Omgeo OASYS Global℠

Intelligent
Trade
Management
Solutions℠

Information Guide for Version 3.6.1 via a Direct Interface

A DTCC/Thomson Financial Company

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Table of Contents

What is Omgeo OASYS Global?

Effective trade processing begins with Omgeo OASYS Global[SM], the worldwide electronic trade allocation and confirmation service supporting T+0 affirmation. OASYS Global processes the majority of the world's cross-border Electronic Trade Confirmation (ETC) volumes and is recognized by global regulators including the Securities Exchange Commission in the U.S., the Financial Services Authority (FSA) in the UK and the Toronto Stock Exchange (TSE) in Canada.

OASYS Global eliminates all manual steps in the communication of block trades, allocations, and confirmations. This reduces the risk of error, increases efficiency, and lowers processing costs.

Note! OASYS Global can also be used with other Omgeo services, such as Omgeo ALERT[SM], Omgeo MarketMatch[SM], or Omgeo AutoMatch[SM], to further streamline trade processing.

What is Omgeo OASYS Global via a Direct Interface?

Omgeo OASYS Global via a direct interface provides a dedicated on-line connection that links your internal systems directly to the OASYS Global electronic trade allocation and confirmation service. Traditionally, the OASYS Global workstation software has provided the connectivity to this service. A direct interface provides the full functionality of the workstation software. It allows you to leverage your investment in automation by enabling you to embed the functionality of OASYS Global directly inot your in-house system. Another benefit is direct connectivity from your host system to the OASYS Global service. This eliminates the need for a dedicated terminal at your site.

An illustration of the basic communication layout for a direct interface appears below:

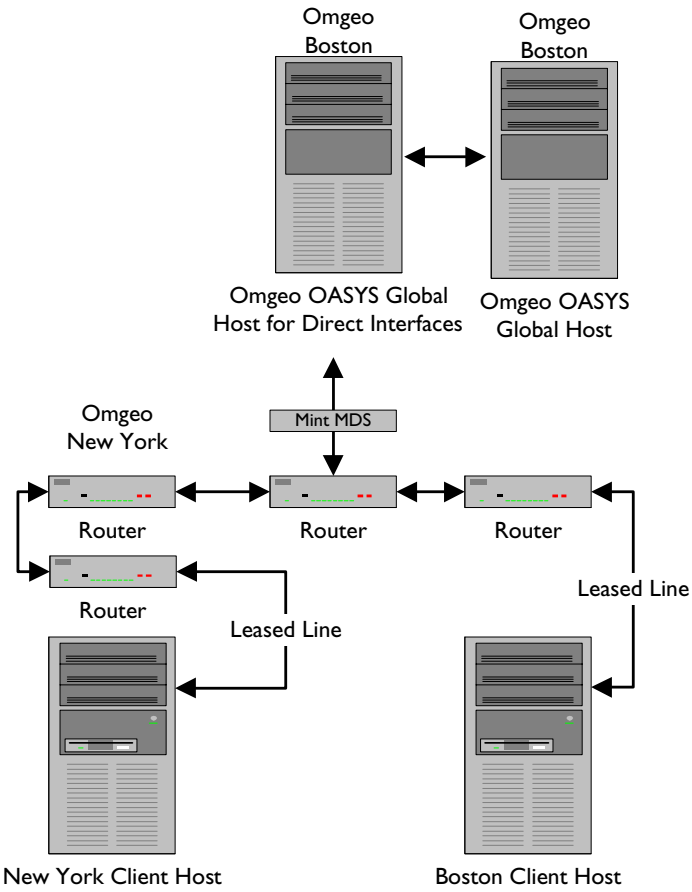

Figure 1 Basic Communication Layout for an Omgeo OASYS Global Client using a Direct Interface

In line with Omgeo's open systems philosophy and commitment to standards, the direct interface uses industry standards, including transmission control protocol (TCP)/internet protocol (IP) and the Securities Standards Advisory Board's (SSAB) MT511 message standards, for cross-border trade confirmations.

We provide a complete Omgeo OASYS Global Developer's Kit, along with a team of experienced consultants, to help implement the direct interface. Along with various documents, the kit includes two programmer application program interfaces (API) for use in the implementation of the messaging and communication portions of the process.

Your interface to OASYS Global consists of three pieces:

- The client host application (your application)
- Messaging (MT511 message protocol)
- Communication (leased lines and TCP/IP)

An illustration of the application layers and the flow of communication between your application and OASYS Global host appears below.

