ChangeMan® ZMF 8.1
Web Services Getting Started Guide
Proprietary and Confidential Information
# Table of Contents

**Welcome to the Serena ChangeMan ZMF Web Services Getting Started Guide**  
About This Book ................................................................. 5
Related Documentation ....................................................... 6
  - Web Service Standards Documentation .......................... 6
  - ZMF Web Services Sample Code .................................. 6
  - ChangeMan ZMF Documentation Suite .......................... 7
Using the Manuals ............................................................... 8
  - Searching the ChangeMan ZMF Documentation Suite ....... 9
Typographical Conventions ................................................ 9

## Chapter 1

**Installation and Setup** .................................................. 11
Components of the ZMF Web Services Environment .................. 11
Component Locations ......................................................... 12
Installation Prerequisites .................................................... 13
  - Web Application Server Environment .......................... 13
  - Web Services Development Environment ........................ 13
  - z/OS Server Environment ........................................... 13
  - Security Considerations ............................................ 14
Installing the Web Services API ........................................... 14
  - Uninstall Prior API Versions ....................................... 14
Download the WAR File ..................................................... 15
Install the Web Application Server Plug-in ............................ 15
Verifying the Install .......................................................... 15

## Chapter 2

**Concepts** ....................................................................... 17
Web Services API Concepts .................................................. 17
  - Thick Clients and Thin Clients .................................... 18
  - Request/Response Cycle .............................................. 18
  - Supported ChangeMan ZMF Functions .......................... 19
Mapping ZMF Web Services to XML Services ........................ 19
  - Service Tag Names ..................................................... 19
  - Request Messages ...................................................... 20
  - Reply Messages ........................................................ 20
ZMF and SERNET Namespaces .............................................. 21
ZMF Web Services Sample Code ........................................... 22

## Chapter 3

**Connectivity and Session Management** .............................. 23
SERNET Web Services ........................................................ 23
Logon Service ................................................................. 23
  - Logon Request .......................................................... 23
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logon Response</td>
<td>24</td>
</tr>
<tr>
<td>Logoff Service</td>
<td>25</td>
</tr>
<tr>
<td>Logoff Request</td>
<td>25</td>
</tr>
<tr>
<td>Logoff Response</td>
<td>26</td>
</tr>
<tr>
<td>Maintaining State and Managing Sessions</td>
<td>26</td>
</tr>
<tr>
<td><strong>Chapter 4</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Developer Services</strong></td>
<td>27</td>
</tr>
<tr>
<td>Package Search and Summary Services</td>
<td>28</td>
</tr>
<tr>
<td>Package Life Cycle Services</td>
<td>28</td>
</tr>
<tr>
<td>Package Information Management Services</td>
<td>29</td>
</tr>
<tr>
<td>Package Configuration Services</td>
<td>30</td>
</tr>
<tr>
<td>Package Validation Services</td>
<td>31</td>
</tr>
<tr>
<td>Package Component Management Services</td>
<td>31</td>
</tr>
<tr>
<td>Component Life Cycle Services</td>
<td>32</td>
</tr>
<tr>
<td>Component Version Management Services</td>
<td>33</td>
</tr>
<tr>
<td>Component Information Management Services</td>
<td>33</td>
</tr>
<tr>
<td>Component Security Services</td>
<td>34</td>
</tr>
<tr>
<td>Data Set Management Services</td>
<td>35</td>
</tr>
<tr>
<td>Database Management Services</td>
<td>35</td>
</tr>
<tr>
<td>DB2 Database Management Services</td>
<td>35</td>
</tr>
<tr>
<td>IMS Database Management Services</td>
<td>36</td>
</tr>
<tr>
<td>Impact Analysis Services</td>
<td>36</td>
</tr>
<tr>
<td>Schedule Services</td>
<td>37</td>
</tr>
<tr>
<td><strong>Chapter 5</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Administrator Services</strong></td>
<td>39</td>
</tr>
<tr>
<td>Approver Notifications</td>
<td>39</td>
</tr>
<tr>
<td>Change Library Administration</td>
<td>40</td>
</tr>
<tr>
<td>Developer Environment Administration</td>
<td>40</td>
</tr>
<tr>
<td>Install Site Administration</td>
<td>41</td>
</tr>
<tr>
<td><strong>Index</strong></td>
<td>43</td>
</tr>
</tbody>
</table>
Welcome to the **Serena ChangeMan ZMF Web Services Getting Started Guide**

**ChangeMan ZMF Summary**
Serena® ChangeMan® ZMF is a comprehensive and fully integrated solution for software change management in z/OS environments. It provides reliable and streamlined implementation of software changes from development into production. ChangeMan ZMF manages and automates the application life cycle, ensures current and complete software builds, protects the integrity of the code migration process, and delivers higher quality code to test and production environments.

**Web Services API Summary**
The ChangeMan ZMF Web Services Application Program Interface (API) is designed for customers who want to develop their own intranet, extranet, or Internet client applications for ChangeMan ZMF in a Service Oriented Architecture (SOA) environment. Because the Web Services API is built on the ChangeMan ZMF XML Services, Web clients have programmatic access to the full range of ZMF functionality. Because access is enabled through the industry-standard Simple Object Access Protocol (SOAP) messaging protocol over the HTTP transport protocol, client applications can be developed in any programming language that supports these standards, including Java and C++ for open-source clients and .NET and C# for Windows clients.

ChangeMan ZMF services are described with the Web Service Description Language (WSDL), so you can take advantage of the many development tools that enable rapid development of Web client applications from WSDL specifications.

Web-enabled ZMF integration products, such as ChangeMan ZMF for Eclipse, are not required in order to use the ZMF Web Services API.

---

**About This Book**

**Objective** The *ChangeMan ZMF Web Services Getting Started Guide* provides installation and quick-start programming guidance for the Web Services API to functions and facilities of ChangeMan ZMF. More general aspects of Web Services technology, tools, or implementation are not addressed.

**NOTE** This document discusses the ChangeMan ZMF Web Services API only. See the documentation provided with your particular Web Services application server for information about installing and configuring that server.

**Audience** This document is intended for software developers, systems engineers, and test engineers who will install, develop, and test Web Services applications that access the functions of ChangeMan ZMF. Familiarity with the features of ChangeMan ZMF and its XML Services API are assumed. Familiarity with open-source Web Services tools and technologies is also assumed.

**Before You Begin** See the ChangeMan ZMF Readme file for the latest updates and corrections to this manual.
Related Documentation

This manual provides only the essential information needed to take advantage of the Web Services API for ChangeMan ZMF. It does not duplicate generic information about the SOAP protocol, WSDL, or other information that applies to all SOA Web Services applications. This manual does not duplicate information already described in detail in other ChangeMan ZMF documentation. Customers are referred to the following related documentation for such information.

Web Service Standards Documentation

The following reference information about SOAP and Web Services standards applies to most SOA Web Services environments.

