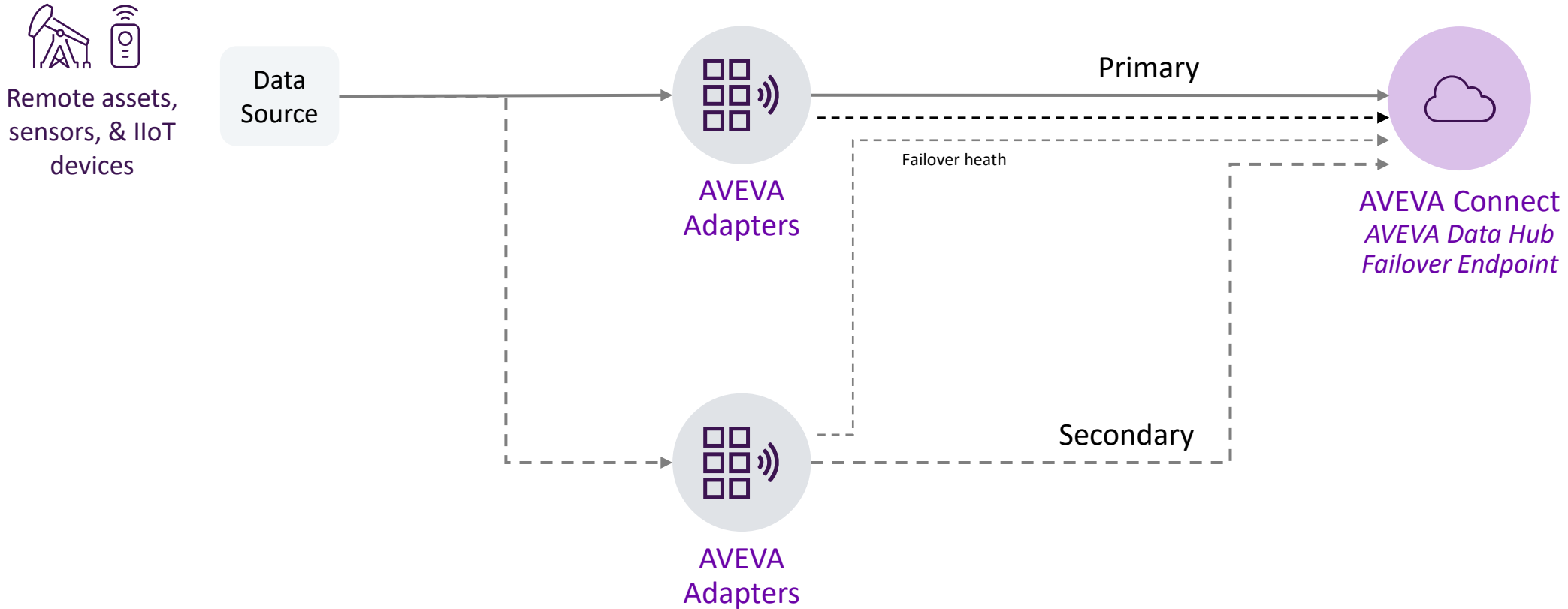
What are the requirements for an on-premises installation?



<h2>Standalone Install Kit</h2>	<ul style="list-style-type: none"><li>• Windows</li><li>• Linux → Future Release</li></ul>
<h2>Installation Details</h2>	<ul style="list-style-type: none"><li>• Requires open port (Default 5495)</li><li>• Generates self-signed certificate</li></ul>
<h2>Creates Windows Local Groups</h2>	<ul style="list-style-type: none"><li>• AVEVAFailoverAdministrators</li><li>• AVEVAFailoverUsers</li></ul>

# AVEVA Adapter Failover: Cloud

## Client-side failover

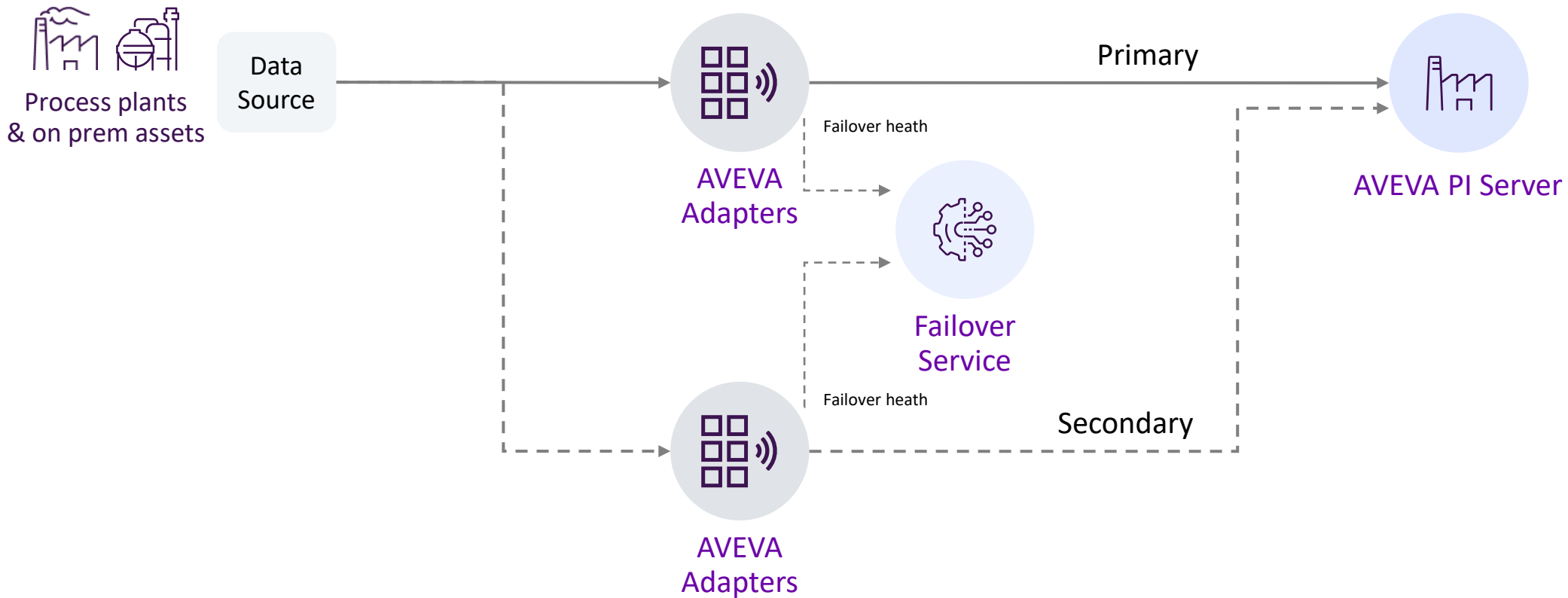


### Failover modes:

- Hot
- Warm
- Cold

# AVEVA Adapter Failover: On-Premises

## Client-side failover

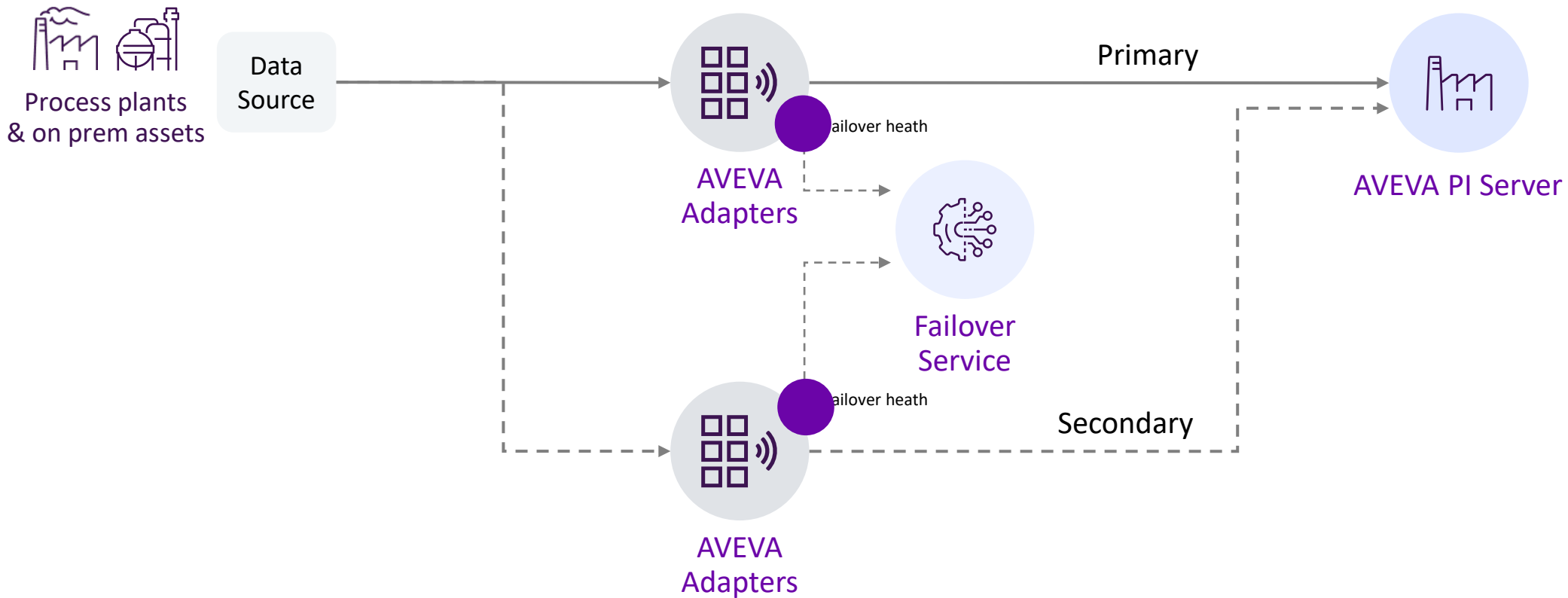


### Failover modes:

- Hot
- Warm
- Cold

# AVEVA Adapter Failover: On-Premises

## Client-side failover

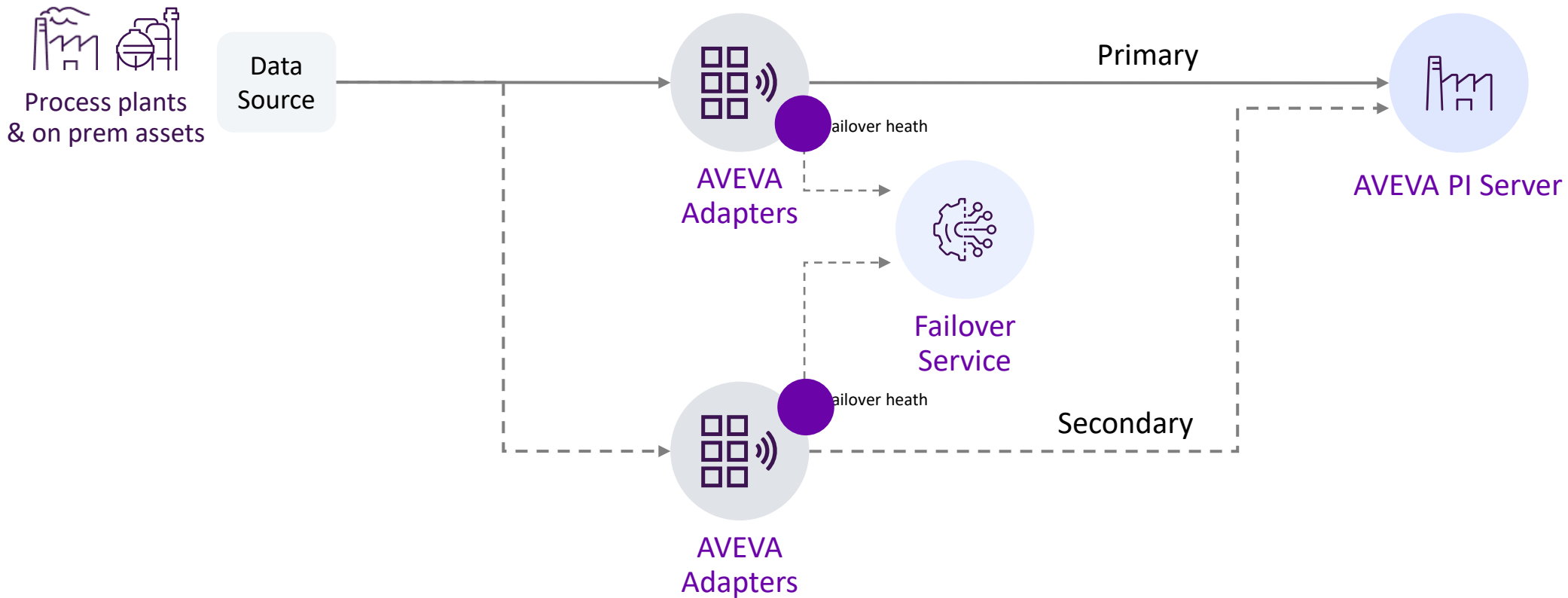


### Failover modes:

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# AVEVA Adapter Failover: On-Premises

