FieldServer Webinar Series

Why and When to Use BACnet Routing

By Richard Theron, Product Manager

Agenda

- Introduction
- Brief History of BACnet
- Why and When to Use a BACnet Router
- "How To" Problem Solving
- Configuration
- Diagnostics
- Summary

Introduction

- Founded in 1979
- Listed on US Stock Exchange - SRMC
- HQ in Milpitas, Silicon Valley
- ~$20M Revenue and 65+ employees
- Sales offices around the world

CONNECT
Protocol Gateways

FieldServer

PROTECT
Fire & Gas Detection Solutions

SentryIT

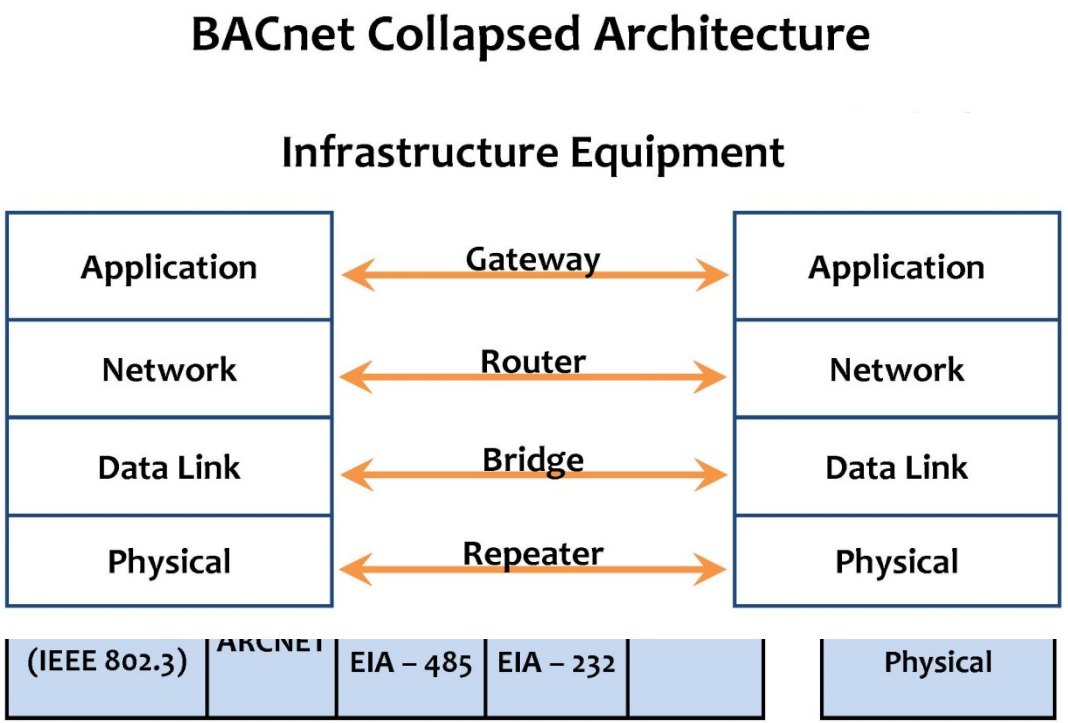
SMC addresses the industrial and commercial *facilities management* market with *Industrial Internet of Things* (IIoT) solutions that *connect and protect* high-value infrastructure assets

FieldServer's Experience

- 150,000+ FieldServer protocol gateways installed worldwide
- 140 protocols supported
- Applications
  - Building Automation
  - Industrial Automation
  - Energy Management
  - Remote Monitoring
- Examples
  - Empire State Building
    - Energy management
    - Tennant metering into cloud
  - Levi's Stadium
    - Fume hood integration
    - Water reticulation integration

History of BACnet

- 1987 first meeting
- 1995 ASHRAE/ANSI Standard
- 2000 BTL formed
- 2003 Conformance Standards published
- Ongoing working groups
- The BACnet protocol defines a number of services that are used to communicate between devices
- A Gateway moves messages between application layers, while a **Router** moves messages between Network layers