- **Web Services Basic Profile Version 1.0** — Available from the Web Services Interoperability Organization (WS-I) at
  
  http://www.ws-i.org/Profiles/BasicProfile-1.0.html

- **Simple Object Access Protocol (SOAP) Version 1.1** — Available from the World Wide Web Consortium (W3C) at
  
  http://www.w3.org/TR/2000/NOTE-SOAP-20000508/

- **Web Services Description Language (WSDL) Version 1.1** — Available from the World Wide Web Consortium (W3C) at
  
  http://www.w3.org/TR/wSDL

- **Apache Axis Version 1.3** — Available from the Apache open source Web site at
  
  http://www.apache.org/dyn/closer.cgi/ws/axis/1_3

**NOTE** Refer to the Readme file for the latest information on supported versions and required enabling technology.

ZMF Web Services Sample Code

Sample code and instructions for running it are attached to solution number S139564 in the Serena knowledgebase.

The sample code includes 2 Java source files that illustrate:

- Logging on to ZMF
- Getting a copy of the ZMF global parameters
- Getting a list of ZMF package components
- Logging off

You can download the zip file containing the code and instructions from the following link:
## ChangeMan ZMF Documentation Suite

The ChangeMan ZMF documentation set includes the following manuals in PDF format.

<table>
<thead>
<tr>
<th>Manual</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator’s Guide</td>
<td>Describes ChangeMan ZMF features and functions with instructions for choosing options and configuring global and application administration parameters.</td>
</tr>
<tr>
<td>ChangeMan ZMF Quick Reference</td>
<td>Provides a summary of the commands you use to perform the major functions in the ChangeMan ZMF package life cycle.</td>
</tr>
<tr>
<td>Customization Guide</td>
<td>Provides information about ChangeMan ZMF skeletons, exits, and utility programs that will help you to customize the base product to fit your needs.</td>
</tr>
<tr>
<td>DB2 Option Getting Started Guide</td>
<td>Describes how to install and use the DB2 Option of ChangeMan ZMF to manage changes to DB2 components.</td>
</tr>
<tr>
<td>ERO Concepts</td>
<td>Discusses the concepts of the ERO Option of ChangeMan ZMF for managing releases containing change packages.</td>
</tr>
<tr>
<td>ERO Getting Started Guide</td>
<td>Explains how to install and use the ERO Option of ChangeMan ZMF to manage releases containing change packages.</td>
</tr>
<tr>
<td>ERO Messages</td>
<td>Describes system messages and codes produced by ChangeMan ZMF ERO.</td>
</tr>
<tr>
<td>ERO XML Services User’s Guide</td>
<td>Documents ERO functions and services available for general customer use. These services are also known as the green services and provide primarily search and query functions.</td>
</tr>
<tr>
<td>High-Level Language Functional Exits Getting Started Guide</td>
<td>Provides instructions for implementing and using High-Level Language (Cobol, PL/1, and REXX) exits, driven consistently by all clients to enforce local business rules in ZMF functions.</td>
</tr>
<tr>
<td>IMS Option Getting Started Guide</td>
<td>Provides instructions for implementing and using the IMS Option of ChangeMan ZMF to manage changes to IMS components.</td>
</tr>
<tr>
<td>INFO Option Getting Started Guide</td>
<td>Describes two methods by which ChangeMan ZMF can communicate with other applications:</td>
</tr>
<tr>
<td></td>
<td>- Through a VSAM interface file.</td>
</tr>
<tr>
<td></td>
<td>- Through the Tivoli Information Management for z/OS product from IBM.</td>
</tr>
<tr>
<td>Installation Guide</td>
<td>Provides step-by-step instructions for initial installation of ChangeMan ZMF. Assumes that no prior version is installed or that the installation will overlay the existing version.</td>
</tr>
</tbody>
</table>
Welcome to the Serena ChangeMan ZMF Web Services Getting Started Guide

Using the Manuals

Use Adobe® Reader® to view ChangeMan ZMF PDF files. Download the Reader for free at get.adobe.com/reader/.

This section highlights some of the main Reader features. For more detailed information, see the Adobe Reader online help system.

The PDF manuals include the following features:

- **Bookmarks.** All of the manuals contain predefined bookmarks that make it easy for you to quickly jump to a specific topic. By default, the bookmarks appear to the left of each online manual.
- **Links.** Cross-reference links within a manual enable you to jump to other sections within the manual with a single mouse click. These links appear in blue.
- **Comments.** All PDF documentation files that Serena delivers with ChangeMan ZMF have enabled commenting with Adobe Reader. Adobe Reader version 7 and higher has commenting features that enable you to post comments to and modify the contents of

<table>
<thead>
<tr>
<th>Manual</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java / HFS Getting Started Guide</td>
<td>Provides information about using ZMF to manage application components stored in UNIX System Services (USS) file systems, especially Java application components.</td>
</tr>
<tr>
<td>Load Balancing Option Getting Started Guide</td>
<td>Explains how to install and use the Load Balancing Option of ChangeMan ZMF to connect to a ZMF instance from another CPU or MVS image.</td>
</tr>
<tr>
<td>M+R Getting Started Guide</td>
<td>Explains how to install and use the Merge and Reconcile (M+R) Option of ChangeMan ZMF to consolidate multiple versions of source code and other text components.</td>
</tr>
<tr>
<td>M+R Quick Reference</td>
<td>Provides a summary of M+R Option commands in a handy pamphlet format.</td>
</tr>
<tr>
<td>Messages</td>
<td>Explains messages issued by ChangeMan ZMF, SERNET, and System Software Manager (SSM) used for the Staging Versions feature of ZMF.</td>
</tr>
<tr>
<td>OFM Getting Started Guide</td>
<td>Explains how to install and use the Online Forms Manager (OFM) option of ChangeMan ZMF.</td>
</tr>
<tr>
<td>User’s Guide</td>
<td>Describes how to use ChangeMan ZMF features and functions to manage changes to application components.</td>
</tr>
<tr>
<td>XML Services User’s Guide</td>
<td>Documents the most commonly used features of the XML Services application programming interface to ChangeMan ZMF.</td>
</tr>
<tr>
<td>ZMF Web Services User’s Guide</td>
<td>Documents the Web Services application programming interface to ChangeMan ZMF.</td>
</tr>
</tbody>
</table>
PDF documents. You access these features through the Comments item on the menu bar of the Adobe Reader.

- **Printing.** While viewing a manual, you can print the current page, a range of pages, or the entire manual.

- **Advanced search.** Starting with version 6, Adobe Reader includes an advanced search feature that enables you to search across multiple PDF files in a specified directory.

### Searching the ChangeMan ZMF Documentation Suite

There is no cross-book index for the ChangeMan ZMF documentation suite. You can use the Advanced Search facility in Adobe Acrobat Reader to search the entire ZMF book set for information that you want. The following steps require Adobe Reader 6 or higher.

1. Download the ZMF All Documents Bundle ZIP file and the ZMF Readme to your workstation from the Downloads tab on the Serena Support Web site.

2. Unzip the PDF files in the ZMF All Documents Bundle into an empty folder. Add the ZMF Readme to the folder.


4. Select the All PDF Documents in option and use Browse for Location in the drop down menu to select the folder containing the ZMF documentation suite.