## Client-side failover

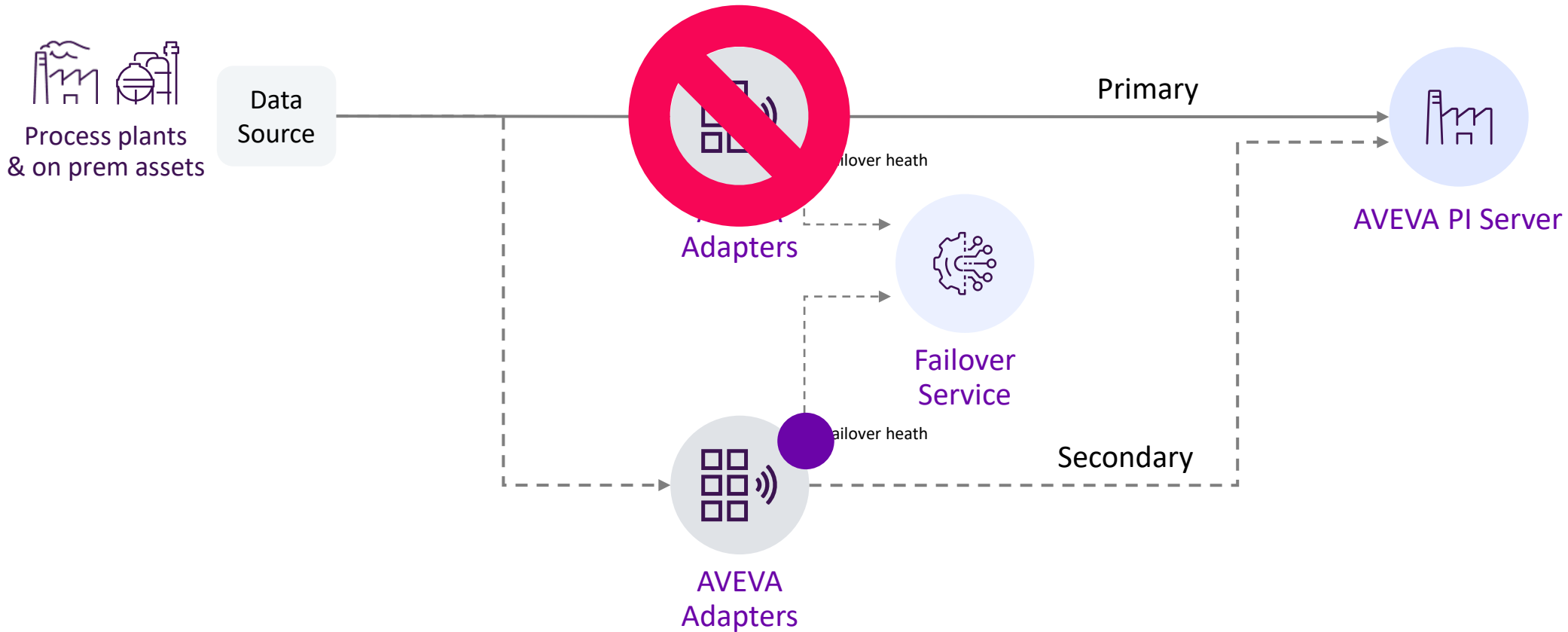


### Failover modes:

- Hot
- Warm
- Cold

# AVEVA Adapter Failover: On-Premises

## Client-side failover

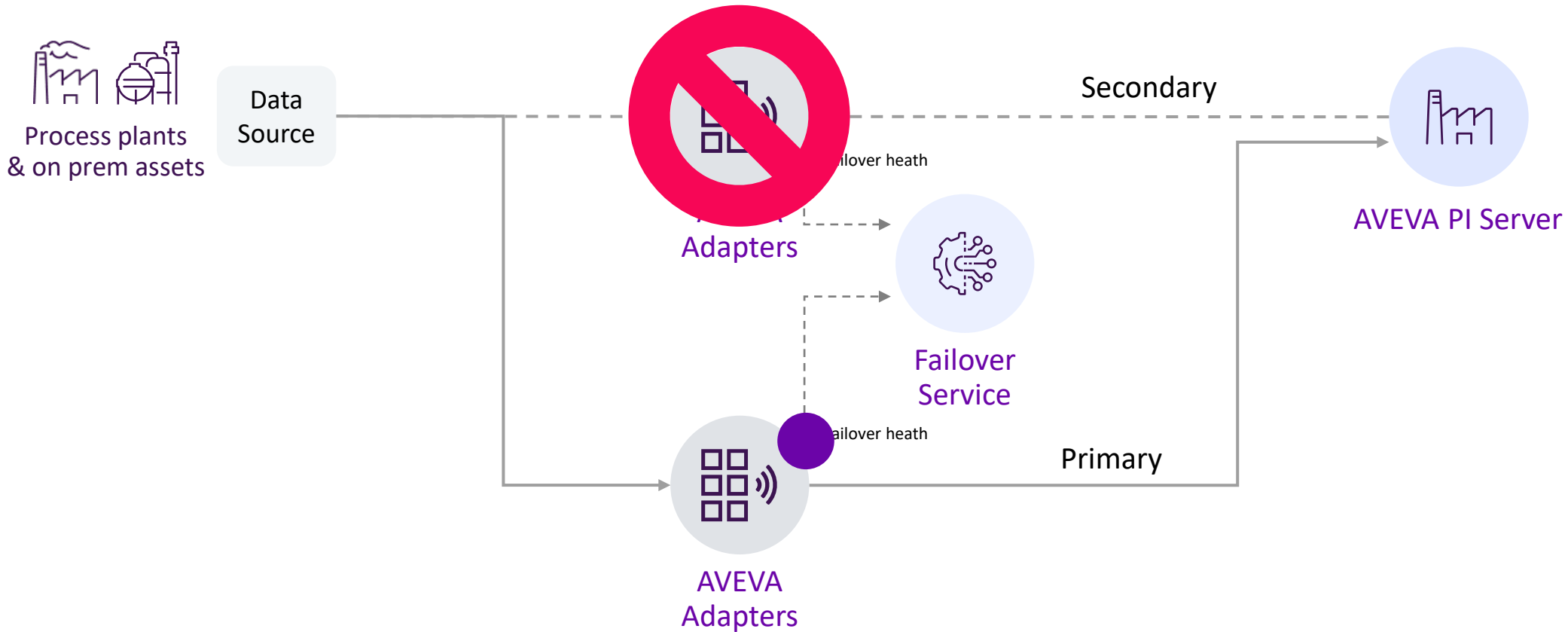


### Failover modes:

- Hot
- Warm
- Cold

# AVEVA Adapter Failover: On-Premises

## Client-side failover



### Failover modes:

- Hot
- Warm
- Cold

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How do we configure adapters  
to utilize failover?

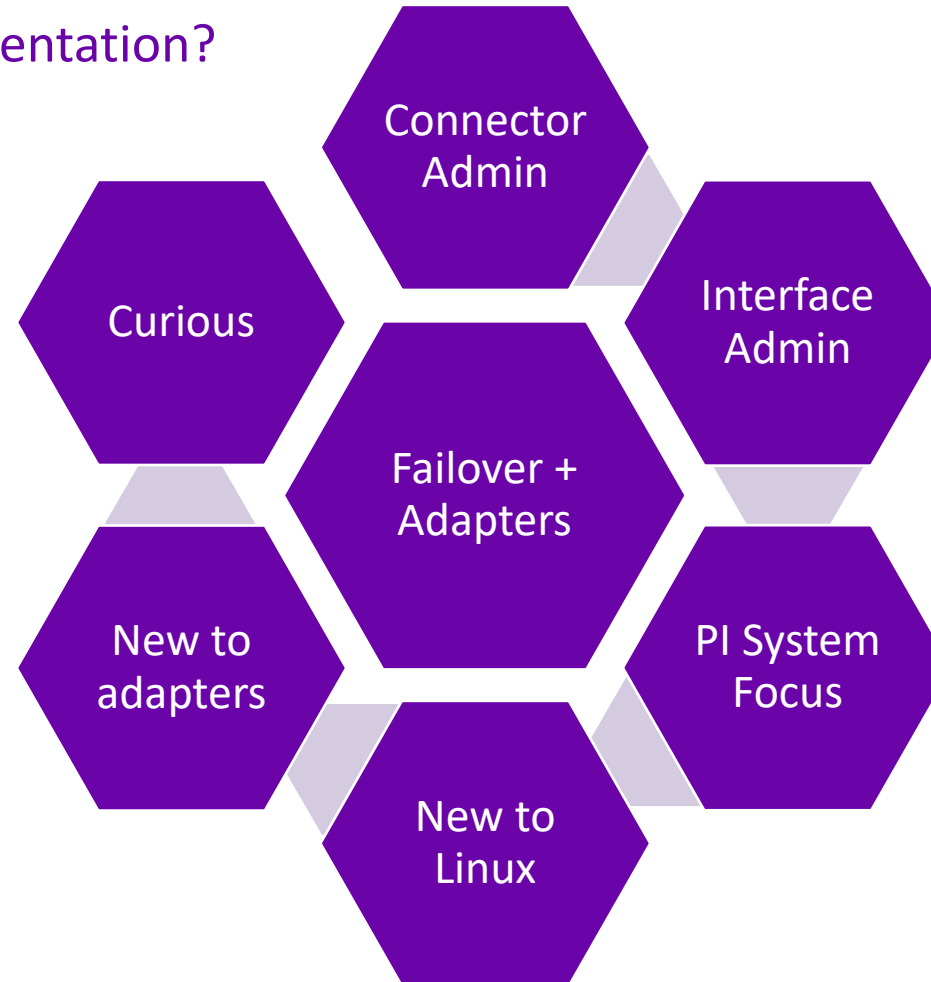
AVEVA



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# Demonstration Audience

Who will benefit from this presentation?



# Demonstration Goals

What do we want users to take away?

## Install and configure the MQTT adapter

Eight commands

Lightweight linux machine



## Showcase failover

Simple configuration

Demonstrate successful failover events



## Realistic example

Common failover scenario

Repeatable at home

# Demonstration Background

What is the current status of the adapter environment?

Single adapter

Configured and sending data

No secondary adapter, Client Failover Service, etc

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# Utilizing Edge Command

How can one tool be used to configure each facet of an adapter?

- **edgecmd** *<operation>* *<target>* **-cid** *<component>* *<arguments>*

# Utilizing Edge Command

How can one tool be used to configure each facet of an adapter?

- **edgecmd** *<operation>* *<target>* **-cid** *<component>* *<arguments>*

operation

get

edit

remove

start

cancel

set

add

reset

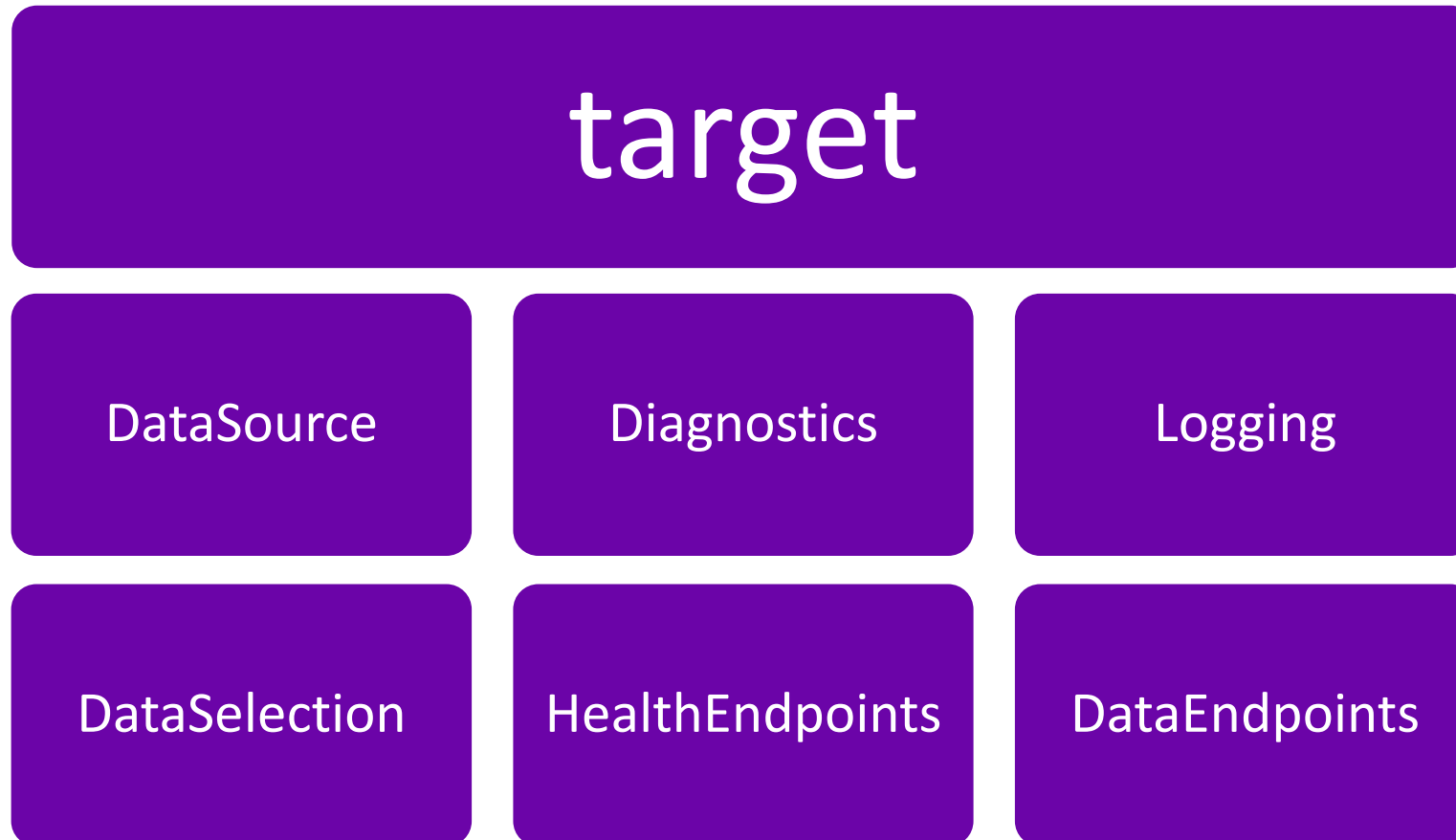
stop

resume

# Utilizing Edge Command

How can one tool be used to configure each facet of an adapter?

- **edgecmd** *<operation>* *<target>* **-cid** *<component>* *<arguments>*



# Utilizing Edge Command

How can one tool be used to configure each facet of an adapter?

- **edgcmd** *<operation>* *<target>* **-cid** *<component>* *<arguments>*

component

System

OmfEgress

MQTT1

# Utilizing Edge Command

How can one tool be used to configure each facet of an adapter?

- **edgecmd** *<operation>* *<target>* **-cid** *<component>* *<arguments>*

arguments

id

query

<property>

file

csv

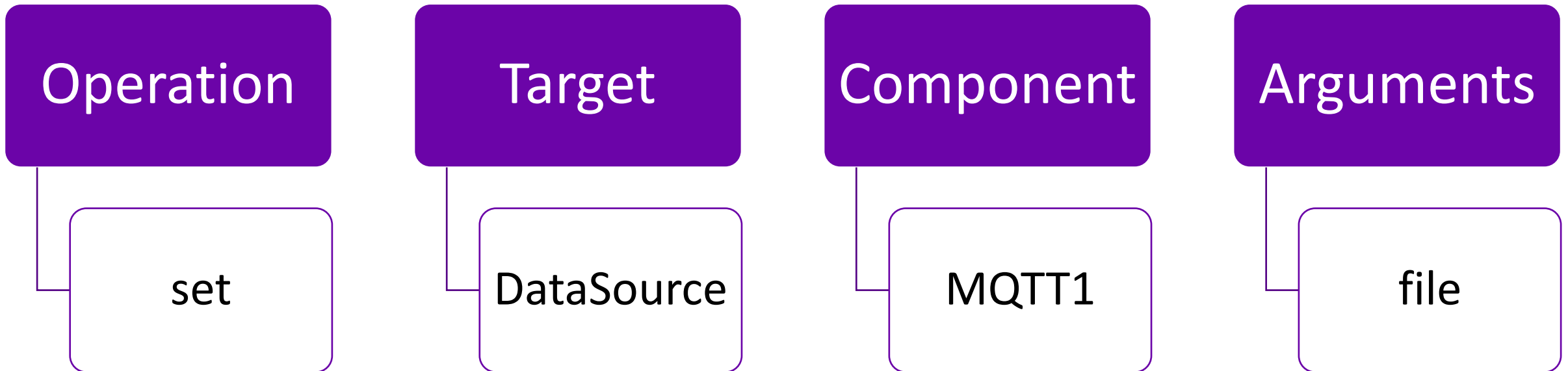
port



# Utilizing Edge Command

How can one tool be used to configure each facet of an adapter?

