



Application

Integrating with the Services Portal

80-J7301-2 Rev. E
October 2015

Integrating with the

Services Portal



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About This Guide

Integrating with the Services Portal provides an overview of Omnitrac's Web Services and the Event Subscription Service. It is designed for anyone who needs to know at a high level how integration with software on the Services Portal works.

This guide assumes that readers are familiar with the Omnitrac's applications with which they want to integrate. It includes the following chapters:

1. Introducing Integration with the Services Portal
2. Omnitrac's Web Services
3. Event Subscription Service

For more detailed information about Services Portal applications, contact Omnitrac's Technical Services.

CHAPTER 1

Introducing Integration with the Services Portal

This chapter introduces integration with Services Portal applications with the following sections:

- ▶ About Integration
- ▶ Benefits of Integration
- ▶ Integration Overview
- ▶ How Web Services Work

About Integration

Applications on the Services Portal let you exchange information with your mobile units and receive timely information about them. The QTRACS™ application, for example, provides messaging and vehicle positioning data, and the Trailer Tracks application provides trailer positioning and cargo status. Integration lets you share this data with back-office applications such as dispatch, billing, or payroll systems.

Benefits of Integration

Integration lets your back-office applications use your Omnitrac application vehicle, message, and trailer data. Two tools are provided to facilitate this: Omnitrac Web Services and the Event Subscription Service. Using these tools saves you time because you don't have to transfer data manually or enter it in two applications.

Some uses for integration include the following:

- Send load information messages from your dispatch system. Update the dispatch system with information retrieved from load status messages and position reports.
- Retrieve position information for fuel tax calculations or out-of-route analysis
- Update the QTRACS or other application databases with new trailer and vehicle records created in your back-office application
- Retrieve payroll and customer billing data from return messages

Integration Overview

The two tools for integrating application data with your back-office applications include:

- *Web Services* enable your applications to place procedure calls to the Omnitrac's integration web server. This allows your back-office applications to perform operations such as pinging a vehicle or sending a text message.
- *The Event Subscription Service* lets your back-office applications receive Omnitrac's transaction data, including return text messages, trailer events, and vehicle positions.

You can specify which back-office applications receive which transactions. For example, your dispatch application might receive all return messages (messages from vehicles to dispatch) and your billing system might receive information about specific return macro messages.

The Event Subscription Service uses Web Services to request and acknowledge transaction data, so it's important to understand how Web Services work.

How Web Services Work

Omnitrac's Web Services are implemented using the standard web services architecture as described by the World Wide Web Consortium (w3c.org). This section describes how web services in general work. If you are already familiar with web services, including SOAP, XML, and WSDL, skip to Chapter 2.

What Is a Web Service?

A web service is an application that can be accessed remotely over the Internet. Just like a web site, a web service is identified by a URL. For a web site, the URL is the address you type into your browser to navigate to it. Unlike a normal web site, however, a web service can communicate with programs other than browsers.

To communicate with a web service, a program sends a specially-formatted message to the web service's URL. The message tells the web service what command to perform and gives it any data required to carry out the command.

The SOAP Standard for Web Messages

The standard that defines the format for web service messages is called SOAP. Although once an acronym for Simple Object Access Protocol, SOAP is now considered just a name. You sometimes see SOAP referred to as SOAP/XML or SOAP (XML) because SOAP is an instance of an extensible markup language (XML). Without going into the details of SOAP and XML, the important point is that the SOAP standard enables any computer program to communicate with any other computer program, regardless of hardware, operating system, or programming language.

Web Service Clients

A back-office application typically communicates with a web service through an intermediate piece of software called a *web service client*. The web service client translates requests from the back-office application to SOAP, then sends the SOAP message over the Internet to the web service.

For example, suppose you want your back-office application to ping a vehicle. The back-office application would request this of your *web client*. The format of this request doesn't matter, as long as the web client can understand it. The web client takes this request and translates it into a SOAP/XML message and sends it to the web service.

The web client also receives SOAP messages from the web service, translates them into a form the back-office application can understand, and forwards them to the back-office application.

Note that although this is the typical architecture, you don't have to use a separate web service client. You could instead modify the back-office application so that it handles the translations to and from SOAP. For the sake of simplicity, the diagrams in this document show the web client separately.

