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Adapter performance, failover, and best practices

PI GEEK TRACK

Presented by: Evan Greavu, Ashish Jain

Hello AVEVA World!

Evan Greavu

Senior Tech Support Engineer

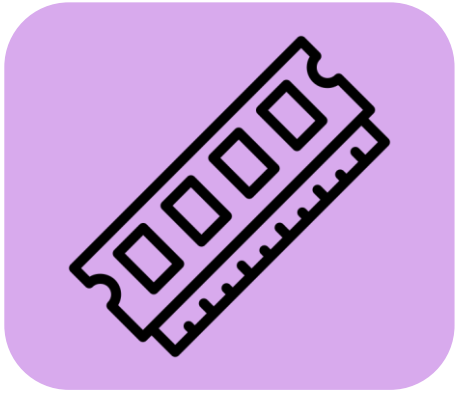
Escalation team for AVEVA PI Interfaces, Connectors, and Adapters

Ashish Jain

Senior Tech Support Engineer

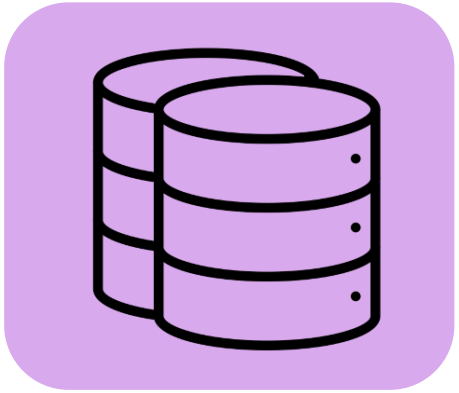
Escalation team for AVEVA PI Interfaces, Connectors, and Adapters

Objectives



Hardware and best practices

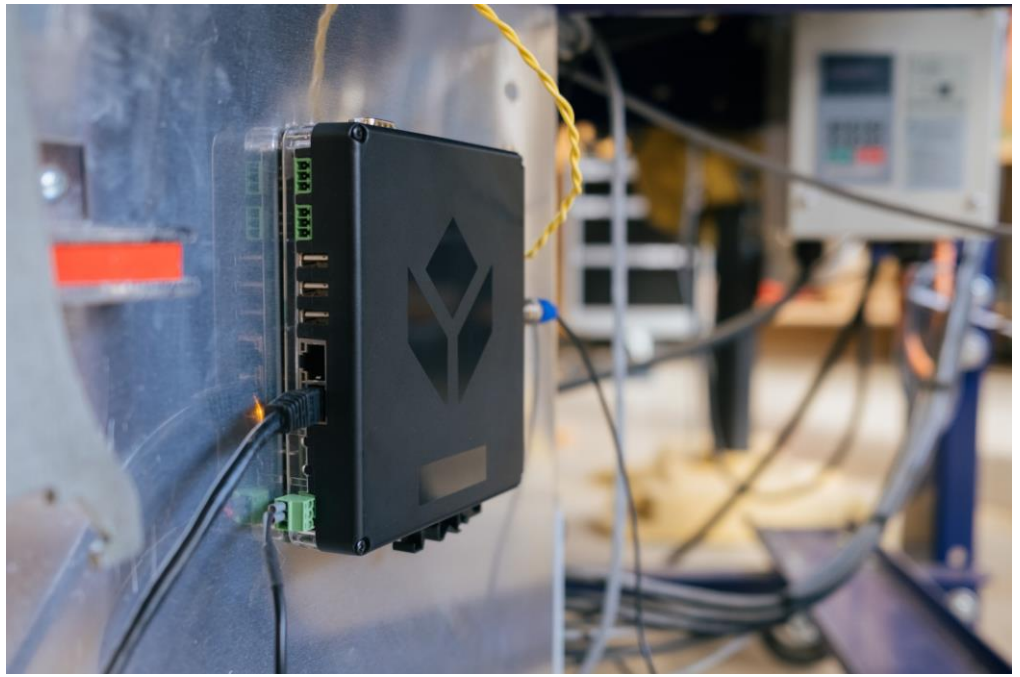
Adapter performance expectations



Failover and redundancy

Supported hardware

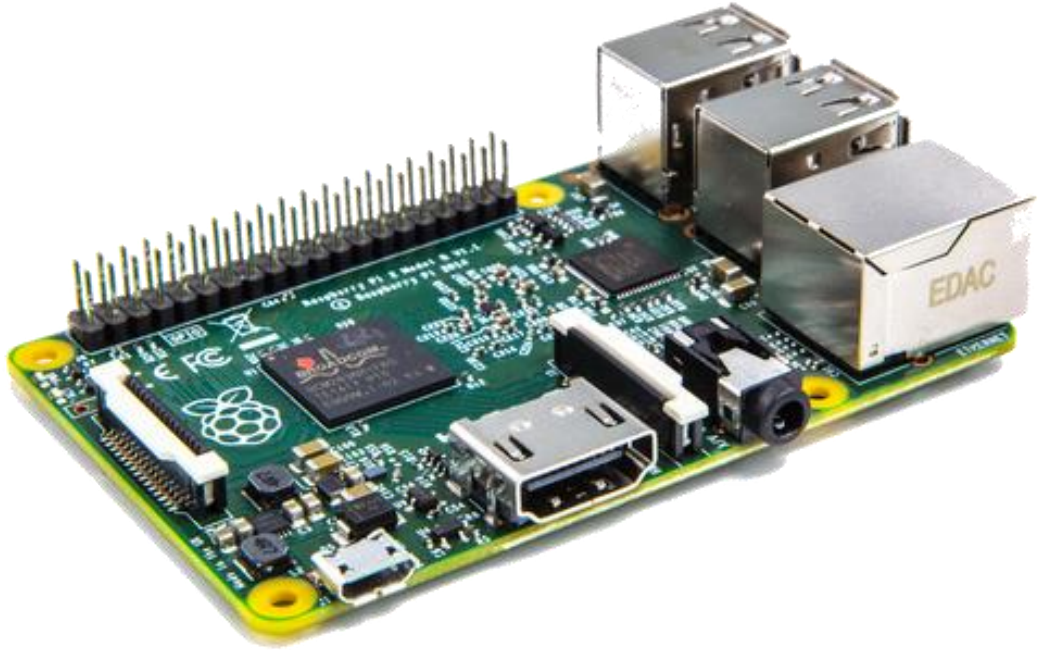
- Broadened platform compatibility with edge devices in mind
  - Linux (Debian/Ubuntu)
  - ARM processors
  - Docker containers
- Windows
- Intel/AMD processors