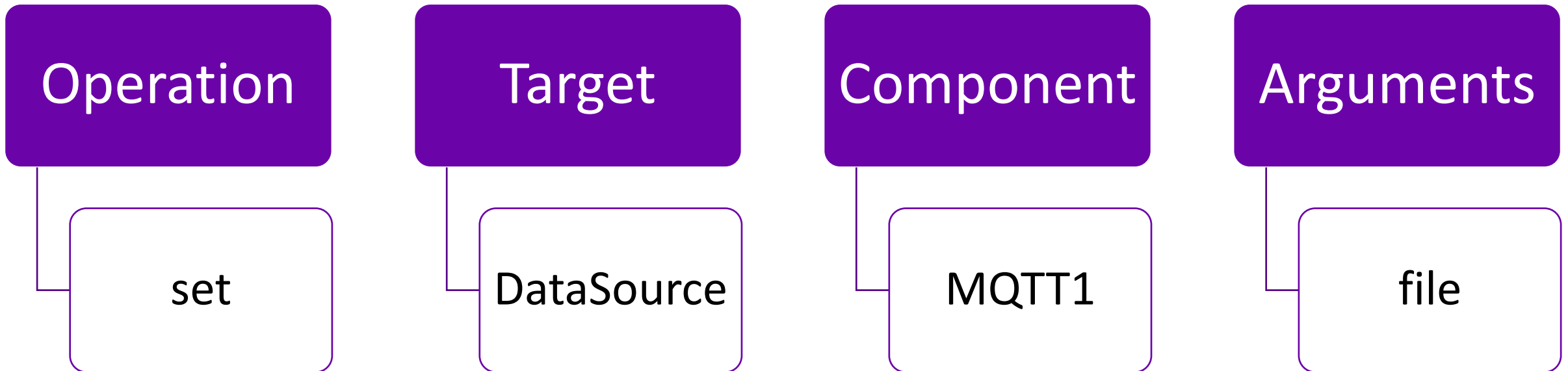
- **edgcmd set DataSource –cid MQTT1 –file DataSource.json**



# Utilizing Edge Command

How can one tool be used to configure each facet of an adapter?

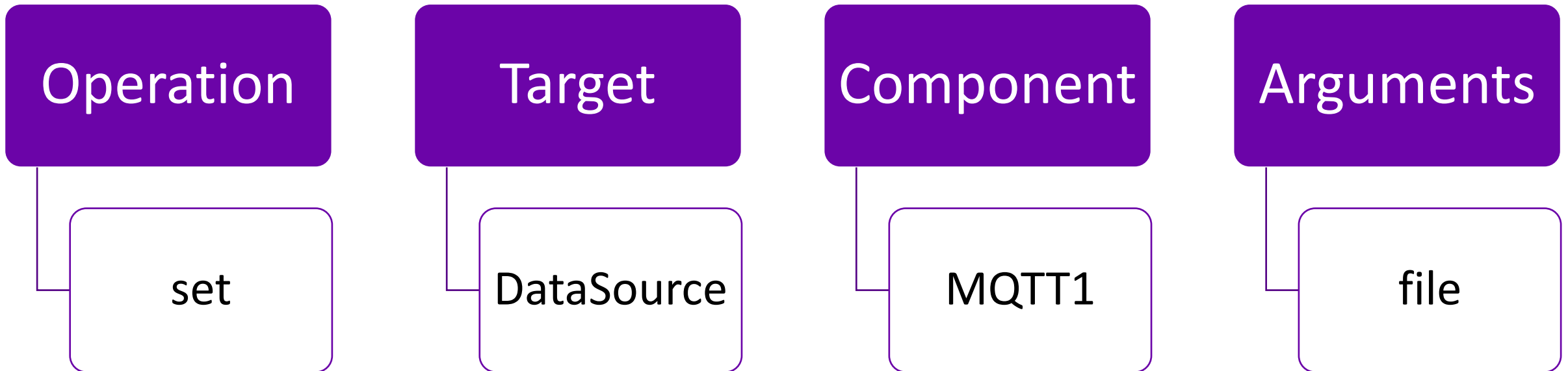
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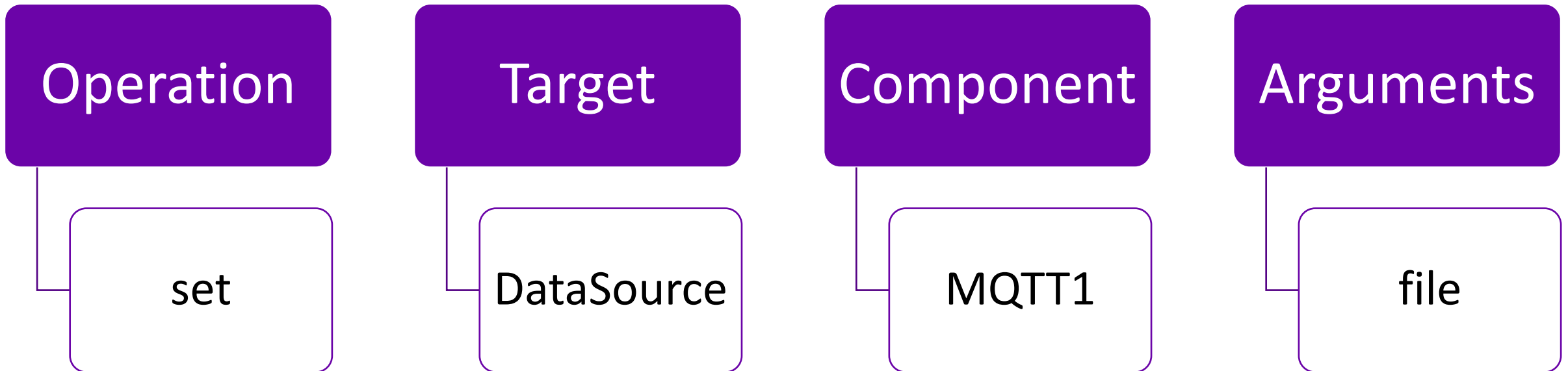
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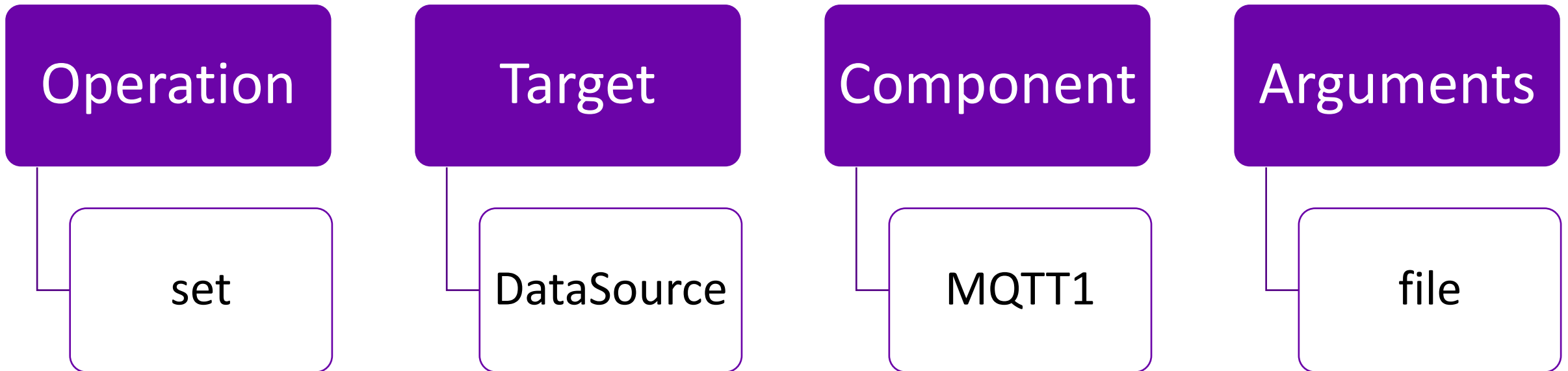
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# Utilizing Edge Command

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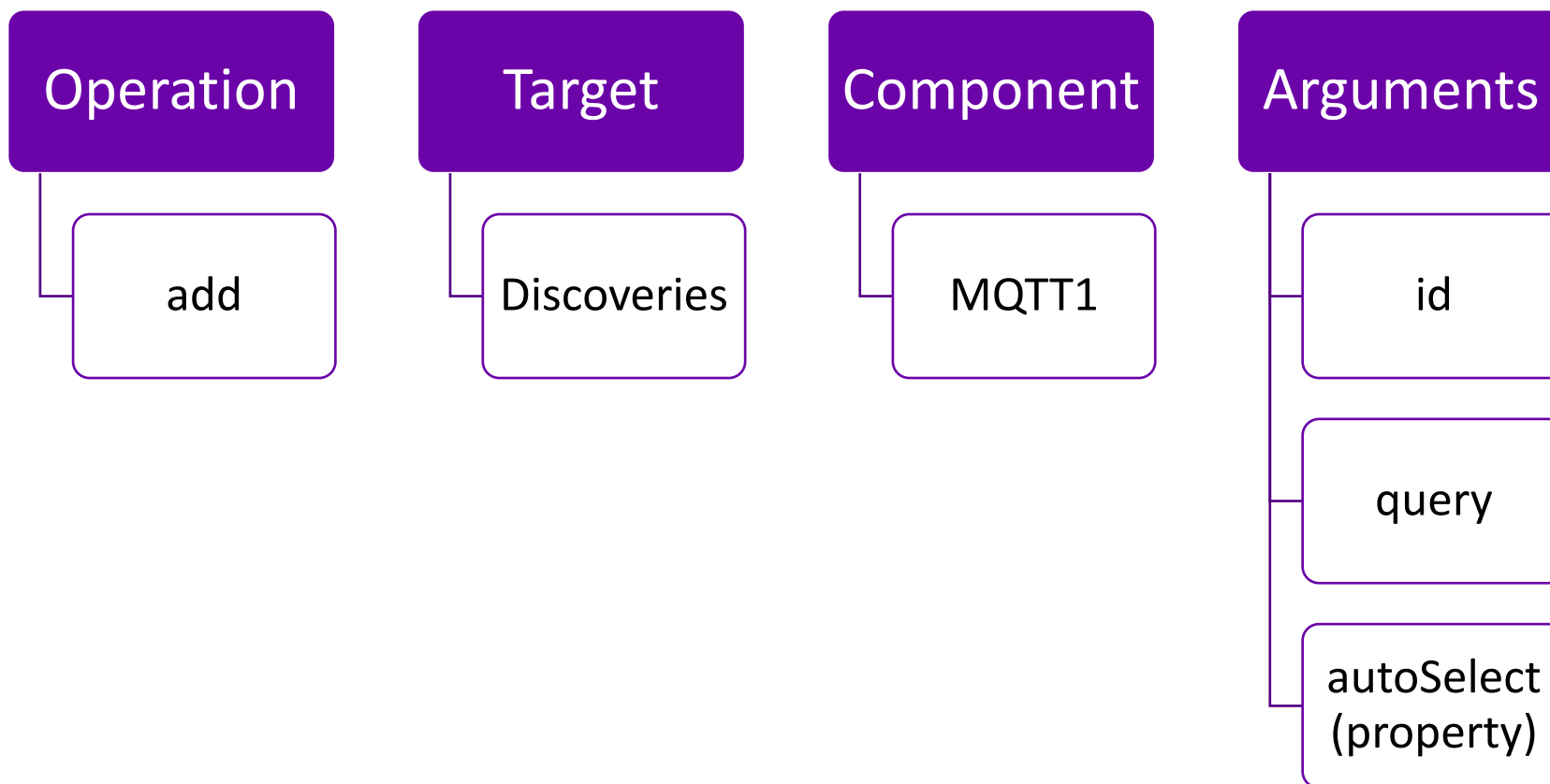
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# Utilizing Edge Command

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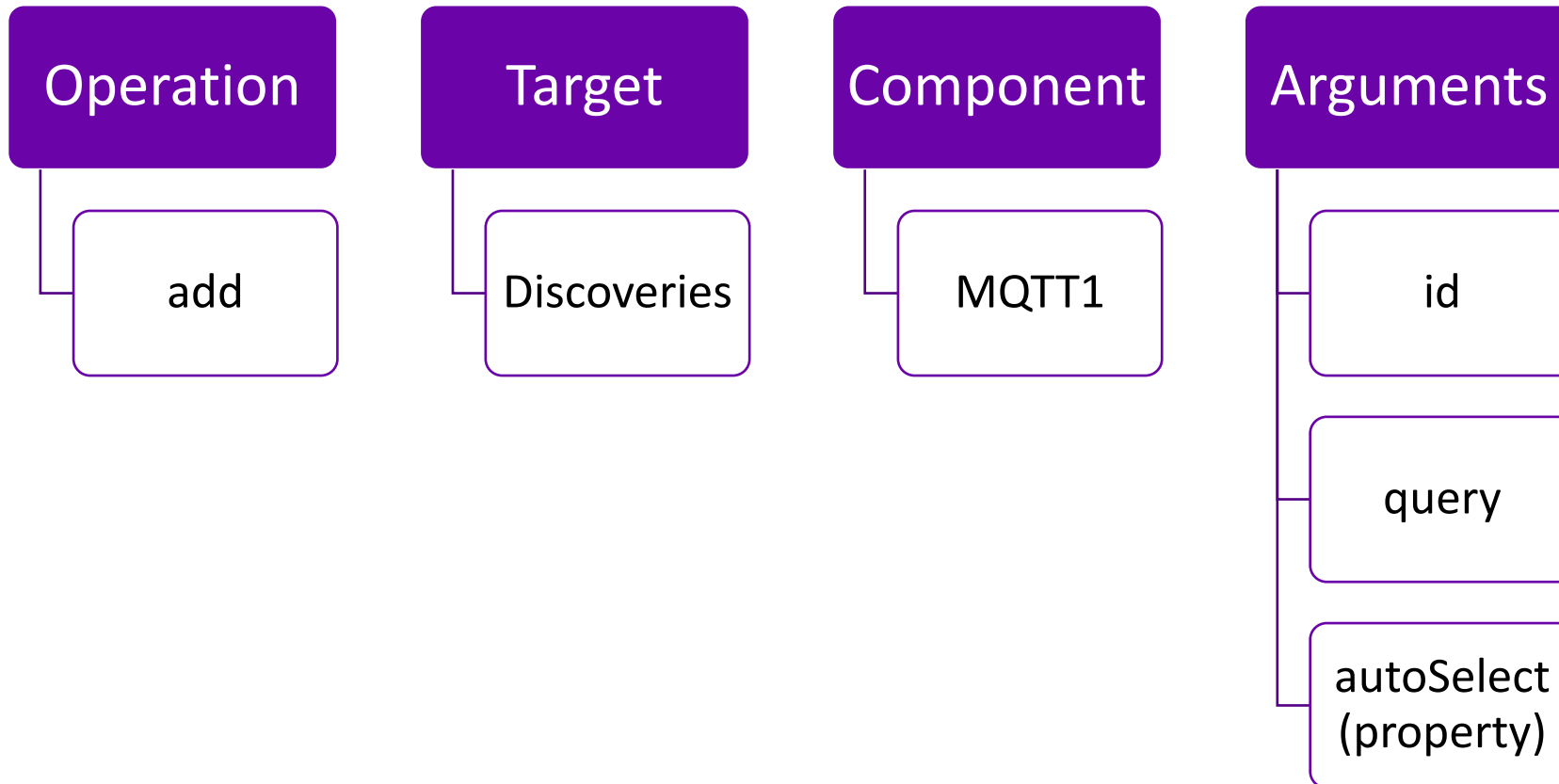
- **edgcmd add discoveries –cid MQTT1 –id discovery1 –query “Topics=generic/random1” –autoSelect true**



# Utilizing Edge Command

How can one tool be used to configure each facet of an adapter?