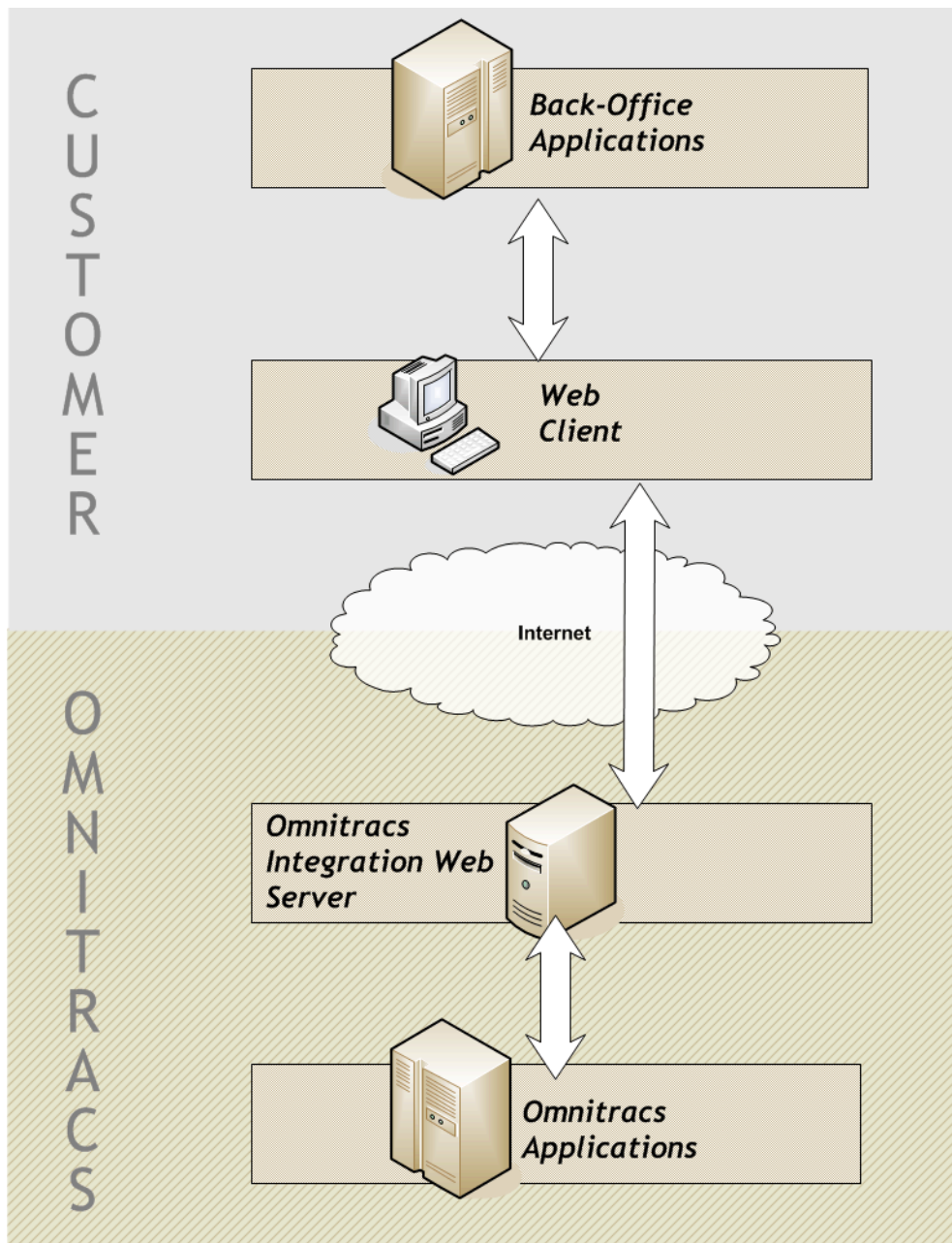


FIGURE 1.
Omnitracs
Integration
Architecture

WSDL Documents

Web services have a standard document format for describing themselves. A document written in this format—the Web Services Description Language (WSDL)—provides all the information that a web client needs to send and receive messages. Like SOAP, WSDL is an example of an extensible markup language (XML).

Although web clients can be written in any programming language, the most common programming environments provide tools to simplify the process. Specifically, they can use the WSDL document to automatically generate code modules that form the building blocks for the web client program.

