Cisco Application Extension Platform Solution

Secure Healthcare Connector for Healthcare Industry.

The healthcare market is undergoing a major change. Today, with a few exceptions, healthcare providers, dentists, small offices, pharmacies etc. are not networked. The inherent management and security of healthcare information and patient records are expensive and unwieldy. Locally managed devices and applications are not secure and are hard to manage. Doctors and practitioners struggle to care for patients without knowledge of past illnesses and treatments.

This solution brochure involves an innovative approach to solving this problem involving the development of a “healthcare connector” application that resides on a industry-leading router—the Cisco Integrated Services Router. Some of the beachhead customers require a simplified connected solution to get access to the e-health infrastructure that is currently evolving. The ideal solution requires both application and network (VPN router with firewall) to be housed in one tamperproof enclosure. It needs to be completely secure while being centrally managed, demanding multiple technologies combined into a cohesive end-to-end solution.

Industry Trends

The healthcare market can be characterized briefly by the following trends:

- Worldwide, healthcare is one of the largest economic sectors.
- With improving technical possibilities, there is a growing interest in good medical treatment; people care for their personal health.
- New healthcare regulations across the world are mandating conformance
- With this there is a growing demand for telemedicine and home care solutions.
- There will be an increasing involvement of the patient; strengthening the patient’s rights and responsibilities.
- Healthcare costs are increasingly very rapidly worldwide because of demographic change, growth of chronic diseases, and inefficient workflows.
- IT spending in healthcare in percentage of revenue is below average compared to other industries.
- Consequentially implementation of IT technology is behind today’s standards; there is a high backlog demand.

Cisco and ICW: Creating the Healthcare Router

Cisco® and ICW have collaborated to provide a single-box solution: the healthcare router. This is a cohesive, single-box, secure, centrally managed solution. The healthcare router consists of two parts:

- Network connector
- Application connector

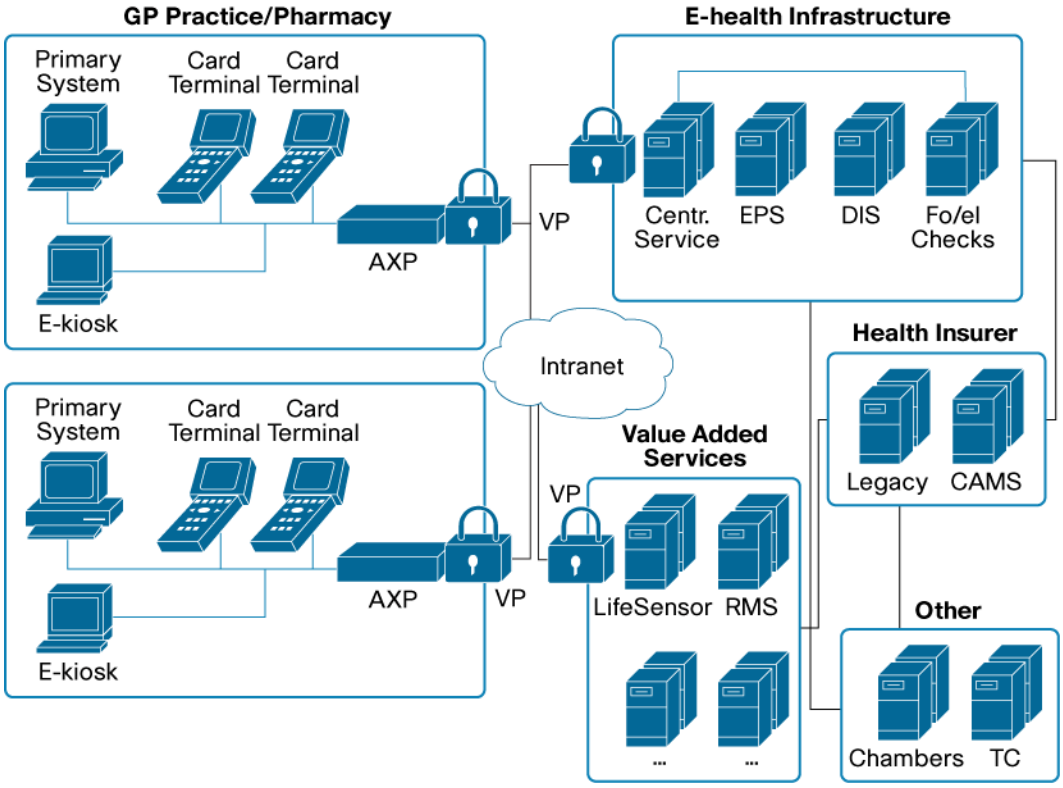
In this scenario, the Cisco 1841 Integrated Services Router with the Application Extension Platform (AXP) serves as a high-security box that handles secure network traffic and connects doctors' primary systems, pharmacy software systems, hospital information systems, and smart card terminals with the e-health infrastructure. The security profile for the solution requires both the application connector and the network connector to be housed in a single physical device, which is tamper-proof.

The solution provides an application-level authentication of medical care providers to central telematics applications (for example, e-Prescription and Personal Health Record). The middleware handles the communication between the medical care providers' primary system and the central telematics applications. There is inherent encryption/decryption of patient data. It facilitates e-signatures from the medical care provider. It does management of IP-based smart card readers. All the above functionalities make it an integral part of the total health connector system.

