Cisco Application Extension Platform

Process manufacturing companies are looking for ways to capture, track, and share increasingly complex process data. At the same time, their supervisory and process control networks must meet robust standards to ensure that their communication and information infrastructure is not compromised. If a system goes down, the result can be millions of dollars in damage, lost production, and dangerous safety issues.

As these companies continue to connect important assets to the network so that they can increase operational transparency, the systems need to scale, and better tools for managing at the edge become essential. A joint effort between OSIsoft and Cisco® is designed to address these needs for real-time process control and efficient data management, focusing on applications in three main industries: power transmission and distribution, oil and gas, and retail. All of these applications are related to the management and utilization of energy.

Industry Trends

Industry leaders rely on data to drive decisions and to help them make continuous improvements in their operations. The ability to react quickly to changes can provide a profound competitive advantage. OSIsoft and Cisco are exploring ways to improve real-time gathering and monitoring of process data in the following industries:

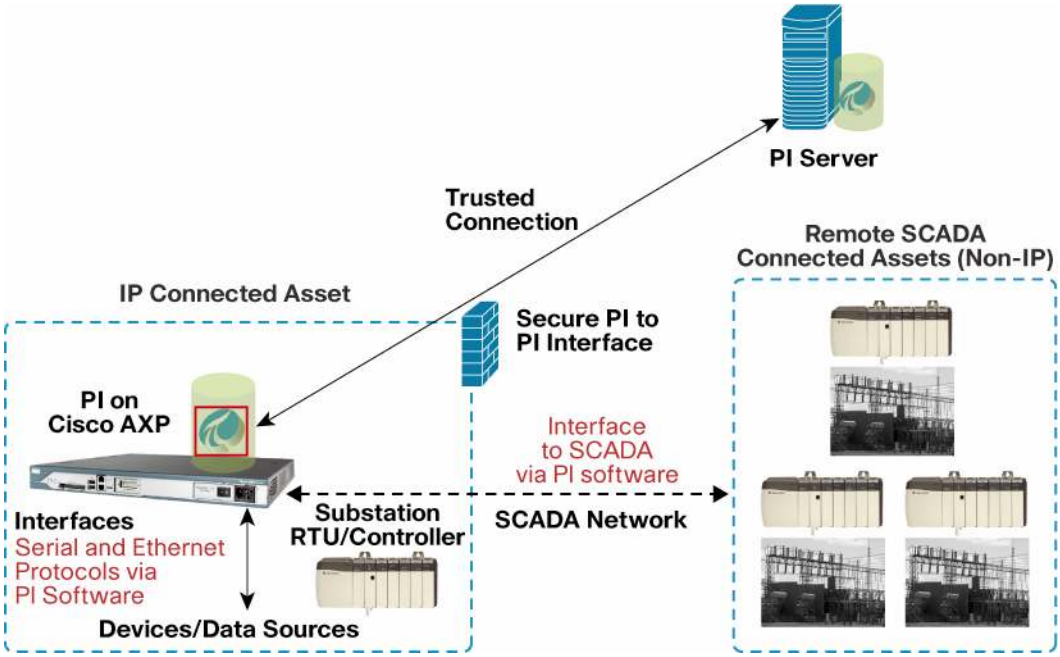
- **Power:** In leading power transmission and distribution companies, OSIsoft and Cisco are working to develop solutions for substation automation and meter data management. This is part of an ongoing trend to respond more quickly to changes in the supply of and demand for energy. These efforts involve upgrading field instrumentation to collect information from remote substations and meters. Once data is collected and analyzed, employees with secure access determine the condition, performance, and utilization of important elements of these complex, interconnected systems. This increases power availability and meets North American Electric Reliability Council (NERC) Critical Infrastructure Protection (CIP) regulatory standards.
- **Oil and gas:** In the oil and gas industry, OSIsoft and Cisco are exploring applications in brownfield upstream production and pipeline monitoring. These applications are generally geographically dispersed, creating networking challenges for real-time systems. Reducing the hardware requirements and simplifying the administration of these systems allows larger portions of the system to be continuously monitored for trouble, minimizing costly failures.
- **Retail:** Applications in retail involve monitoring energy consumption and availability at large retailers. This monitoring can substantially increase profits by reducing energy costs. As energy becomes a major expense, companies are looking for innovative ways to control these costs, which otherwise can cripple profitability.

Cisco and OSIsoft Create an Operations Router

OSIsoft and Cisco now offer a joint solution that extends real-time information management into edge networking solutions. The Cisco Application Extension Platform (AXP) has enabled a series of Integrated Services Routers (ISRs) to include OSIsoft's legendary PI System, the leading real-time information management software. The resulting device provides the capabilities of real-time data infrastructure as an integral component of Cisco's network infrastructure.

OSIsoft's PI information management software, integrated into Cisco's ISR, enables cost-effective global deployment of secure, robust, intelligent network infrastructure to many assets that are not currently being monitored in real time. Figure 1 shows how this solution is deployed.