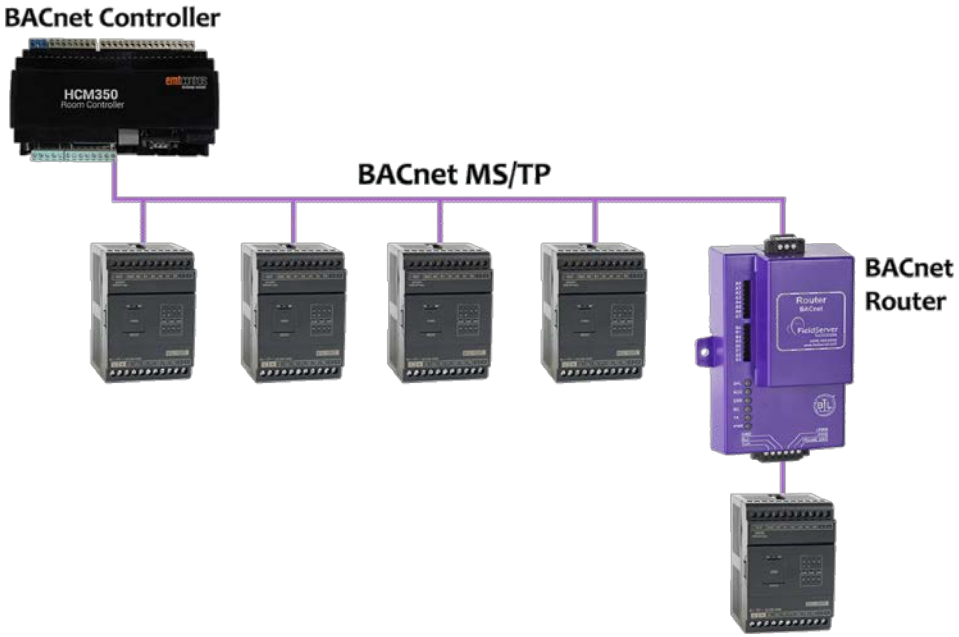


Why and When to Use a BACnet Router

- Why
  - To reduce installation costs
  - To reduce MS/TP latency
  - To have a transparent BACnet network from a single work station
- When
  - Cost of installation is an issue
    - Installation time and cabling
    - Additional Controllers
  - Current BACnet/IP infrastructure is installed
  - Ethernet drops are available

How To: Connect a Slower MS/TP Device

- Problem
  - My MS/TP trunk runs at 38,400, but I want to connect a device that only runs at 19,200
    - 38,400 is very common
    - But several devices use 9,600, 19,200 or 76,800
- Solution
  - Use a FieldServer BACnet Router with two RS-485 ports
  - The low-speed device needs to be a Master that responds to Who Is