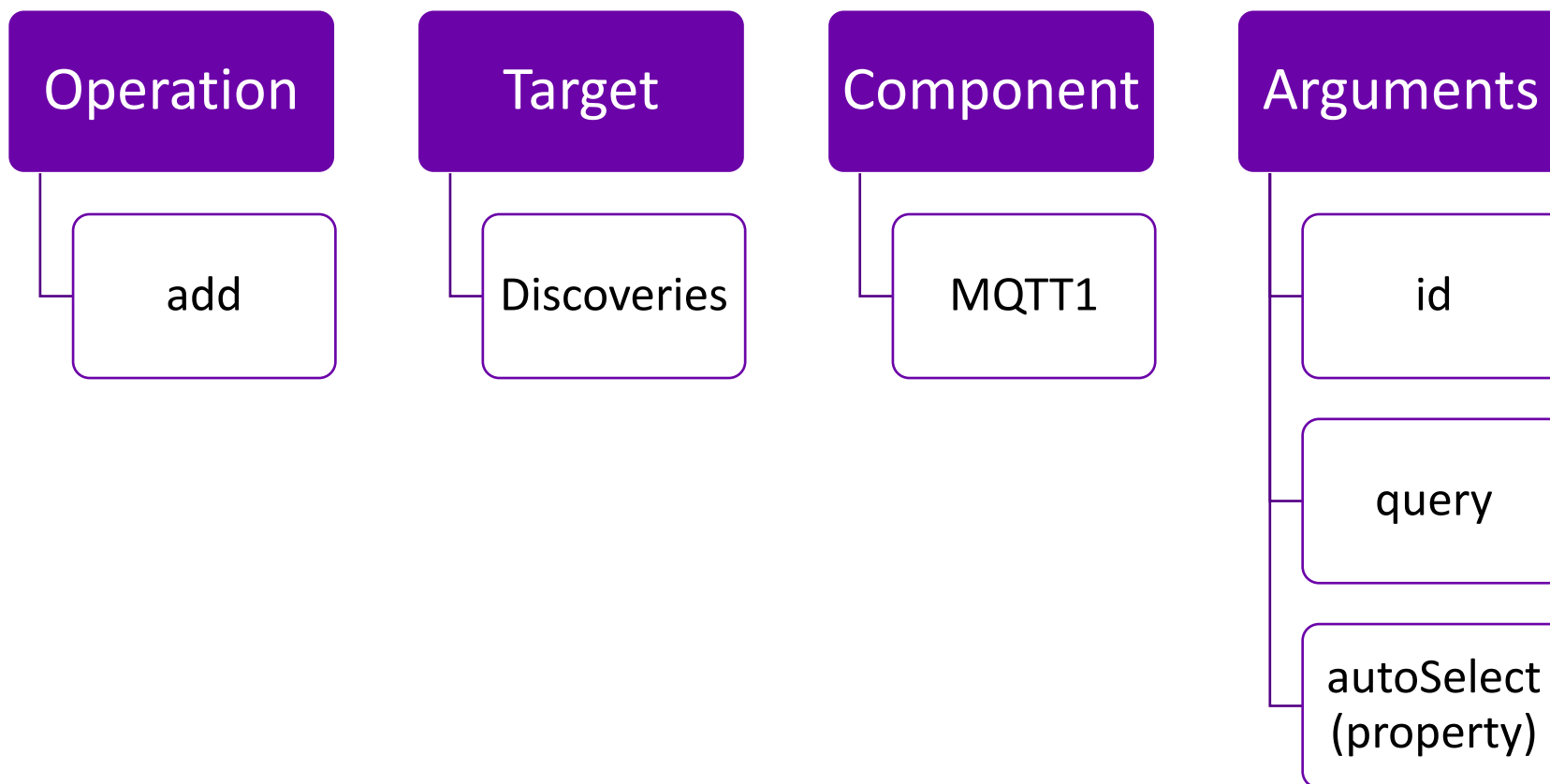
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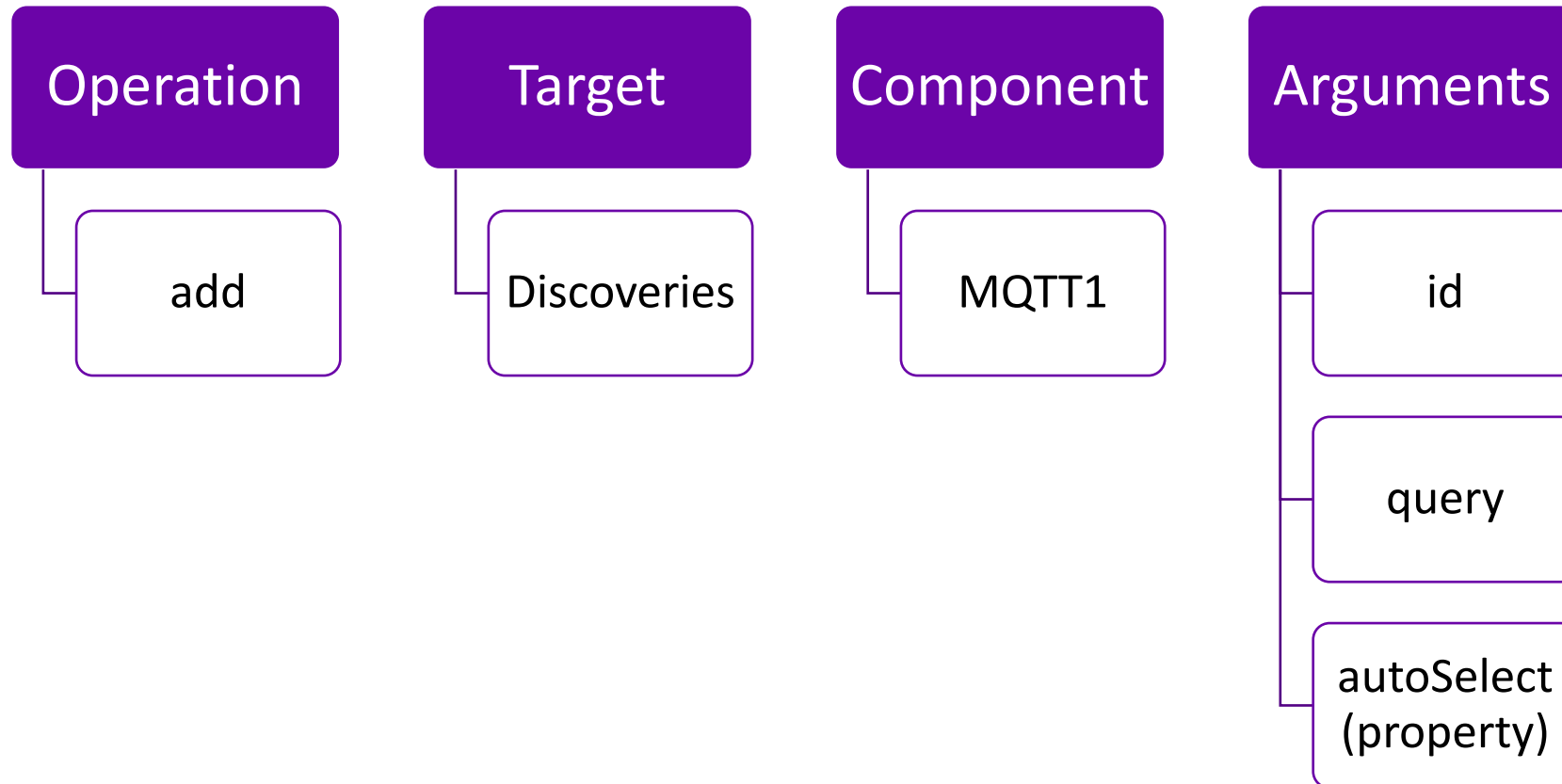




# Utilizing Edge Command

How can one tool be used to configure each facet of an adapter?

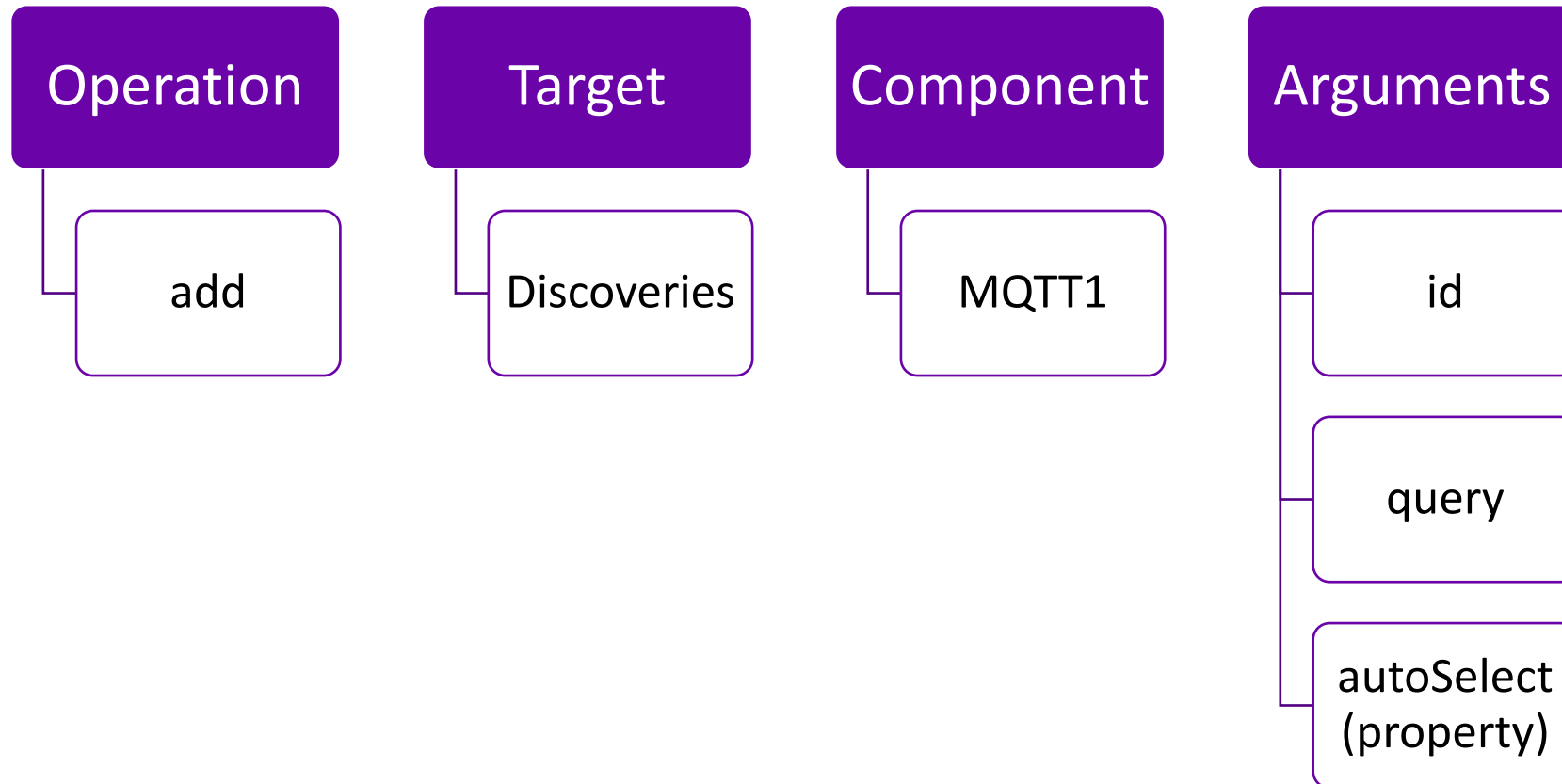
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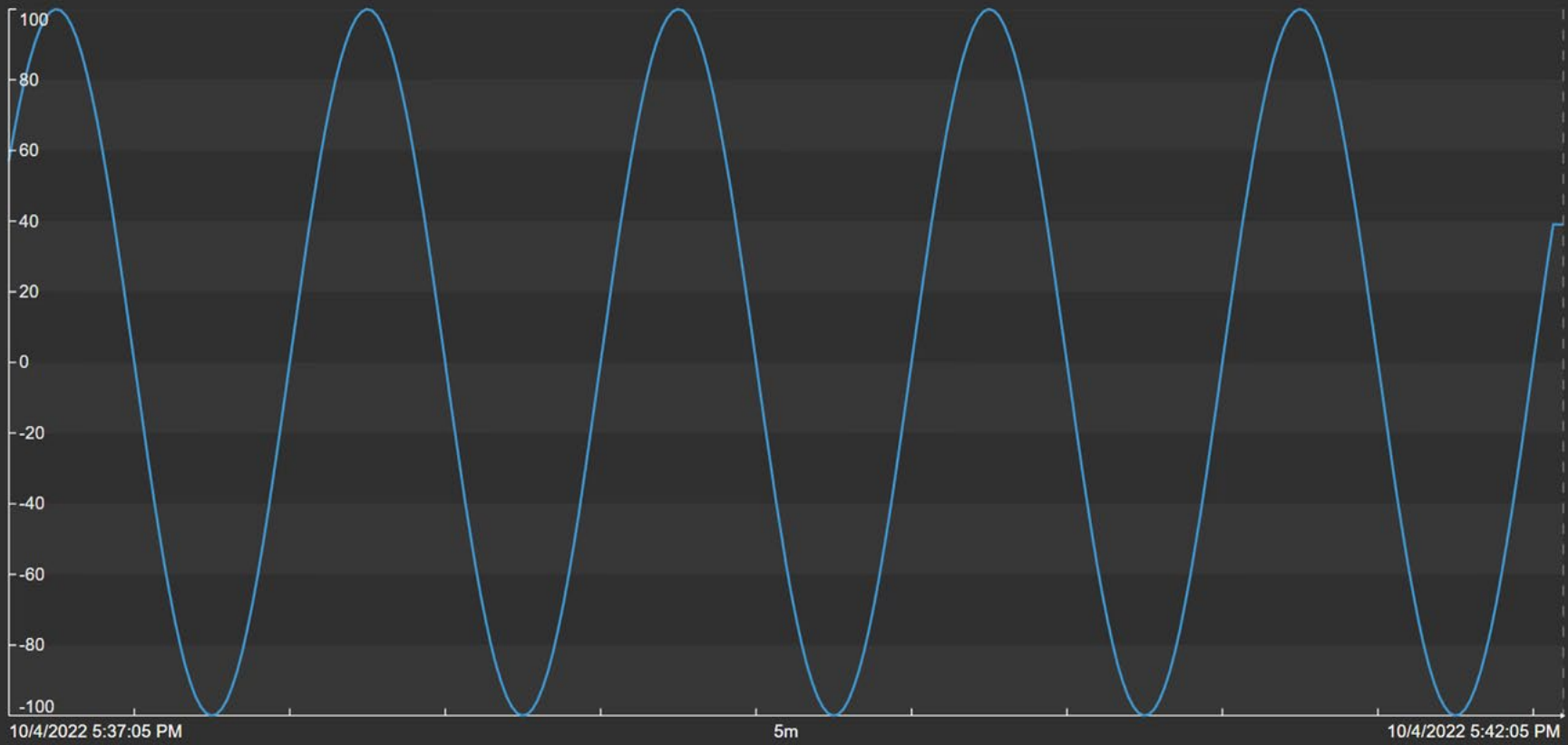


# Utilizing Edge Command

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- **edgecmd add discoveries –cid MQTT1 –id discovery1 –query “Topics=generic/random1” –autoSelect true**





MQTT1.generic/Performance/Boiler\$.BoilerSin  
39.026



Elements

- Elements
- Adapters
- Element Searches

Adapters

- General
- Child Elements
- Attributes
- Ports
- Analyses
- Notification Rules
- Version

Filter

Name	Value
__id	Adapters
__indexProperty	Name
__nameProperty	Name
Description	Collection of Adapter Assets

---

# Windows Installation

- `edgecmd add components -type MQTT -id MQTT1`
- `edgecmd start -cid MQTT1`
- `edgecmd set DataSource -cid MQTT1 -file DataSource.json`
- `edgecmd add discoveries -cid MQTT1 -id discovery1 -query "Topics=generic/random1" -autoSelect true`
- `edgecmd get discoveries -cid MQTT1 -id discovery1`
- `edgecmd set DataEndpoints -cid OmfEgress -file Egress.json`
- `edgecmd set ClientFailover -cid System -file Failover.json`
- `edgecmd set HealthEndpoints -cid System -file Health.json`
  
- remove configuration files when completed!

