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Portland ABB User's Group Meeting

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Power and productivity
for a better world™

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Plant Overview

Avista and Portland General Electric co-own the combined cycle natural gas plant called Coyote Springs, located in Boardman, Oregon. The plant has 2 main generation units. PGE owns Unit 1 (231MW) and Avista owns Unit 2 (280MW). PGE operates both units.

Two (2) GE 7001FA gas turbines, two (2) Toshiba heat recovery steam generators (HRSG) and one (1) ABB Alstom steam turbine. In addition, the plant also exports steam.

Portland General Electric:
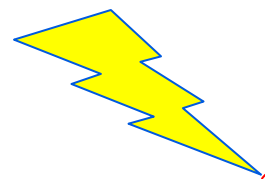
Wholly owned plants	Location	Net MW Capacity[1]
Hydroelectric		
Faraday	Clackamas River	46
North Fork	Clackamas River	58
Oak Grove	Clackamas River	44
River Mill	Clackamas River	25
T.W. Sullivan	Willamette River	18
Natural Gas/Oil		
Beaver	Clatskanie, Ore.	516
Coyote Spring	Boardman, Ore.	231
Port Westward	Clatskanie, Ore.	410
Wind		
Biglow Canyon Wind Farm	Sherman Co., Ore.	450
Jointly owned plants[1]		
Coal		
Boardman[2]	Boardman, Ore.	374
Colstrip 3 & 4[3]	Colstrip, Mont.	296
Hydroelectric		
Pelton[4]	Deschutes River	73
Round Butte[4]	Deschutes River	225
		Total: 2,766 MW

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Recent ABB DCS Activities

✓ Upgrade from ConductorNT to 800xA HMI (ie PPA)

✓ Modular Power System III (MPSIII) Upgrades

✓ NIS/NPM Upgrades

✓ Redo Aux Boiler combustion logic

✓ Evolution from MFPs to BRC410s

✓ Upgrade from MFP/FDI (RS232) to BRC410/HGS (ethernet)

✓ Cyber Security Work

✓ Evolve from semAPI to Harmony OPC for OSI-PI

✓ Upgrade from SCSI to ethernet CIUs (IET800)
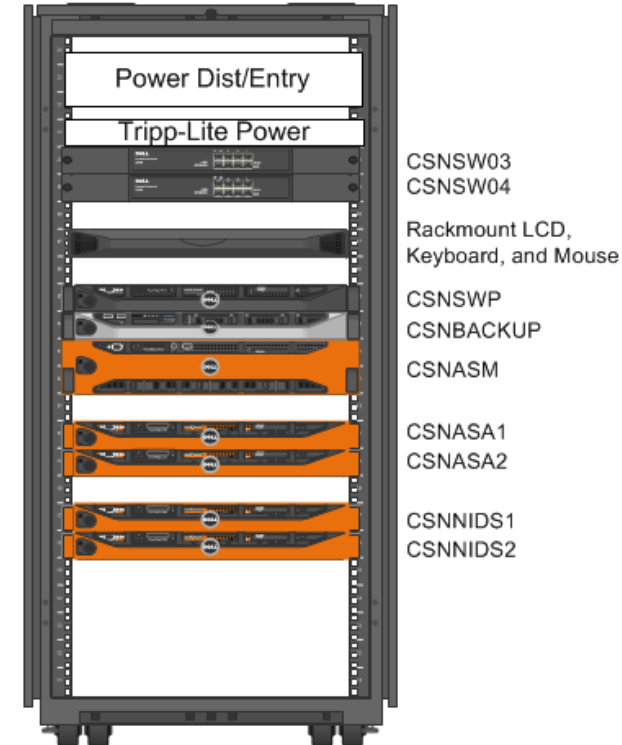
Future:

　　　Upgrade from PPA 5.0 to 5.1

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Cyber Security - Motivation / Justification

- Unit in fleet is black start and therefore a critical asset under v3. PGE team was tasked to build a program to address it. During that process, they realized that they had a need to heighten security at all of their plants, regardless of compliance (i.e., good housekeeping).

- Proactively harden and protect their control systems within their generation group vs being driven by corporate IT assurance.

- Minimize on site manpower for cyber security requirements

- PGE is a public company that must regularly go to the PUC for rate cases. They felt that having a cyber-attack of some sort could hurt them with the general public and make rate cases even more difficult.

