

## The IAgent™ Product Sheet



### *IAgent*, an Introduction:

The Lymeware IAgent Product is a conformal implementation of the TCIF/ECIC Interactive Agent (TCIF IA), which allows secure EDI transactions over relatively insecure networks, via TCP/IP and SSLv3.

The TCIF IA Specification (TCIF 98-006v2) describes and specifies a data interface to provide interoperability between trading partners in the Telecommunications Industry. The initial purpose of the data exchange was to support Local Service Ordering, but any 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 AXIS network, etc.) have no built-in delays and will support “near real-time” transaction processing.

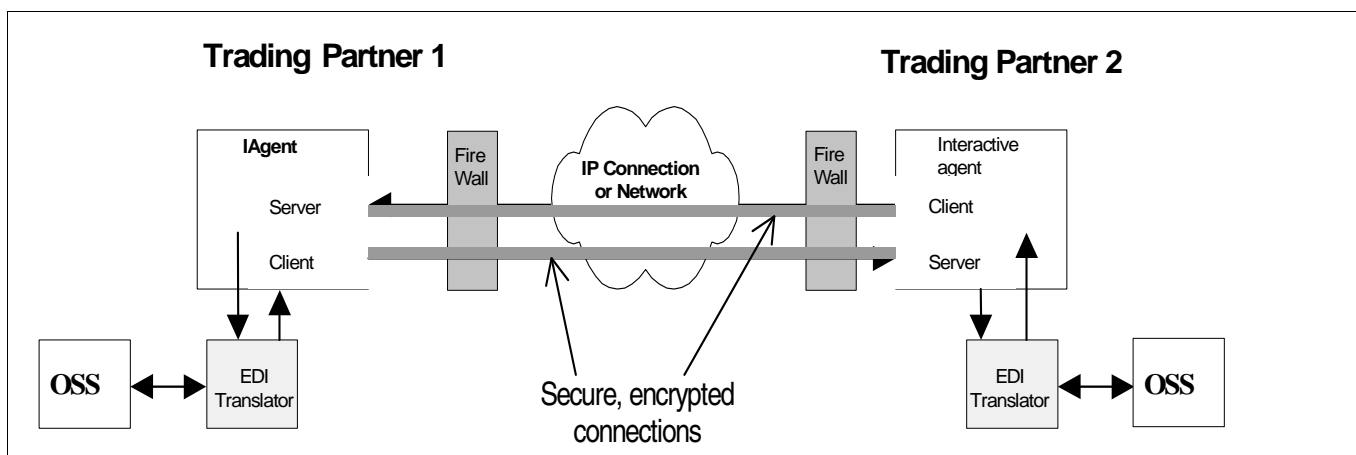


Figure 1. The end-to-end use of an IAgent system for communications to any other TCIF compliant interactive agent system

The TCIF IA design provides:

- Secured data transactions over unsecured networks (including the Internet), using Secured Socket Layer (SSLv3) protocol, a de facto Internet standard developed by Netscape.
- Sender and Receiver Trading Partner authentication (identification and validation) via Industry standard X.509 certificates issued by a valid third-party Certificate Authority.
- Digital non-repudiation by both the sending and receiving Trading Partners.
- Support for current and emerging Public Key Infrastructure (PKI) security standards (including RSA PKCS and IETF PKIX standards support).
- Support for transaction receipts with multiple levels of validation, customized by trading partner.
- Support for multiple levels of message validation on each transaction, customized by trading partner.

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## **IAgent Product Description:**

The IAgent Product is a complete 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 transaction transport for the U.S. Telecommunications Industry. IAgent provides a robust, secure, fast transport of EDI and non-EDI messages valuable for electronic messaging in any industry.

## **IAgent Product Benefits:**

- Public Standards conformance, including full featured implementations of TCIF, IETF and RSA protocols
- Near Real-time High Volume Performance (up to 1 transaction a second)
- Supports industry standard X.509 version 3 certificates from Verisign and other commercial Certificate Authorities
- Multi-threaded Client / Server Architecture with a flexible, scaleable Design
- Customer-centric Security and Auditing, including selectable cipher-suites
- Elimination of EDI Value Added Network (VAN) fees
- Simple Operational Support System (OSS) Integration via Multiple Application Program Interfaces ( Integration APIs)
- Dynamic Web-based and static log-based monitoring is provided

## **IAgent Product Features (and TCIF 98-006 requirements):**

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

**Payload Privacy** - Secured Socket Layer (SSLv3) 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 down to single message detail.

**Resumable Sessions** –Session Reuse is optionally supported to minimize high computation required for temporary session key generation.

