



Making Control Systems Smarter, Faster, Safer™

Smarter, Faster, Safer SCADA from your existing Environment

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Introduction



Agenda

- 🌐 **Aegis Technologies Overview**
- 🌐 **Odyssey™ Solution Technical Discussion**
- 🌐 **Product Demonstration**
- 🌐 **Summary**
- 🌐 **Questions and Answers**

How the Project Started



- 🌐 **Creating a new niche:**
Control System Communications Optimization
- 🌐 **Founded February 2002**
- 🌐 **Genesis was 9/11 attack**
- 🌐 **APS involved since 2004: design, specification, funding**

APS Concerns – Project Drivers



- **Infrastructure is vulnerable to cyber/terrorist attack**
- **Control system communications network performance is at or near capacity – risk of decreased reliability**
- **Manpower quickly nearing Retirement Age**
- **Lack of comprehensive solution from industry suppliers**

Project Scope



- **Life extension of current system by utilizing proven technology to provide performance improvement**
- **Improve troubleshooting capabilities to increase reliability and response time while reducing maintenance costs**
- **Operate with a vastly improved cyber security system**
- **Improve and secure control systems now – and expand capabilities as new technology and standards emerge**

The APS Challenge to Aegis



- **APS wants more than just security:**
They want security that pays for itself

Project Scope



- 🌐 **Create the foundation of a ‘Trusted Control Network’ for Legacy and Future systems with the benefits of:**
 - 🌐 **Maximizing performance**
 - 🌐 **Reducing maintenance costs**
 - 🌐 **Providing the most complete electronic security perimeter**
- 🌐 **Result: Odyssey™ Product Series**
The first intelligent SCADA upgrade that provides security as a value-add
- 🌐 **Making SCADA Smarter, Faster, Safer™**

The Result



- **Communications backbone for future intelligent applications –**
 - **Protocol agnostic implementation – Bit and Byte Serial and TCP/IP protocols supported**
 - **20+ additional features under development**
 - **Data Aggregation**
 - **Physical Security - Video/audio capabilities, electronic security badges**
- **Designed to grow with changing industry needs**

Odyssey™ Product Series



Technical Discussion

Odyssey™ Product Series: Core Components



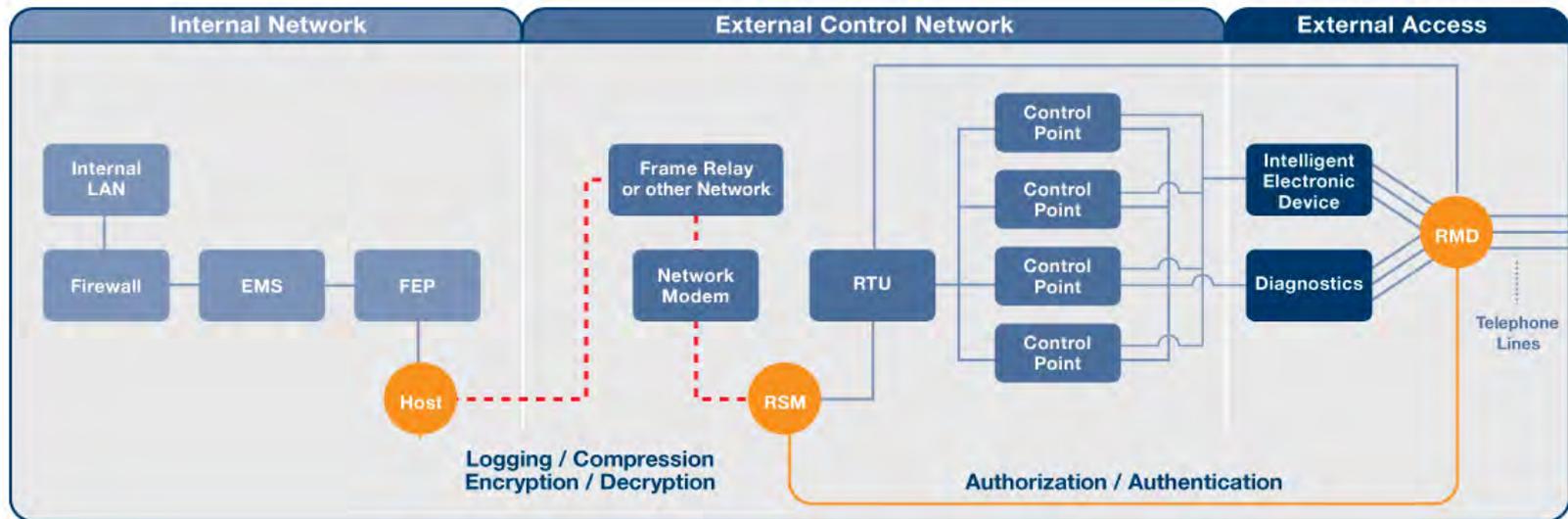
- **Three components to install:**
 1. **Host System (Database / Web Interface Server, Communication servers)**
 2. **Remote Service Module (RSM)**
 3. **Remote Modem Defender (RMD)**

- **Completely configurable, scalable**
- **Manages legacy and new system configurations simultaneously**

Odyssey™ Product Series: Retrofit Implementation



Quickly and easily installed into the control system network:



