HOW ARUBA & SIEMENS BRIDGE THE IT/OT DIVIDE

THE TRUST DIVIDE

The proliferation of connected industrial IoT devices has moved in lock step with initiatives to optimize operations, boost efficiency, better manage inventory, and enhance safety.

Powered by insights from data analytics applications, and fueled by device data and contextual information like location and identity, these initiatives have generated an almost insatiable demand for high-availability, connected devices.

A connected device is only useful when it's operating properly, and the data it generates are trustworthy. These requirements demand data visibility and cybersecurity spanning from I/O to CEO, from manufacturing cells to business applications.

It is here that the trust divide surfaces between information technology (IT) networks that interconnect the enterprise, and operational technology (OT) that runs plants and factories. IT and OT have different perspectives the meaning of "trust" and acceptable operating practices, In the IT world, trust is associated with the provenance and security of data and devices. In the OT, world trust is equated with the reliability and resilience of systems that are often in place for decades.

IT systems are frequently patched and updated, resulting in device or network outages, no matter how brief, that would be unacceptable in the OT world. Many OT systems lack security mechanisms considered foundational in IT systems.

Both forms of trust and operations are relevant to achieving enterprise-wide data visibility and cybersecurity, and realizing one without the other can put an enterprise at risk. The focus needs to be on bridging the trust divide and ensuring that the needs of both IT and OT can be satisfied.

WHY SIEMENS AND ARUBA

- Integrated plant-wide IT and OT architecture provides visibility and cybersecurity from I/O-to-CEO
- Dynamic segmentation provides common enforcement options for devices connected to Aruba switches
- Common AAA services simplifies security management
- AirWave monitoring of select Siemens industrial network devices gives single pane of glass visibility
- VPN termination and wireless management with select Siemens devices extends the value of IT infrastructure
- Hitless updates of Aruba and Siemens Scalance W1750D-2IA access point to keep networks running while staying current with the latest security and software updates
- Aruba's Multizone allows Aruba devices and Scalance W1750D-2IA to be partitioned into multiple networks for machine-as-a-service and other applications
- Aruba's Common Criteria and FIPS 140-2 validated platforms complement Siemens' OT systems in government and defense applications
- Validated reference designs
- Direct support escalation for fast problem resolution

PARTNERSHIP BUILT ON EXPERIENCE

Siemens and Aruba have partnered to realize that vision. Siemens brings over 30 years of experience in the fields of OT communication technology, with services and infrastructure that can be customized and scaled to meet the needs of a wide range of industrial and manufacturing customers.

As one of the world's largest IT networking companies, Aruba brings unparalleled experience in high-reliability, secure mobility, LAN switching, SD branch, locationing, application assurance, and network management systems.

Working in concert, Siemens and Aruba can together deliver the most secure, resilient, and insightful integrated OT and IT systems available.

INTEGRATED, PLANT-WIDE NETWORKS

Siemens' OT solutions include Scalance, Ruggedcom, Simatic, and MindSphere brands. Products include Industrial Ethernet switches and wireless, modems, routers, WAN radios, security appliances, and the MindSphere cloud-based open IoT operating system. Ruggedcom products work in harsh environmental and electromagnetic conditions, while Simatic location and RFID systems can track mobile robots, transport systems, and work in process.

Aruba's solution platform is built around seven building blocks, which together form its architecture for building trust-based IT and IoT networks for business-critical applications. The building blocks include connectivity and data collection, security, edge computing, location services, performance analytics, application assurance, and network management, diagnostics, and visibility. Interconnections with Siemens' products and services deliver unique value in integrated OT/IT systems.
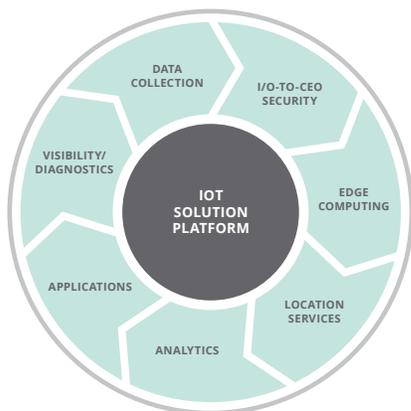
IoT Building Blocks

Aruba's switch portfolio includes edge, aggregation, and core switches, including high availability options for non-stop operation. Zero-touch provision speeds installation, and cloud, hosted, and on-premise management and monitoring options allow for a wide range of deployment scenarios.