# Demonstration Goals

What do we want users to take away?

## Install and configure the MQTT adapter

Eight commands

Lightweight linux machine



## Showcase failover

Simple configuration

Demonstrate successful failover events



## Realistic example

Common failover scenario

Repeatable at home

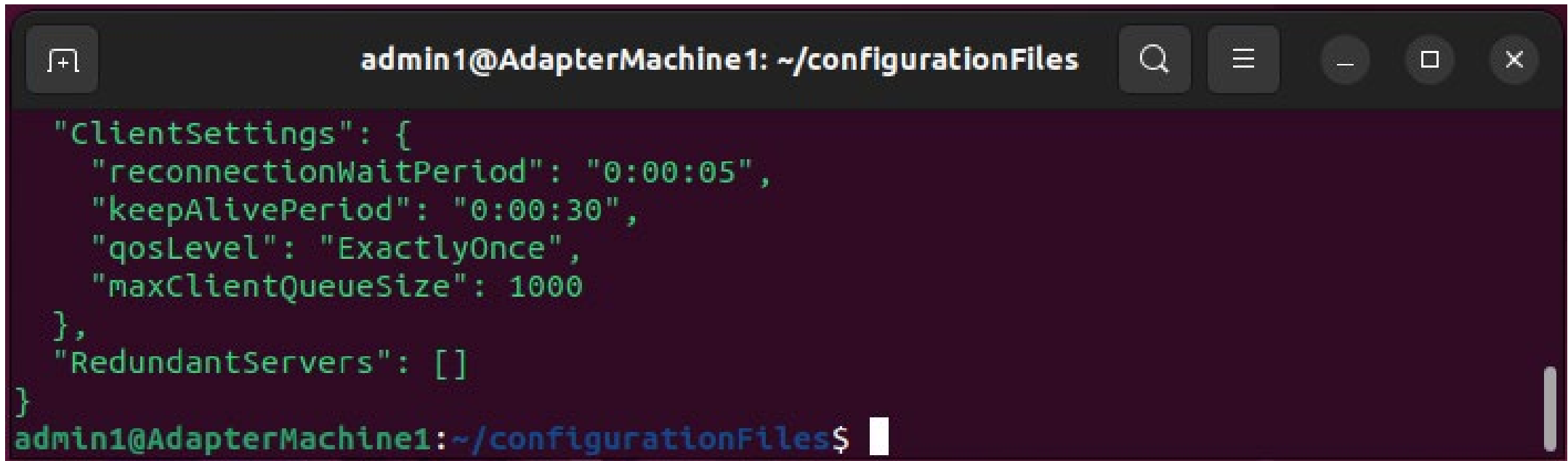
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# Additional Notes and Configuration Options

# Data Source Server Failover

Access redundant MQTT data sources when the primary data source is unreachable

- Specify additional MQTT data sources in the MQTT Component
  - RedundantServers[]
- Available for OPC UA, MQTT Generic, and MQTT Sparkplug adapters

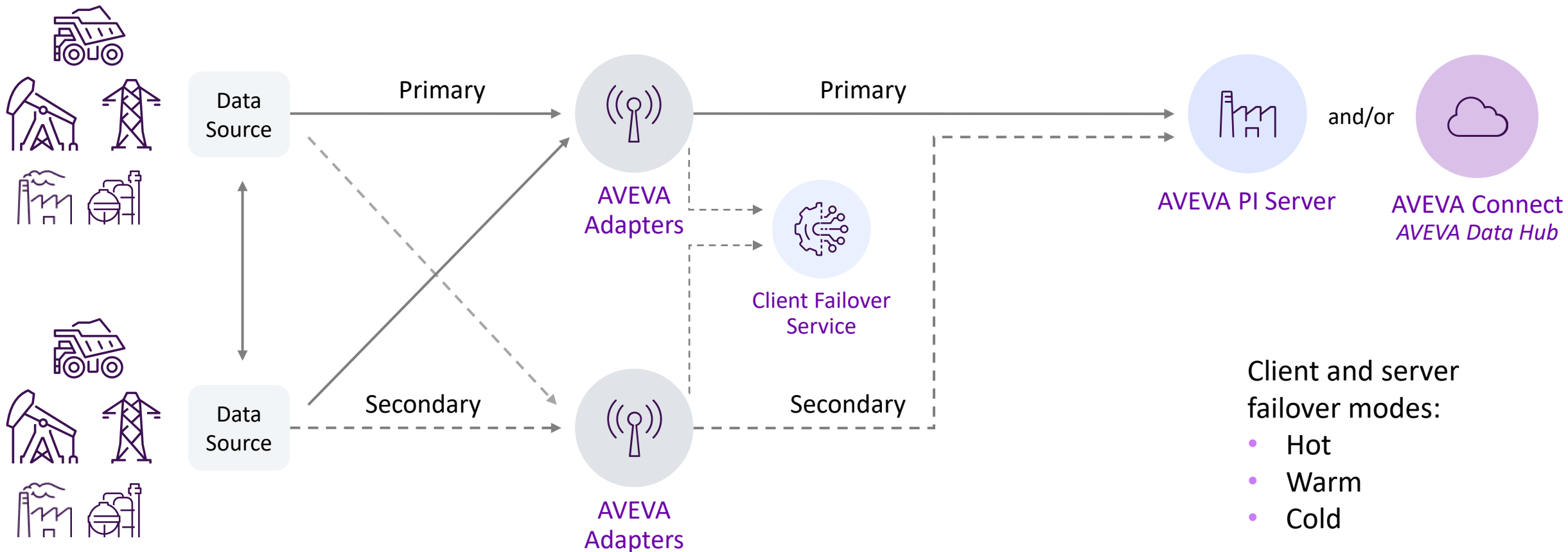
A terminal window with a dark background and light text. The title bar shows 'admin1@AdapterMachine1: ~/configurationFiles'. The terminal content displays a JSON configuration for MQTT client settings. The 'RedundantServers' array is currently empty. The prompt is 'admin1@AdapterMachine1:~/configurationFiles\$'.

```
admin1@AdapterMachine1: ~/configurationFiles
"ClientSettings": {
  "reconnectionWaitPeriod": "0:00:05",
  "keepAlivePeriod": "0:00:30",
  "qosLevel": "ExactlyOnce",
  "maxClientQueueSize": 1000
},
"RedundantServers": []
}
admin1@AdapterMachine1:~/configurationFiles$
```



# AVEVA Adapter failover

Client-side and server-side failover for AVEVA PI Server and AVEVA Data Hub



Client and server failover modes:

- Hot
- Warm
- Cold

---

# Benefits of Being an Administrator

Why put users in the 'AVEVAFailoverAdministrators' local group?

Update service logging levels

Health Endpoint administration

Role Override

# Configuration Alternatives

Use your favorite REST client!

## EdgeCMD

- CMD line configuration utility
- Developed by AVEVA

## cURL

- Windows and Linux CMD line
- Easily scriptable

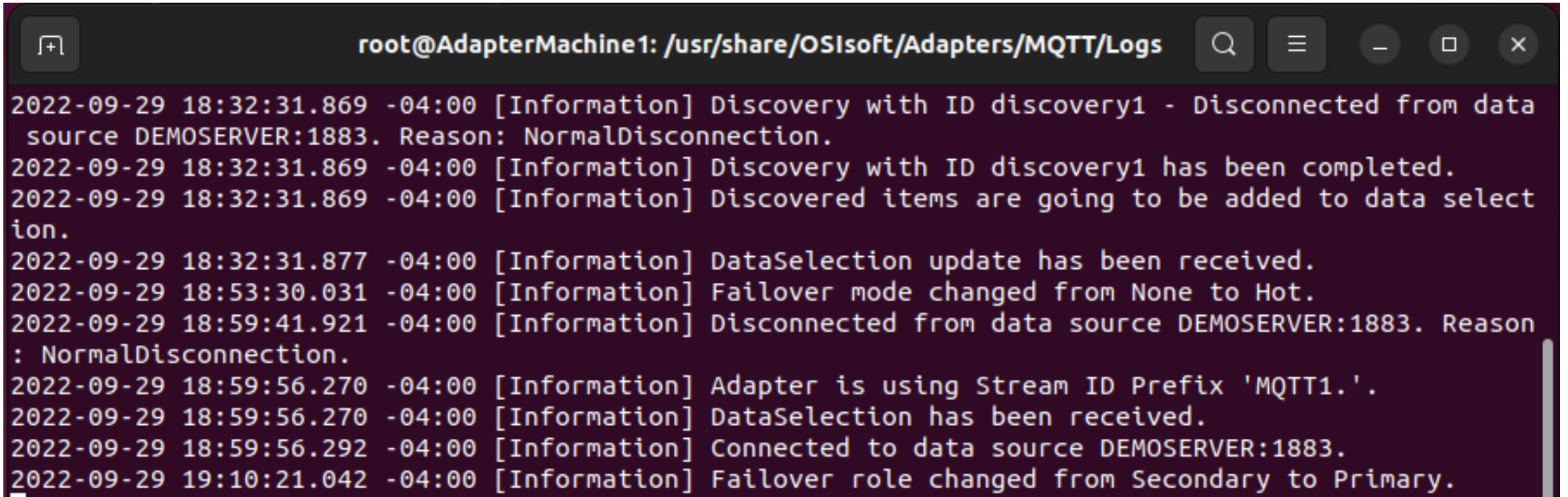
## Postman

- Standalone application
- Save configuration collections

# Looking through Adapter Logs

Where to look when you need more information!

- C:\ProgramData\OSIsoft\Adapters\MQTT\Logs
- /usr/share/OSIsoft/Adapters/MQTT/Logs (Sudo tail -f logfile.txt)

A terminal window screenshot showing MQTT adapter logs. The window title is 'root@AdapterMachine1: /usr/share/OSIsoft/Adapters/MQTT/Logs'. The logs contain several information messages regarding discovery, data selection, failover mode changes, and connection status to a data source named DEMOSERVER:1883.

```
root@AdapterMachine1: /usr/share/OSIsoft/Adapters/MQTT/Logs
2022-09-29 18:32:31.869 -04:00 [Information] Discovery with ID discovery1 - Disconnected from data
source DEMOSERVER:1883. Reason: NormalDisconnection.
2022-09-29 18:32:31.869 -04:00 [Information] Discovery with ID discovery1 has been completed.
2022-09-29 18:32:31.869 -04:00 [Information] Discovered items are going to be added to data select
ion.
2022-09-29 18:32:31.877 -04:00 [Information] DataSelection update has been received.
2022-09-29 18:53:30.031 -04:00 [Information] Failover mode changed from None to Hot.
2022-09-29 18:59:41.921 -04:00 [Information] Disconnected from data source DEMOSERVER:1883. Reason
: NormalDisconnection.
2022-09-29 18:59:56.270 -04:00 [Information] Adapter is using Stream ID Prefix 'MQTT1.'.
2022-09-29 18:59:56.270 -04:00 [Information] DataSelection has been received.
2022-09-29 18:59:56.292 -04:00 [Information] Connected to data source DEMOSERVER:1883.
2022-09-29 19:10:21.042 -04:00 [Information] Failover role changed from Secondary to Primary.
```

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# What is next?