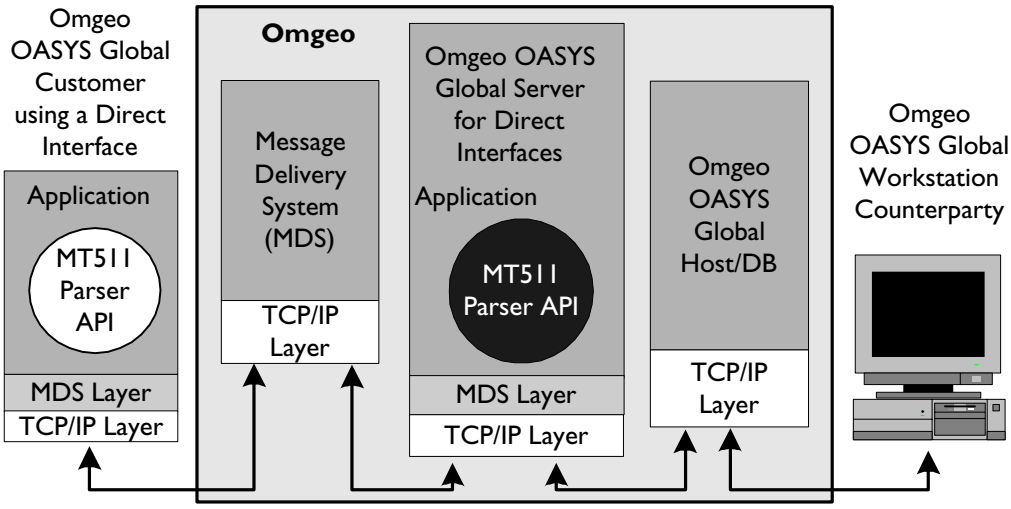

Figure 2 Application Layers for an Omgeo OASYS Global Client Using a Direct Interface

Developer's Kit

Omgeo provides two software APIs for application developers. Omgeo supplies both APIs for use with the 'C' programming language and with selected variants of the UNIX™ and Microsoft NT™ operating systems. An MDS TCP/IP API handles the basic communications between the direct interface and your application. You must have an operating system and software libraries that support Berkeley-style sockets for TCP/IP. The second API is a parser API for Omgeo's implementation of the MT511 messaging protocol. The parser API provides tools for building and disassembling MT511 messages.

We supply the developer's kit, consisting of documentation on the APIs and the MT511 messaging protocol, to clients who are implementing a direct interface for OASYS Global. All software is available electronically, in binary format, for your download via FTP.

In addition to this document, the Omgeo OASYS Global Developer's Kit includes these documents:

- *Omgeo OASYS Global MT511 Messaging Specification for a Direct Interface*
- *Omgeo OASYS Global Message Delivery System TCP/IP API Programmer's Guide for a Direct Interface*
- *Omgeo OASYS Global MT511 Parser API Programmer's Guide and Reference for a Direct Interface*
- *Omgeo OASYS Global Broker and Institution Conformance Requirements for a Direct Interface*
- *Omgeo OASYS Global Migration Guide for OASYS Global Automated Workstation Clients Converting to a Direct Interface*
- *Omgeo OASYS Global Sample MT511 Data - Block and Contract Level Data Flow Examples for a Direct Interface*

- *Omgeo OASYS Global Release Notes, Version 3.6.1 for a Direct Interface*

Client Host Application

The direct interface lets you leverage your investment in automation by enabling you to embed the functionality of OASYS Global directly into your in-house system. By embedding OASYS Global, you can customize the user interface to match your corporate standards, collect and redistribute information using existing networks, and update or modify functionality as necessary.

System Design

The first step in implementing a direct interface is defining what need the system will fulfill. For most clients the answer will contain many pieces. Since the direct interface provides no application front-end, you are free to customize the user interface. A direct interface lets you provide multi-user access to multiple OASYS Global acronyms and also allows for communication of multiple customer locations via a single link.

Application Design

A direct interface usually involves four pieces:

- User interface
- Database
- Application logic
- Communications component

You are free to implement whatever you wish for the user interface, database, and application logic. The application logic is open to customer design, but it must support the proper data flow to and from OASYS Global. The MT511 message specification, included with the Developer's Kit, lays out the logical states for information flowing into and out of OASYS Global. The specification also shows all valid operations for the exchange of information. For example, the specification describes under what circumstances canceling a trade is valid and how to initiate a cancel.