Hardware configurations

Small devices

- 1 core CPU
- 512MB RAM
- Example: Raspberry Pi 1



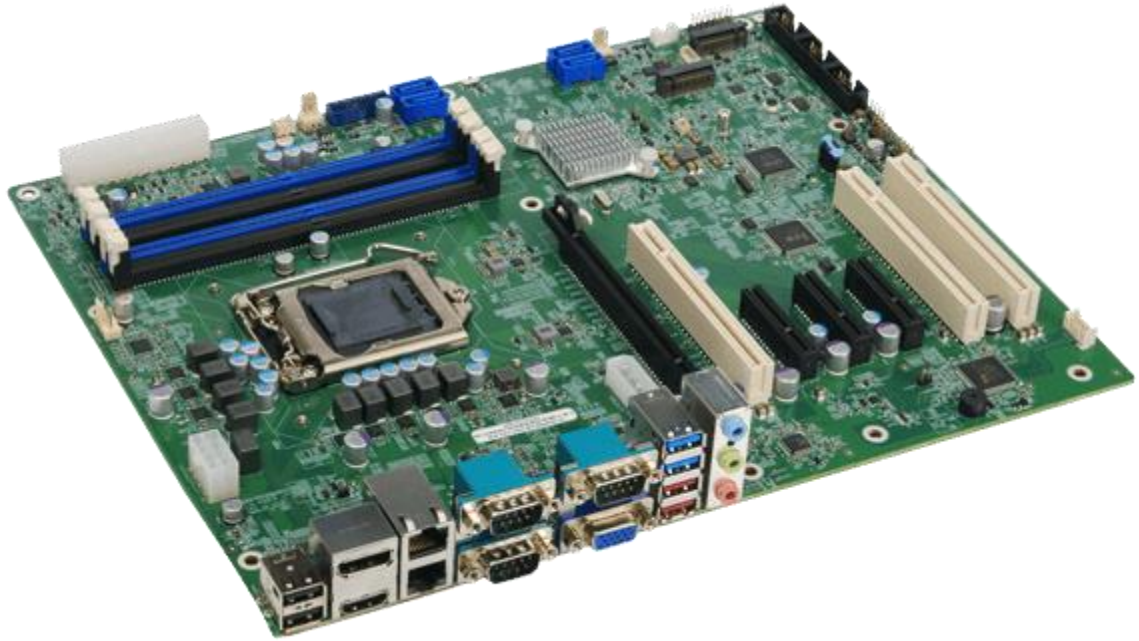
Performance expectations

- 1,000 events / sec
- 1,000 total streams

Hardware configurations

Large devices

- 2 core CPU
- 8GB RAM
- Virtual machines or dedicated servers



Performance expectations

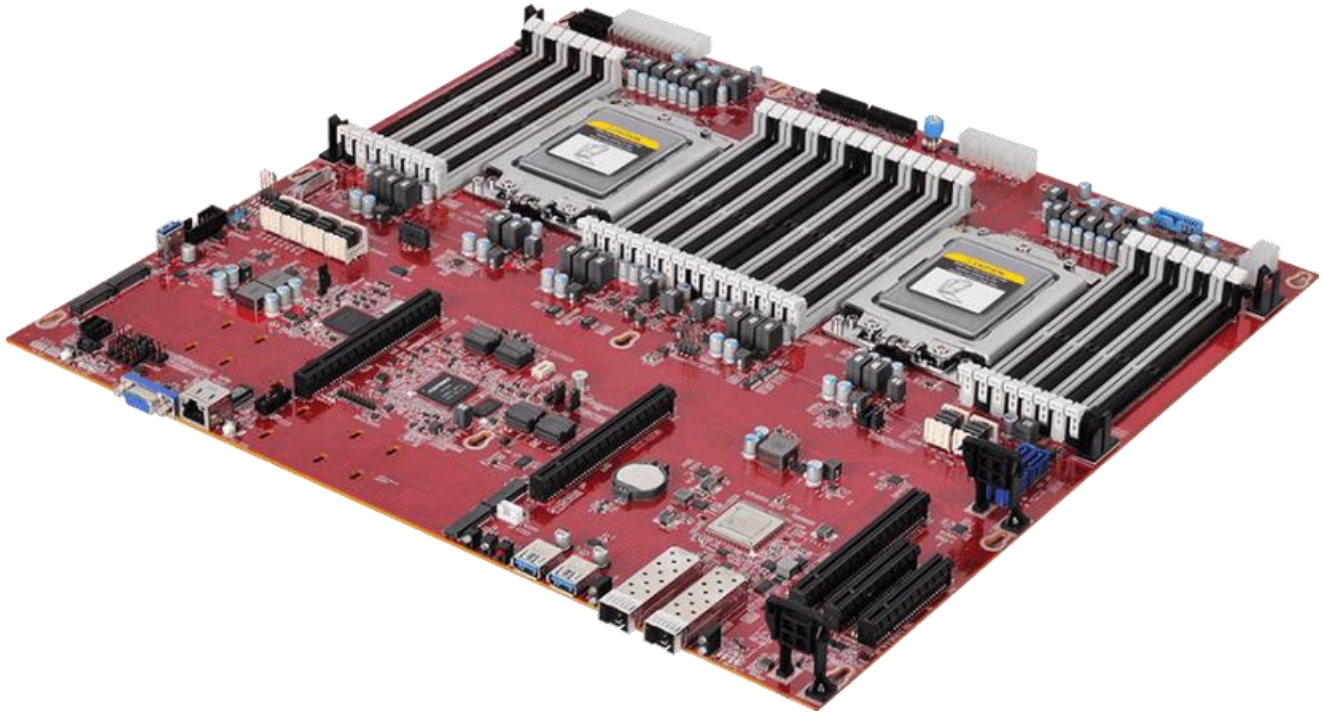
- 20,000 events / sec
- 20,000 total streams

Expect enhancements to adapter performance in the future!

Isolating software performance

Extremely large device

- 24 core CPU
- 24GB RAM



Performance test

- Custom OPC UA server
- 100,000 nodes - random float values every 1s
- Data source and PI Web API run locally

OPC UA adapter results

- 50,000+ events/sec
- 100,000 total streams

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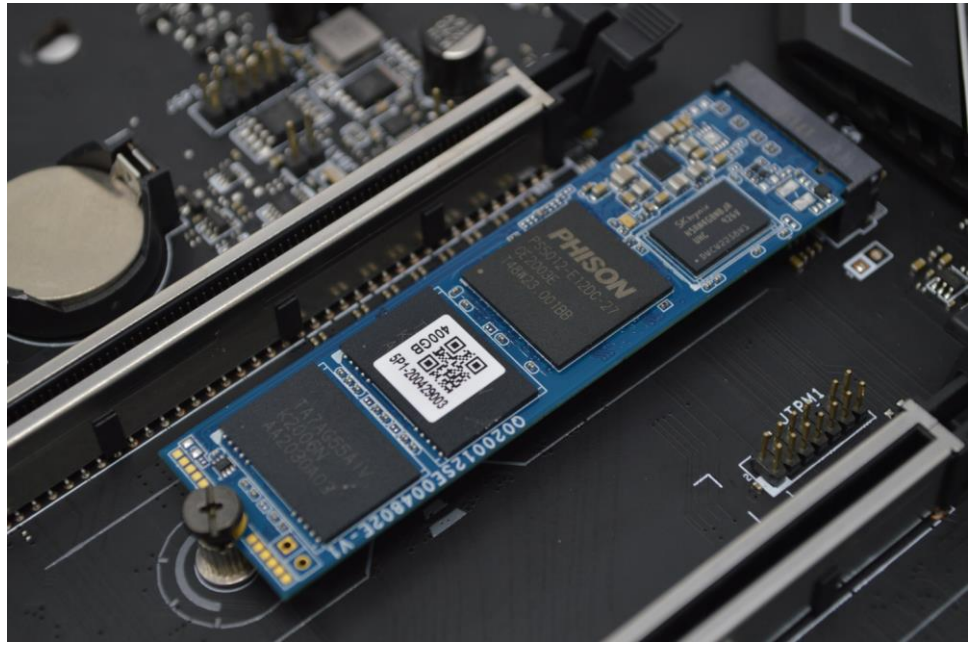
General recommendations

- Sufficient resources to handle desired stream count and throughput
- Solid state drives
- Stable network



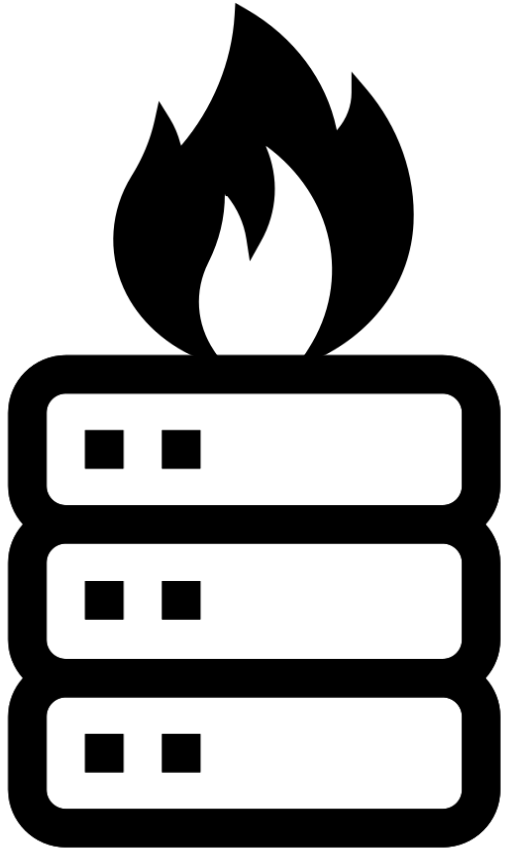
Performance issues

Factors that can negatively impact performance

- Insufficient hardware sizing
- Network instability
- Programs hogging resources
- Excessive stream count/subscriptions