Aruba's dynamic segmentation provides common enforcement options for wired devices. A simpler alternative to VLANs, the technology separates L3 network traffic and can send target traffic to a specific service.
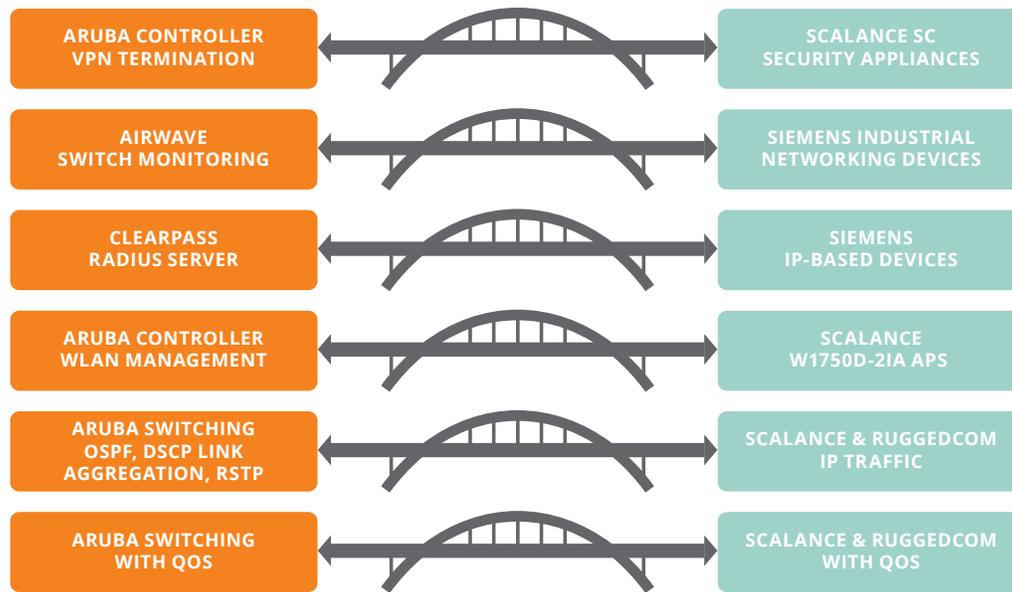
Aruba's AirWave Management Platform can manage Aruba and monitor select Siemens industrial network devices from one common pane of glass. The result is a homogeneous view of a heterogeneous network that is more intuitive to operate and manage.

Remote access solutions provide secure communications to remote machines, users, and sites, over WANs or cellular. VPN tunnels can be established on select Siemens platforms and terminated at Aruba controllers that are also securing industrial IT applications.

Aruba controllers work with both Aruba and Siemens' SCALANCE W1750D-2IA access points, simplifying the integration of IT and OT systems in jointly deployed industrial applications. Hitless updates allow software and security updates to be installed immediately, without losing data and instead of waiting for annual updates, improving both uptime and cybersecurity.

Governments and defense contractors rely on high security IoT solutions for manufacturing, logistics, SCADA, plant and base operations, and weapons systems. Aruba's Common Criteria and FIPS 140-2 validated platforms complement Siemens' systems in these critical applications.

Aruba's Multizone feature allows Aruba and SCALANCE W1750D-2IA wireless networks to be segmented into multiple virtual networks – each with its own security and access rules – so one common infrastructure can service up to five owners, each with its own SSID, with no cross-access, i.e., factory network, machine-as-a-service network, supplier network, auditor network, etc. Originally developed for defense applications, Multizone does not rely on VLANs, making it easier to deploy and modify.

ARUBA CONTROLLER VPN TERMINATION	⟷	SCALANCE SC SECURITY APPLIANCES
AIRWAVE SWITCH MONITORING	⟷	SIEMENS INDUSTRIAL NETWORKING DEVICES
CLEARPASS RADIUS SERVER	⟷	SIEMENS IP-BASED DEVICES
ARUBA CONTROLLER WLAN MANAGEMENT	⟷	SCALANCE W1750D-2IA APS
ARUBA SWITCHING OSPF, DSCP LINK AGGREGATION, RSTP	⟷	SCALANCE & RUGGEDCOM IP TRAFFIC
ARUBA SWITCHING WITH QOS	⟷	SCALANCE & RUGGEDCOM WITH QOS

Bridging the IT/OT Divide

Aruba's ClearPass can automatically profile, identify, on-board, and assign the appropriate security policies to IP-based Siemens devices, as well as mobile and fixed IoT devices. Its RADIUS server enables Siemens devices to obtain AAA services from the IT infrastructure, providing one common source of control. Adds, moves, and changes are faster without compromising cybersecurity, lowering lifecycle costs and reducing the mean time to repair systems. ClearPass also interfaces with other security infrastructure – next gen firewalls, MDM, SIEM, EMS – to provide comprehensive security, including quarantining if permitted under OT rules.

Aruba's portfolio of edge compute gateways and servers to locally ingest, process, and respond to IoT data flows. The platforms can be remotely managed without providing access to the data being processed. These compute engines complement Siemens industrial controls in environments that require data center-class compute at the network edge.

