IAgent3, an Introduction
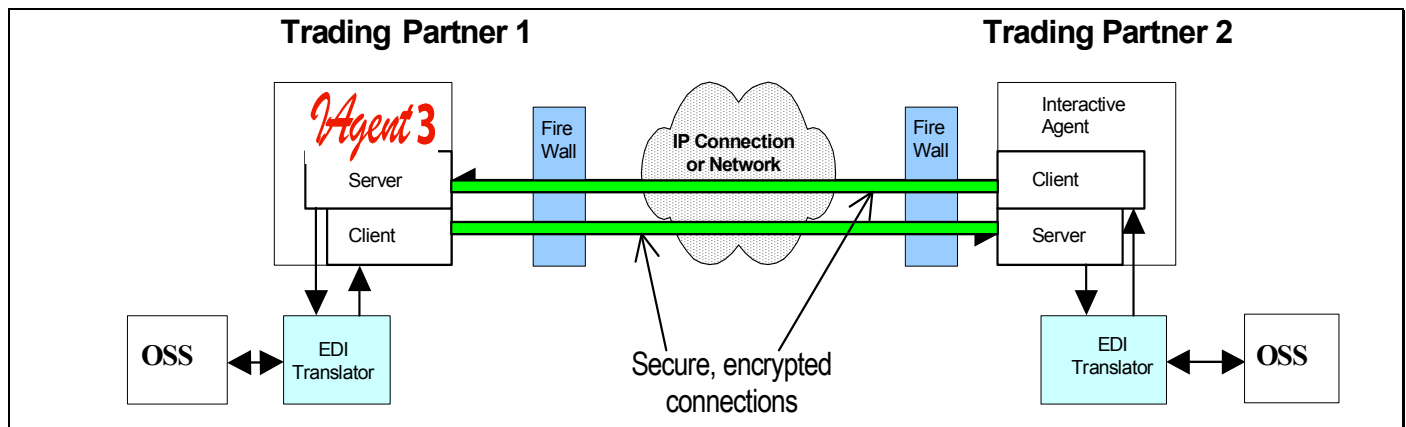
The Lymeware IAgent3 Interactive Agent Gateway product is a conformal implementation of the **Telecommunications Industry Forum** (TCIF/ECIC) Interactive Agent (TCIF IA), which allows secure EDI transactions over relatively insecure networks, via TCP/IP, SSLv3 and TLS.

The TCIF IA Specifications (TCIF 98-006v2 and TCIF 98-006v3) describe and specify a new data protocol to provide interoperability between trading partners in the Telecommunications Industry. The initial purpose of the data exchange was to support Local Service Request ordering, but any Electronic Data interchange (EDI) transaction or type of ordering is supported.

The intent of the TCIF IA was to improve upon the performance of the conventional "store and forward" method of messaging used by Value Added Networks (VANs). When using a VAN for EDI connectivity, the sending trading partner drops off an EDI transaction message. Later, perhaps in minutes or hours, the VAN delivers the EDI transaction message to the receiving trading partner. This "batch" mode and the associated delays, preclude the use of a VAN for "near-real-time" EDI transaction processing. The trading partners using TCIF IA compliant products for EDI connectivity, with either a direct connection (frame relay, ATM, etc.), or a public data network (the Internet, the AXN network, etc.) have no built-in delays and will support "near real-time" transaction processing.

IAgent3 Product Description:

The IAgent3 Interactive Agent Gateway product is a complete TCIF Electronic Communications Interactive Agent, as described in and compliant with TCIF 98-006. TCIF 98-006 describes specifications for a system, which provides large volume near real-time secure business-to-business (B2B) transaction transport for the U.S. Telecommunications Industry. IAgent3 provides a robust, secure, fast transport of EDI and non-EDI messages valuable for electronic messaging in any industry.