Future enhancements for the on-premises Client Failover Service



Kerberos

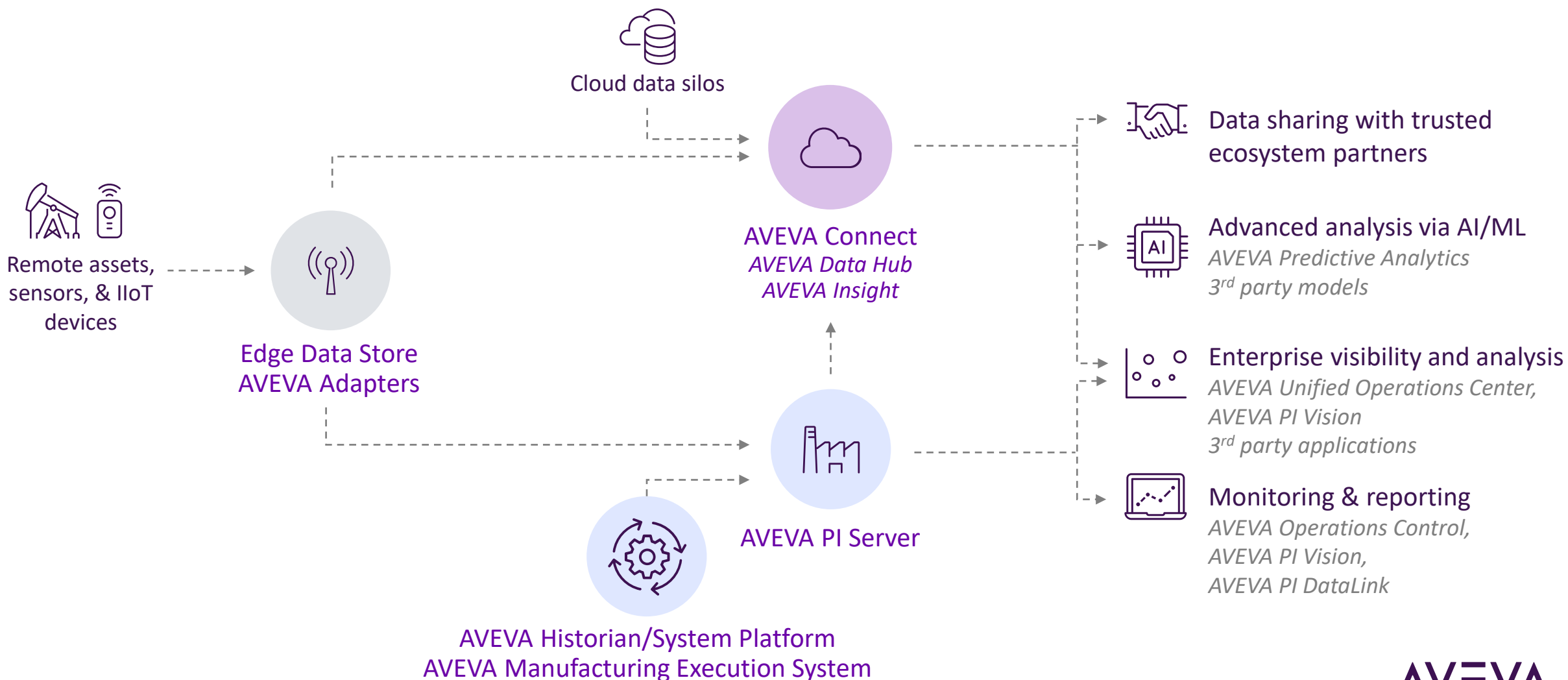
OMF Health

Linux OS  
Support

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# Summary

# Bridging engineering, operations, and business domains





# Providing the Backbone for a Stable Data Infrastructure

Empowerment through extensive data collection

Various Protocols

Robust Connectivity

Edge-to-Cloud Coverage

Interoperability and Flexibility

Expanding Feature Set



# Available AVEVA Adapters

OPC UA

Modbus TCP

DNP3

Azure Event  
Hubs

MQTT

Structured  
Data Files

BACnet

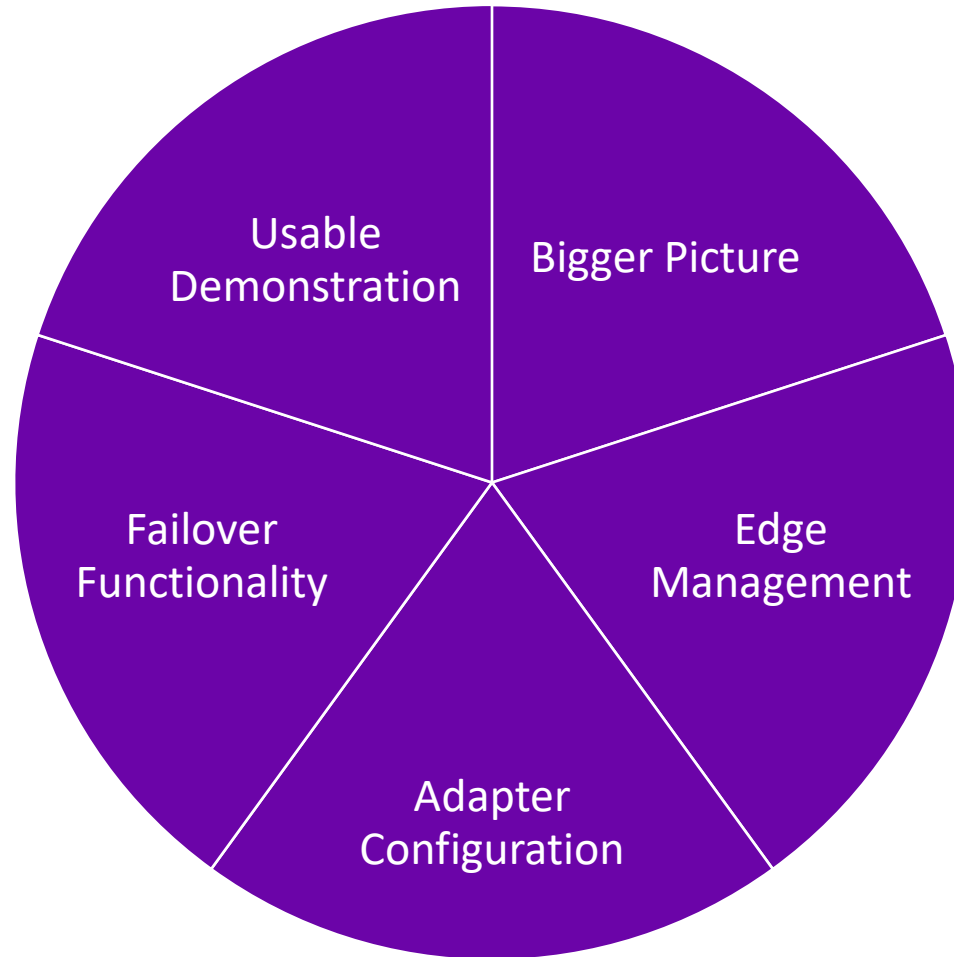
RDBMS

AVEVA  
Historian  
2023\*

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# Presentation Goals

What will we discuss?





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## Ellery Murdock

Senior Technical Product Manager

- AVEVA
- [William.Murdock@aveva.com](mailto:William.Murdock@aveva.com)



## Jane Matheson

R&D Manager

- AVEVA
- [jane.matheson@aveva.com](mailto:jane.matheson@aveva.com)

# Questions?

Please wait for the microphone  
State your name and company



# Please remember to...

Navigate to this session in the mobile  
app to complete the survey.



# Thank you

# AVEVA



# Individual Demo Steps

**AVEVA**



# Installing the Client Failover Service

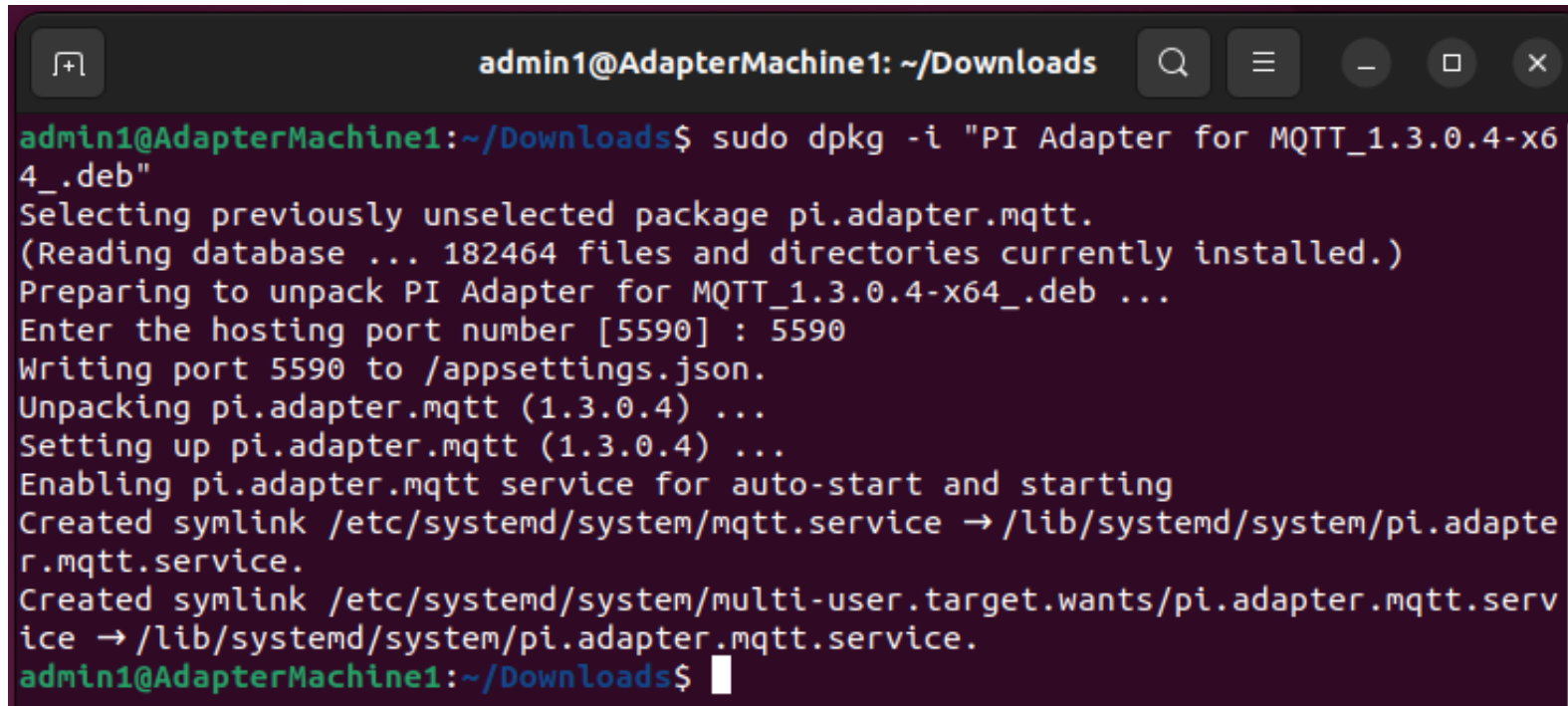
[Installation](#) | [Data Source](#) | [Data Selection](#) | [OMF Egress](#) | [Failover](#) | [OMF Health](#)

- Standalone installation kit
  - Windows OS
  - Linux → future release
- Requires open port (default 5495)
- Creates two Windows Local Groups
  - AVEVAFailoverAdministrators
  - AVEVAFailoverUsers
- Generates self-signed certificate

# Install the Adapter

[Installation](#) | [Data Source](#) | [Data Selection](#) | [OMF Egress](#) | [Failover](#) | [OMF Health](#)

- Sudo dpkg -i "PI Adapter for MQTT\_1.3.0.4-x64\_.deb"
- Specify port number

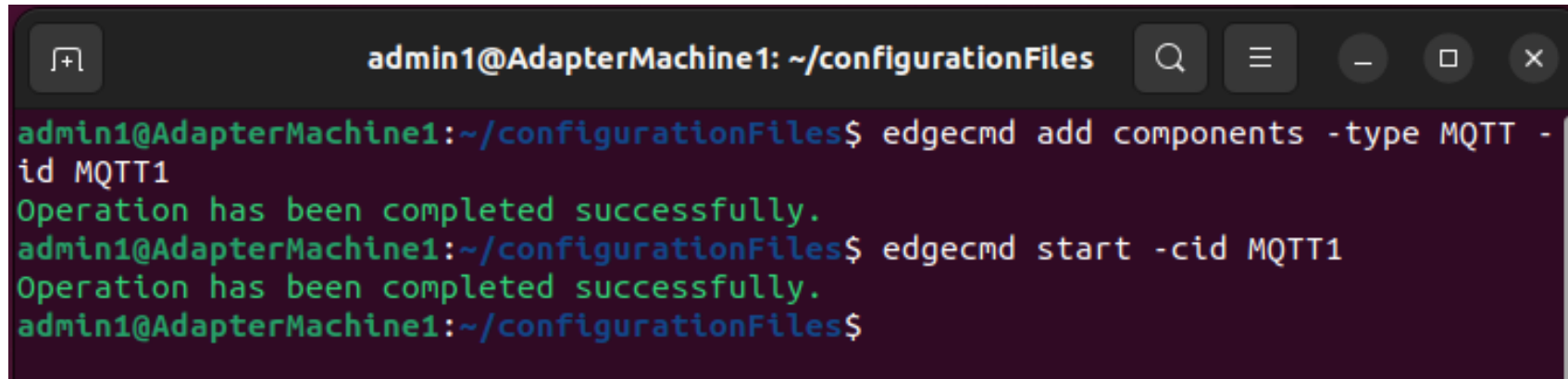


```
admin1@AdapterMachine1: ~/Downloads
admin1@AdapterMachine1:~/Downloads$ sudo dpkg -i "PI Adapter for MQTT_1.3.0.4-x64_.deb"
Selecting previously unselected package pi.adapter.mqtt.
(Reading database ... 182464 files and directories currently installed.)
Preparing to unpack PI Adapter for MQTT_1.3.0.4-x64_.deb ...
Enter the hosting port number [5590] : 5590
Writing port 5590 to /appsettings.json.
Unpacking pi.adapter.mqtt (1.3.0.4) ...
Setting up pi.adapter.mqtt (1.3.0.4) ...
Enabling pi.adapter.mqtt service for auto-start and starting
Created symlink /etc/systemd/system/mqtt.service -> /lib/systemd/system/pi.adapter.mqtt.service.
Created symlink /etc/systemd/system/multi-user.target.wants/pi.adapter.mqtt.service -> /lib/systemd/system/pi.adapter.mqtt.service.
admin1@AdapterMachine1:~/Downloads$
```

# Add and start an MQTT Component

[Installation](#) | [Data Source](#) | [Data Selection](#) | [OMF Egress](#) | [Failover](#) | [OMF Health](#)

- `edgecmd add components -type MQTT -id MQTT1`
- `edgecmd start -cid MQTT1`



```
admin1@AdapterMachine1: ~/configurationFiles
admin1@AdapterMachine1:~/configurationFiles$ edgecmd add components -type MQTT -id MQTT1
Operation has been completed successfully.
admin1@AdapterMachine1:~/configurationFiles$ edgecmd start -cid MQTT1
Operation has been completed successfully.
admin1@AdapterMachine1:~/configurationFiles$
```



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# Create and apply Data Source Configuration

Installation | **Data Source** | Data Selection | OMF Egress | Failover | OMF Health

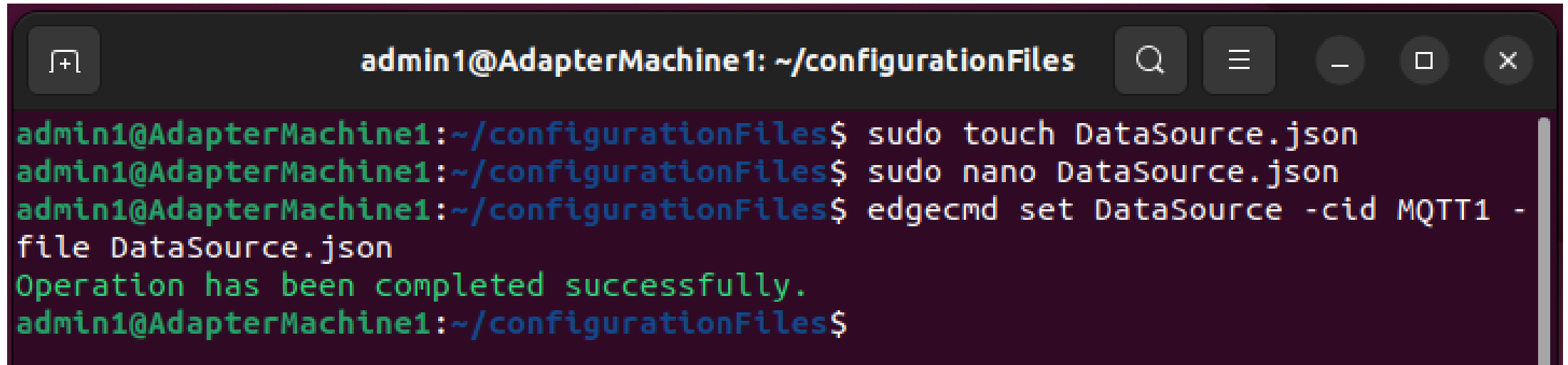
DataSource.json:

```
{  
  "HostNameOrIpAddress": "DEMOSERVER",  
  "Port": "1883",  
  "TLS": "None",  
  "ClientId": "AdapterMachine1"  
}
```

