A YANG Data Model of Performance Management Streaming

(draft-yoon-ccamp-pm-streaming-03)

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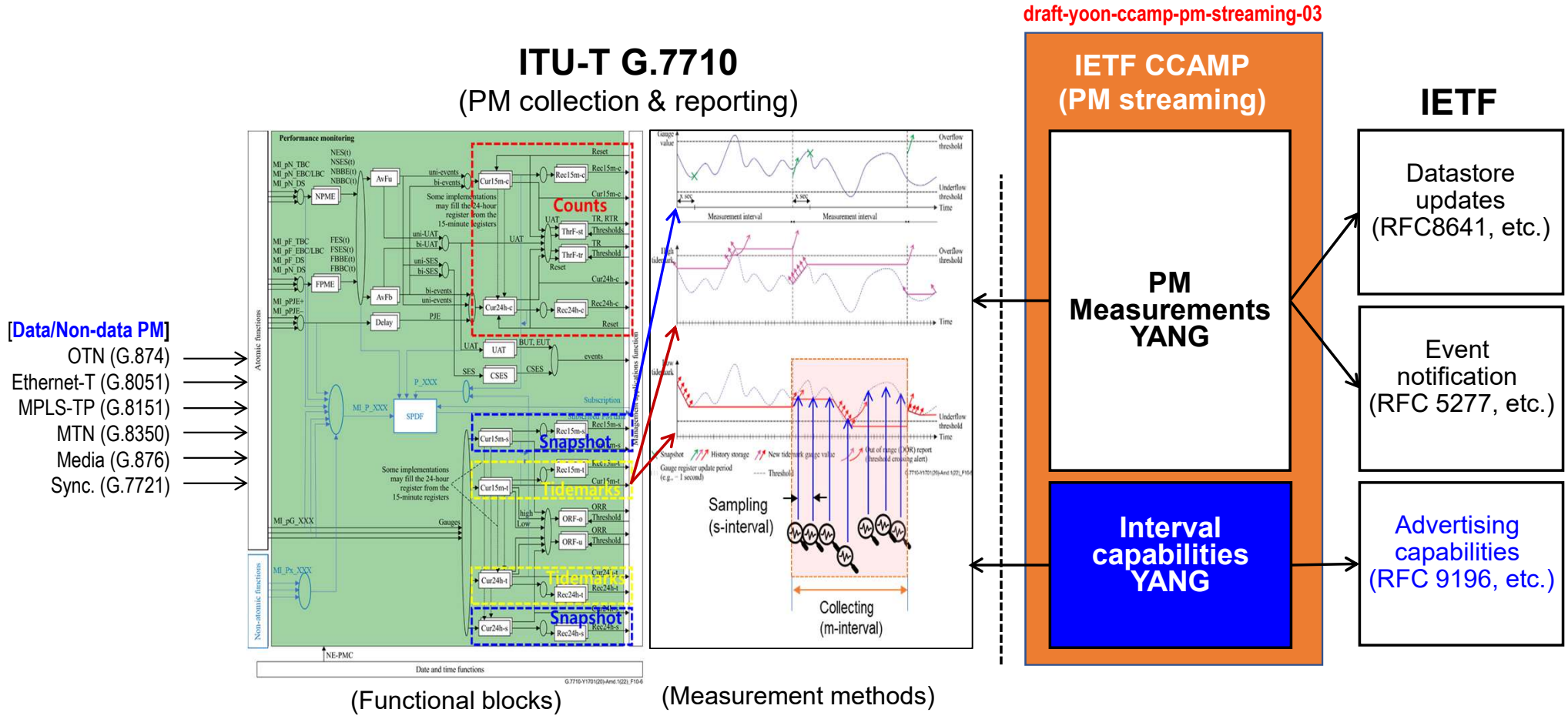
Recap of PM Streaming

- Aims to stream server performance data to clients for emerging technologies such as **NDT** and **AI/ML**
  - Combines **ITU-T G.7710** (widely deployed in transport equipment) with **IETF YANG Push**
  - Applicable to **OTN**, **Ethernet-T**, **MPLS-TP**, **MTN,** Media, and Synch equipment
- Main Features
  - Collection of performance data in NE: three measurement methods (ITU-T)
  - Subscriptions and notifications: YANG push (IETF)
- Use case
  - Enabling network equipment to stream data to consumers (e.g., EMS) in transport networks

Related Standards



Background of Updates

- ITU-T G.7710 Revision consented in ITU-T SG15 to include PM streaming requirements (October 2025)

Features (Performance Mgt.)		Existing version (v.02)	New version (v.03)
Reporting		• Polling, thresholding • Streaming w/o subscription (static configuration)	• Polling, thresholding • Streaming w/subscription (e.g., push model)
Collection (streaming)	Sampling interval	1 second	Variable
	Measurement interval	15min., 24hr.	Variable

Variable Time Intervals

- Motivation
  - Different performance metrics or client requirements may dictate distinct sampling and measurement intervals
    - Latency measurements often require more frequent sampling compared to throughput
  - Hardware capabilities can vary significantly between vendors
  - So, clients should be informed of the server capabilities advertised by the server before subscribing to a target metric