The application logic is necessary to handle application-level data reliability. The Message Delivery System (MDS) within the direct interface uses a positive acknowledgment system that, when properly implemented by your host application, will prevent data loss. In addition, the MDS uses other methods for ensuring data integrity.

Perhaps the most important piece of the design of a direct interface is the data mapping. This involves mapping fields in your database to the fields that are available in the MT511 message. The MT511 specification includes a complete data dictionary that includes information about field sizes and whether fields are mandatory or optional.

Application Testing

You must successfully complete Omgeo OASYS Global conformance testing before your application can go into production with OASYS Global. Conformance testing entails a suite of tests designed to exercise full application functionality as well as communication between your host system and the OASYS Global host for direct interfaces. This process involves a collaboration of efforts between you and the Omgeo integration consultant.

A test environment, which is separate from the production system, is available for customer testing. Your Omgeo integration consultant coordinates your access to the test system. The test system is available during normal business hours and can be arranged for weekend and off-hours. In addition, support is available during regular business hours.

Messaging

The direct interface uses the MT511 message protocol for delivery of block trade allocation and confirmation messages. These MT511 messages travel to the OASYS Global host for direct interfaces through the MDS coming from you, the OASYS Global client. Transferring data through message-based communications provides optimum throughput for large trade volumes and near real-time performance. This enables a fine degree of control over error detection and correction while minimizing the possibility of data loss.

The MDS is a store-and-forward positive acknowledgment system. The OASYS Global host for direct interfaces receives, processes and stores information from the messages that pass through the MDS coming from you, the OASYS Global client. It sends the messages on to the OASYS Global host, which stores all of the information, and ultimately to your counterparties. Messages returning to you from the counterparties pass through the OASYS Global host, OASYS Global host for direct interfaces, and MDS, to your direct interface, in that order. Your client host system sends a message coming into the OASYS Global host for direct interfaces to the MDS via a function call. If the function returns successfully, this assures your system that the OASYS Global host for direct interfaces has properly received the message. On the other hand, when your application receives a message from a counterparty, you must successfully store the message and then send an acknowledgment to the MDS. This tells the MDS host that it can delete the message.

Communication

Your application connects to the OASYS Global host for direct interfaces over leased lines using the TCP/IP protocol via network routers. The OASYS Global host for direct interfaces system security includes firewalls, filtering routers, and application level dependencies. Filtering routers and Internet firewalls ensure that no other customer can view or modify information between you and Omgeo.

Clients use leased line(s) to physically link their system to Omgeo's network. Omgeo provides the leased line(s), router(s), and ISDN dial backup necessary to establish the connections. Omgeo also installs and maintains all the equipment for the link down to, and including, the router(s) at your site.

The setup includes a leased line from your production site to Omgeo's closest point-of-presence. Leased lines are typically 56Kbps digital circuits. In addition, Omgeo puts a backup line in place for each leased line connection. We can also set up a second leased line to connect to a disaster recovery site for you.

Communication to the OASYS Global application takes places over a TCP stream. The system does not use the standard TCP/IP applications (e.g., telnet, ftp). Your application always originates the connection. Since TCP streams are bidirectional, the direct interface application returns information on the same stream established by your application. Each client receives two TCP ports at Omgeo to communicate with Omgeo. Your application uses different processes for sending to versus receiving from counterparties, and the two processes require separate ports to enable the flow of messages in both directions. The routers and firewalls at Omgeo assure that each customer can only access their designated port. The MDS TCP/IP API provided by Omgeo handles all the details of implementing this level of communication.

Electronic Trade Confirmation Code of Practice

A Code of Best Practice (COP) has been defined which provides guidelines for the usage of Electronic Trade Confirmation (ETC). This has been defined by the industry over the past four years and recommends codes of best practice across all ETC systems (in this case, OASYS Global). The COP provides direction for the interpretation of specific service features outside the scope of each vendor's product definition. The COP aims to standardize ETC usage across markets, time zones, and ETC service providers. Issues and items covered in this document include:

- Systems availability
- Vendor service and support
- User practice and staffing levels
- Message turnaround times
- Average prices
- Commission rate markers and hard/soft indicators
- Foreign exchange
- Price reporting

The COP document is constantly evolving as ETC extends to new markets and new instruments. Access to the content of the evolving COP for Omgeo clients is through the Omgeo Advisory Board COP working parties. You may obtain a copy of the COP from your account manager or from a customer support representative.

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