Cyber Security - Scope of Supply

- ABB Security Workplace

    - System Hardening

    - Microsoft Patch Updates

    - Anitvirus DAT File Deployment

    - Disaster Recovery

    - Security Event Monitoring

    - Configuration Change Management

    - NERC-CIP Compliance Reporting

    - Network Intrusion Detection

- ServiceGrid Monthly Patch DVD Subscription

- 800xA Healthcheck & System Fingerprint prior to work beginning

Power Dist/Entry

Tripp-Lite Power

CSNSW03
CSNSW04

Rackmount LCD, Keyboard, and Mouse

CSNSWP
CSNBACKUP

CSNASM

CSNASA1
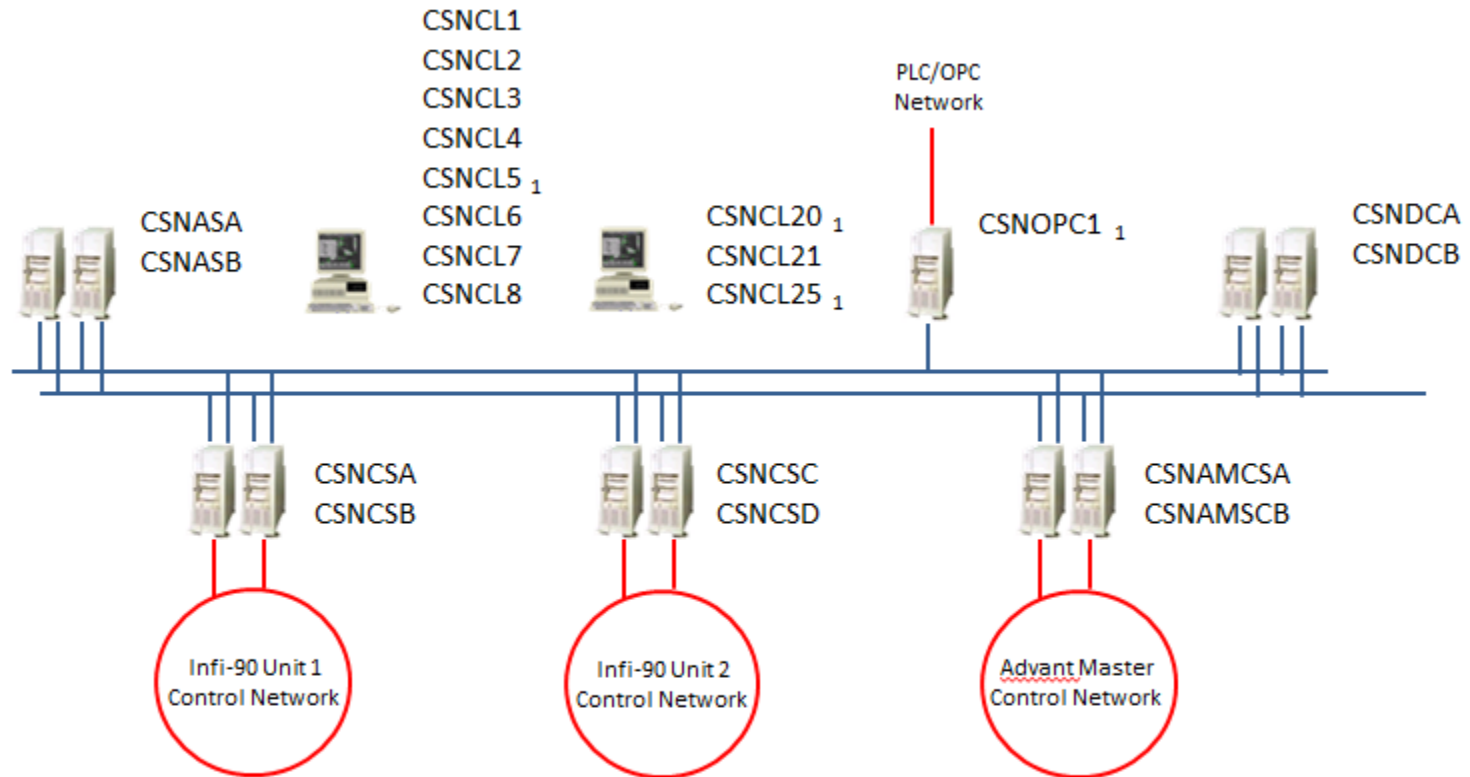CSNASA2

CSNNIDS1
CSNNIDS2

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Cyber Security – Lessons Learned

- Scanning of 30 Nodes takes awhile. User can only select 4 nodes at a time to scan.

- Able to roll-out Microsoft and McAffee updates on line. Servers require reboot but system is redundant so not an issue.

- Whitelisting was not implemented at this time

- WindowsXP doesn't allow us to remotely install patches. You can push patches but you can't install remotely.

- Added a node after original install. First time doing this was a little confusing. Expect to be easier as we become familiar with the product.

- The Patch DVD only comes with the standard DAT file from McAfee and not the ePO DAT file or updated engine files.