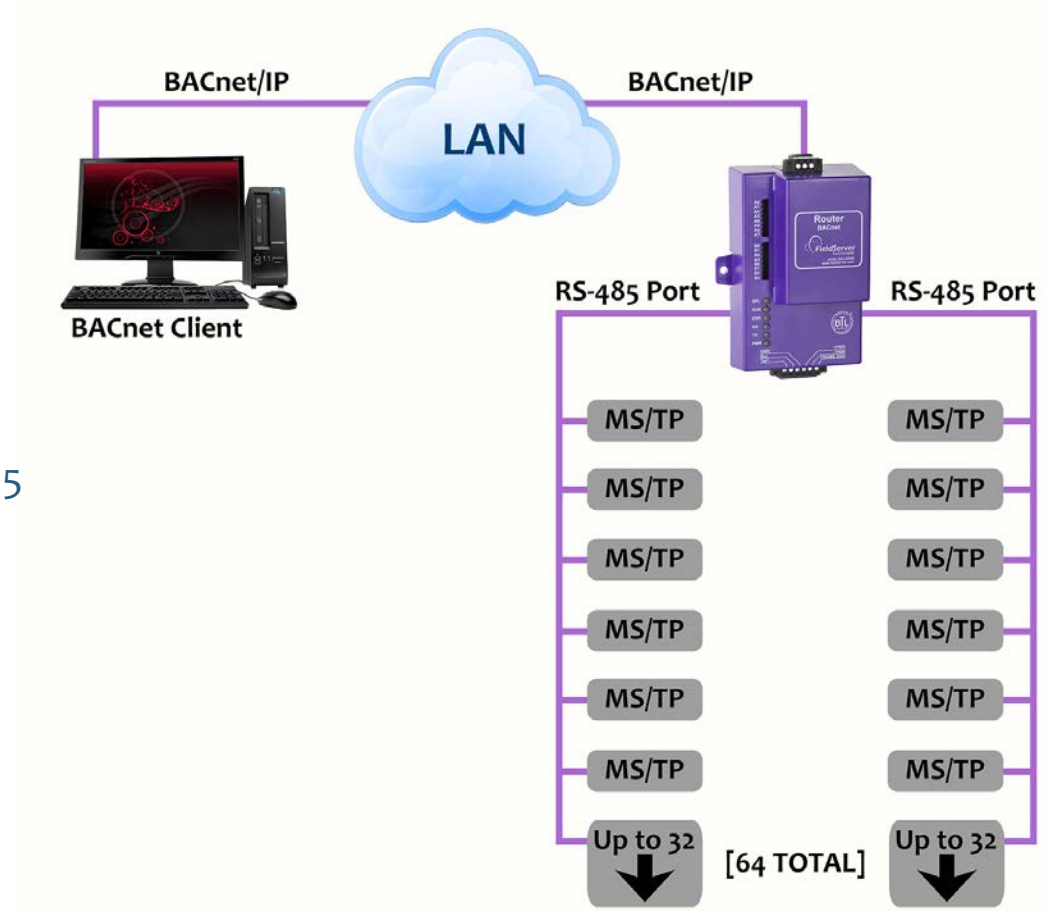


How To: Connect Remote MS/TP Trunks

- Problem
  - I have a long distance between RS-485 trunks on my campus
  - Costly alternatives
    - Cost of line drivers and cabling – if using RS-485 to interconnect
    - Cost of adding controller at each site – if using IP to interconnect
- Solution
  - Use two back to back FieldServer BACnet Routers over the LAN or WAN
  - BACnet/IP runs seamlessly over the LAN/WAN

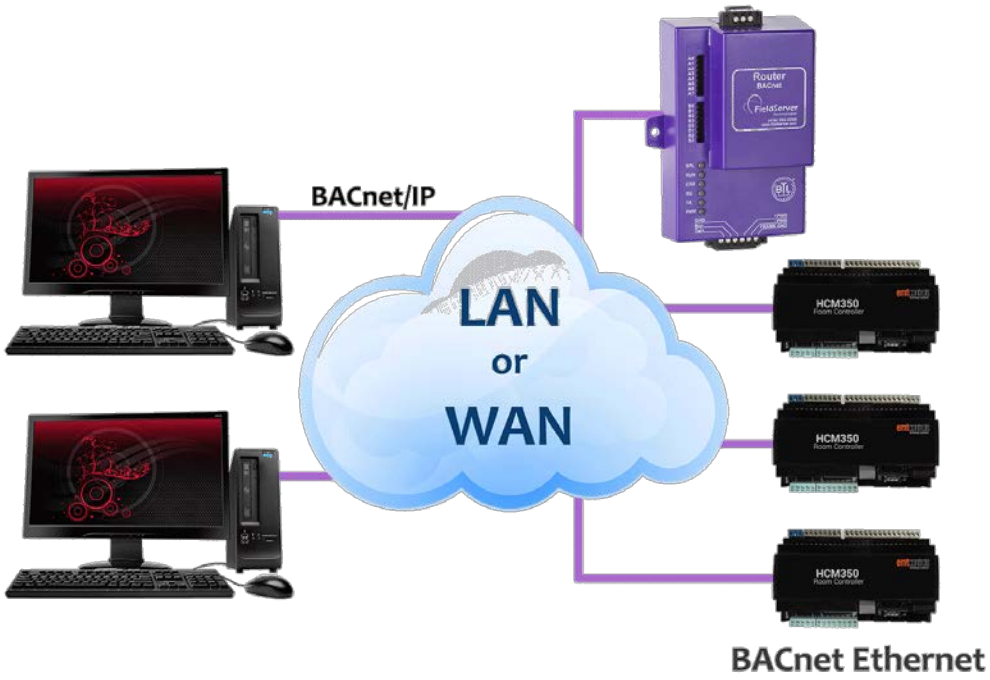
How To: Connect 64 Devices to My Network