CHAPTER 2

Omnitracs Web Services

This chapter describes Omnitracs Web Services. It includes the following sections:

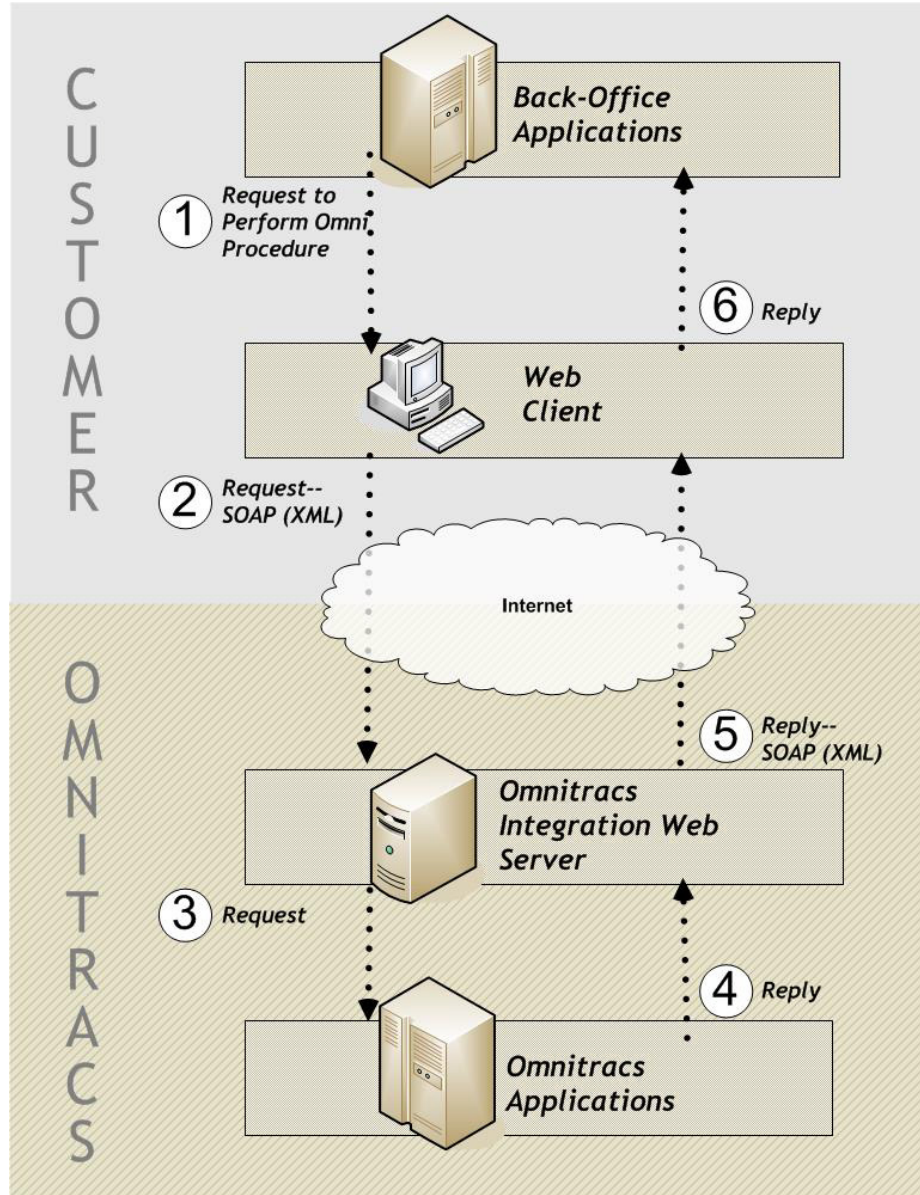
- ▶ About Omnitracs Web Services
- ▶ Available Omnitracs Web Services
- ▶ Web Service Security
- ▶ Implementing Omnitracs Web Services

About Omnitracs Web Services

Omnitracs Web Services let your back-office applications perform Omnitracs application operations. For example, with Omnitracs Web Services your back-office application can ping a vehicle, send a message, or change a configuration setting. See “About Omnitracs Web Services” on page 5 for a partial list of services. New services are added as needed.

As mentioned in Chapter 1, Omnitracs Web Services are implemented using the standard web services architecture as described by the World Wide Web Consortium (w3c.org). Figure 2 on page 6 illustrates this architecture.