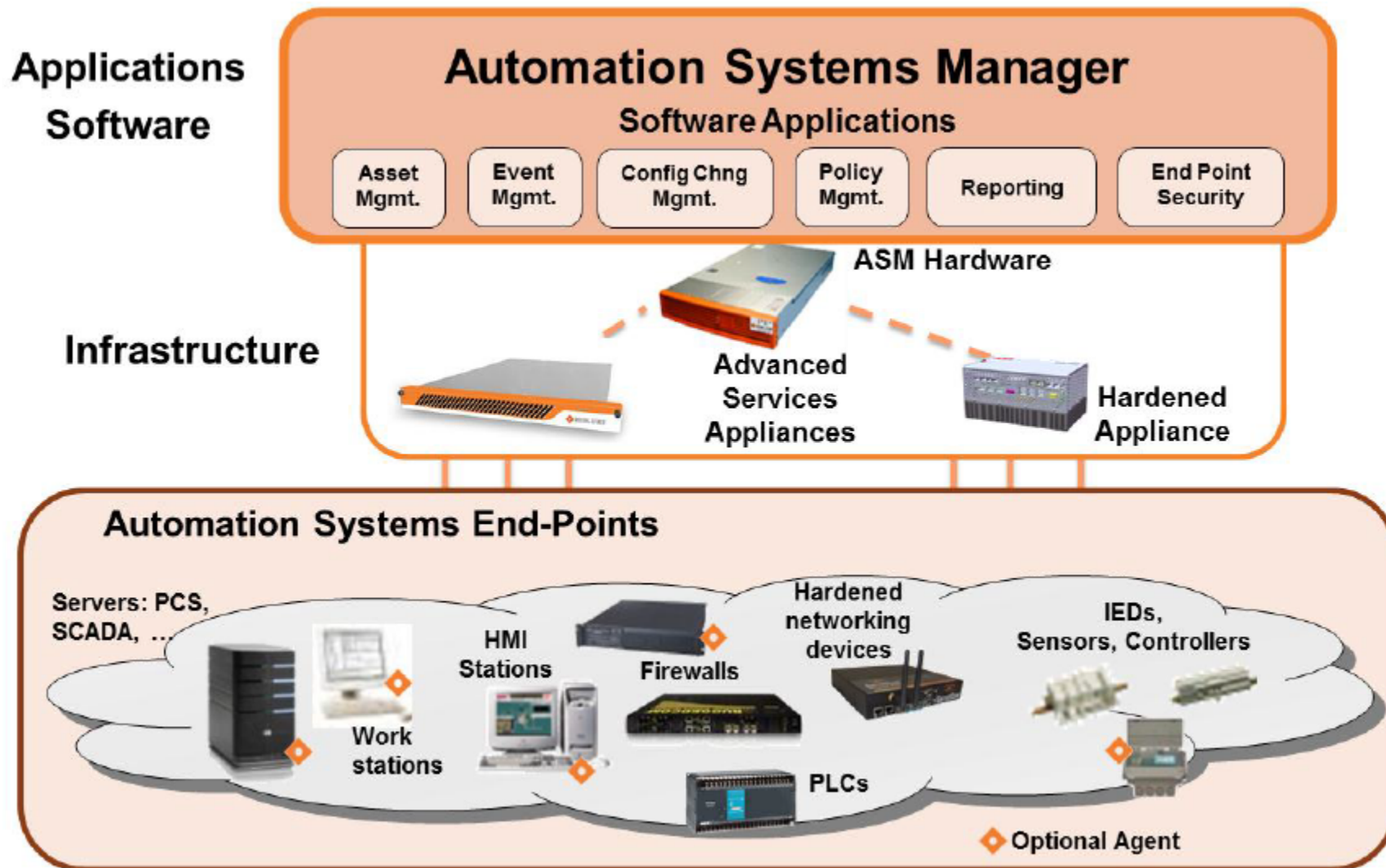**ABB**

Cyber Security – Benefits

- All Machines are up to date with Microsoft Patches and McAfee. Minimize labor to bring up to date and to maintain. Also tool provides proof of updates being completed.

- Central Management of MS Patching, DAT file distribution, and Backups from a single console

- Easy to restore machines. Save TIME.

- Vulnerability reduced due to hardened Ports and Services

- Simple generation of NERC-CIP Compliance Reports

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ABB DCS Architecture

ASM Typical Architecture

Applications Software

Automation Systems Manager
Software Applications

- Asset Mgmt.
- Event Mgmt.
- Config Chng Mgmt.
- Policy Mgmt.
- Reporting
- End Point Security

Infrastructure

ASM Hardware

Advanced Services Appliances

Hardened Appliance

Automation Systems End-Points

Servers: PCS, SCADA, …

Work stations

HMI Stations

Firewalls

Hardened networking devices

IEDs, Sensors, Controllers

PLCs

◆ Optional Agent

Security Workplace in Factory

- Security Workplace
- Acronis Backup & Recovery
- Automation System Manager
- Advanced Services Appliance 1
- Advanced Services Appliance 2
- Network Intrusion & Detection 1
- Network Intrusion & Detection 2