- Problem
  - I need to keep my costs down and have a good response time from 64 MS/TP devices
- Solution
  - Install a FieldServer BACnet Router with 2 x RS-485 ports
  - Response time is halved when the MS/TP network is split by two RS-485 ports



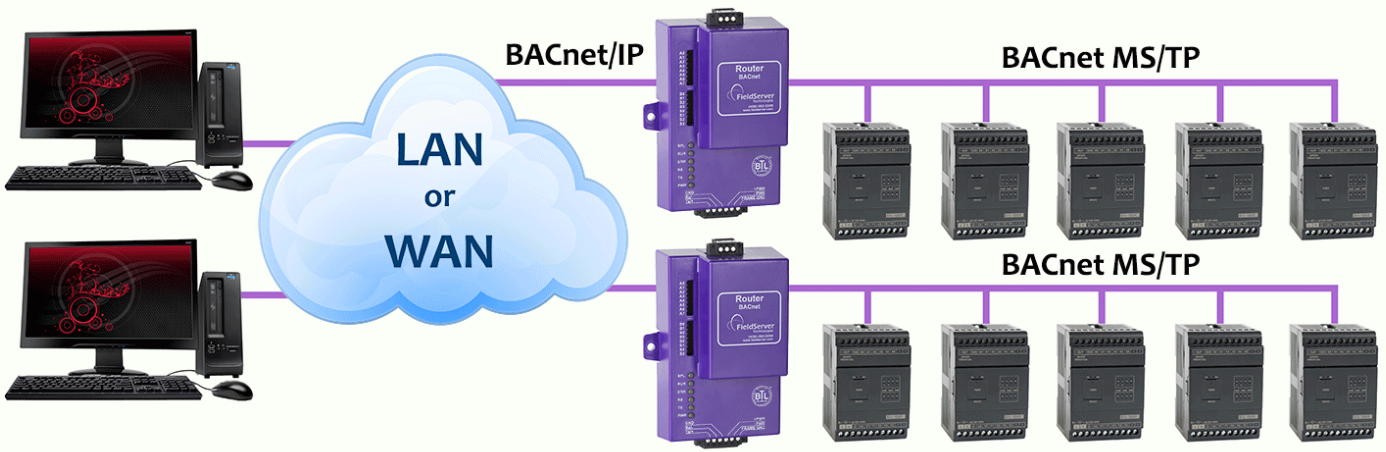
How To: Connect Legacy Ethernet Devices

- Problem
  - I don't want to replace my BACnet Ethernet controllers, but I need them on my BACnet/IP network
  - BACnet Ethernet does not support BBMD
  - BACnet Ethernet does not go through
    - Routers
    - Firewalls
- Solution
  - Install a FieldServer BACnet Router



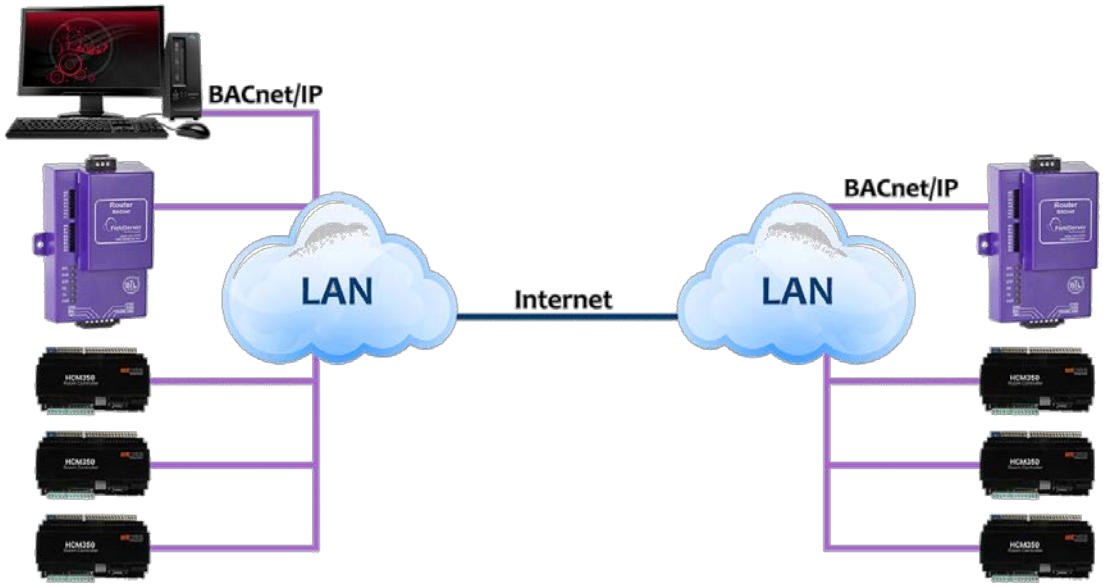
How To: Manage Multi-Trunk MS/TP Network