5. In the text box, enter the word or phrase that you want to find.

6. Optionally, select one or more of the additional search options, such as Whole words only and Case-Sensitive.

7. Click Search.

8. In the Results, expand a listed document to see all occurrences of the search argument in that PDF.

9. Click on any listed occurrence to open the PDF document to the found word or phrase.

### Typographical Conventions

The following typographical conventions are used in the online manuals and online help. These typographical conventions are used to assist you when you use the documentation; they are not meant to contradict or change any standard use of typographical conventions in the various product components or the host operating system.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>italics</em></td>
<td>Introduces new terms that you may not be familiar with, and occasionally indicates emphasis.</td>
</tr>
<tr>
<td><strong>bold</strong></td>
<td>Emphasizes important information and field names.</td>
</tr>
<tr>
<td>UPPERCASE</td>
<td>Indicates keys or key combinations that you can use. For example, &quot;press the ENTER key&quot;.</td>
</tr>
</tbody>
</table>
Welcome to the Serena ChangeMan ZMF Web Services Getting Started Guide

<table>
<thead>
<tr>
<th>Convention</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>monospace</td>
<td>Indicates syntax examples, values that you specify, or results that you receive.</td>
</tr>
<tr>
<td>monospaced italic</td>
<td>Indicates names that are placeholders for values you specify; for example, filename.</td>
</tr>
<tr>
<td>monospace bold</td>
<td>Indicates the results of an executed command.</td>
</tr>
<tr>
<td>vertical rule</td>
<td>Separates menus and their associated commands. For example, &quot;select File</td>
</tr>
</tbody>
</table>
Chapter 1

Installation and Setup

Components of the ZMF Web Services Environment

The ZMF Web Services API is intended for "roll your own" use by Web-savvy customers across a variety of environments. Some standard components of the ZMF Web Services environment are installed on the host with the base ChangeMan ZMF product. Others vary greatly across sites according to the requirements of the customer. Because few assumptions about the application environment can be made in advance, the installation and use of the ZMF Web Services are intended to be tailored extensively by the customer.

The following components are required by the ChangeMan ZMF Web Services API:

- **ZMF XML Services** — The XML Services API to ChangeMan ZMF must be enabled on the host before installing ZMF Web Services support. See the ChangeMan ZMF Installation Guide for instructions on enabling external access to the XML Services.

- **SERNET** — The mainframe communications front-end for ChangeMan ZMF manages TCP/IP connectivity between ChangeMan ZMF and the ZMF Connector plug-in that resides on your Web Services application server. (See the description of the ZMF Connector plug-in on page 12.) SERNET also supervises the ZMF XML Services request/response cycle and routes requests across multiple ZMF started tasks. SERNET is automatically installed with ChangeMan ZMF.

- **Web application server** — A Web application server, such as Apache Tomcat or IBM WebSphere Application Server, services requests and shares resources among multiple Web clients. The application server may include a native HTTP server or be front-ended by an external HTTP server, as needed to optimize security and performance. It invokes the ZMF Connector plug-in to provide service connectivity between the mainframe and the Web. Any Web Services application server that supports the Apache Axis SOAP library should in principle be compatible with the ChangeMan ZMF Web Services API. You must install and configure the application server before you install the ZMF Web Services API.

- **Apache Axis SOAP engine** — The Apache eXtensible Interaction System (Axis) is an open-source SOAP message processing engine and Web Services function library based on J2EE (Java 2 Enterprise Edition). It is installed as a plug-in to the Web Services application server. In addition to a SOAP parser, the Axis library includes utilities for generating Java classes from Web Service Description Language files (WSDLs) and for monitoring TCP/IP packets. Axis is supported by many Web Services
application servers, including Apache Tomcat, BEA WebLogic, Borland Enterprise Server, JBoss, Macromedia Cold Fusion MX, Oracle Web Services Manager, and (as an alternate SOAP engine) IBM WebSphere Application Server. The ZMF Connector plug-in requires Axis. It is supplied by the ChangeMan ZMF installer and is installed on the Web Services application server platform.

- **ZMF Connector** — The ZMF Connector plug-in is a Java servlet that manages connectivity between a Web Services application server on the network and SERNET on the mainframe. On inbound requests, it extracts ZMF XML Services payloads from their SOAP envelope, validates them, then passes them on to the chosen ZMF instance on the mainframe. On outbound replies, it encapsulates ZMF XML Services payloads within a SOAP envelope and passes them to a particular Web Services client application. The ChangeMan ZMF installer supplies the ZMF Connector plug-in and installs it on the Web Services application server platform.

- **WSDL (Web Service Description Language) files** — The ZMF Web Services API WSDLs describe the SERNET and ChangeMan ZMF services. They provide XML Schema specifications for data types and allowed values, as well as SOAP XML extensions that specify bindings of the abstract services to specific SOAP messages and Web application servers. A variety of code generators and development tools take WSDLs as input to assist Web client development. The ChangeMan ZMF installer supplies the ZMF WSDLs and installs them on the Web application server or on a separate development system, as needed.

- **Web client developer tools** — Standalone tools or integrated development environments (IDEs) and plug-ins of your choice can take WSDL specifications as input, parse the XML, and generate Java code stubs and/or interactive fill-in-the-blank Web client prototypes as output. Open-source Web Services tools are available at no charge, such as Eclipse (for Java development).

**NOTES** Because the ZMF Web Services do not build in a session management mechanism, Web Services development and testing tools such as soapUI will not execute ZMF Web Services calls successfully from the basic API WSDLs supplied with the ChangeMan ZMF installer.

You can find further information about Web Services tools for the Eclipse IDE online at [http://www.eclipse.org/webtools/ws/](http://www.eclipse.org/webtools/ws/).

## Component Locations

Of the environment components required by the Web Services API, the ChangeMan ZMF installer supplies ChangeMan ZMF itself, the XML Services API, SERNET, and the ZMF Connector plug-in for your Web Services application server.

- **WAR File** — A Web Application Archive (WAR) file is used to distribute the Web Services WSDL files, the Apache Axis library, and a set of Java classes associated with the ZMF Connector. The file name is `zmfws.war` and is contained in a zip file named `zmfws.zip`, which you can download from the Serena Support Web site under Serena ChangeMan ZMF Client Pack.
Chapter 1  Installation and Setup

Installation Prerequisites

Your environment must be set up to satisfy the requirements listed below before you install the ChangeMan ZMF Web Services plug-in on the Web Services application server. It is not within the scope of this document to describe how to install or configure the software listed in this section.

Web Application Server Environment

The Web Services application server may run on any desired operating system platform, including z/OS, but most commonly runs on Windows, Linux, or Solaris. On this platform, the ChangeMan ZMF Web Services API requires:

- Oracle® Corporation’s J2SE™ Development Kit (JDK) version 1.5 or higher, which you can download free of charge from
  
  http://www.oracle.com/technetwork/java/index.html

- The ZMF Web Services API has been tested with Apache Tomcat. You can download the latest GA version free of charge from
  
  http://tomcat.apache.org/

**IMPORTANT!** The Web Services application server must support Apache Axis version 1.3. Axis version 1.3 should not be confused with Axis 2 version 1.3. The ChangeMan ZMF Web Services API does not support Axis 2.

