Monitoring Saved the Substation: Leveraging SNMP in the Utility Industry

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Agenda

Historic role of IT and OT

Overview of SNMP

Benefits of SNMP

Challenges and Considerations

Steps to Implement SNMP

*Financial
Operational
Reputational

Historic Role of IT in Utilities – FOR

Enterprise Resource Planning

Customer Information Systems

Cybersecurity

Historic Role of OT in Utilities - Delivery

Real-time Control (SCADA)

Automated Meter Infrastructure (AMI)

Distributed Energy Resources Management (DERM)

Overview of SNMP

- The Simple Network Management Protocol (SNMP) is a widely used protocol for managing and monitoring network devices on TCP/IP networks.
- The primary purpose of SNMP is to facilitate the exchange of management information between network devices and systems. It provides a standardized framework and a common language used for the monitoring and management of devices in various networks.

Basic Concept of SNMP

SNMP works by using a mix of push and pull mechanisms: agents (which run on the network devices) collect data and can send it to the management system without being asked (push), or the management system can query agents for specific information (pull).

Managed devices

Network nodes that contain an SNMP agent and reside on a managed network

Agents

Software modules that collect, store, and forward management information to the NMS

Network management systems (NMS)

Send requests for information to agents and receive traps (alerts) or responses.

Management Information Base (MIB)

Define the properties of the managed object within the device being managed. Each managed object in a MIB has a unique identifier.

Benefits of SNMP

Real-time Monitoring and Alerts

Remote Configuration and Management

Fault Diagnosis and Performance Analysis

SNMP in Action – Use Cases in Utilities

Monitoring Network Devices and Infrastructure

Managing Distributed Energy Resources (DERS)

Enhancing Smart Grid Operations

Improving Asset Management with SNMP

Asset Tracking and Inventory Management

Predictive Maintenance through Performance Data Analysis

Enhancing Cybersecurity with SNMP

Detect
Unusual
Network
Activity

Managing
Network
Security
Configs

Facilitating Compliance and Reporting

Automating Data Collection for Regulatory Compliance

Generate Reports on Network and System Health

Challenges and Considerations in SNMP Implementations

Security Concerns (especially for V1 and V2c)

Network Bandwidth and Performance Implications

Integration with Existing Systems

Future of SNMP in Utilities

Emerging technologies and their impact on SNMP (e.g., IoT, 5G)

Evolving standards and protocols

Steps to Implement SNMP

Network Assessment and Planning

Determine Deployment Strategies

Continuous Monitoring and Improvement

Q&A

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