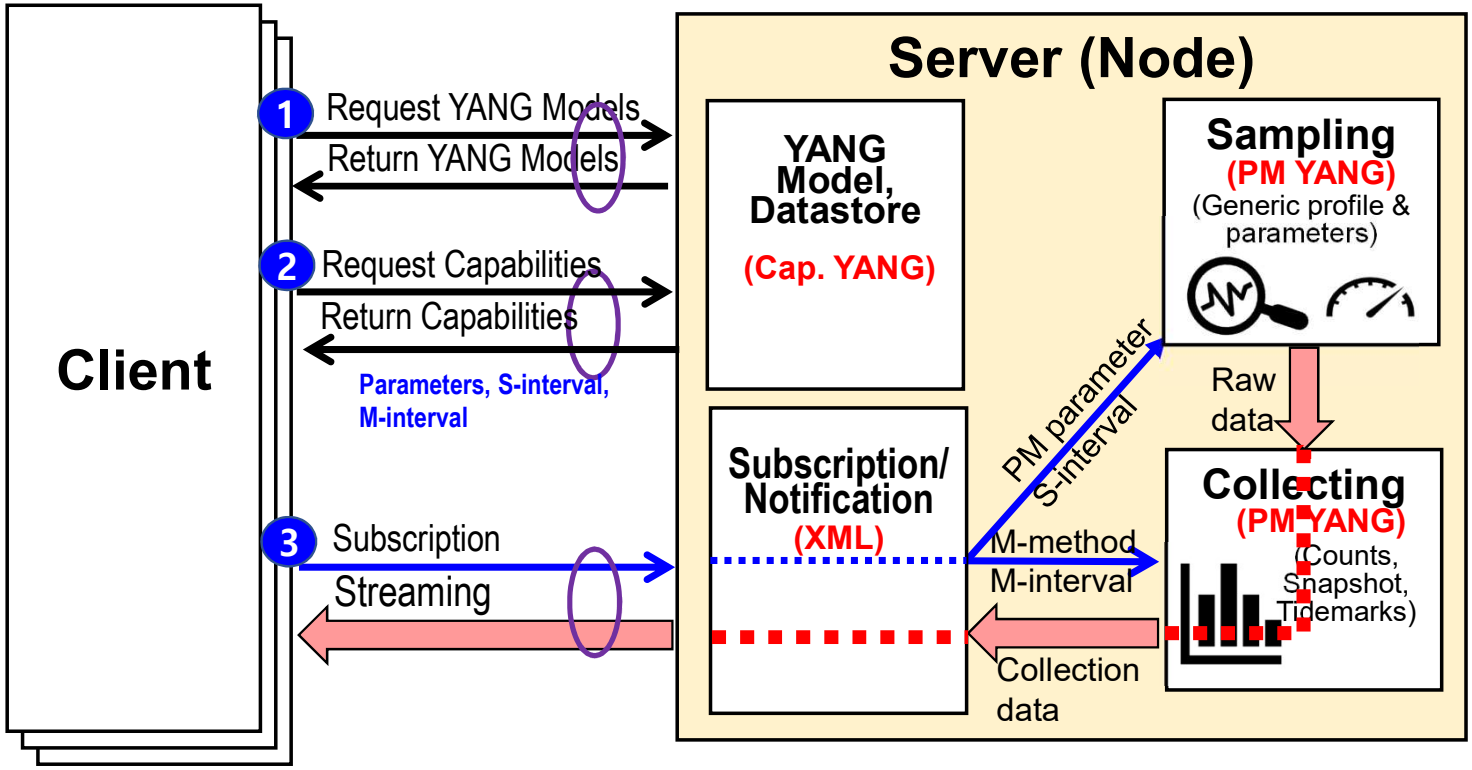
Client Type (parameter)	Sampling Interval	Measurement Interval	Measurement Methods	Purpose
NOC (ES)	1s	15min	tidemarks	Maintenance
		24hr	tidemarks	QoS
NOC (latency)	500ms	1min	counts	Delay spikes
		30min	counts	Recurring bursts
		24hr	counts	Trends
AI/ML Analytics System (ES)	1s	1min	tidemarks	Anomaly detect
		15min	tidemarks	Trend
		24hr	tidemarks	Model training
Digital Twin (pdv)	100ms	1min	counts	Synchronization
		5min	counts	Feedback loop
		1hr	counts	Learning model

YANG (Advertising Interval Capabilities)

```
module: ietf-pm-interval-capabilities
  +--ro pm-interval-capabilities
     +--ro parameter-profile* [name]
        +--ro name              pm-meas:profile-names
        +--ro pm-parameter* [name]
           +--ro name                        string
           +--ro interval-relationships
              +--ro sampling-interval* [id]
                 +--ro id                          string
                 +--ro min-value?                  uint32
                 +--ro max-value?                  uint32
                 +--ro units*                      interval-unit
                 +--ro default-value?              uint32
                 +--ro default-unit?               interval-unit
                 +--ro granularity?                uint32
                 +--ro measurement-interval* [id]
                    +--ro id                 string
                    +--ro min-value?         uint32
                    +--ro max-value?         uint32
                    +--ro units*             interval-unit
                    +--ro default-value?     uint32
                    +--ro default-unit?      interval-unit
                    +--ro granularity?       uint32
```

- Follows RFC 9196 principles (standalone approach)
  - Defines its own top-level, read-only container (config false)
  - Does not augment the ietf-system-capabilities

Procedures of PM Streaming



① RFC 8525 (Discovery of YANG modules)

② RFC 9196 (YANG Modules Describing Capabilities for Systems and Datastore Update Notifications

③ RFC 8641 (Datastore Updates), RFC 5277 (Event Notifications)

Future Work

- Welcome your comments and interest
  - Opportunity to apply to various types of PM parameters on which CCAMP works
  - Review and participation invited via GitHub:
    - https://github.com/binyeongyoon-ietf/ietf-pm-streaming
- Ready for WG Adoption?