The Axis 1.3 library is supplied in the zmfws.war file. It does not conflict with other versions of Axis installed on the server.

Web Services Development Environment

A Web Services client development tool that supports the WSDL 1.1 standard is desirable. For Java development, Eclipse is recommended.

**ZMF for Eclipse Compatibility**

ZMF for Eclipse (formerly WD4ZMF), a Serena plug-in that integrates the open-source Eclipse IDE with ChangeMan ZMF, uses the ChangeMan ZMF Web Services API.

If you plan to install the ChangeMan ZMF Web Services API on the same platform where the ZMF for Eclipse or an earlier ZMF Eclipse integration already resides, be sure that both ZMF for Eclipse and the Web Services API you plan to install are at the same maintenance level before you proceed.

**CAUTION!** If a previously installed Eclipse plug-in for ZMF uses an older version of the Web Services API than the one you are about to install, proceeding with the installation may cause ZMF for Eclipse or WD4ZMF to fail.

z/OS Server Environment

On the z/OS host, the ChangeMan ZMF 8.1 Web Services API requires the following:

- ChangeMan ZMF version 6.1.0 (or above) on every z/OS LPAR you wish to access with ZMF Web Services. (HFS and Java functionality require ZMF 7.1.0 or higher.)
Chapter 1  Installation and Setup

- TCP/IP connectivity between the Web Services application server and the ChangeMan ZMF server(s).

In addition, Serena recommends that you install the XMLSERV prototyping tool on your ChangeMan ZMF system to assist with debugging Web Services calls to the ZMF XML Services. (See the ChangeMan ZMF Installation Guide for setup instructions.)

Security Considerations

Host Security  The ChangeMan ZMF Web Services API is compatible with RACF®, CA-ACF2®, and CA-Top Secret® on the mainframe. In addition, all messages between ChangeMan ZMF on the host and the ZMF Connector plug-in on the Web Services application server are compressed.

Installing the Web Services API

NOTE  Installation steps are illustrated here using Microsoft Windows XP as the client operating system and Apache Tomcat for the Web Services application server. You may use other client operating systems and Web Services application servers, as described in "Installation Prerequisites".

Uninstall Prior API Versions

Remove any previous installation of the ChangeMan ZMF Web Services API before upgrading to a new version. In particular, delete any previous ZMF Web Services WAR file and expansions of the WAR file from the webapps directory of your Web Services application server.

CAUTION! If you have previously installed the ZMF for Eclipse or WD4ZMF plug-ins on your Web application server, some version of the ChangeMan ZMF Web Services API resides on this system. Verify the compatibility of your installed plugin with the version of the Web Services API you plan to install before deleting the existing WAR file.

Apache Tomcat Example  If you are using Apache Tomcat on the Windows XP platform as your Web Services application server, perform the following steps:

1  Stop the Tomcat service:
   a  Go to Start > Settings > Control Panel > Administrative Tools > Services.
   b  Select the Apache Tomcat entry and then click Stop to stop the service.

2  Go to the Tomcat webapps directory at:

   Program Files\Apache Software Foundation\Tomcat x.x\webapps

3  Delete the following if they exist in the webapps directory:

   zmfw$  folder (and all its contents, which are expansions of the WAR file)
   zmfw$.war  file
**Download the WAR File**

**WAR File Download**

Download the ChangeMan ZMF Web Services API WAR file from the Serena Support Web site.

1. Under **My Downloads**, select **ChangeMan ZMF Client Pack** from the **Product** drop-down list.
2. Locate the desired version and click on **Z/OS** under **Available Operating Systems**.
3. Download the ChangeMan ZMF Web Services file (zmfws.zip) and save it to an appropriate directory. This zip file contains the WAR file, **zmfws.war**.

**Install the Web Application Server Plug-in**

**WAR File Installation**

To install the Web Services application server software plugin, do the following:

- Stop the Web Services application server software.
- Copy `zmfws.war` (from the directory where it was saved) to the **webapps** directory for the Web Services application server that will serve ChangeMan ZMF requests on behalf of Web Services clients.
- Restart the Web Services application server software.

**Apache Tomcat Example**

If you are using Apache Tomcat installed as a service on the Windows XP platform as your Web Services application server, perform the following steps:

1. Stop the Tomcat service:
   - Go to **Start > Settings > Control Panel > Administrative Tools > Services**.
   - Select the Apache Tomcat entry and then click **Stop** to stop the service.
2. Copy `zmfws.war` (from the directory where it was saved) to the Tomcat **webapps** directory at:
   ```
   Program Files\Apache Software Foundation\Tomcat x.x\webapps
   ```
3. Restart the Tomcat service:
   - Go to **Start > Settings > Control Panel > Administrative Tools > Services**
   - Select the Apache Tomcat entry and then click **Start** or **Restart** to restart the service.
   - Tomcat automatically expands the ZMF Web Services WAR file on restart. This creates the **zmfws** directory and all its contexts.

   **TIP** If the `zmfws.jar` file is not expanded into the `zmfws` directory automatically when you start Tomcat, use Tomcat’s **Activate administrator function** to expand the archive and start the ZMF Connector servlet.

**Verifying the Install**

To verify the API installation, use the Web application server’s manager app to verify that the zmfws application is running.
Chapter 1  Installation and Setup
Chapter 2

Concepts

Web Services API Concepts
The ChangeMan ZMF Web Services API is a Web-enabled messaging layer built over the ChangeMan ZMF XML Services API. It enables developers to create applications that access ZMF functionality over an intranet, an extranet, or the World Wide Web.
Chapter 2  Concepts

SOAP Protocol The Web Services API works by organizing existing ChangeMan ZMF XML Services into named classes (Web Services) and methods (functions). Inbound calls to these services and methods are wrapped in an XML-defined, open-standard messaging syntax called SOAP (Simple Object Access Protocol). The SOAP message is transmitted over an HTTP connection to a Web Services application server, such as Apache Tomcat or IBM Websphere. The application server directs messages to the appropriate ZMF Web Service, which in turn invokes a server-side Java servlet that acts as a connector to ZMF.

ZMF Connector Java Servlet The ZMF Connector servlet strips off the SOAP wrapper, then validates the data in the request against a Web Service specification defined in a Web Services Definition Language (WSDL) file. (WSDL is also an open, XML-based standard.) If the data in the request is valid, the ZMF Connector forwards it over a TCP/IP link as a straightforward XML Services request to ChangeMan ZMF. ZMF XML Services replies are received by the ZMF Connector, encapsulated in a SOAP wrapper, then forwarded by the Web application server back to the Web client.

Thick Clients and Thin Clients

The ZMF Web Services API supports both thick and thin client types.