- Problem
  - I need to have visibility and control of all devices from my front end system
  - The MS/TP devices are in different buildings behind firewalls
  - My manager told me to keep my costs as low as possible without compromising network reliability or security
  - Adding and installing BBMD-capable controllers to each MS/TP trunk is a costly solution
- Solution
  - Connect BACnet MS/TP trunks with a FieldServer BACnet Router to the BACnet/IP network
  - BACnet BBMD works well with Firewalls and IP Routers by distributing BACnet broadcasts



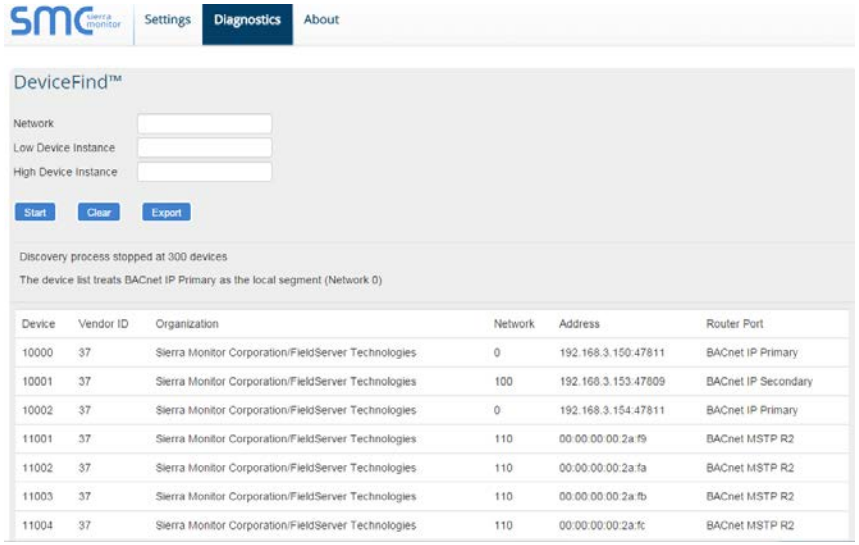
How To: Manage a Multi-Site Network

- Problem
  - I need to have visibility and control of all devices from my front end system
  - I don't have BBMD on all my existing devices
- Solution
  - Install a FieldServer BACnet Router with BBMD
  - MDIX ensures seamless integration