FIGURE 2.The Omnitrac Web Service Architecture.



Available Omnitrac Web Services

Omnitrac Web Services are available in the following categories: vehicle management, trailer management, text and macro messaging, and landmark management. Others are added as needed.

Web Service Security

Whenever a business sends information over the Internet, it must consider the security implications. How do you know that a third party isn't intercepting your SOAP messages or sending unauthorized commands to the web server? Omnitrac's Web Services secure your information three ways:

- **Secure communication**—all web service messaging takes place over secure, anonymous SSL connections (HTTPS). This provides a secure point-to-point connection between the web service client and the Integration web server.
- **Authentication**—all Omnitrac's Web Services clients must incorporate a standard WS-Security-compliant header in each web service request. The header contains client credential information (such as user name and password), which are authenticated against the list of valid web-services users.
- **Authorization**—the Integration web server forwards the user credentials to the Omnitrac's application to ensure that users are authorized to perform the actions requested.

Implementing Omnitrac's Web Services

To implement Omnitrac's Web Services, you need the following:

- Licenses for remote integration and the Omnitrac's applications with which you want to interact. Obtain these from your customer service representative.
- Programming tools for building a web client that can send SOAP messages to Omnitrac's Web Services and communicate with your back-office applications. Common programming environments include .NET, J2EE, C++, Visual Basic, JBuilder, BEA Weblogic, Perl, or Python.
- A hardware environment to host your web client. This environment needs a secure Internet connection and the ability to communicate with your back-office applications.
- A SOAP implementation package that works with your programming environment.
- Programmers proficient with web services, SOAP, XML, HTTPS and one or more tools used to build a web client (for example, .NET or J2EE). If you do not have your own programmers, the Technical Services group can write the web client for you.
- Technical documentation from Omnitrac's, including instructions and security keys for accessing the WSDL and Omnitrac's Web Services. You can obtain these from your customer service representative.

Steps for Implementing Omnitracs Web Services

Omnitracs Web Services are implemented the same way as any other web service. The general steps are as follows:

1. Obtain the licenses and information necessary to access the WSDL and Omnitracs Web Services. Your customer service representative also gives you access to a web site (in the form of a wiki) with extensive information and tools for developers.
2. Use the WSDL to generate the code that forms the foundation of your web client. From a programmer's point of view, this means generating the wrapper classes your web client uses.
3. Use this foundation to write a web client that communicates between your back-office applications and the Omnitracs Web Services.

The Technical Services group can help you with all of these steps.

CHAPTER 3

Event Subscription Service

This chapter describes the Event Subscription Service. It includes the following sections:

- ▶ About the Event Subscription Service
- ▶ How the Event Subscription Service Works
- ▶ Available Event Subscription Service Transactions
- ▶ Implementing the Event Subscription Service

About the Event Subscription Service

The *Event Subscription Service* forwards Omnitrac's application transactions to your back-office applications. These transactions include return text messages, vehicle positions, alerts, and so forth. See "Available Event Subscription Service Transactions" on page 12 for a complete list.