IAgent3 Product Benefits:

- Secured data transactions over unsecured networks (including the Internet), using Secured Socket Layer (SSLv3) protocol, the de facto Internet security standard, and Transaction Layer Security (TLS), an Internet Engineering Task Force (IETF) standard

- Sender and Receiver Trading Partner authentication (identification and validation) via Industry standard X.509 certificates issued by a valid third-party Certificate Authority

- Public Standards conformance, including full featured implementations of TCIF, IETF and RSA protocols

- Near Real- time High Volume Performance (up to 300 transactions a second)

- Simple Operational Support System (OSS) Integration via Multiple Application Program Interfaces (Integration APIs)

- Multi-threaded Client / Server Architecture with a flexible, scaleable Design

- Customer-centric Security and Auditing, including selectable multiple levels of message validation, per trading partner

- Elimination of third-party EDI Value Added Network (VAN) traffic-based transaction fees

- Support for transaction receipts with multiple levels of validation, customized by trading partner

- Dynamic Web-based and static log-based monitoring is provided

IAgent3 Product Features:

Authentication – RSA Public Key authentication with standard X.509 certificates and PKCS#1 and PKCS#7 (public/private key encryption algorithms and exchange protocols).

Payload Privacy - Secured Socket Layer (SSLv3) and Transport Layer Security (TLS) with multiple symmetric cipher and hash algorithms ensure payload message privacy, even on public networks.

Message Integrity - Message digest hash (SHA1) may be used to ensure message integrity.

Non-Repudiation of Origin – Messages may be digitally signed (RSA) for proof of sending trading partner.

IA Message Receipts – Optional Message receipts may also support Integrity and Non-Repudiation.

Full Audit Logging - Records all transmission or data errors, and all inbound and outbound activity to single message detail.

Resumable Sessions – Optional session reuse is supported to minimize high computation required for temporary session key generation.

Reusable Socket Connections – Socket connection reuse is supported to minimize high computation required for additional TLS handshake session generation.

Web-based Monitoring and Configuration – A web browser-based graphical user interface (GUI) is available and allows administration from any local or remote web browser.

IAgent3 Product Performance Details:

Throughput: The IAgent3 system offers a throughput of 30 IA messages a second (over 10,000 per hour) on the reference platform. This number may increase to 300 messages per second on larger platforms. Throughput metrics were measured using 1024 byte EDI messages on a pair of mid range Sun SPARC Solaris servers (Sun Enterprise 250 with 2 CPUs) with Solaris 9 and 512MB of memory.

Scaling: The IAgent3 system has excellent scaling characteristics with its multi-threaded and robust design. IAgent3 will take advantage of multiprocessor scalability and operating system SMP support to improve performance.

Connectivity: IA Trading partners must share TCP/IP connectivity either through a direct private connection between both trading partners (e.g. Frame Relay) or over a shared/public network (such as the Internet). Each trading partner must provide the other partner their unique IP addresses and port assignments for the location to send and receive IA messages (e.g. EDI Pre-Order and Ordering, or other message types). IAgent3 uses standard SSLv3 or TLS to provide the secured transport over the TCP/IP connection.   The specific agreed method to connect with TCP/IP and other IA implementation issues, such as levels of message and receipt security, certificate requirements and valid Certificate Authorities, are typically addressed in a Joint Implementation Agreement between trading partners.