Symptoms

- Errors and timeouts
- Data lag
- Missing data



Mitigating performance issues

Adjust client parameters

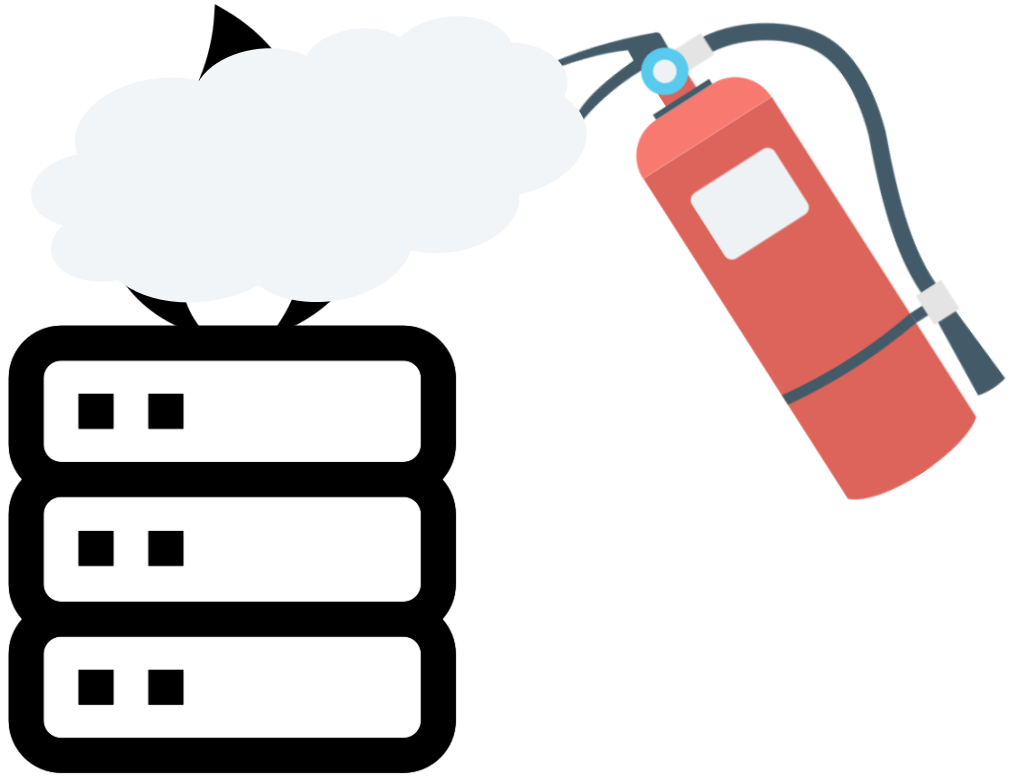
- Timeouts
- Operation limits
- Block sizes

Increase buffer capacity

- Default is 1024MB
- Increase in case of long egress outages

Configure data filters

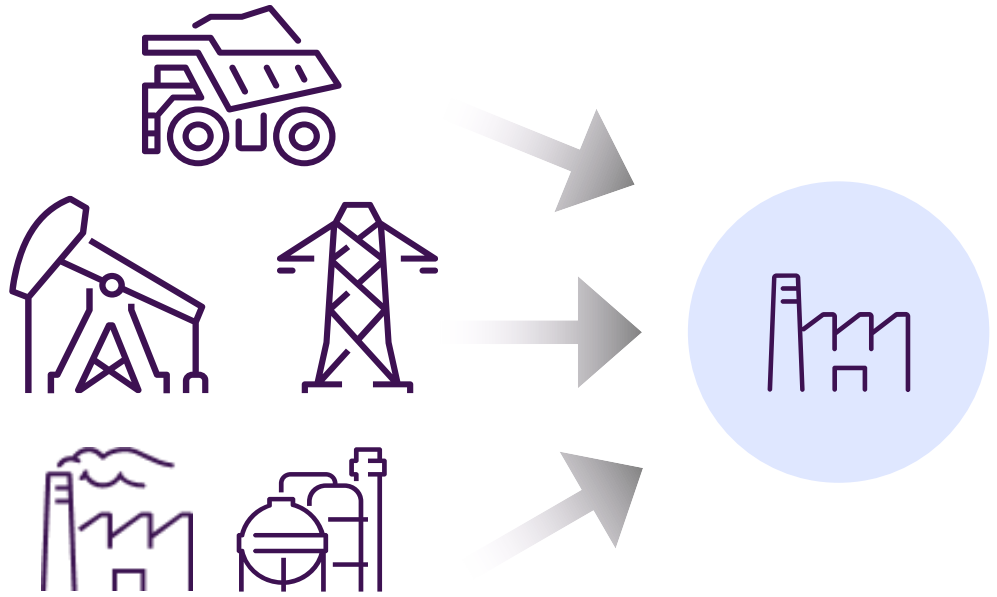
- Set dead bands to reduce network traffic



Data source performance

Many support cases for interfaces, connectors and adapters turn out to be caused by problems at the data source!

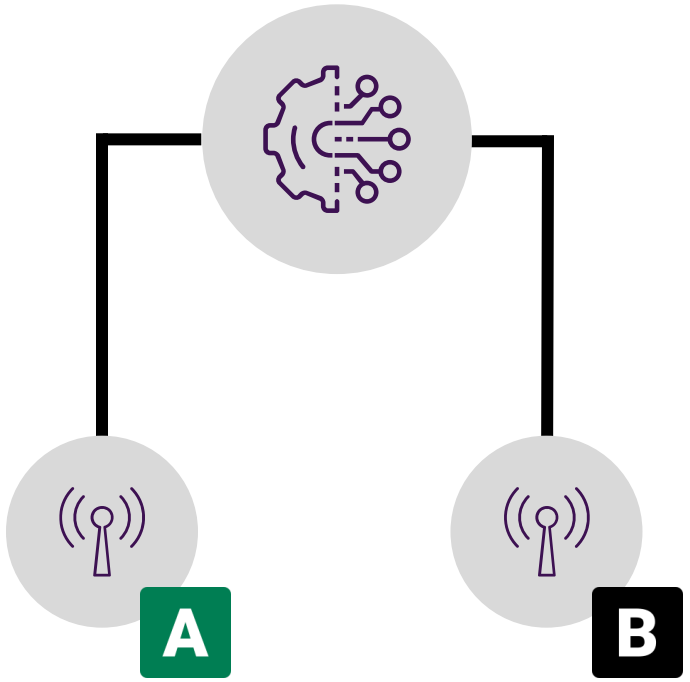
- Data source devices need sufficient hardware and network stability as well
- Symptoms can appear similar to adapter performance issues
- Correct source server settings (operation limits, timeouts, etc.)