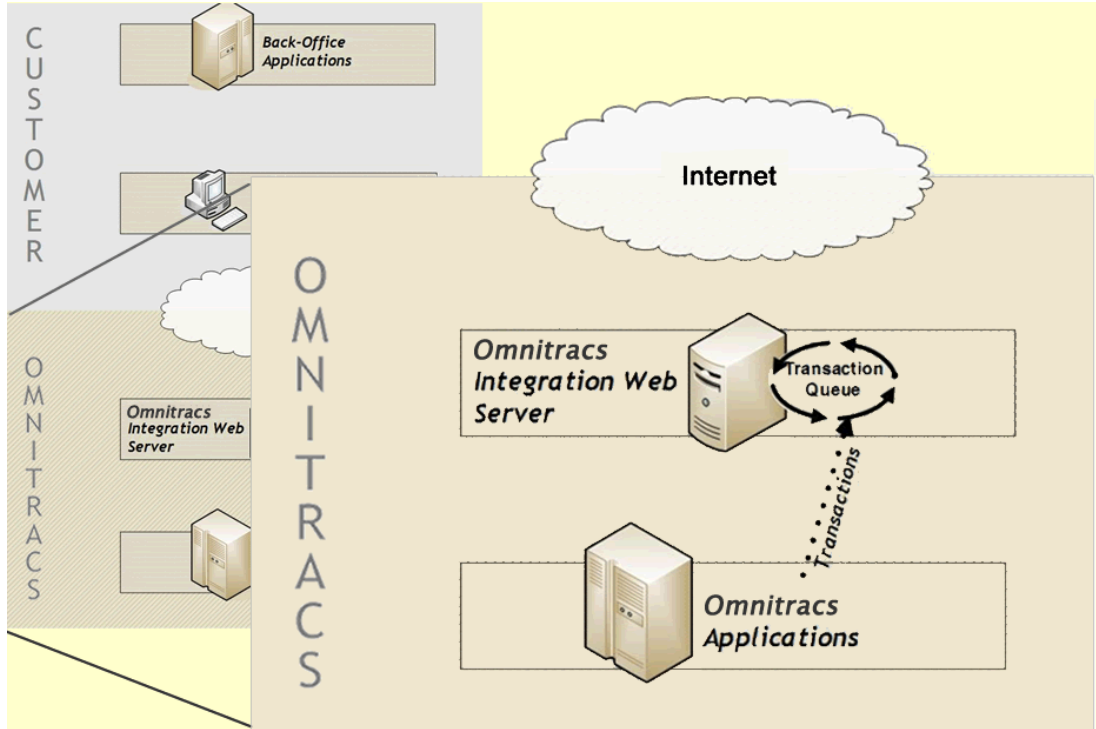
How the Event Subscription Service Works

The Event Subscription Service works on a publish-subscribe system. Omnitrac's applications continually publish transactions to the Integration Web Server. Your back-office applications subscribe to the transactions you want them to receive.

When an Omnitrac's application publishes a transaction, it goes into a queue on the Integration Web Server. Using Omnitrac's web services, your application periodically requests the transactions to which it subscribes. The Event Subscription Service formats these transactions into a standard SOAP (XML) package and sends them to your application. Your application then sends a SOAP (XML) message to the Integration Web Server acknowledging that it has received the transaction. After all subscribers have requested and acknowledged receiving a transaction, The Event Subscription Service deletes it from the queue.

Figure 3 on page 10 and Figure 4 on page 11 illustrate these processes.

FIGURE 3. Omnitracs applications continuously publish transactions to the queue on the integration server.



