Open Phasor Gateway

Easy Publication of Measurements

- Security Built-In
  - Security review of the full code base
  - CIP-informed controls and measures to be CIP v5 ready
    - Logging, Algorithm selection, Key storage, etc.
  - Leveraging Microsoft SDL-based approach to software development and testing to ensure security model
    - Design, Attack/Threat models, fuzz testing, unit testing, code reviews, integration testing, functional testing, and security testing
  - Standards based communication layer (TLS)
    - Leverages X.509 Identity Certificates and secure key storage

Alarms for Data and Statistics

- Why Install a Phasor Gateway?
  - Provides security isolation between trusted internal systems and untrusted external ones
  - Presents a small external attack surface
  - Creates highly trusted gateway-to-gateway associations
  - Makes it very easy to publish or subscribe to data
  - Overcomes scaling and latency limitations with frame-based protocols
  - Minimizes communication bandwidth

- OpenPG Features
  - High availability and reliability
  - CIP 5 Ready
  - Uses COTS hardware
  - Can bridge multiple namespaces and indifferent to registry use
  - Easy publication and subscription configuration
  - Rapid extensibility to support new protocols
  - Detect and alarm on communication or data

Specifications

- Input Protocols
  - IEEE C37.118-2005; IEEE C37.118-2011 (Beta)
  - 61850-90-5; IEEE 1344-1995
  - SEL Fast Messaging
  - Macrodyne N and G; BPA PDC Stream
  - Virginia Tech FNET
  - DNP3 (Beta)
  - GPA’s GEP publish/subscribe protocol

- Output Protocols
  - Time-series Data Transport Protocol (TDTP)
  - Gateway Exchange Protocol (GEP)
  - Mirrored C37.118 Streams
  - Database (ADO) adapter for MS SQL Server
  - API (library) for development of custom interfaces - C#, C++, and Java

- Exchange Protocol - GEP
  - Command Channel
    - Authenticates other gateways
    - Exchanges metadata on points
    - Requests points for subscription
  - Data Channel
    - Compact 9-byte packet for phasor data
      (Point ID, Time, Value, and Quality Flags)

- Communications Standards
  - TCP – IPv4 and IPv6
  - UDP Unicast and Multicast, IPv4 and IPv6
  - Serial (input only)

- Operating System
  - Windows Server 2008, R2 recommended

- Hardware Requirements
  - Multi-processor / multi-core systems recommended

- Configuration System
  - A relational database is recommend to house configuration data. Supported databases are:
    - MS SQL Server; Oracle
    - MySQL; SQLite

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