Thick Client A thick client is an application in which most of the custom-coded function executes locally on the client computer. This approach is preferred when computational workload can profitably be offloaded from the server to the client; when the high bandwidth demands of a rich user interface or multimedia processing can be offloaded from the network to the client; or when security considerations demand independent processing on both sides of the connection. In these kinds of situations, a ZMF Web Services application would be coded to reside on the client and send SOAP messages via HTTP to the application server where the ZMF Web Services API is hosted. In the preceding diagram, the gold box labeled "Thick Client" shows where your Web Services code would reside in a thick-client application and illustrates the kinds of Web Services message flows involved when a thick client connects to ChangeMan ZMF.

Thin Client A thin client is an application in which most of the custom-coded function executes on a server, with the results supplied on demand to the client computer. In a Web Services context, a thin client is often simply a Web browser, which sends a standard HTTP request to the Web application server, which invokes a custom server-side application and then serves the result to the client. In the background, the custom application sends SOAP-formatted messages as needed to the ZMF Web Services API, which converts each message to XML, passes it to ZMF, receives the reply, reformats the XML reply in a SOAP wrapper, and returns it to the custom application. In the previous figure, the gold box labeled "Custom Application" shows where your Web Services code would reside in a thin-client application and illustrates the kinds of Web Services message flows involved when a thin client connects to ChangeMan ZMF.

Request/Response Cycle

Session Management Like the ZMF XML Services transactions they are built over, ZMF Web Services transactions consist of a request message issued by the client, followed by a reply message returned by the host. However, HTML and SOAP are stateless protocols that do not automatically associate a particular reply with a particular request. It is the Web client developer's responsibility to maintain state and session information to properly associate requests and replies.

Array Results The SOAP protocol does not support "boxcar" chaining of multiple requests or responses in a single transaction. However, several ChangeMan ZMF XML Services build in a
workaround for this problem in tasks such as searches or requests for parameter lists, which typically return a large number of identically formatted XML strings. The relevant XML Service packages such results in an array, with the number of elements in the array noted in the first array element. The ZMF Web Services API accepts such array results and passes them to the Web client in a single response message.

**Supported ChangeMan ZMF Functions**

| Developer Functions | All ZMF developer functions are accessible through the ZMF Web Services API. These include package creation, freeze, approval, promotion, revert, and backout; component checkout and checkin; package and component search functions; impact analysis and audit; user notifications; and others. In addition, the Web Services API supports SERNET file and dataset services for basic file manipulations such as download and upload, as well as retrieval of DDname allocations and performing ISPF file tailoring. |
| Administrator Functions | ZMF administrator functions are supported in read-only mode. For example, you can retrieve a list of package parameters using the Web Services API, but you cannot change those parameters. |
| ERO | The Web Services API does not support ZMF Enterprise Release Option (ERO) functions. |

**Mapping ZMF Web Services to XML Services**

ChangeMan ZMF Web Services tag names are not identical to ZMF XML Services tag names, but they do map to XML Services tag names in a systematic way.

**Service Tag Names**

The XML Services `<service/>`, `<scope/>`, and `<message/>` tags are general-purpose tags, each of which includes a `name` attribute specifying the ZMF functionality desired. The three tags must be used in the correct combination to specify a function, and an eight-byte length restriction on the value of the `name` attribute leads to error-prone abbreviations such as `name="COMPONENT"` for certain services.

In contrast, the Web Services API uses a single named service tag, such as `<newPackage/>` or `<checkinComponent/>`, to fully identify the functionality desired in a request. Each top-level service name maps to one and only one XML Services service.scope.message triplet.

Within the service tag, request tags are always named `<request>`. Reply messages, however, can take one of two forms, depending on whether they are standalone host status messages or if they also return data from the host. Reply messages that return only host status information are always called `<response>`. Reply messages that return data in addition to host status information have a different structure and take names specific to each service.

Within each request or reply tag are a number of parameter tags specific to the service. The names of these parameter tags are identical to their XML Services counterparts. Data types, allowed values, and dependencies are also identical to those in XML Services. Users are referred to the *ChangeMan ZMF XML Services User's Guide* for parameter tag names and allowed values. That information is not duplicated in this document.
Request Messages

ZMF Web Services request messages take the general form

```xml
<serviceTag>
  <request>
    <parameterTag1/>
    <parameterTag2/>
    ...
    <parameterTagn/>
  </request>
</serviceTag>
```

where
- `serviceTag` is a Web Services-specific tag name that maps to a specific XML Services service/scope/method tag triplet and which varies with the ZMF service requested.
- `request` is the literal tag name of the request method.
- `parameterTag` takes the same name and values as the corresponding XML Services parameter tag.

Reply Messages

ZMF Web Services reply messages take one of two general forms, depending on whether or not data is retrieved from the host and returned to the client as part of the reply.

**Standard <response> Message**

The simplest reply format contains no returned data, but only an acknowledgement of host status as a result of the requested action. The general form of a simple reply is

```xml
<serviceTag>
  <response>
    <statusMessage>Some message</statusMessage>
    <statusReturnCode>nn</statusReturnCode>
    <statusReasonCode>nnnn</statusReasonCode>
  </response>
</serviceTag>
```

where
- `serviceTag` is a Web Services-specific tag name that maps to a specific XML Services service/scope/method tag triplet and which varies with the ZMF service requested.
- `response` is the literal tag name of the response method.
- `nn` and `nnnn` are numeric values returned by the host.

**Replies With Host Data**

Reply messages that return data include the `<response>` tag above as the final element of a more complex reply. The general form of a complex reply is

```xml
<serviceTag>
  <serviceTagResults>
    <parameterTag1/>
    <parameterTag2/>
  </serviceTagResults>
</serviceTag>
```
<parameterTagn/>
<response>
  <statusMessage>Some message</statusMessage>
  <statusReturnCode>nn</statusReturnCode>
  <statusReasonCode>nnnn</statusReasonCode>
</response>
<serviceTagResults>
</serviceTag>

where

- **serviceTag** maps to a specific XML Services service/scope/method tag triplet and varies with the ZMF service requested
- **serviceTagResults** is the name of the response method, where the literal suffix Results is appended to the **serviceTag** name
- **parameterTag** takes the same name and values as the corresponding XML Services parameter tag
- **response** is the literal name of the standard complex tag used to return the host status resulting from the request

### ZMF and SERNET Namespaces

All Web Services tag names must be qualified by a namespace prefix. Two proprietary namespaces have been defined for the ZMF Web Services:

- **ser** — This namespace defines SERNET connectivity and data transfer services.
- **cmn** — This namespace defines ChangeMan ZMF change management services.

**SERNET Namespace**

SERNET service tag names take the following general form in production code:

```xml
<ser:tagname/>
```

where

- **ser:** is the literal namespace prefix for SERNET tags
- **tagname:** is any SERNET tag name

**ChangeMan ZMF Namespace**

All ChangeMan ZMF developer and administrator service tag names take the following general form in production code:

```xml
<cmn:tagname/>
```

where

- **cmn:** is the literal namespace prefix for ChangeMan ZMF tags
- **tagname:** is any ChangeMan ZMF tag name
Tag syntax descriptions in this manual may omit namespace prefixes for clarity, but they are not optional in practice.