# Create and apply Data Source Configuration

Installation | [Data Source](#) | Data Selection | OMF Egress | Failover | OMF Health

- Edgecmd set DataSource –cid MQTT1 –file DataSource.json

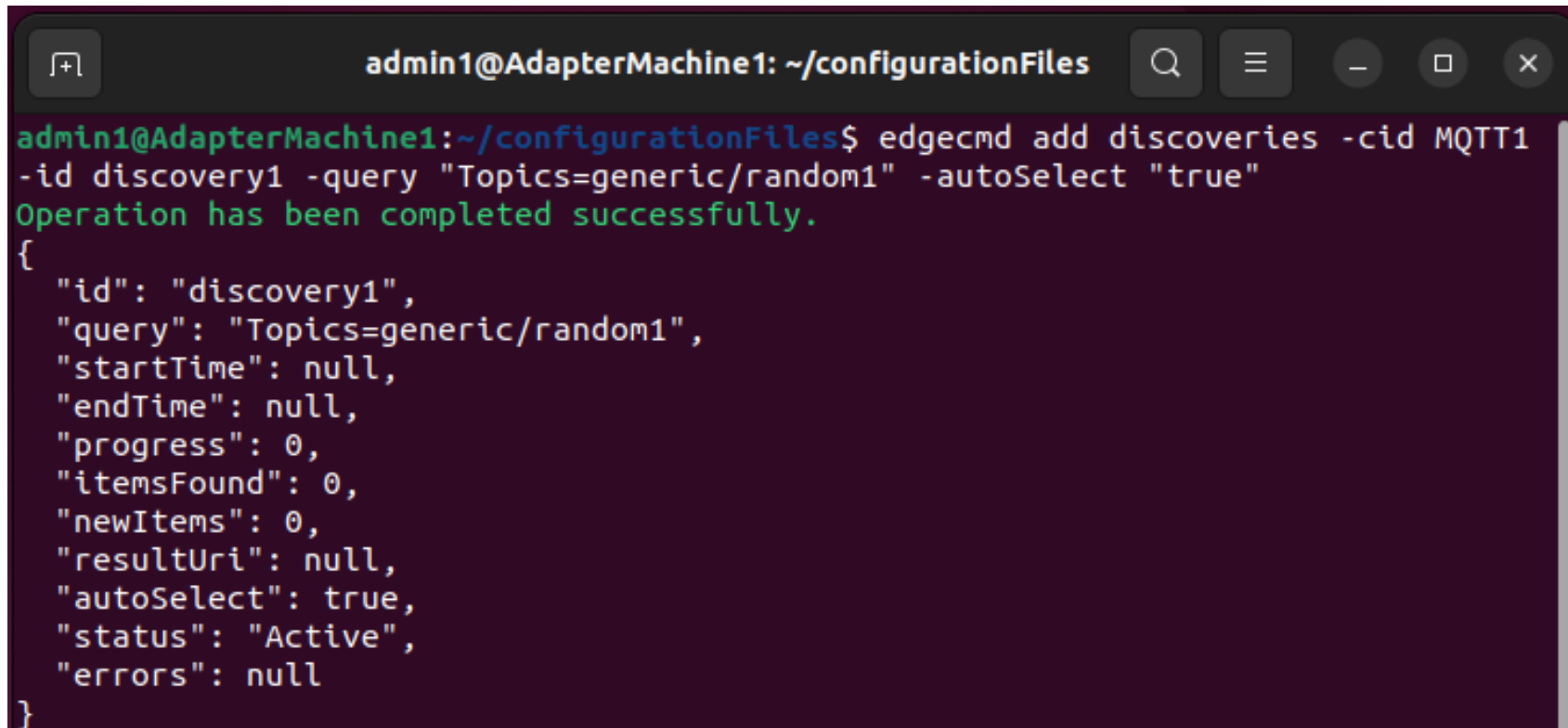


```
admin1@AdapterMachine1: ~/configurationFiles
admin1@AdapterMachine1:~/configurationFiles$ sudo touch DataSource.json
admin1@AdapterMachine1:~/configurationFiles$ sudo nano DataSource.json
admin1@AdapterMachine1:~/configurationFiles$ edgecmd set DataSource -cid MQTT1 -
file DataSource.json
Operation has been completed successfully.
admin1@AdapterMachine1:~/configurationFiles$
```

# Create Discovery for MQTT Data Items

[Installation](#) | [Data Source](#) | [Data Selection](#) | [OMF Egress](#) | [Failover](#) | [OMF Health](#)

- `edgecmd add discoveries -cid MQTT1 -id discovery1 -query "Topics=generic/random1" -autoSelect true`



```
admin1@AdapterMachine1: ~/configurationFiles
admin1@AdapterMachine1:~/configurationFiles$ edgecmd add discoveries -cid MQTT1
-id discovery1 -query "Topics=generic/random1" -autoSelect "true"
Operation has been completed successfully.
{
  "id": "discovery1",
  "query": "Topics=generic/random1",
  "startTime": null,
  "endTime": null,
  "progress": 0,
  "itemsFound": 0,
  "newItems": 0,
  "resultUri": null,
  "autoSelect": true,
  "status": "Active",
  "errors": null
}
```

# Run Discovery for MQTT Data Items

Installation | Data Source | Data Selection | OMF Egress | Failover | OMF Health

- `edgecmd get discoveries -cid MQTT1 -id discovery1`

```
admin1@AdapterMachine1:~/configurationFiles$ edgecmd get discoveries -cid MQTT1
-id discovery1
{
  "id": "discovery1",
  "query": "Topics=generic/random1",
  "startTime": "2022-09-29T18:31:30.4424561-04:00",
  "endTime": null,
  "progress": 1,
  "itemsFound": 16,
  "newItems": 0,
  "resultUri": null,
  "autoSelect": true,
  "status": "Active",
  "errors": null
}
admin1@AdapterMachine1:~/configurationFiles$
```

# Check DataSelection Items

Installation | Data Source | Data Selection | OMF Egress | Failover | OMF Health

- `edgecmd get DataSelection -cid MQTT1`

```
admin1@AdapterMachine1: ~/configurationFiles
admin1@AdapterMachine1:~/configurationFiles$ edgecmd get DataSelection -cid MQTT1
1
[
  {
    "topic": "generic/random1",
    "valueField": "$.UShort",
    "dataFields": null,
    "indexField": null,
    "dataType": "Float32",
    "indexFormat": null,
    "selected": true,
    "name": null,
    "streamId": "generic/random1.$.UShort",
    "dataFilterId": null
  },
  {
    "topic": "generic/random1",
    "valueField": "$.UInt",
    "dataFields": null,
    "indexField": null,
    "dataType": "Float32",
    "indexFormat": null,
    "selected": true,
    "name": null,
    "streamId": "generic/random1.$.UInt",
    "dataFilterId": null
  },
]
```

# Create and Apply OMF Egress Points

Installation | Data Source | Data Selection | OMF Egress | Failover | OMF Health

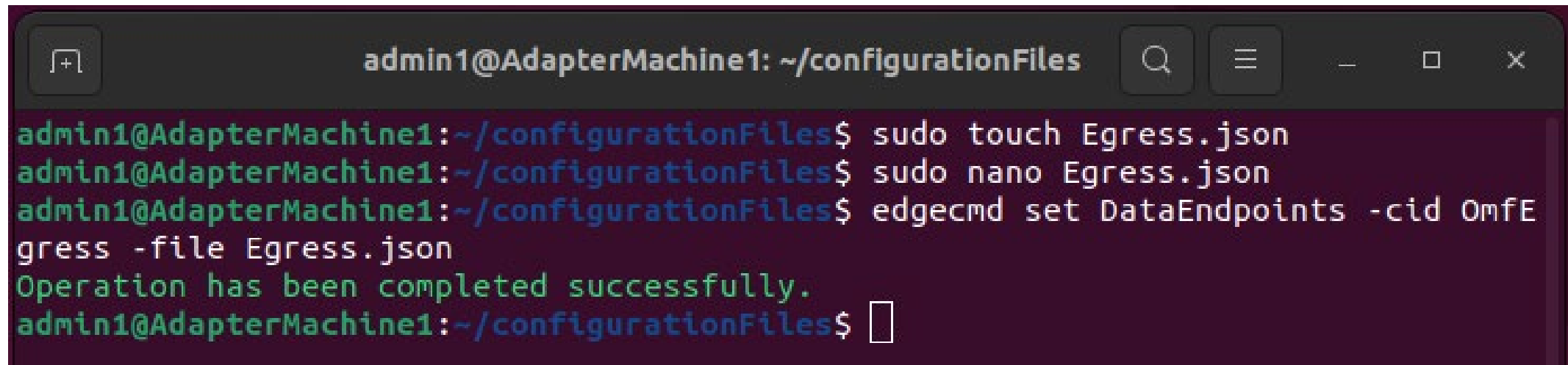
Egress.json:

```
{  
  "ID": "PI Web API",  
  "Endpoint": "https://demosever:443/piwebapi/omf",  
  "UserName": "administrator",  
  "Password": "----",  
  "ValidateEndpointCertificate": "false"  
}
```

# Create and Apply OMF Egress Points

Installation | Data Source | Data Selection | OMF Egress | Failover | OMF Health

- `edgecmd set DataEndpoints -cid OmfEgress -file Egress.json`



```
admin1@AdapterMachine1: ~/configurationFiles
admin1@AdapterMachine1:~/configurationFiles$ sudo touch Egress.json
admin1@AdapterMachine1:~/configurationFiles$ sudo nano Egress.json
admin1@AdapterMachine1:~/configurationFiles$ edgecmd set DataEndpoints -cid OmfEgress -file Egress.json
Operation has been completed successfully.
admin1@AdapterMachine1:~/configurationFiles$
```

# Create and Apply failover configuration

Installation | Data Source | Data Selection | OMF Egress | **Failover** | OMF Health

Failover.json:

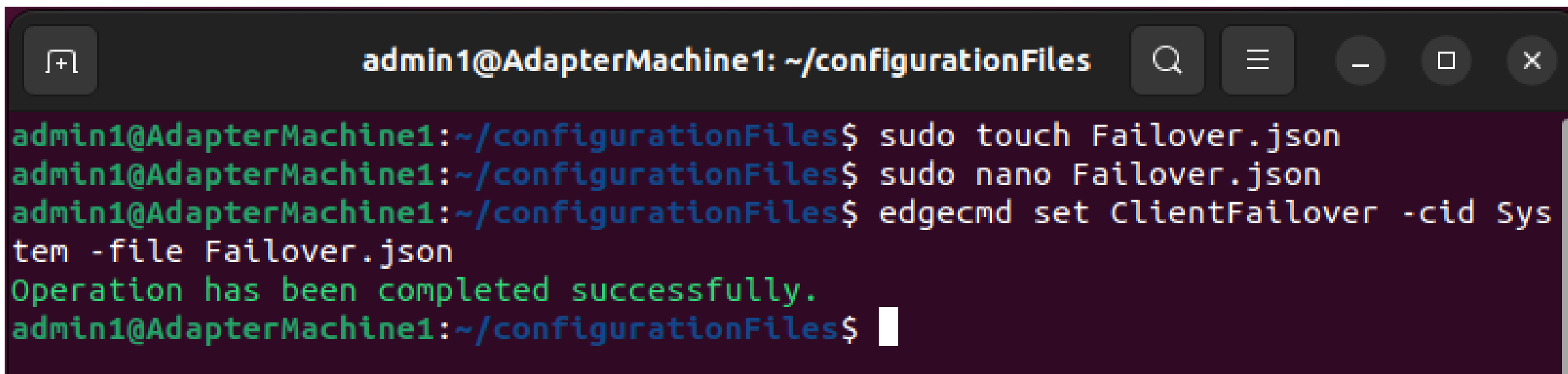
```
{  
  "FailoverGroupId": "AdapterDemoGroup",  
  "Name": "Failover Group 1",  
  "Description": "This demonstrates failover functionality",  
  "FailoverTimeout": "0:00:20",  
  "Mode": "Hot",  
  "Endpoint": "https://demoserver:5495/api/v1/clientfailover",  
  "UserName": "administrator",  
  "Password": "-----",  
  "ValidateEndpointCertificate": "false"  
}
```



# Create and Apply failover configuration

Installation | Data Source | Data Selection | OMF Egress | Failover | OMF Health

- `edgecmd set ClientFailover -cid System -file Failover.json`

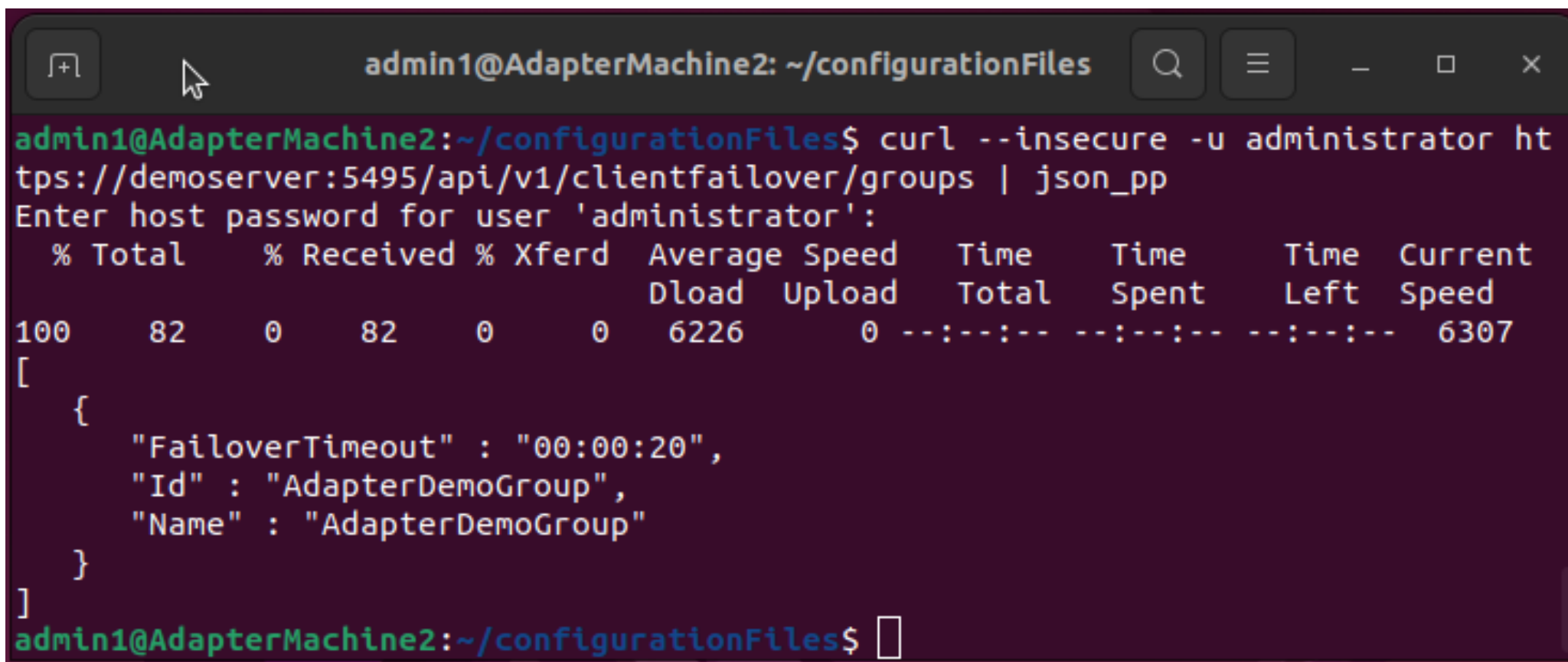


```
admin1@AdapterMachine1: ~/configurationFiles
admin1@AdapterMachine1:~/configurationFiles$ sudo touch Failover.json
admin1@AdapterMachine1:~/configurationFiles$ sudo nano Failover.json
admin1@AdapterMachine1:~/configurationFiles$ edgecmd set ClientFailover -cid System -file Failover.json
Operation has been completed successfully.
admin1@AdapterMachine1:~/configurationFiles$
```