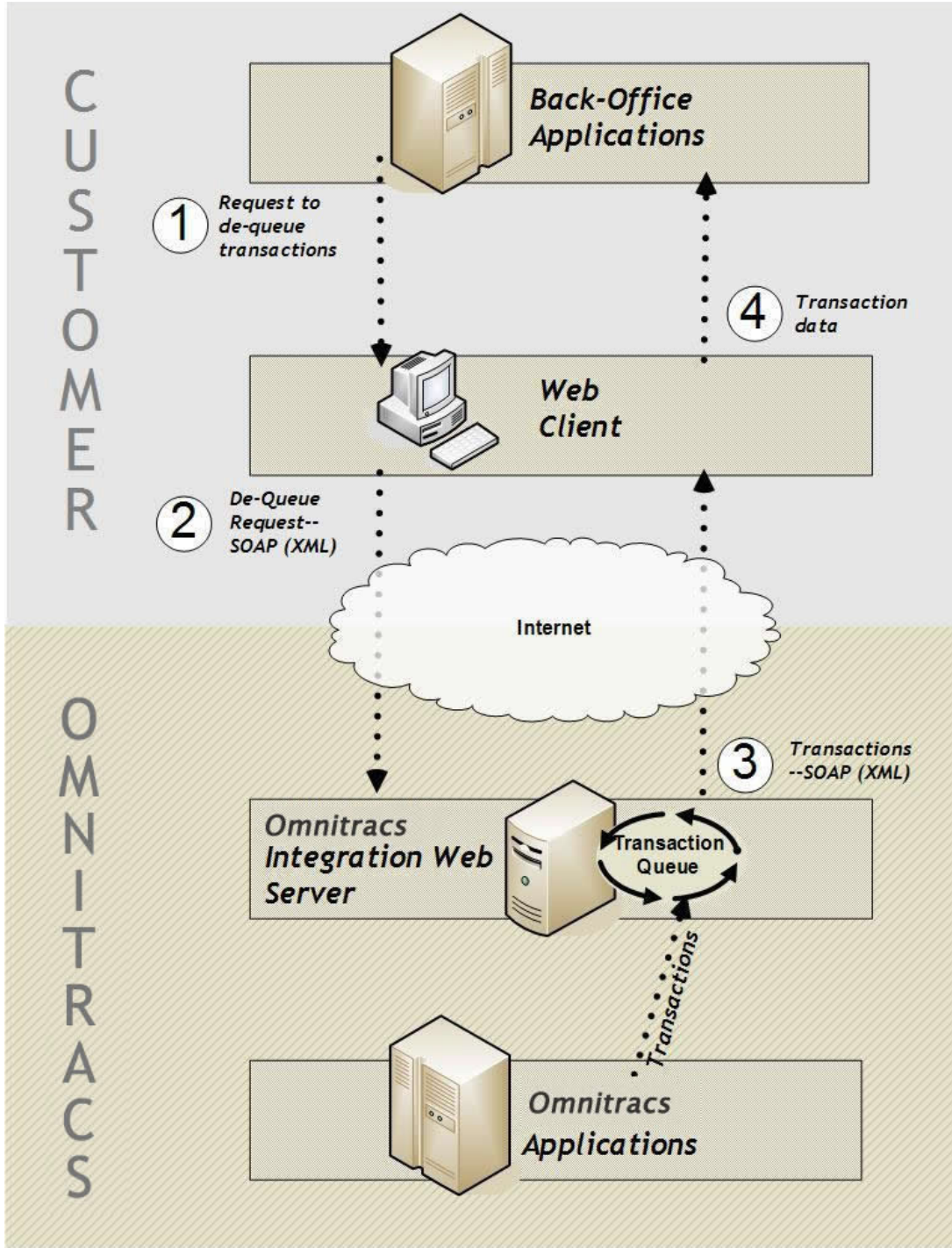


FIGURE 4. Your back-office application sends a request for transactions using Omnitracs Web Services.

Available Event Subscription Service Transactions

Your applications can subscribe to the following types of transactions:

- Return text and macro information
- Text information copied to/from auxiliary vehicles
- Forward transmission disposition (such as received or undeliverable)
- Position reports
- Notifications that vehicles, drivers, or trailers have been created or deleted in the database
- Trailer events, such as connect and disconnect, door opening or closing, battery, geofence, or reefer alarmnotifications, and status reports
- Mobile notification events from applications, such as Critical Event Reporting, Vehicle Maintenance, Driver Login, Trip Manager, etc.
- Performance monitoring data extracts and fault notifications
- Other application events, such as GeoServices, Workflow, Vehicle Inspection Report, and Media Manager

For a complete, up-to-date listing, consult the online Services Portal Integration documentation site.

Your applications can subscribe to individual return macros (0-63). They can send forward macros using the Omnitracs web services.

You can also invite other companies to subscribe to your data. For more information, see “Inviting Other Companies to Subscribe to Your Data” on page 13.

Implementing the Event Subscription Service

To implement the Event Subscription Service, you need the following:

- A working implementation of Omnitracs web services, as described in Chapter 2.
- Technical documentation describing the transactions available and web service calls for requesting (de-queueing) transactions from the Integration Web Server. You can obtain this documentation from your customer service representative.
- Administrative-level user access to the Services Portal.

Steps for Implementing the Event Subscription Service

In general, the steps for implementing the Event Subscription Service are as follows:

1. Implement web services.
2. Set up your back-office applications so that they *subscribe* to the transactions you want them to receive. You do this from the Administration pages in the Services Portal. Online help describes the necessary steps.

3. Use your web services client to request (dequeue) transactions from the Integration Web Server, process the information as needed, and forward to your back-office application.

Inviting Other Companies to Subscribe to Your Data

You may want to share one or more transaction types with another company that integrates with the Services Portal. After you have made an agreement with the other company for the type of data to share, the steps for inviting them to subscribe to your data are as follows:

1. Ask your customer service representative to request authorization for you to extend invitations to the company.
2. Set up a cross company invitation by transaction type from the Administration pages in the Services Portal.
3. Tell the other company to set up a subscription to your transaction. They see your transaction in the Cross Company Subscriptions section of the Create Subscription page.

You can see when the company has subscribed to your data by viewing your cross company invitations.