**IMPORTANT!** All Web Services tags must be qualified by the appropriate namespace prefix or the function call will fail. For SERNET tags, the qualified tag name format is `<ser:tagname/>`. For ZMF tags, the qualified tag name format is `<cmn:tagname/>`.

# ZMF Web Services Sample Code

Sample code and instructions for running it are attached to solution number S139564 in the Serena knowledgebase.

The sample code includes 2 java source files which illustrate:

- Logging on to ZMF
- Getting a copy of the ZMF global parameters
- Getting a list of ZMF package components
- Logging off

The zip file containing the code and instructions can be downloaded using the following link:

Chapter 3
Connectivity and Session Management

SERNET Web Services

Function Summary
Connectivity between your Web client application and ChangeMan ZMF is managed on the mainframe side by SERNET, Serena's communication and networking front-end for ChangeMan ZMF. SERNET must be running on the host before ChangeMan ZMF can start and Web Services connectivity to ChangeMan ZMF can be established.

SERNET manages Web Services logon and logoff to z/OS.

Logon Service

The SERNET logon service takes as input a valid TSO user ID and password for the user of the Web client application. It also requires an IP address for the desired host system where the ChangeMan ZMF subsystem resides and a port ID where SERNET is listening for requests to this subsystem. The subsystem ID for the desired ChangeMan ZMF instance is not required, as it is redundant with the IP address and port.

The logon service returns status information stating whether or not logon was successful.

Logon Request

Service Tag
A SERNET logon request contains the <logon> service tag as the top-level tag in the SOAP envelope body. The <logon> service tag encloses a <request> method tag, which in turn encloses a set of parameter tags.

Syntax Example
The following example logon request shows fully qualified ZMF Web Services tag names with values, wrapped in a SOAP envelope. Deprecated parameter tags are omitted.

```xml
    <soapenv:Header/>
    <soapenv:Body>
        <ser:logon>
            <ser:request>
```

Web Services Getting Started Guide 23
Chapter 3 Connectivity and Session Management

The following parameter tags are supported within the logon request tag:

<table>
<thead>
<tr>
<th>Parameter Tag</th>
<th>Use</th>
<th>Occurs</th>
<th>Data Type &amp; Length</th>
<th>Values &amp; Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;host&gt;</td>
<td>Required</td>
<td>1</td>
<td>String (255)</td>
<td>TCP/IP address of LPAR where desired ZMF subsystem resides</td>
</tr>
<tr>
<td>&lt;newpassword&gt;</td>
<td>Optional</td>
<td>0 - 1</td>
<td>String (8)</td>
<td>New password for &lt;user&gt;</td>
</tr>
<tr>
<td>&lt;password&gt;</td>
<td>Required</td>
<td>1</td>
<td>String (8)</td>
<td>Current password for &lt;user&gt;</td>
</tr>
<tr>
<td>&lt;portid&gt;</td>
<td>Required</td>
<td>1</td>
<td>String (4)</td>
<td>TCP/IP port ID for desired ZMF subsystem</td>
</tr>
<tr>
<td>&lt;subsystemid&gt;</td>
<td>Deprecated</td>
<td>1</td>
<td>String (1)</td>
<td>ZMF subsystem ID. Blank subsystem ID not supported.</td>
</tr>
<tr>
<td>&lt;user&gt;</td>
<td>Required</td>
<td>1</td>
<td>String (8)</td>
<td>TSO user ID for Web client</td>
</tr>
<tr>
<td>&lt;version&gt;</td>
<td>Optional</td>
<td>0 - 1</td>
<td>String (10)</td>
<td>ZMF API version supported by Web client. Example value for ZMF 6.1.0 patch 01: 6.1.0.01</td>
</tr>
</tbody>
</table>

Logon Response

A SERNET logon response contains the <logon> service tag as the top-level tag in the SOAP envelope body. Within this service tag, the status of the logon action is reported in the <response> method tag, which in turn encloses a set of parameter tags.

Syntax Example

The logon response method tag returns a host-originated status message, return code, and reason code describing the host status of the logon request. The same syntax is used by all SERNET Web Services <response> methods.

```xml
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
                   xmlns:ser="http://wsdl.zmf.serena.com/services="/"
  <soapenv:Header/>
  <soapenv:Body>
    <ser:logon>
      <ser:response>
        <ser:statusMessage>Logon successful</ser:statusMessage>
        <ser:statusReturnCode>00</ser:statusReturnCode>
      </ser:response>
    </ser:logon>
  </soapenv:Body>
</soapenv:Envelope>
```
The following parameter tags are supported within the logon <response> tag:

<table>
<thead>
<tr>
<th>Parameter Tag</th>
<th>Use</th>
<th>Occurs</th>
<th>Data Type &amp; Length</th>
<th>Values &amp; Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;statusMessage&gt;</td>
<td>Required</td>
<td>1</td>
<td>String (255)</td>
<td>Free-format status message returned by host or ZMF</td>
</tr>
<tr>
<td>&lt;statusReasonCode&gt;</td>
<td>Required</td>
<td>1</td>
<td>String (4)</td>
<td>Diagnostic reason code</td>
</tr>
</tbody>
</table>
| <statusReturnCode>       | Required  | 1      | String (4)         | Status severity code. Typical values:
|                          |           |        |                    | 00 - Normal completion                           |
|                          |           |        |                    | 04 - Completed using default overrides for minor error conditions |
|                          |           |        |                    | 08 - Some job steps failed                       |
|                          |           |        |                    | 12 or higher - Severe error                      |

**Logoff Service**

The SERNET logoff service takes as input the TSO user ID for the Web client user to be logged off the host. The logoff service returns status information stating whether or not logoff was successful.

**Logoff Request**

A SERNET logoff request contains the top-level <logoff> service tag, which in turn encloses a <request> method tag. The method tag in turn encloses parameter tags.

**Syntax Example**

The following example logoff request shows fully qualified ZMF Web Services tag names with values, wrapped in a SOAP envelope.

```xml
  <soapenv:Header/>
  <soapenv:Body>
    <ser:logoff>
      <ser:request>
        <ser:user>USER01</ser:user>
      </ser:request>
    </ser:logoff>
  </soapenv:Body>
</soapenv:Envelope>
```

The following parameter tags are supported within the logoff <request> tag:

<table>
<thead>
<tr>
<th>Parameter Tag</th>
<th>Use</th>
<th>Occurs</th>
<th>Data Type &amp; Length</th>
<th>Values &amp; Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;user&gt;</td>
<td>Required</td>
<td>1</td>
<td>String (8)</td>
<td>TSO user ID for Web client</td>
</tr>
</tbody>
</table>
Logoff Response

The logoff <response> method tag returns a host-originated status message, return code, and reason code describing the status of the host logoff request. The same syntax is used by all SERNET Web Services <response> methods.

```
  xmlns:serman="urn:serma:soap/">
  <soapenv:Header/>
  <soapenv:Body>
    <ser:logoff>
      <ser:response>
        <ser:statusMessage>Logon successful</ser:statusMessage>
        <ser:statusReturnCode>00</ser:statusReturnCode>
      </ser:response>
    </ser:logoff>
  </soapenv:Body>
</soapenv:Envelope>
```