Failover and redundancy

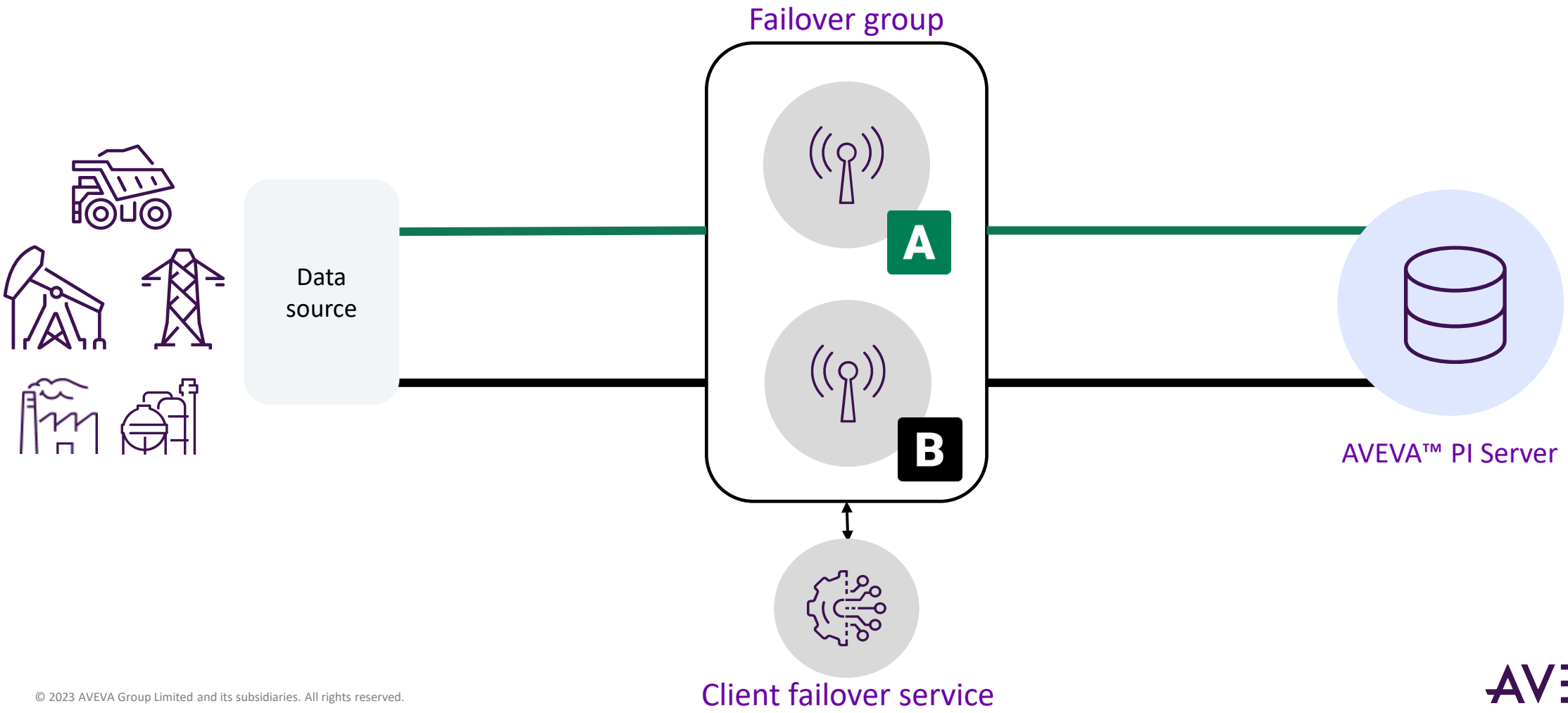
Client failover service

- External service that controls adapter failover states
  - Installation not required if using AVEVA™ Data Hub
- Adapter with best health score is chosen as active primary
- Currently supported by OPC UA and MQTT adapters



