Enhanced Power Edge Security
Intel Corporation

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Summary: Enhanced Power Edge Security

Objective
- Enhance reliance/resilience of the nation’s energy infrastructure through End-to-end security solution.

Schedule
- Oct 2016 – Sept 2019
- Gateway solution to protect the network communication in legacy systems and a greenfield solution to create new secure devices
- Gateway solution completed. FPGA solution in progress

Total Value of Award: $4,441,532 ($1,188,019 participant cost share)
Funds Expended to Date: %55

Performer: Intel Corp.
Partners: Schneider Electric, LiveData Utilities
Advancing the State of the Art (SOA)

- No or minimal security in legacy systems
- Adding security appliances to legacy systems require significant reconfiguration
  - Risky with large downtime
- Multiple security vendors that do not interoperate
  - Improperly configured systems or applications compromising the security
- Tension between OT and IT
  - OT more focused on functionality, IT on security
- Objective of our solution:
  - Provide a security focused system independent of OT application
  - That can be remotely configured and monitored
  - That provides a ‘Security wrapper’ around applications
  - With open standardized security APIs
Gateway Solution

Legacy Brownfield Deployment

- Mgmt UI
- Firewall policy
- VPN policy
- Logging policy
- SIEM support
- Packet filtering
- VPN setup
- Security events monitoring
- Bump in the wire
Greenfield Solution

New Greenfield Deployment

- Mgmt UI
- Firewall policy
- VPN policy
- Logging policy
- SIEM support

FPGA Security Chip

- HW container for security
- Security native to the device

Security Mgmt. & Monitoring Cloud

- Mgmt UI
- Firewall policy
- VPN policy
- Logging policy
- SIEM support
Challenges to Success

• HW development is expensive and risky
• Larger FPGAs are expensive
  • Requires a careful balance between cost and functionality
• Ecosystem enabling
  • Standardization helps but has its own challenges
• It is hard to sell security – customers want functionality with built-in security
Progress to Date

Major Accomplishments

- Gateway solution has been productized
- Solution supports both on-prem as well as cloud security management and monitoring
- Successful demo of the solution at Schneider Electric microgrid
- RFP and SoWs in progress with hardware IP vendors and ISVs for security chip and software development
Collaboration/Technology Transfer

- Ecosystem consists of OEMs, ISVs and Service Providers
- Planning to develop and bring solution to market
- Gateway solution installed at Schneider Electric facility
- Demonstration plans:
  - Deploy in a Utility testbed H1’19
  - Engage with National Labs for red team testing
  - Pursuing additional opportunities within IAB
Next Steps for this Project

• Complete development of security chip
• Integrate security functions with service providers and ISVs
• Publish and standardize Security APIs