The following parameter tags are supported within the logoff <response> tag:

<table>
<thead>
<tr>
<th>Parameter Tag</th>
<th>Use</th>
<th>Occurs</th>
<th>Data Type &amp; Length</th>
<th>Values &amp; Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>statusMessage</td>
<td>Required</td>
<td>1</td>
<td>String (255)</td>
<td>Free-format status message returned by host or ZMF</td>
</tr>
<tr>
<td>statusReasonCode</td>
<td>Required</td>
<td>1</td>
<td>String (4)</td>
<td>Diagnostic reason code</td>
</tr>
<tr>
<td>statusReturnCode</td>
<td>Required</td>
<td>1</td>
<td>String (4)</td>
<td>Status severity code. Typical values: 00 - Normal completion 04 - Completed using default overrides for minor error conditions 08 - Some job steps failed 12 or higher - Severe error</td>
</tr>
</tbody>
</table>

Maintaining State and Managing Sessions

It is the Web client developer’s responsibility to maintain state and manage sessions with the host when using the ChangeMan ZMF Web Services API. This is because ChangeMan ZMF assumes that sessions are managed externally (for example, by TSO or by ZMF for Eclipse), but HTML and SOAP are stateless protocols.
Chapter 4
Developer Services

Mapping Table
Conventions

The tables in this chapter summarize the mappings between ZMF Web Services API tag names and ZMF XML Services tag names for ChangeMan ZMF developer services. The following conventions apply:

- The Web Services API service tag name shown in these tables evokes the corresponding XML Services service.code.message triplet in the leftmost column.
- All Web Services requests use the `<request>` method tag, which encloses service-specific parameter tags.
- Web Services reply messages use the method tag names shown in the table for the particular service. Method tags named `<response>` have the standard status response format. Method tags with other names enclose service-specific parameter tags, followed by the standard `<response>` tag.
- Parameter tag names are identical to those shown for the corresponding XML Service request or result in the ChangeMan ZMF XML Services User’s Guide.
- All tag names for developer services must be qualified with the `cmn` namespace prefix.

See Chapter 2, "Concepts", for more information about ZMF Web Services tag syntax.

This chapter describes the following ChangeMan ZMF developer Web Services:

- Package Search and Summary Services
- Package Life Cycle Services
- Package Information Management Services
- Package Configuration Services
- Package Validation Services
- Package Component Management Services
- Component Life Cycle Services
- Component Version Management Services
- Component Information Management Services
- Component Security Services
- Data Set Management Services
- Database Management Services
- Impact Analysis Services
- Schedule Services
Package Search and Summary Services

The package search and summary services of ChangeMan ZMF are supported by the Web service PackageSearchSummaryServices and are described in the WSDL file ZMFPackageSearchSummaryServices.wsdl.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>package.general.search</td>
<td>&lt;queryPackages&gt;</td>
<td>&lt;queryPackages Results&gt;</td>
<td>Query all packages</td>
</tr>
<tr>
<td>package.limbo.search</td>
<td>&lt;queryLimboPackages&gt;</td>
<td>&lt;queryLimboPackages Results&gt;</td>
<td>Query limbo packages</td>
</tr>
<tr>
<td>package.service.summary</td>
<td>&lt;calculatePackage Summary&gt;</td>
<td>&lt;calculatePackage SummaryResults&gt;</td>
<td>Calculate package summary statistics</td>
</tr>
</tbody>
</table>

Package Life Cycle Services

The change package life cycle services of ChangeMan ZMF are supported by the Web service PackageLifeCycleServices and are described in the WSDL file ZMFPackageLifeCycleServices.wsdl.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>package.check.promote</td>
<td>&lt;checkPackagePromotion&gt;</td>
<td>&lt;response&gt;</td>
<td>Check package eligibility for promotion</td>
</tr>
<tr>
<td>package.cleanup.demote</td>
<td>&lt;demoteCleanupPackage&gt;</td>
<td>&lt;response&gt;</td>
<td>Clean up after package demote</td>
</tr>
<tr>
<td>package.service.approve</td>
<td>&lt;approvePackage&gt;</td>
<td>&lt;response&gt;</td>
<td>Approve package</td>
</tr>
<tr>
<td>package.service.backout</td>
<td>&lt;backoutPackage&gt;</td>
<td>&lt;response&gt;</td>
<td>Back out package</td>
</tr>
<tr>
<td>package.service.create</td>
<td>&lt;newPackage&gt;</td>
<td>&lt;newPackageResults&gt;</td>
<td>Create package</td>
</tr>
<tr>
<td>package.service.delete</td>
<td>&lt;deletePackage&gt;</td>
<td>&lt;response&gt;</td>
<td>Delete package</td>
</tr>
<tr>
<td>package.service.demote</td>
<td>&lt;demotePackage&gt;</td>
<td>&lt;response&gt;</td>
<td>Demote package</td>
</tr>
<tr>
<td>package.service.freeze</td>
<td>&lt;freezePackage&gt;</td>
<td>&lt;response&gt;</td>
<td>Freeze package</td>
</tr>
<tr>
<td>package.service.promote</td>
<td>&lt;promotePackage&gt;</td>
<td>&lt;response&gt;</td>
<td>Promote package</td>
</tr>
<tr>
<td>package.service.revert</td>
<td>&lt;revertPackage&gt;</td>
<td>&lt;response&gt;</td>
<td>Revert package</td>
</tr>
<tr>
<td>package.service.submit</td>
<td>&lt;submitPackageJCLBuild&gt;</td>
<td>&lt;response&gt;</td>
<td>Build JCL install job for package</td>
</tr>
<tr>
<td>schedule.service.hold</td>
<td>&lt;holdPackageInstallJob&gt;</td>
<td>&lt;response&gt;</td>
<td>Hold package install job</td>
</tr>
<tr>
<td>schedule.service.release</td>
<td>&lt;releasePackageInstallJob&gt;</td>
<td>&lt;response&gt;</td>
<td>Release package install job</td>
</tr>
</tbody>
</table>
## Package Information Management Services