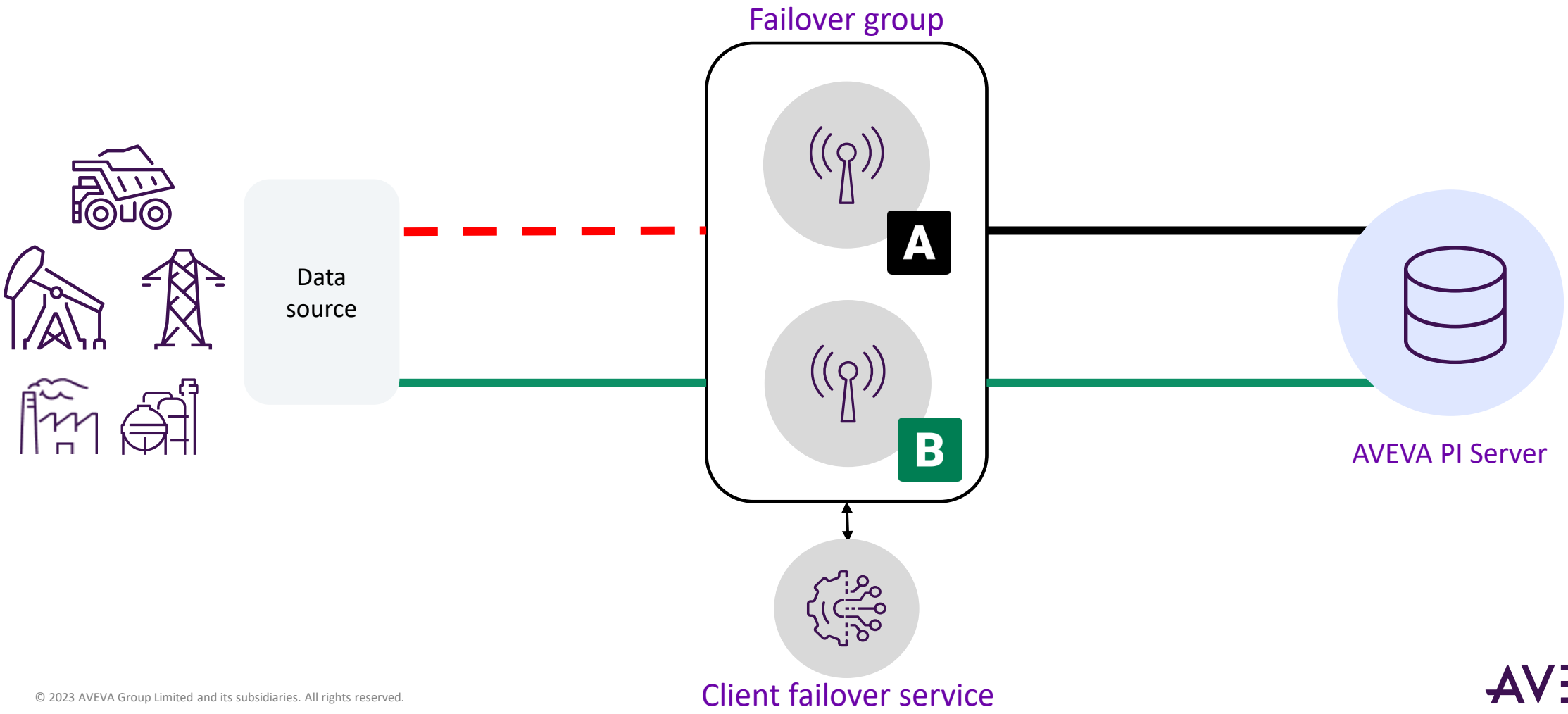
Adapter failover behavior

Hot failover: Normal operation



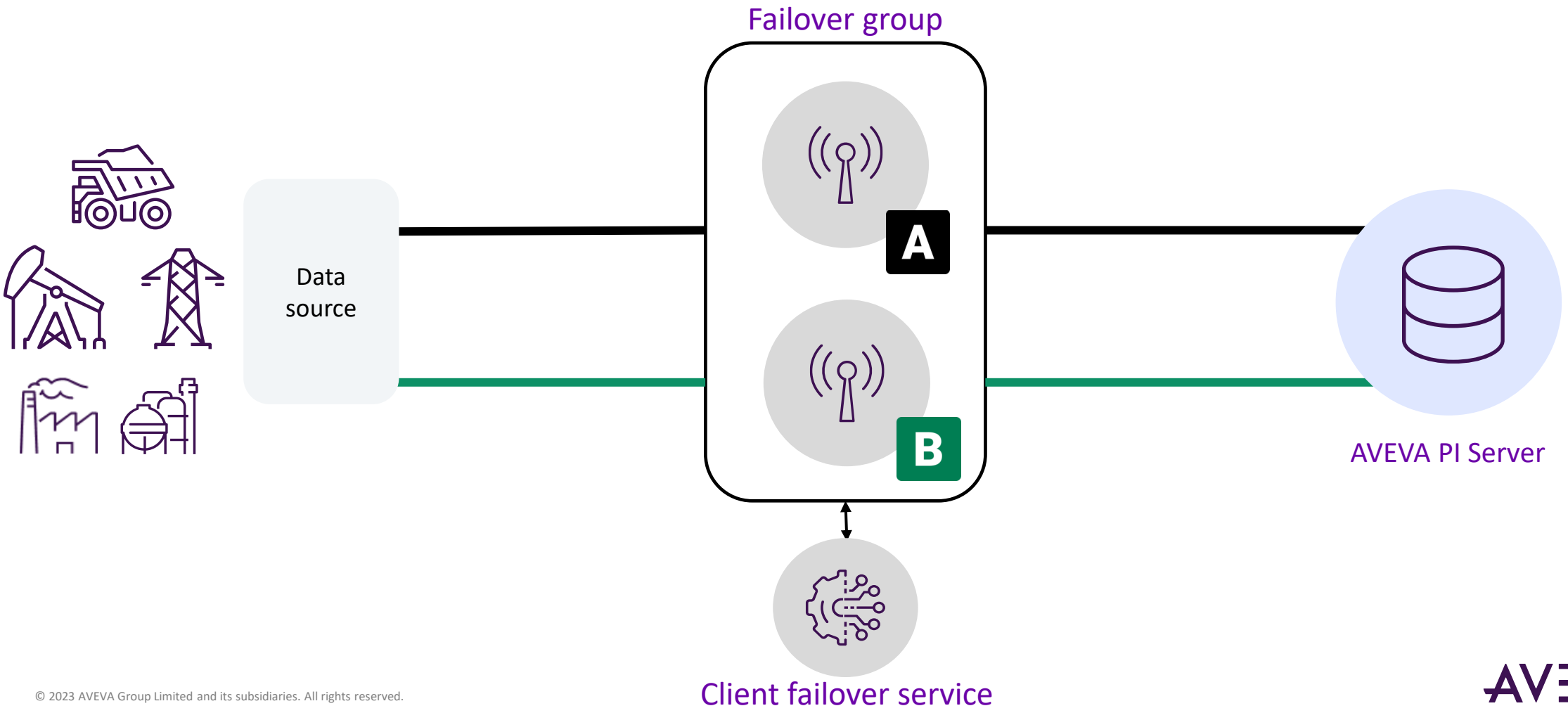
Adapter failover behavior

Hot failover: A data source disconnection



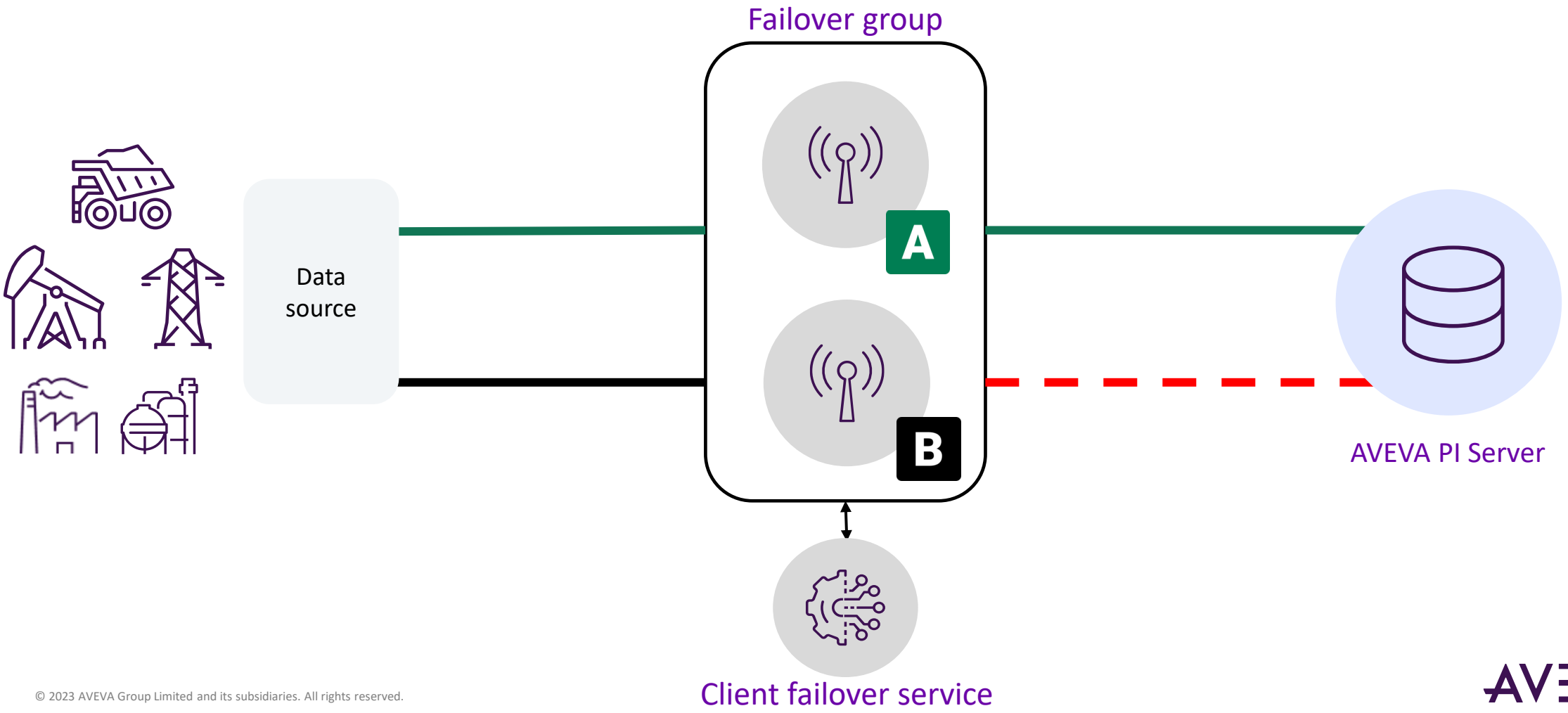
Adapter failover behavior

Hot failover: Normal operation



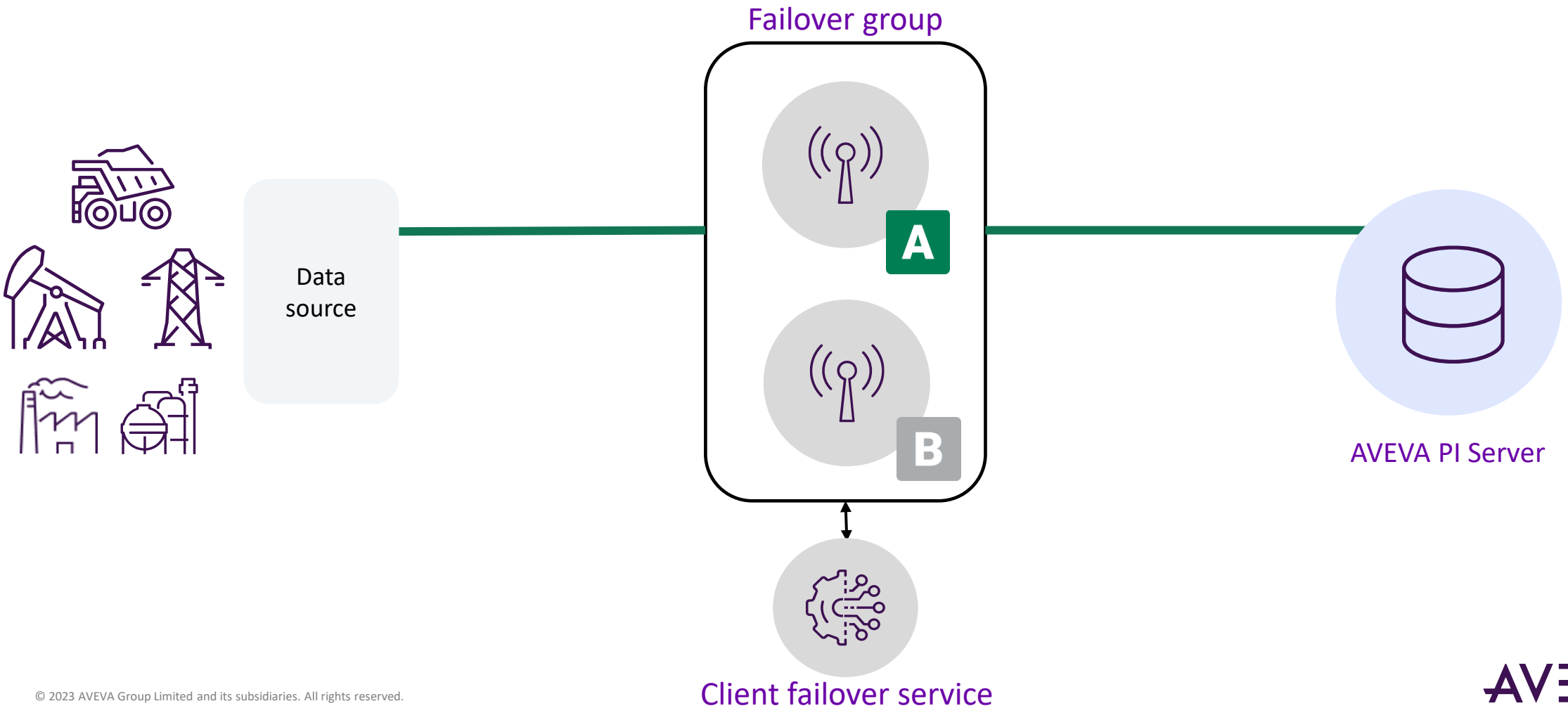