Aruba's Meridian system provides wayfinding, geofencing, and asset tracking services. For example, upon detection of an out-of-normal machine state Meridian wayfinding can guide an engineer to the machine and recall the service record and user's guide. Meridian can also notify a billing application when the engineer arrived and left. Meridian is compatible with Aruba and the SCALANCE W1750D-2IA access points.

High mean times between network failures, and low mean times to repair, hinge on deep knowledge of network operations and the rapid identification of the root cause of issues. Aruba's NetInsight uses machine learning algorithms to detect problems, automatically eliminate false positives when the network is not performing as expected, and issue prescriptive recommendations on network changes to both IT and OT IP-based networks to prevent future incidents.

Where performance analytics inform how a network is performing internally, application assurance notifies you how the system is running from the applications' perspective. Aruba's Cape Service Assurance Solution will proactively simulate real-world user and client experiences using synthetic transactions sent over Wi-Fi and/or the Ethernet LAN. Distributed across a facility, Cape Sensors can continuously test on-premise and cloud OT applications to detect and identify the source of performance degradation before it threatens critical processes.

Finally, Aruba's AirWave network management solution offers single pane of glass visibility into network operations, zero touch device provisioning, intrusion detection, and trouble ticket management. By pulling data from every element of the Aruba infrastructure, these tools deliver fine grained visibility and predictive insights into systems of any size. AirWave is capable of monitoring select Siemens industrial network devices, providing visibility into both IT and OT switch performance.

## INTEROPERABLE SYSTEMS & VALIDATED REFERENCE DESIGNS

Siemens and Aruba have taken the guess work out of OT/IT deployments by validating interoperable operation across products, and documenting reference designs. As a result systems should go in faster and work more reliably. An example integrated OT/IT system showing secure VPN crossing the IT/OT divide follows below.

DIRECT SUPPORT ESCALATION

To ensure that deployed systems continue working at their best, Siemens and Aruba have an established engineer-to-engineer escalation program so the best technical resources are available 24/7. Customers and resellers get fast answers and problem resolution.

SUMMARY

Working in close collaboration, Siemens and Aruba have bridged the IT/OT divide by integrating solutions across a broad range of complementary technologies and services. Contact your local sales representative to see how together we provide IoT visibility and cybersecurity from I/O to CEO for manufacturing, industrial, transportation, defense, and electric power applications worldwide.
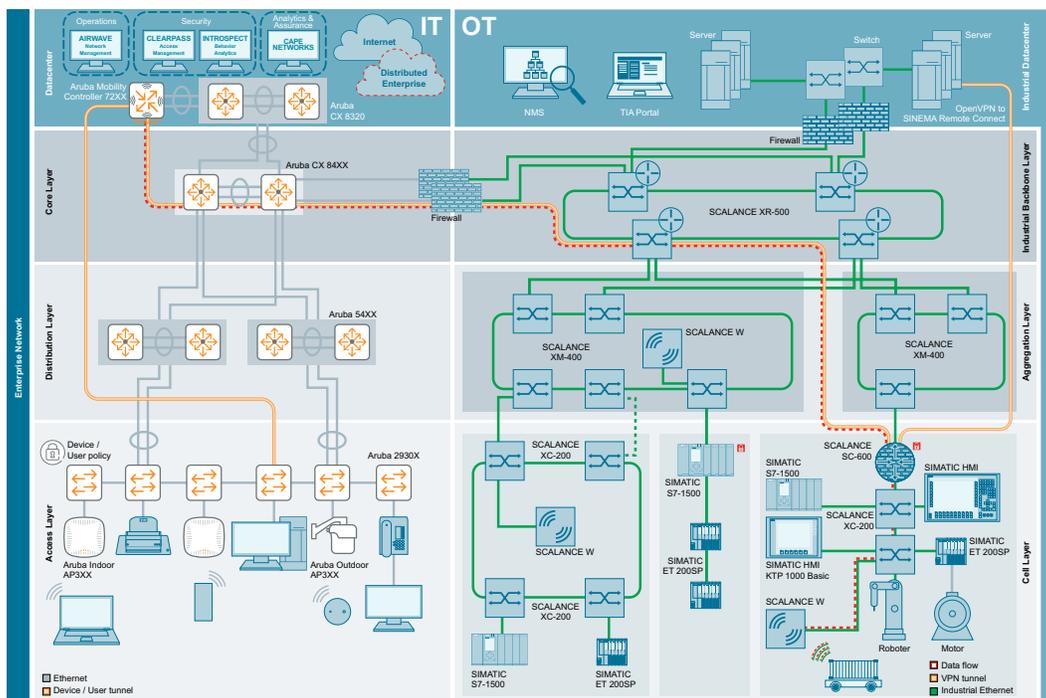
Integrated IT/OT Secure Communication Termination

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