# Check Failover Status

Installation | Data Source | Data Selection | OMF Egress | Failover | OMF Health

- `Curl -u administrator https://demosever:5495/api/v1/clientfailover/groups | json_pp`



```
admin1@AdapterMachine2: ~/configurationFiles
admin1@AdapterMachine2:~/configurationFiles$ curl --insecure -u administrator https://demosever:5495/api/v1/clientfailover/groups | json_pp
Enter host password for user 'administrator':
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload  Total  Spent  Left   Speed
100    82      0    82      0      0    6226      0  --:--:--  --:--:--  --:--:--   6307
[
  {
    "FailoverTimeout" : "00:00:20",
    "Id" : "AdapterDemoGroup",
    "Name" : "AdapterDemoGroup"
  }
]
admin1@AdapterMachine2:~/configurationFiles$
```

# Check Failover Status

Installation | Data Source | Data Selection | OMF Egress | Failover | OMF Health

- Curl -u administrator <https://demoserver:5495/api/v1/clientfailover/groups/AdapterDemoGroup/ClientSessions> | json\_pp

```
[
  {
    "Heartbeat" : {
      "FailoverStatus" : 100,
      "HeartbeatTime" : "2022-09-30T17:07:44.42257Z",
      "LastDataProcessedTime" : "2022-09-30T15:36:56.3541028Z"
    },
    "Id" : "AdapterMachine2.MQTT",
    "Name" : "AdapterMachine2 MQTT",
    "Role" : "Secondary",
    "RoleOverride" : "Off"
  },
  {
    "Heartbeat" : {
      "FailoverStatus" : 100,
      "HeartbeatTime" : "2022-09-30T17:07:42.736952Z",
      "LastDataProcessedTime" : "2022-09-30T17:07:42.5268225Z"
    },
    "Id" : "AdapterMachine1.MQTT",
    "Name" : "AdapterMachine1 MQTT",
    "Role" : "Primary",
    "RoleOverride" : "Off"
  }
]
```

---

# Configure Health endpoint

Installation | Data Source | Data Selection | OMF Egress | Failover | OMF Health

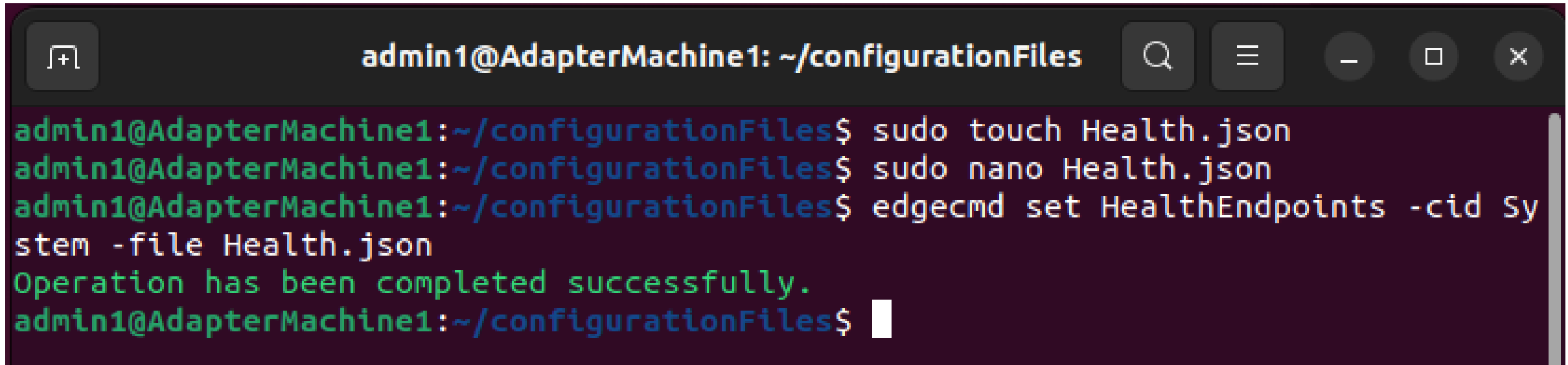
Health.json

```
{  
  "Id": "PI Web API Health | MQTT1 | AdapterMachine1",  
  "Endpoint": "https://demosever:443/piwebapi/omf",  
  "UserName": "administrator",  
  "Password": "-----",  
  "ValidateEndpointCertificate": "false"  
}
```

# Configure Health endpoint

[Installation](#) | [Data Source](#) | [Data Selection](#) | [OMF Egress](#) | [Failover](#) | [OMF Health](#)

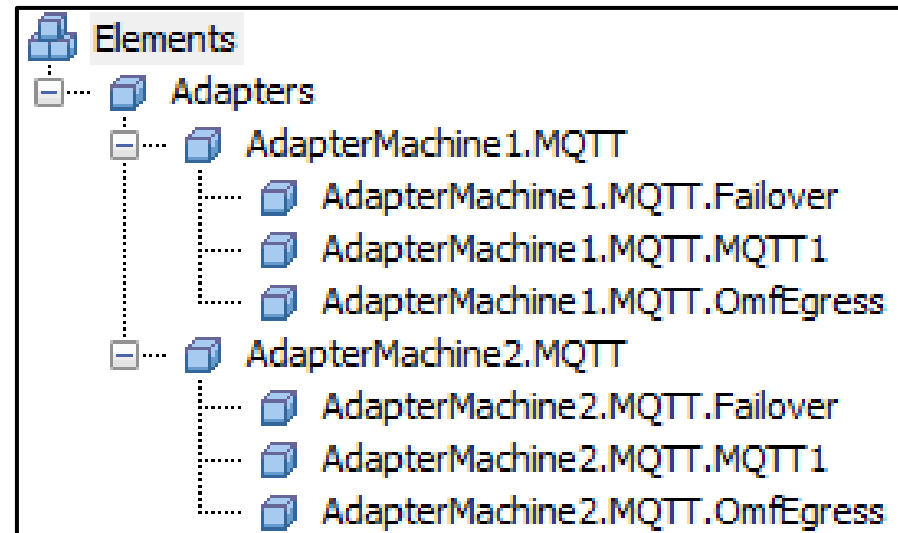
- `edgecmd set HealthEndpoints -cid System -file Health.json`



```
admin1@AdapterMachine1: ~/configurationFiles
admin1@AdapterMachine1:~/configurationFiles$ sudo touch Health.json
admin1@AdapterMachine1:~/configurationFiles$ sudo nano Health.json
admin1@AdapterMachine1:~/configurationFiles$ edgecmd set HealthEndpoints -cid System -file Health.json
Operation has been completed successfully.
admin1@AdapterMachine1:~/configurationFiles$
```

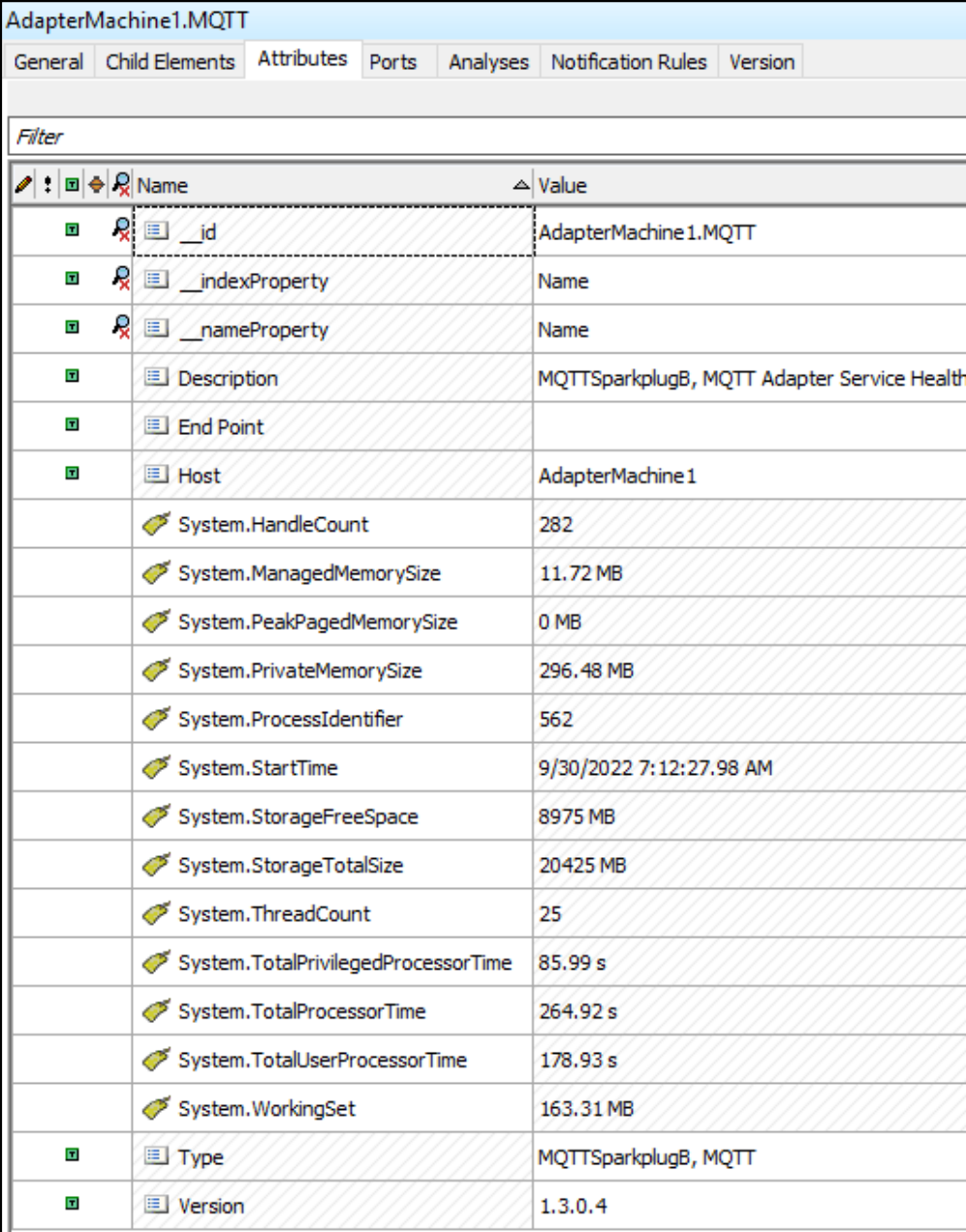
# OMF Health Endpoint Element Hierarchy

Multiple elements created for each Adapter



# Adapter Machine and Type
























































## AdapterMachine1.MQTT



AdapterMachine1.MQTT	
General Child Elements Attributes Ports Analyses Notification Rules Version	
Filter	
Name	Value
__id	AdapterMachine1.MQTT
__indexProperty	Name
__nameProperty	Name
Description	MQTTSparkplugB, MQTT Adapter Service Health
End Point	
Host	AdapterMachine1
System.HandleCount	282
System.ManagedMemorySize	11.72 MB
System.PeakPagedMemorySize	0 MB
System.PrivateMemorySize	296.48 MB
System.ProcessIdentifier	562
System.StartTime	9/30/2022 7:12:27.98 AM
System.StorageFreeSpace	8975 MB
System.StorageTotalSize	20425 MB
System.ThreadCount	25
System.TotalPrivilegedProcessorTime	85.99 s
System.TotalProcessorTime	264.92 s
System.TotalUserProcessorTime	178.93 s
System.WorkingSet	163.31 MB
Type	MQTTSparkplugB, MQTT
Version	1.3.0.4

# Failover Component

AdapterManager1.MQTT.Failover

AdapterManager1.MQTT.Failover						
General	Child Elements	Attributes	Ports	Analyses	Notification Rules	Version
Filter						
Name	Value					
     _id	AdapterManager1.MQTT.Failover					
     __indexProperty	Name					
     __nameProperty	Name					
    Description	Failover Health					
    DeviceStatus	Good					
    Failover Endpoint	<a href="https://demoserver:5495/api/v1/clientfailover">https://demoserver:5495/api/v1/clientfailover</a>					
    Failover Group ID	AdapterDemoGroup					
    Failover Mode	Hot					
    FailoverStatus.FailoverRole	Primary					
    FailoverStatus.FailoverStatus	100					
    Host	AdapterManager1					
    NextHealthMessageExpected	9/30/2022 11:59:29.549 AM					
    Version	1.3.0.4					























# Individual MQTT Component

## AdapterMachine1.MQTT.MQTT1

AdapterMachine1.MQTT.MQTT1						
General	Child Elements	Attributes	Ports	Analyses	Notification Rules	Version
Filter						
Name	Value					
__id	AdapterMachine1.MQTT.MQTT1					
__indexProperty	Name					
__nameProperty	Name					
Data Source	MQTT1					
Description	MQTT Adapter Health					
DeviceStatus	Good					
End Point						
ErrorRate	0					
Host	AdapterMachine1					
IORate	167					
NextHealthMessageExpected	9/30/2022 12:00:32.374 PM					
StreamCount.StreamCount	167					
StreamCount.TypeCount	0					
Type	MQTT					
Version	1.3.0.4					

# OMF Egress Component

## AdapterMachine1.MQTT.OmfEgress

AdapterMachine1.MQTT.OmfEgress						
General	Child Elements	Attributes	Ports	Analyses	Notification Rules	Version
Filter						
Name	Value					
     __id	AdapterMachine1.MQTT.OmfEgress					
   __indexProperty	Name					
   __nameProperty	Name					
  Description	OMF Egress health					
 DeviceStatus	Good					
  Host	AdapterMachine1					
 NextHealthMessageExpected	9/30/2022 12:00:29.468 PM					
 PI Web API.IORate	167					
  Version	1.7.0.47+4eef69b3b4a96386bf2d72efad3208115d0fd340					


---

# Helpful commands

- `edgecmd set Logging -cid System -logLevel trace`
- Curl example:
  - `curl -d "@Failover.json" -H "Content-Type: application/json" -X PUT "http://localhost:5590/api/v1/configuration/System/ClientFailover"`

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