How It Works

The Cisco AXP is programmable and allows you to use established network components and expand it with the customer's business logic. ICW is a specialist in healthcare applications. The solution is an ideal combination of those advantages. (See Figure 1.)

Figure 1. Sample Schematic of Healthcare Solution



The unique selling propositions of the Cisco ICW solution are that it is a standards-based, high-quality device, not a proprietary solution. It has low support demands and allows remote management, monitoring, and configuration. Besides, in future, the multi-VRF functionality could allow service gateways to port their own services using a second virtual router. Finally, it is a part of the Cisco Self-Defending Network.

The benefits of an integrated application on the Cisco Application Extension Platform include:

- Pervasive security with Encryption services in the network
- Central management with Low risk and efficiently manageable deployments
- In-built support for WAN optimization, Unified Communications etc.
- Service, support, and product lifecycle management

The ICW middleware offers the following benefits:

- It supersedes the need for medical care providers and caregivers to learn and use additional software.
- It does away with potential reentry of data.
- It does not require medical practice software companies to replace their existing infrastructure tools.

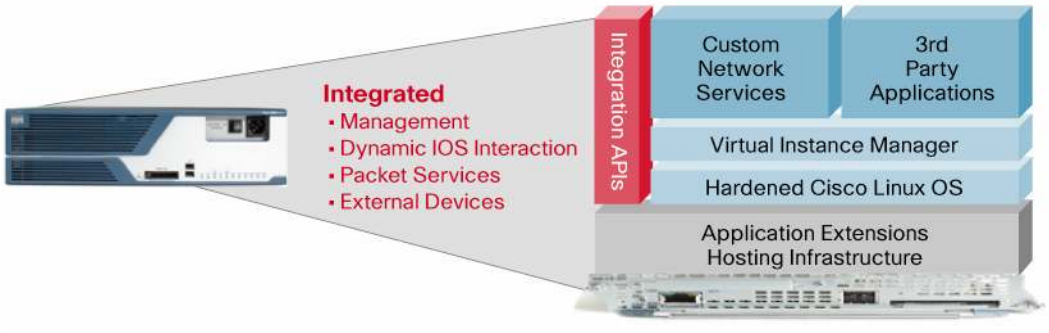
Most proprietary solutions are completely dependent on regional healthcare systems and their requirements. The solution generally is composed of separated components such as a VPN router and applications running on a PC or server.

The solution offers a significant advantage over the application connector middleware being located on the caregiver's client PCs:

- **Branch Optimization:** Consolidation of servers helps drive operational simplicity, efficiency, manageability and hence lower Total Cost of Ownership (TCO)
- Industry leading architecture with the Cisco Integrated Services Router
- **Acceptance:** Caregivers in private practice are independent business owners who usually will not permit standardization and central management of their resources.
- **Security:** Caregiver PCs are not a stable, secure, and standardized IT environment.

AXP Product Overview

The Cisco Application Extension Platform (AXP) provides a standards-based Linux hosting environment within the ISR allowing 3rd parties to integrate applications with the router. Tightly integrated, the AXP environment is configured and managed through the router. Harnessing this integration, an AXP application can appear to the end-user as an extension of the router.



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, manage and 3rd party applications and services.
- IOS Integration APIs allowing the application to integrate and leverage the features of the router.
- Software Developer Kit (SDK) allowing certified customers and partners to develop applications and services.
- AXP Partner Program provides the collateral, extended technical support and online resources to help partners, develop, deploy and market their AXP based solutions.

Solution Highlights

Cisco and ICW have been working on this solution since September 2005 and have created a highly stable and reliable solution for the implementation of an e-health infrastructure. Technical highlights of the solution include:

- Secure provision of patient data at the point of care
- One box that includes router technology and application logic
- Standard interfaces for primary systems
- Software development kit (SDK) for easy integration
- Data format conversion into HL-V3 standard or other formats
- Remote management and monitoring services
- Remote software update
- Card terminal support

Business Benefits of Solution

The ICW and Cisco solution is the primary element of an e-health infrastructure that enables the participants (such as healthcare institutions, payers, General Practitioners offices, hospitals, and pharmacies) to improve electronic data exchange substantially.

Doing this, they can attain various benefits, including:

- Reduce administration and transaction costs in health care
- Improve quality of medical treatment (crosscheck of treatment with patient's medication history)
- Reduce costly errors
- Facilitate new concepts (for example, health insurance bonus programs)
- Accelerate billing processes
- Reduce fraud

About ICW

InterComponentWare (ICW) is a leading international eHealth specialist with networking solutions for creating a longitudinal view of patient information available at the point of care. Among other things, ICW develops and distributes software and hardware components for networking solutions for hospitals and resident physicians, the personal electronic health record LifeSensor, and the health care IT infrastructure of electronic health cards. ICW is a major participant in the national electronic health card initiatives underway in Germany, Austria and Bulgaria. ICW has locations in Germany, Austria, Switzerland, the USA and Bulgaria.

For further information, please see http://www.de.icw-global.com/icw/content/index_eng.html.

If you are interested in finding more information, have concerns or want to purchase the solution, please contact:

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