## **IAgent Product Performance:**

**Throughput:** The IAgent system offers a throughput of 1 IA message a second (3,600 per hour) on the reference platform. This number may increase to 10 messages per second on larger platforms. This performance is higher than needed in the most demanding commercial environments.

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 2.6 and 128MB of memory.

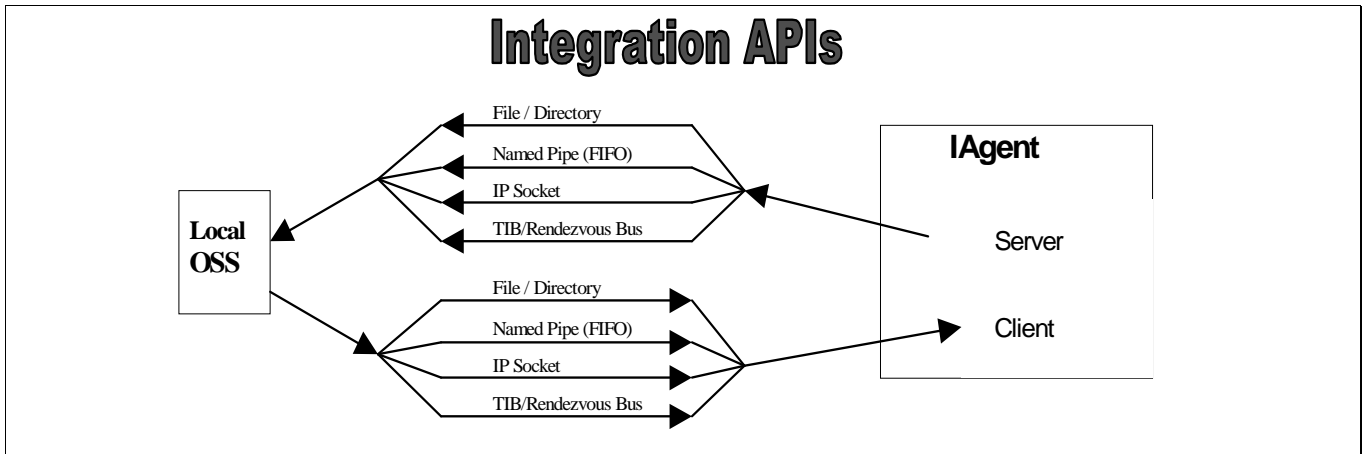
**Latency and Resilience:** The IAgent system has a low transfer latency, and its transfer scheduling optimizes connections and offers low latency for messages where the destination trading partner is available. It will not waste resources on repeatedly attempting connections to trading partners that are not available.

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

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### Simple Integration is the key

The underlying structure of the TCIF IA standard and the IAgent 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. IAgent 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 Named Pipe interface, the IP Socket interface and the Tibco™ 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 Named Pipe interface reads from and writes to specific user defined named pipes (or FIFOs).
- 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 Tibco™ TIB/Rendezvous message bus interface reads input Tibco messages with a single subscriber and writes output Tibco messages with multiple publishers.

### User Defined Connectivity

**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). IAgent uses standard SSLv3 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, supported cipher suites, certificate requirements and valid Certificate Authorities, are typically addressed in a Joint Implementation Agreement between trading partners.

### IAgent Product Availability:

**Supported Target Hardware/OS platforms:** IAgent is available for either:

Sun Solaris 2.6 and 7 for SPARC machines, or  
Red Hat Linux 6.2 for x86 machines.

**IAgent Product footprint:** Recommended minimum memory 128MB. Recommended disk storage for logging and archiving per 5000 (1kb) EDI transactions is 7MB.

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Lymeware Corporation, a software engineering and consulting firm in Old Lyme Connecticut, has over 12 years of experience building custom standards based communications software for major portions of the Telecommunications industry. From SNMP and MML monitors for SS7 switch systems, to RBOC calling card validation subsystems, to carrier based long distance fraud control systems, to the first wholesale ILEC EDI ordering interface, to the first XML-based TCIF Wholesale 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 Lotus Notes), Security (PKI, X.509, SSL, TLS, and PGP) and product development.

Lymeware is known for our concentrated domain expertise in software development with Messaging, Network and Security technologies. Another focus of Lymeware is specialty software product development. Large, small, and startup companies have used Lymeware to develop software products, marketed under client company brands. Our operations are structured to provide high-value development services within a framework of quality assurance and long-term commitment, so our clients get the most from our talent and resources.

Past and current Lymeware clients include:

ADC Telecommunications, AT&T Bell Laboratories, SBC Communications, Southern New England Telephone, CTC Communications, List Services Corporation, Resource Management Group, Bristol Myers Squibb and Pfizer Pharmaceuticals.

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