Adapter failover behavior

Hot failover: B Egress destination disconnection



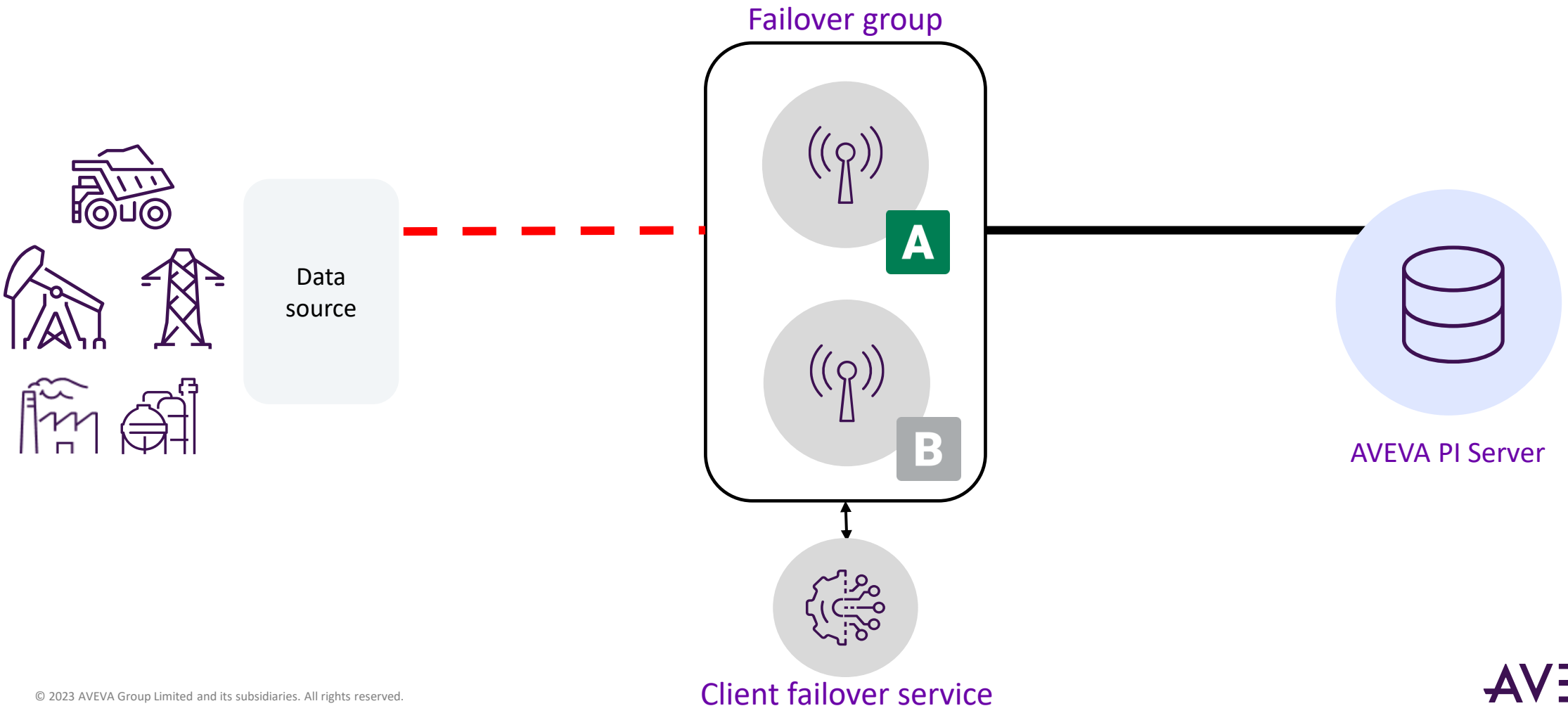
Adapter failover behavior

Cold failover: Normal operation



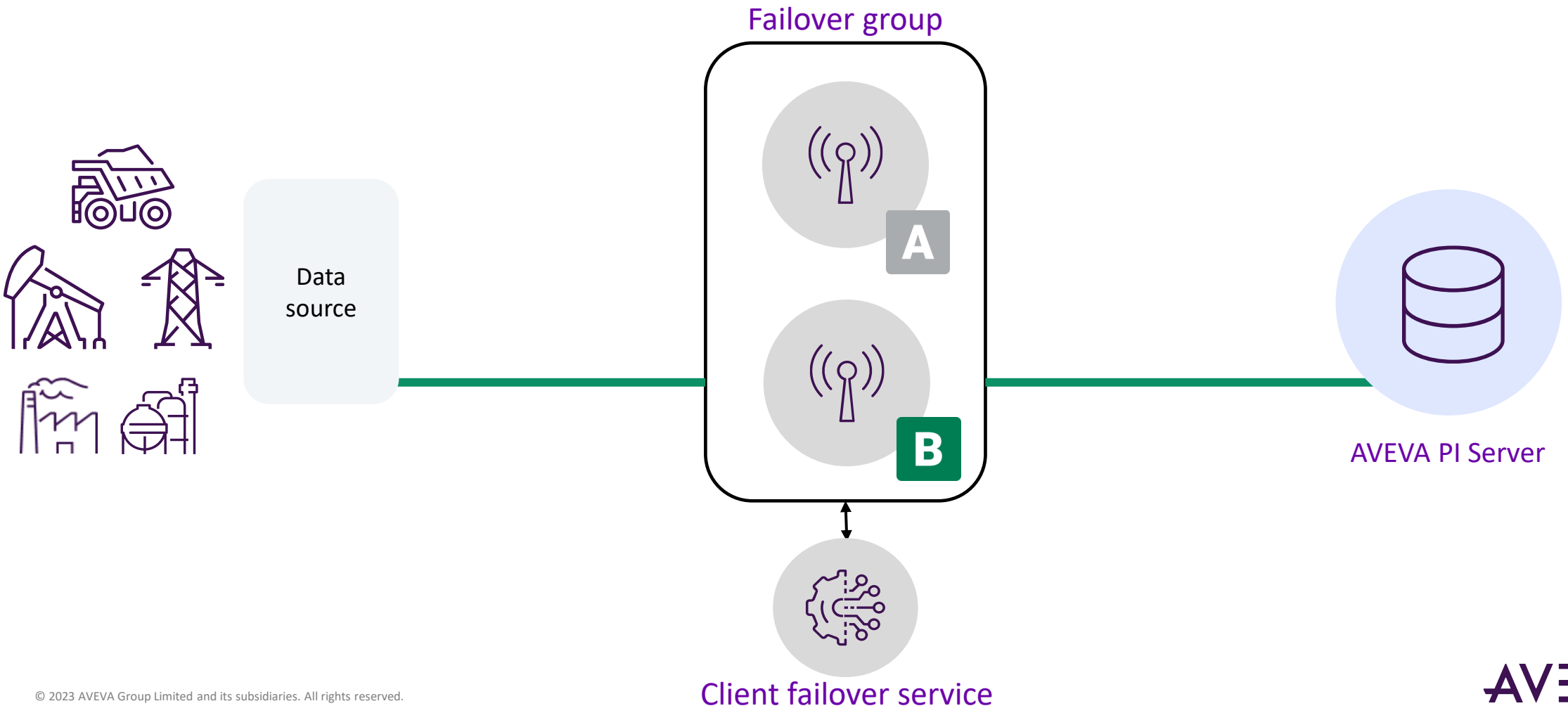
Adapter failover behavior

Cold failover: A data source disconnection



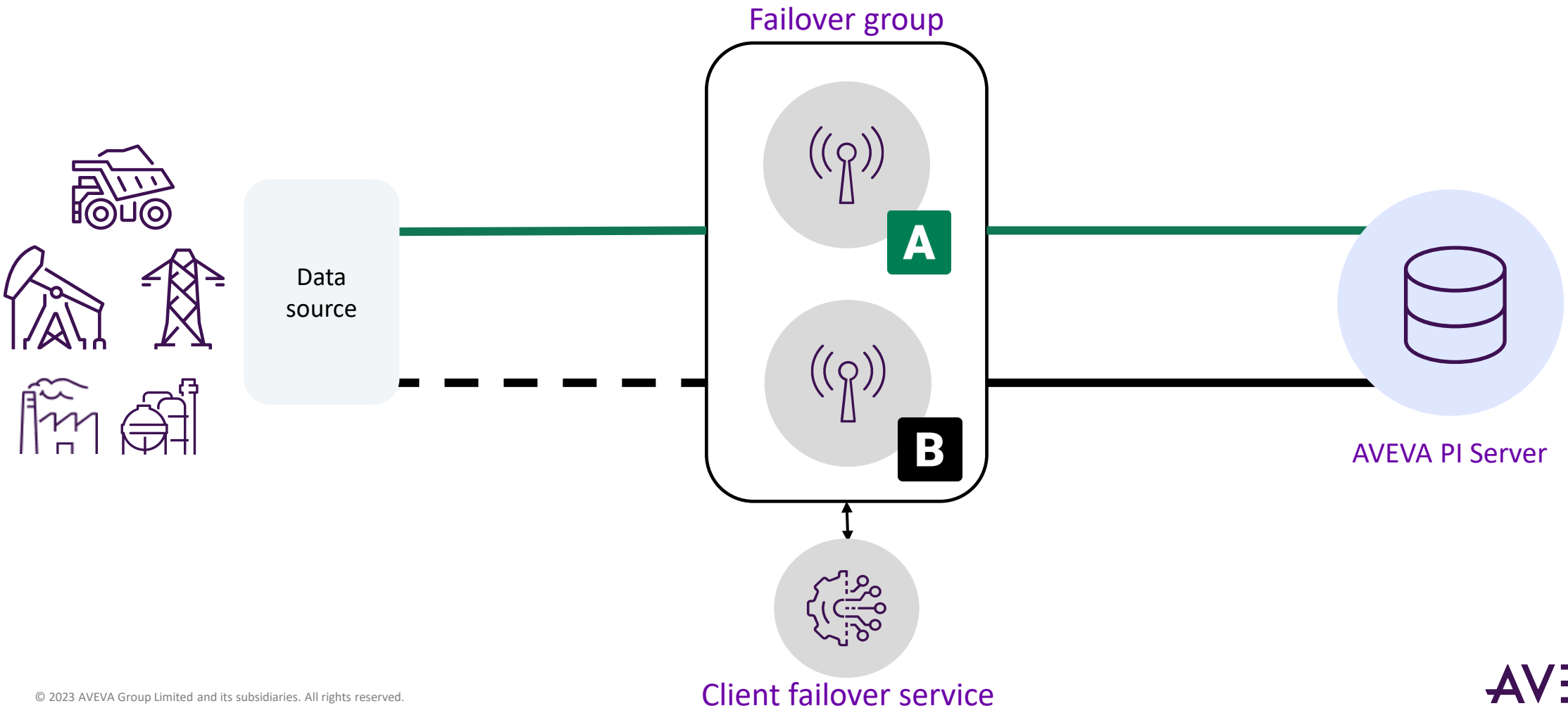
Adapter failover behavior