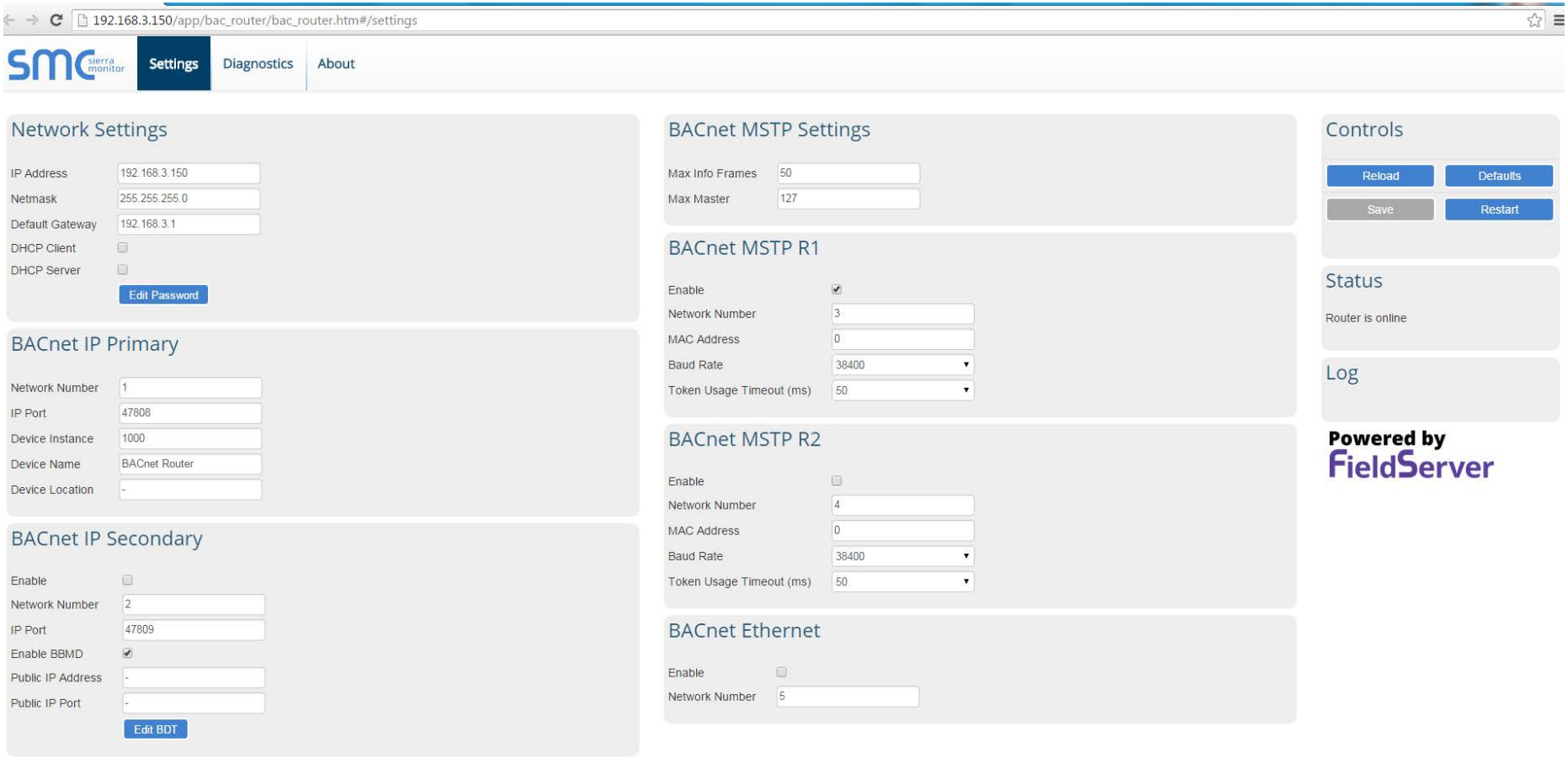


How To: Validate Successful Commissioning

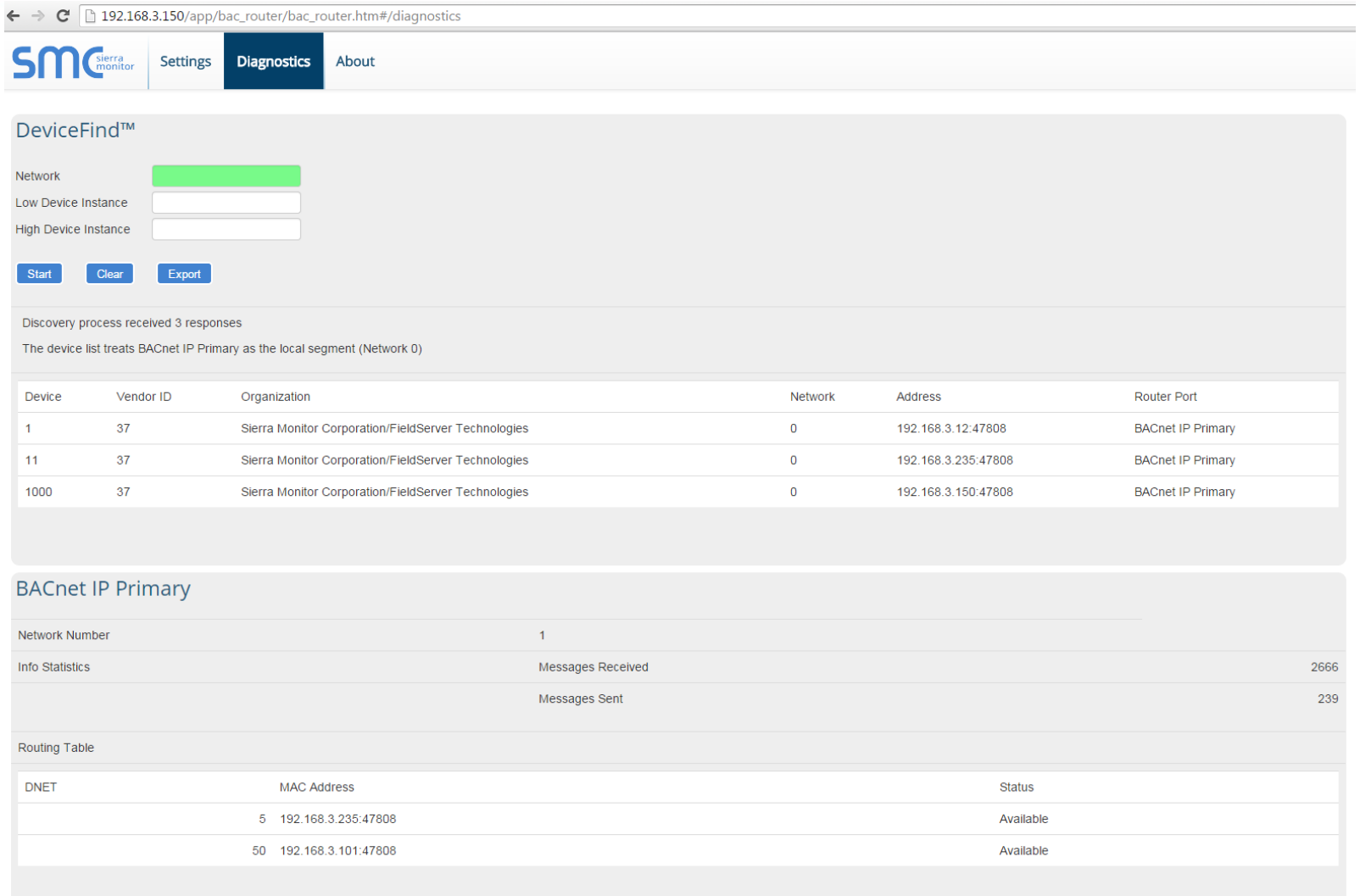
- Problem
  - I have to install a BACnet router and then prove that all BACnet devices on the network are communicating, in order to get a sign off on my project
- Solution
  - Install a FieldServer BACnet Router
  - Use the DeviceFind™ feature to discover and list communicating BACnet devices
  - Click a button to export a CSV file that lists all installed and discovered BACnet devices



Configuration



Diagnostics



BACnet Router Review

Multiple BACnet Routing Options

- BACnet/IP ←→ BACnet MS/TP
- BACnet MS/TP ←→ BACnet Ethernet
- BACnet MS/TP ←→ BACnet MS/TP
- BACnet/IP ←→ BACnet/IP
- BACnet/IP ←→ BACnet Ethernet

Ease of Use

- Web-based configuration – one easy to use page
- DeviceFind™ – find all the devices connected to the BACnet Router and export this list for site verification, all from the simple web interface
- BACnet Broadcast Management Device (BBMD) routing between different networks
- NAT support with secondary BACnet/IP connection for routing between public and private IP networks

Performance

- With 2 x RS-485 ports, the polling rate of MS/TP devices can be halved compared to a Router with only one RS-485 port

Thank You

Call 408 262-2299 or e-mail sales@sierramonitor.com for additional application questions or visit www.sierramonitor.com

To learn about the BACnet router use cases, visit http://www.sierramonitor.com/connect/all-protocol-gateway-products/fieldserver-bacnet-router