Figure 1. Supervisory Control and Data Acquisition (SCADA) via a Cisco Router with PI Software from OSIsoft



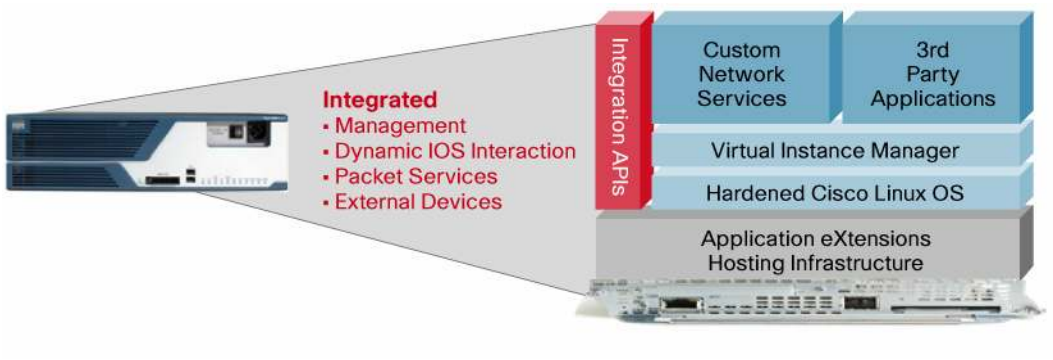
Along with collecting and managing critical real-time operations data, this joint solution also collects information on the health and security of the network itself and uses Cisco's proven suite of connectivity and application solutions.

Interfaces to operational equipment on critical applications collect and buffer data on the ISR to ensure secure connectivity with assets at the edge of the network. PI servers running remotely or in the ISR provide valuable access to data and analytics from the streaming data. This information can be used locally by onsite personnel or aggregated to other PI servers responsible for monitoring collections of assets.

AXP Product Overview

The Cisco Application Extension Platform (AXP) provides a standards-based Linux hosting environment within the router, allowing third parties to integrate applications with the router. Harnessing this integration, an AXP application can appear to the end user as an extension of the router. Figure 2 depicts the AXP environment.

Figure 2. The AXP Environment



The AXP solution consists of:

- Application runtime network module, providing dedicated resources to host applications
- Application Extension Platform hosting environment, providing the infrastructure to securely host, install, upgrade, and manage third-party applications and services
- Cisco IOS® Software Integration APIs, allowing the application to integrate and utilize the features of the router
- Software developer kit (SDK), allowing certified customers and partners to develop applications and services
- AXP Partner Program, providing collateral, extended technical support, and online resources to help partners develop, deploy, and market their AXP-based solutions

Solution Highlights

OSIsoft has developed a version of the PI System that runs exclusively on the Cisco AXP. The solution eliminates the need for a separate PC server at each location but still allows the user to benefit from the scalability of the PI System. This solution reduces both system complexity and the initial and long-term cost. The technology convergence allows companies to cost-effectively monitor many more assets than were previously practical across an expanding operations and corporate network, helping businesses achieve secure, end-to-end visibility of real-time information, communication, and management across both networks.

- OSIsoft's IT Monitor and Industrial Data Center (IDC), powered by the OSIsoft PI database, are the leading real-time performance management systems for manufacturing industries. The OSIsoft IT Monitor agentless software gathers real-time data—more than 80,000 events per second—from across an entire enterprise without affecting network traffic. This gives decision makers an advanced platform for accurate capacity planning, root cause analysis, and gaining an understanding of how IT assets affect their operations.
- The Cisco Ethernet to the Factory solution helps process manufacturers make the transition from proprietary control networks to standards-based Ethernet. By bridging the

gap between the corporate office and control systems, companies can make strategic business decisions that are backed by real-time data.

- The OSIsoft IDC uses the Cisco Business-Ready Data Center architecture, part of the Ethernet to the Factory solution, to help companies monitor and manage their PCNs and business networks. This real-time visibility enables companies to determine when they are one standard deviation beyond normal operating status and to take action before crucial processes or networks go offline. These processes run on an adaptive, integrated, and resilient network with multilayered security. Working together, Cisco and OSIsoft bring industry-leading expertise to bear on a growing problem to corporate clients everywhere.

Business Benefits

By obtaining an overall view of previously disparate networks, manufacturers can:

- Have a 360-degree view of plant operations to enable troubleshooting and predictive analysis without compromising network performance or network security
- Anticipate problems and minimize disruptions to operations networks
- Troubleshoot problems with greater precision to reduce mean time to repair
- Eliminate silos of information that result in duplication of effort, miscommunication, and lack of accountability
- Share and manage information over a converged network
- Create a more collaborative operations environment to shorten lead times and respond quickly to customers
- Support “just-in-time” customer processes to reduce costs, waste, and inventory

About OSIsoft

OSIsoft (http://www.osisoft.com) delivers the PI System, the industry standard in enterprise historians, as the core of its real-time infrastructure platform. A global base of more than 11,000 installations across manufacturing, energy, utilities, life sciences, and other process industries relies upon the OSIsoft PI System to safeguard data and deliver enterprisewide visibility into operational health in order to manage assets, mitigate risks, and identify new market opportunities. Founded in 1980, OSIsoft is headquartered in San Leandro, California, with operations worldwide. It is privately held.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

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