Cold failover: A data source disconnection



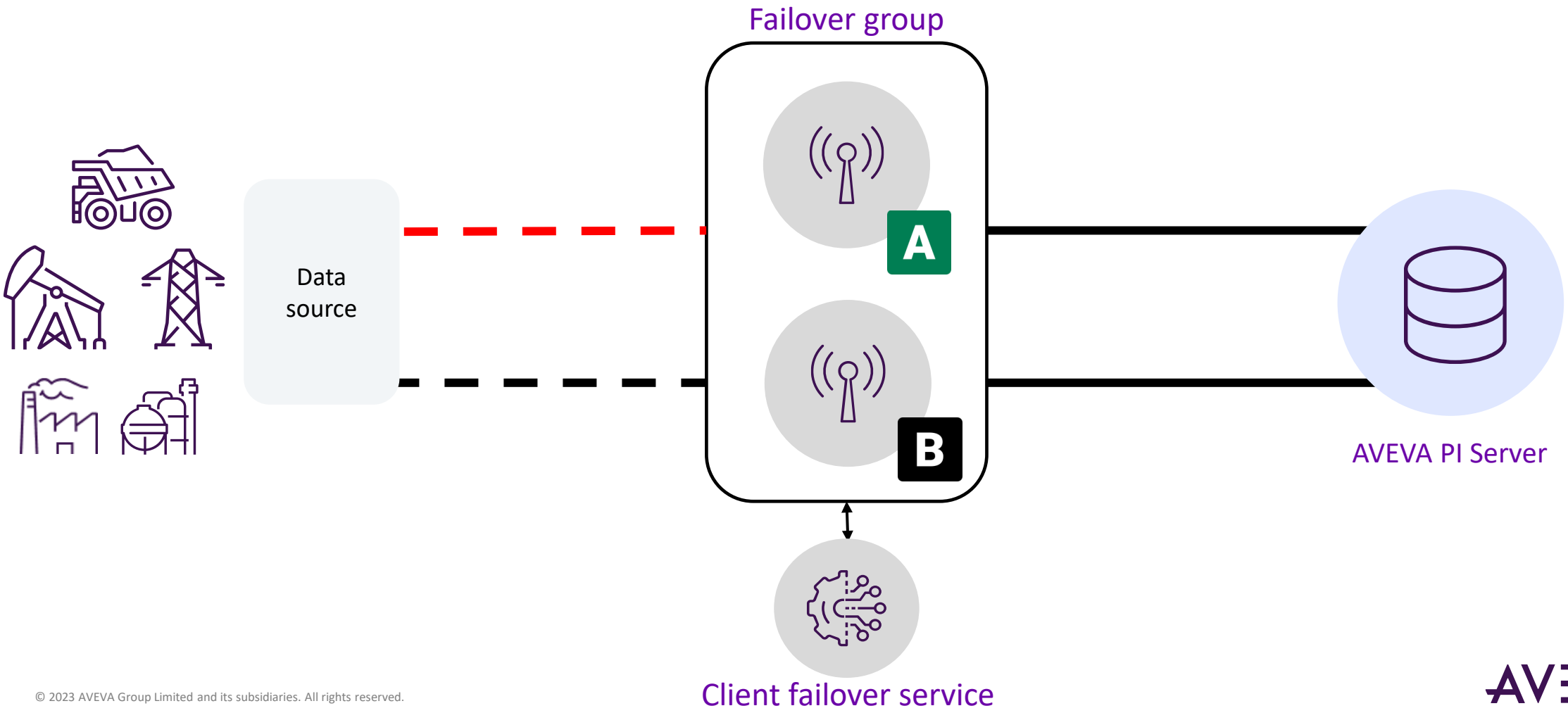
Adapter failover behavior

Warm failover: Normal operation



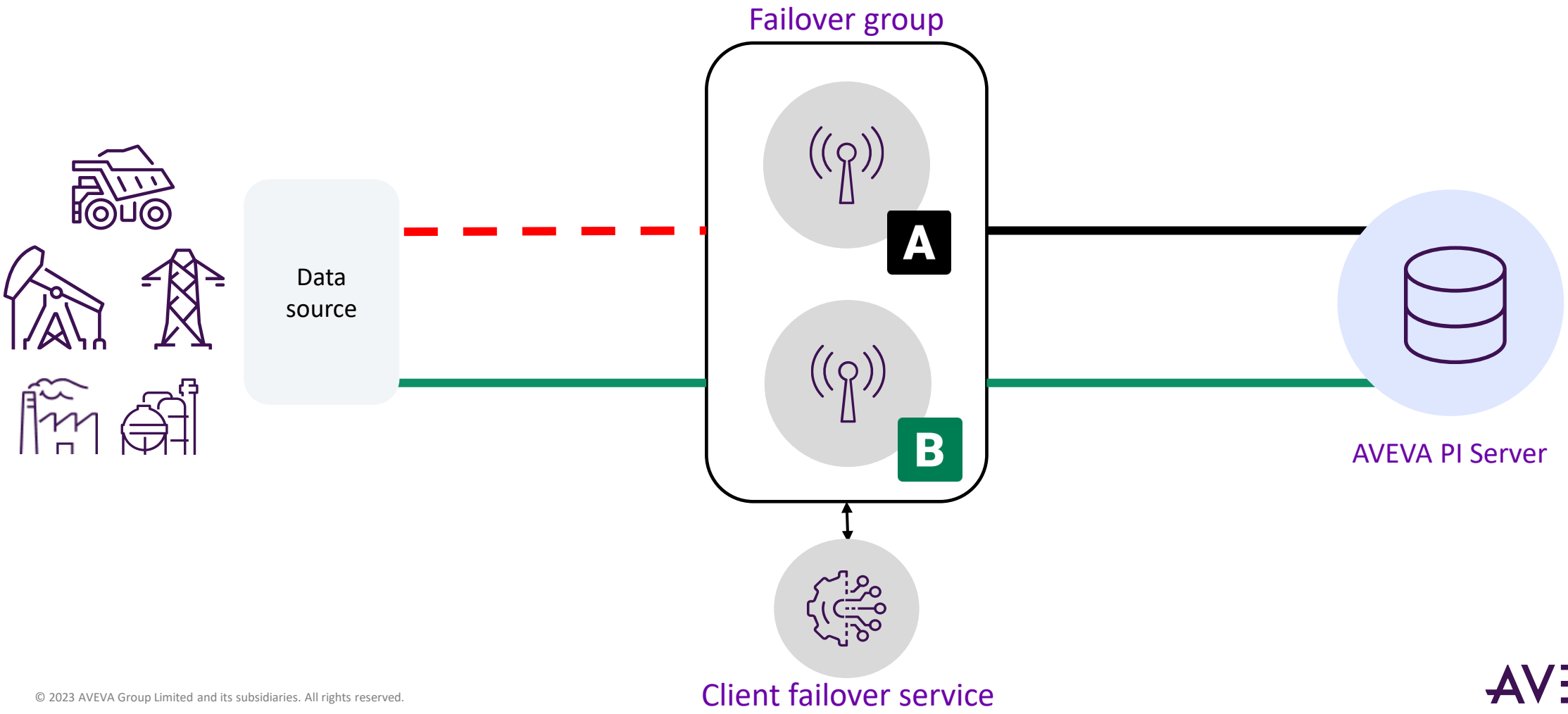
Adapter failover behavior

Warm failover: A data source disconnection



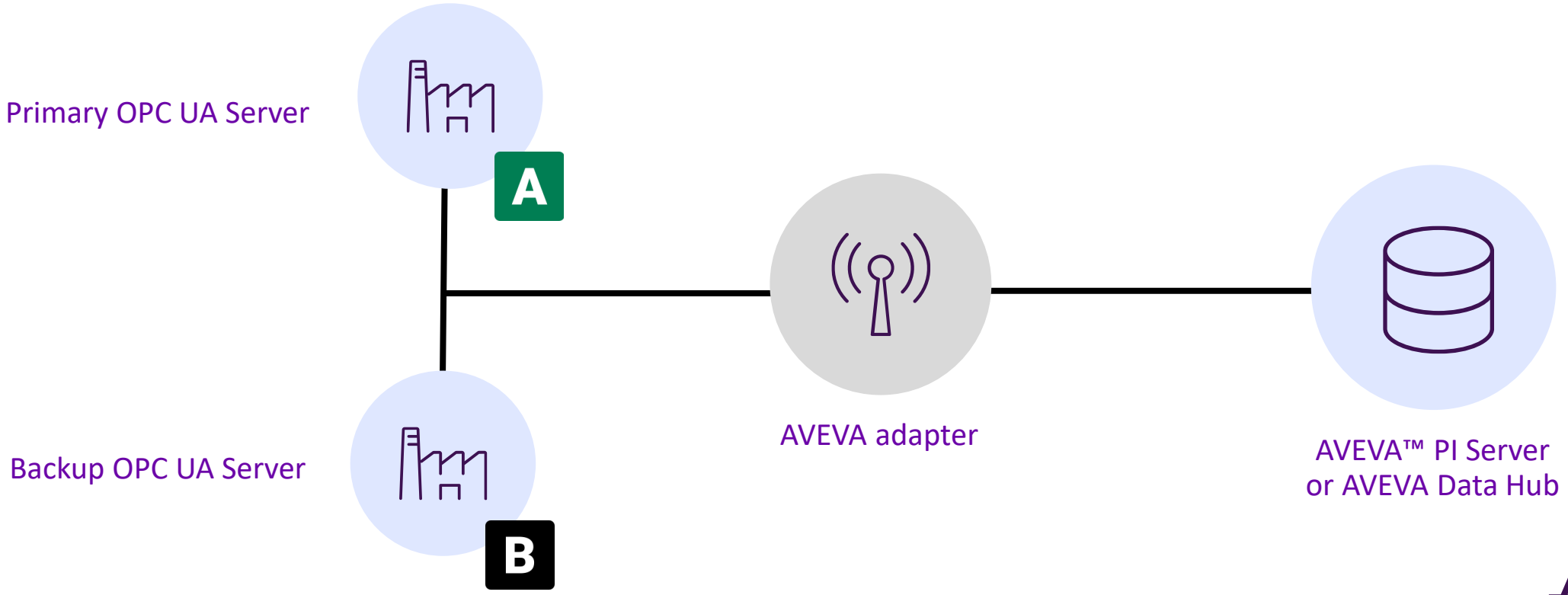
Adapter failover behavior

Warm failover: A data source disconnection