Actual Installation



- 🌐 **At Operations Center:**
Host installs next to EMS



- At the Substation:**
RSM, RMD next to RTU, IEDs



Odyssey™ Product Series: Feature Suites



 **SCADAsafe™/Modem Defender
Security Suite**

 **OptiBit™ Performance Suite**

 **PinPointer™ Diagnostics Suite**

SCADAsafe™/Modem Defender Security Suite



- **Most comprehensive electronic security perimeter available:**
 - **Uses proven security technologies**
 - **Ultra-low latency 2048-bit encryption**
 - **Device-to-device authentication**
 - **Substation dial-up modem protection**
 - **Configurable role-based user permission settings**
 - **Centralized password management**

Dial-Up Modem Security



- **Remote Modem Defender™**
 - **Hardened field unit installs between dial-up modem and IEDs**
 - **Central management of dial-in users and passwords**
 - **Real-time reporting of modem activity, alerts**
 - **Directly out of the financial industry**

Security Benefits



Protected from Attack SCADA Network *WITH* The Odyssey™ Solution

Control Room Comm Cloud Sub Station IED/Diagnostics Telephone Lines



1 2 3 4



5 6



7



8

9 10 11



- 1 Identity Theft *DENIED*
- 2 User Spoofing *DENIED*
- 3 Disgruntled Employee *DENIED*
- 4 Malicious Code Attack *DENIED*

- 5 Man-In-The-Middle *DENIED*
- 6 Replay Attacks *DENIED*

- 7 Device Spoofing *DENIED*
- 8 User Spoofing *DENIED*

- 9 WAR Dialing *DENIED*
- 10 Identity Theft *DENIED*
- 11 Disgruntled Employee *DENIED*



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PERFORMANCE TROUBLESHOOTING SECURITY

OptiBit™ Performance Suite



- **2X existing link bandwidth**
 - Transport more data without changing technology or installing additional communication links
- **Self-optimizing compression technology**
 - Get the most out of the communications network *all the time*
- **Convert Bit to Byte at line speed**
 - Eliminate bottlenecking in the field

PinPointer™ Diagnostics Suite



- **Logs all system events (NERC)**
 - Tracks each user on the control system
 - Tracks each transaction on the control system
 - Diagnose communication errors in real-time when they happen
- **Complete System Monitoring and Control**
 - Operator can drill down from an entire network perspective to a detailed view of the activity across one port
 - Byte-by-byte data capture with millisecond level timing reveals all critical communication elements
 - Enabled from Host, no extra cabling or tools required

Standards Compliance



Field Device Compliance

- CE Mark
- UL 60950, EN60950, EN55022, EN55024
- FCC Part 15 Class A
- ICES-003

Protocol & Security Standards

- IEC 61850, IEC 60870 - compatible
- IEC 62351 - compatible, exceeds security level
- NIST FIPS 140-2, Level 2 – compliant
- AGA 12 – exceeds security level
- NERC CIP-002 to CIP-009 - compliant

Product Testing

- Idaho National Labs, 2007

Operational Benefits



- 🌐 **Enterprise Architecture**
 - 🌐 **Centralized management of all functions**
 - 🌐 **Scalable to thousands of links**
- 🌐 **Compatible with Serial and TCP/IP networks**
- 🌐 **Accommodates all protocols**
 - 🌐 **Bit and Byte protocols**
 - 🌐 **IEC 61850, IEC 60870, Modbus, Conitel, CDC, etc.**
- 🌐 **Easy to Install and Maintain**

Deployment: APS Pilot Project



Current Status:

-  **Three test links successfully installed today**
-  **Using DNP3 and Conitel protocols**
-  **Deploying in live environment**

APS Test Performance Results:

-  **Secured with 2048-bit encryption & authentication**
-  **Transparent - No impact to EMS SCADA system**
-  **83% Compression Ratio (equates to approx +500% improvement in line throughput)**
-  **Poll/response time is cut in half!**

Odyssey™ Product Series



Demonstration

Odyssey™ Product Series



Summary

Summary



- **Applies benefits of IT Technology to Control System Communications**
 - **OptiBit™ Performance Suite**: Performance improvement provides the opportunity to delay the costs associated with upgrading slow communication networks
 - **PinPointer™ Diagnostics Suite**: Access to real-time, intelligent data about all Odyssey™ Solution components
 - **SCADAsafe™/Modem Defender Security Suite**:
 - Comprehensive electronic security perimeter with device and user authentication
 - Protection for dial-up substation modems

Summary (con't)



- **Process of creating fully operational in Pilot Project at a major US utility**
- **Modular design configures to fit into virtually any system environment**
 - **Centralized Host for security, management, alerting, logging functions**
 - **RSM device extends security perimeter to substation**
 - **RMD protects modem access to substations**
 - **Looking to the Future: Embedded within FEPs, RTUs, IEDs, etc.**
- **Meets and exceeds NERC standards, works with all protocols, and serial & TCP/IP networks**

Strategic Benefits



- **Better operational performance and more intelligent decision making capabilities**
- **Better investment alternative versus system replacement**
- **Better profitability resulting from more efficient network performance and troubleshooting**
- **Better control system security**

- **Value Proposition: Performance and Troubleshooting = Security that pays for itself**

Aegis Technologies: Your Partner



- **A truly unique vendor approach**
- **Developing solutions that meet multiple needs – both immediate and future**
- **Committed to long term relationship, complementary new products including integration of Odyssey™ technologies into OEM equipment**



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Thank You!

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