Basic SCADA System Troubleshooting

Presented By: David Beyer
Outline

- Overview of a typical SCADA system
- Communications – Telemetry
- Examples of typical alarm scenarios
Typical System
PLC Basics

- Discrete IO, status and alarms
- Analog IO, status and alarms
Hardware failures

- Damaged Hardware
- Faulted Processor
- Failed Radio or modem
Software

- SCADA software is a collection
  - Interface to PLC
  - HMI
  - Database
  - Reports & Trends
  - Alarm Annunciator
Software Problems

- What is the extent of the problem?
- Has anything changed recently?
- Are there any unusual system log entries?
- Are there any Windows Event log entries?
- Has anything changed recently?
Basic Communication

PLC

Master Radio

RTU

Remote Radio
Don’t overlook the obvious

- Power
- CAPS LOCK key
- NUM LOCK key
- PLC Fault indicator
Typical Failure Scenarios

- Information on the SCADA PC does not appear to be up to date
- Verify connection with Master PLC
- Verify connections with remotes
Typical Failure Scenarios

• Communications alarm with remotes
• Just 1 site or multiple sites
• Master PLC communication with Radio
• Failure of remote site equipment.
Communication Failed at a remote site

PLC

Master Radio

RTU

Remote Radio

T  R

T  R
Communication Failed at a remote site

- PLC
- RTU
- Master Radio
- Remote Radio

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Have a backup plan

- System and Data backups
- Manual mode
- Secondary Operator Interface
- Warranty status
Review Your System

Remote sites
- Control panels – condition, documentation, expandability
- PLC’s or RTU’s – Capability, communications, age, condition, supportability
- Communications equipment – Capability, communications, age, condition, supportability
- Instrumentation – existing or new
- Enhanced Control capabilities
- Expanded IO
- Operator interface, SCADA system access
- Building Security

Central SCADA
- Master Control panel
- Communications equipment
- SCADA software – HMI, Reports & trending, database, alarm annunciation, supportability, capacity
- SCADA Network – server, workstations, printers
- Remote system access, Internet access, security
- SCADA System Management – security, access control, system backup, disaster recovery, redundancy
- Central system software, hardware, networking
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