STREAMING TELEMETRY TRANSPORT PROTOCOL

Data Gap Recovery

NASPI Virtual Meeting

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January 30, 2025

IEEE 2664

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How Did We Get Here? *But I don't wanna use my head!*

- **Original Streaming Data Flows:**
  - All configured data broadcast from point A to point B
- **Common Issue:**
  - Bandwidth / processing overload
- **Information Needs:**
  - Commonly a visualization or computation only needs certain data
- **Idea for Solution:**
  - Find a way to only “subscribe” to desired data
- **Problem -- No Protocol Did This:**
  - ***Invent one!***

Finally Published! *To Infinity and Beyond!*

sttp → IEEE 2664-2024

- Atomic Measurement Packets
- Reduced Data Loss
- Lossless Compression
- Scalability (to hardware limits)

- Publish / Subscribe Model
- Publisher Data Access Control
- IP Level Security
- Configurable Connection Origin

API Status: *Nobody look till I get my cork back in!*

	Subscriber	TSCC	Filter Expressions	Reverse Subscriber	Publisher	Reverse Publisher	TLS
GSF	✓	✓	✓	✓	✓	✓	✓
C++	✓	✓	✓	✓	✓	✓	
Go	✓	✓	✓	✓			
Python	✓	✓	✓				
Rust	✓	*Ongoing progress on STTP API language targets…*					

All API language targets being completed to match new IEEE release features

sttp.info

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Chose one and go! *I found my moving buddy!*

https://github.com/sttp

Streaming Telemetry Transport Protocol

python

Python STTP Implementation
https://github.com/sttp/pyapi

GO

Go STTP Implementation
https://github.com/sttp/goapi

.NET

.NET STTP Implementation
https://github.com/sttp/dotnetapi

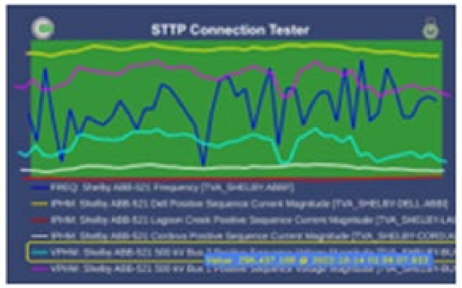
C++ STTP Implementation
https://github.com/sttp/cppapi

sttp Connection Tester

STTP Connection Tester
https://github.com/sttp/connection-tester

Open Source

All STTP reference implementations are Open Source Software (OSS) published on GitHub under the permissive MIT license.



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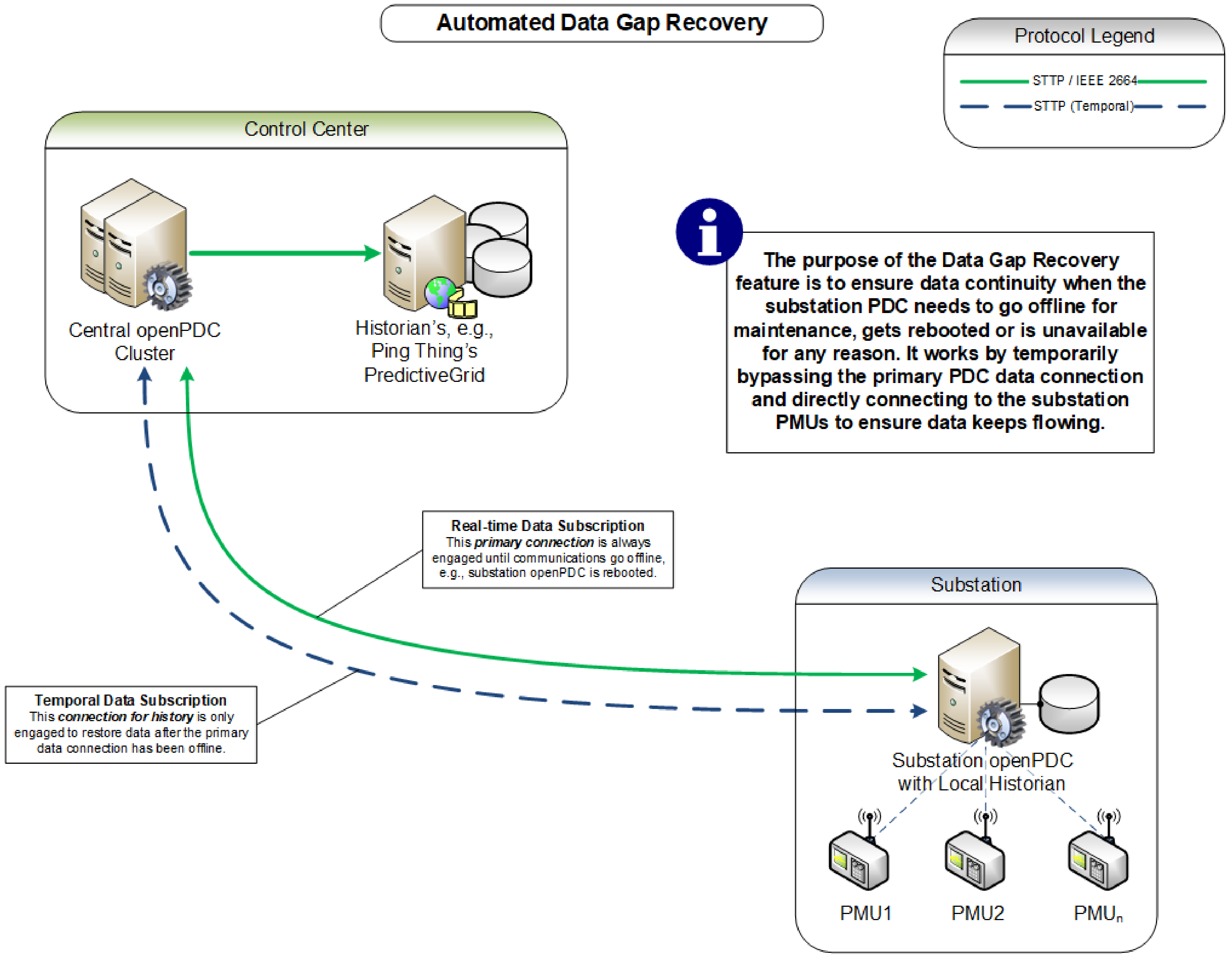
Automated Data Gap Recovery Use Case



Automated Data Gap Recovery
Protocol Legend
STTP / IEEE 2664
STTP (Temporal)
Control Center
Central openPDC Cluster
Historian's, e.g., Ping Thing's PredictiveGrid
Substation
Substation openPDC with Local Historian
PMU1
PMU2
PMUn

Real-time Data Subscription
This ***primary connection*** is always engaged until communications go offline, e.g., substation openPDC is rebooted.

Temporal Data Subscription
This ***connection for history*** is only engaged to restore data after the primary data connection has been offline.

The purpose of the Data Gap Recovery feature is to ensure data continuity when the substation PDC needs to go offline for maintenance, gets rebooted or is unavailable for any reason. It works by temporarily bypassing the primary PDC data connection and directly connecting to the substation PMUs to ensure data keeps flowing.

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