Security Connected for Critical Infrastructure

The Future for Secure Embedded Devices
Securing the Electric Grid

[Map of the United States showing various interconnections and voltage levels.]

Texas Smart Grid Security Deployment

Electric Power Group (EPG) is adding the security fabric to their synchrophasor products and deploying them via CCET.

Center for the Commercialization of Electric Technologies (CCET) is a DOE grant recipient working on a synchrophasor demonstration project in Texas.

ERCOT (Electric Reliability Council of Texas), ONCOR, Sharyland and AEP are Transmission Operators (TOs) participating in the demonstration project.

Texas Tech University (TTU) is the site of the field trial. Turbines, substation, 2-level control center.
In Moments Hostile Traffic Was Detected
RTDMS and ePDC
April 2013

Security Connected RTDMS and ePDC
Dec 2013

C37.118 Data over Ethernet

TTU Network
Reese Tech Center Network

C37.118 Data over Ethernet

Visualization

C37.118 Data over Ethernet

Security Services

C37.118 Data over Ethernet

Visualization

RTDMS Client
The next step forward
Synchrophasor solutions
CONVERGENCE

- Transformer Monitoring
- Event Recorder
- Recloser Control
- Substation Automation
- Synchrophasor Measurement Unit
- Power Electronics Control
- Demand Response
- Metering
- Capacitor Control
- Power Quality Analyzer
PMUs from National Instruments*
Field programmable, scalable, interoperable

NATIONAL INSTRUMENTS™
PMUs from National Instruments*
Powered by Intel® Core™ i7 processors
Intel® Intelligent Systems Framework helps enable a syncphasor solution that's...
Intel® Intelligent Systems Framework helps enable a syncrophasor solution that’s...
- End-to-end
- High capacity
- Validated and tested
- Remotely manageable
- Standards-based
Smart Grid Security Needs

End-to-End Security Needed
Security Connected Platform for Hardening Critical Infrastructure

**Embedded Security**
- Physical Security
- Endpoint Protection

**Secure Communication**
- Attack Surface Management
- Machine-to-Machine AAA

**Security Monitoring & Management**
- Security Policy Management
- Security Event Monitoring
Business Process Node Management
Embedded Security Design Pattern

- Green Field scenarios
- Virtual instance secures network for device
- Physical access protected
- Device-level security provided
Secured Communication
Physical Separation (Gateway)

- Brown Field scenarios
- Gateway secures network for device
- Attack surface reduced to physical access
- No device-level security provided
- Device nodes untouched
Security Connected-Enabled Communication

Trusted Transaction Space

1

2

3

4

EPO

Analytics

Identity
AAA
Directory

Management & Monitoring

G a t e w a y

G a t e w a y

A

D

B

E

C

F

Trusted Transaction Space

XYZ

XYZ
Partnerships

CCET
NATIONAL INSTRUMENTS
Electric Power Group
ONCOR
AEP AMERICAN ELECTRIC POWER
ERCOT
Sharyland Utilities
Security Connected for Critical Infrastructure is a platform

Designed to encapsulate existing business processes

Securing applications without requiring refactoring for security

Enabling applications to collaborate within the Security Fabric
Security Connected for Critical Infrastructure: Comprehensive End-to-End Protection