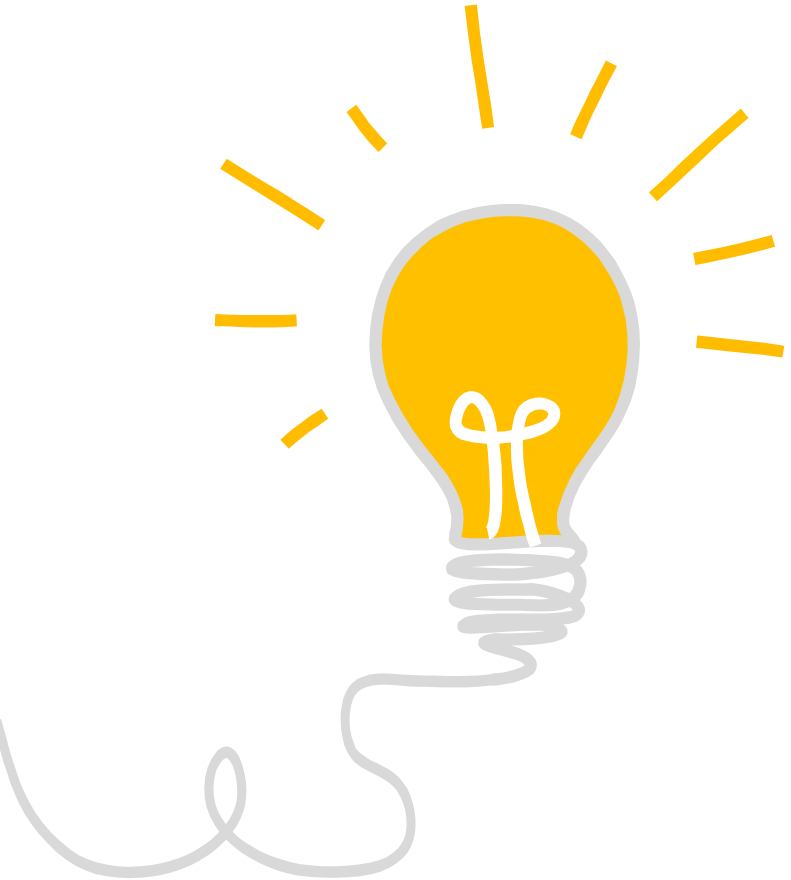


Source server failover

- Some adapters such as OPC UA and MQTT support source server redundancy
- Adapters will fail over to backup server(s) if primary source server goes down



How can you influence the AVEVA data collection roadmap?



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