IAgent3 *Simple Integration is the key*

The underlying structure of the TCIF IA standard and the IAgent3 design is a symmetrical client/server configuration where both the client and server functions are required at each implementation. Integrating these client and server components into an existing OSS or backend system is key to performance, scalability and deployment time. IAgent3 provides **Integration APIs**, designed for simple integration with common application interfaces. The four supported integration APIs (for internal message input and output transfer) include: the File/Directory interface, the IP Socket interface, the Web Services interface, and the optional Tibco^{tm} TIB/Rendezvous message bus interface.
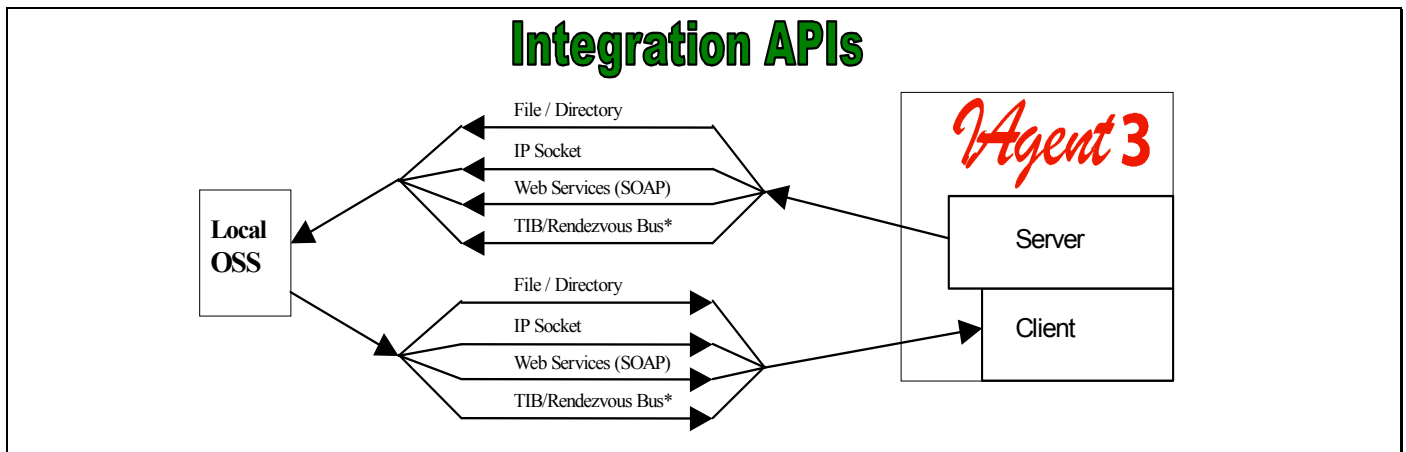
- The File/Directory interface atomically reads and writes ASCII text files (EDI messages in standard ASC X.12 formats).

- The IP Socket interface reads from a single user defined input socket and writes to a single output socket. The customer processes reading/writing the other side of the sockets do not have to reside on the same platform as the IAgent system.

- The Web Services interface reads from and writes to specific SOAP endpoint services, defined in Web Services Description Language (WSDL).

- The optional Tibco^{tm} TIB/Rendezvous message bus interface reads input Tibco messages with a single subscriber and writes output Tibco messages with multiple publishers.

IAgent3 *Product Supported Hardware/OS Platforms:*

IAgent3 is available for the following platforms:

Sun Solaris 8 and 9 for Sun Ultra SPARC platforms

Red Hat Linux Enterprise Linux (3 and 4) for x86/ia32 platforms,
Red Hat Linux Enterprise Linux 3 for IBM pSeries eServer platforms,
Red Hat Linux Enterprise Linux 3 for IBM iSeries eServer platforms,
Red Hat Linux Enterprise Linux 3 for IBM zSeries eServer platforms

Linux Standard Base (LSB 2.0) Linux for ia32/Intel x86 platforms,
Linux Standard Base (LSB 2.0) Linux for ppc32/PowerPC platforms,
Linux Standard Base (LSB 2.0) Linux for S/390 Mainframe platforms.
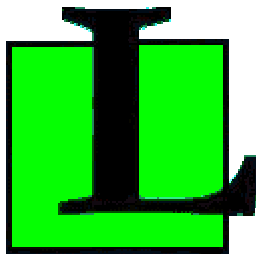
Lymeware Corporation, founded in 1995, provides secure messaging solutions, XML/EDI integration frameworks, and consulting services for Fortune 1000 companies, RBOCs, major carriers, CLECs and other service providers throughout the US.

Lymeware built the first ILEC EDI ordering platform, several CLEC ordering systems, the first IA to successfully test with all of the top ILECs, the first XML-based OSS to support EDI, and the first company to achieve Linux Standard Base 2.0 for Applications on several popular platforms, and several other innovations in the Software, Security, and Telecommunications Industries.

From SNMP and MML monitors for SS7 switch systems, to RBOC calling card validation subsystems, to carrier based long distance fraud control systems, to a wholesale ILEC EDI ordering interface, Lymeware has been at the forefront of industry changes and evolving standards and practices.

Lymeware has a proven track record in Several Areas of Expertise, such as Telecommunications, Electronic Data Interchange (EDI), Networking and Messaging (SMTP, SNMP, X.400, and X.500), Security (PKI, X.509, SSL, TLS, and PGP) and product development.

Lymeware Corporation is privately held and has offices in Old Lyme, Connecticut.

For more information about Lymeware, visit www.lymeware.com or email Sales@Lymeware.com