The package information management services of ChangeMan ZMF are supported by the Web service PackageInfoManagementServices and are described in the WSDL file ZMFPackageInfoManagement.wsdl.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>approver.pkg.list</td>
<td>&lt;getApprovers&gt;</td>
<td>&lt;getApproversResults&gt;</td>
<td>List package approvers &amp; approval actions</td>
</tr>
<tr>
<td>libtype.pkg.list</td>
<td>&lt;getLibraryTypes&gt;</td>
<td>&lt;getLibraryTypesResults&gt;</td>
<td>List library types for package</td>
</tr>
<tr>
<td>package.aff_apls.list</td>
<td>&lt;getAffectedAppls&gt;</td>
<td>&lt;getAffectedApplsResults&gt;</td>
<td>List applications affected by pkg</td>
</tr>
<tr>
<td>package.gen_desc.list</td>
<td>&lt;getDescriptions&gt;</td>
<td>&lt;getDescriptionsResults&gt;</td>
<td>List package description(s)</td>
</tr>
<tr>
<td>package.gen_parms.list</td>
<td>&lt;getGeneralParameters&gt;</td>
<td>&lt;getGeneralParametersResults&gt;</td>
<td>List general parameters for package</td>
</tr>
<tr>
<td>package.gen_parms.refreeze</td>
<td>&lt;refreezeGeneralParameters&gt;</td>
<td>&lt;response&gt;</td>
<td>Refreeze general parameters</td>
</tr>
<tr>
<td>package.gen_parms.unfreeze</td>
<td>&lt;unfreezeGeneralParameters&gt;</td>
<td>&lt;response&gt;</td>
<td>Unfreeze general parameters</td>
</tr>
<tr>
<td>package.imp_inst.list</td>
<td>&lt;getImplementation&gt;</td>
<td>&lt;getImplementationResults&gt;</td>
<td>List implementation instructions</td>
</tr>
<tr>
<td>package.prm_cmp.list</td>
<td>&lt;getPackageComponentPromoHistory&gt;</td>
<td>&lt;getPackageComponentPromoHistoryResults&gt;</td>
<td>List promotion history for pkg component</td>
</tr>
<tr>
<td>package.prm_hist.list</td>
<td>&lt;getPromotionHistory&gt;</td>
<td>&lt;getPromotionHistoryResults&gt;</td>
<td>List promotion history for pkg</td>
</tr>
<tr>
<td>package.pkg_link.list</td>
<td>&lt;getControlLinks&gt;</td>
<td>&lt;getControlLinksResults&gt;</td>
<td>List linked packages</td>
</tr>
<tr>
<td>package.prt_pkgs.list</td>
<td>&lt;getParticipatingPackages&gt;</td>
<td>&lt;getParticipatingPackagesResults&gt;</td>
<td>List participating packages</td>
</tr>
<tr>
<td>package.sch_recs.list</td>
<td>&lt;getDependencies&gt;</td>
<td>&lt;getDependenciesResults&gt;</td>
<td>List install job dependencies</td>
</tr>
<tr>
<td>package.sites.refreeze</td>
<td>&lt;refreezeInstallSites&gt;</td>
<td>&lt;response&gt;</td>
<td>Refreeze install sites for pkg</td>
</tr>
<tr>
<td>package.sites.unfreeze</td>
<td>&lt;unfreezeInstallSites&gt;</td>
<td>&lt;response&gt;</td>
<td>Unfreeze install sites for pkg</td>
</tr>
<tr>
<td>package.usr_recs.list</td>
<td>&lt;getUserVariables&gt;</td>
<td>&lt;getUserVariablesResults&gt;</td>
<td>List user variables for pkg</td>
</tr>
<tr>
<td>schedule.service.list</td>
<td>&lt;getInstallSchedule&gt;</td>
<td>&lt;getInstallScheduleResults&gt;</td>
<td>List package install schedule</td>
</tr>
<tr>
<td>site.pkg.list</td>
<td>&lt;getInstallSites&gt;</td>
<td>&lt;getInstallSitesResults&gt;</td>
<td>List install sites for package</td>
</tr>
</tbody>
</table>
## Package Configuration Services

The package configuration management services of ChangeMan ZMF are supported by the Web service `PackageConfigurationServices` and are described in the WSDL file `ZMFPackageconfigurationServices.wsdl`.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>package.aff_appl.mcreate</code></td>
<td><code>&lt;newAffectedAppls&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Add new affected applications to package</td>
</tr>
<tr>
<td><code>package.aff_appl.mdelete</code></td>
<td><code>&lt;deleteAffectedAppls&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Delete affected application from package</td>
</tr>
<tr>
<td><code>package.aff_appl.update</code></td>
<td><code>&lt;updateAffectedAppls&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Update affected applications for package</td>
</tr>
<tr>
<td><code>package.gen_desc.update</code></td>
<td><code>&lt;updateDescriptions&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Update general pkg description</td>
</tr>
<tr>
<td><code>package.gen_parms.update</code></td>
<td><code>&lt;updateGeneralParameters&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Update general pkg parameters</td>
</tr>
<tr>
<td><code>package.imp_inst.update</code></td>
<td><code>&lt;updateImplementation&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Update package implementation instructions</td>
</tr>
<tr>
<td><code>package.ims_acb.update</code></td>
<td><code>&lt;updateIMSApplControlBlock&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Update IMS ACB</td>
</tr>
<tr>
<td><code>package.ims_crgn.update</code></td>
<td><code>&lt;updateIMSControlRegion&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Update IMS control region</td>
</tr>
<tr>
<td><code>package.prt_pkgs.mcreate</code></td>
<td><code>&lt;newParticipatingPackages&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Add new participating pkg</td>
</tr>
<tr>
<td><code>package.prt_pkgs.mdelete</code></td>
<td><code>&lt;deleteParticipatingPackages&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Delete participating pkg</td>
</tr>
<tr>
<td><code>package.prt_pkgs.update</code></td>
<td><code>&lt;updateParticipatingPackages&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Update participating pkg</td>
</tr>
<tr>
<td><code>package.sch_recs.mcreate</code></td>
<td><code>&lt;newDependencies&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Add new install job dependencies</td>
</tr>
<tr>
<td><code>package.sch_recs.mdelete</code></td>
<td><code>&lt;deleteDependencies&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Delete install job dependencies</td>
</tr>
<tr>
<td><code>package.sch_recs.update</code></td>
<td><code>&lt;updateDependencies&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Update install job dependencies</td>
</tr>
<tr>
<td><code>package.usr_recs.update</code></td>
<td><code>&lt;updateUserVariables&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Update user variables for pkg</td>
</tr>
<tr>
<td><code>schedule.service.update</code></td>
<td><code>&lt;updateInstallSchedule&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Update install schedule</td>
</tr>
<tr>
<td><code>site.pkg.create</code></td>
<td><code>&lt;newInstallSite&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Add new install site to package</td>
</tr>
<tr>
<td><code>site.pkg.delete</code></td>
<td><code>&lt;deleteInstallSite&gt;</code></td>
<td><code>&lt;response&gt;</code></td>
<td>Delete install site from package</td>
</tr>
</tbody>
</table>
Package Validation Services

Validation services for packages are supported by the PackageValidationServices Web service and are described in the file ZMFPackageValidationServices.wsdl.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>site.pkg.update</td>
<td>&lt;updateInstallSite&gt;</td>
<td>&lt;response&gt;</td>
<td>Update install site for package</td>
</tr>
</tbody>
</table>

Package Component Management Services

The package-level component management services of ZMF are supported by the Web service PackageComponentManagementServices and are described in the WSDL file ZMFPackageComponentManagementServices.wsdl.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmponent.pkg_lod.list</td>
<td>&lt;getSourceToLoadDependencies&gt;</td>
<td>&lt;getSourceToLoadDependenciesResults&gt;</td>
<td>List source to load member dependencies</td>
</tr>
<tr>
<td>package.cmponent.integrity</td>
<td>&lt;checkComponentIntegrity&gt;</td>
<td>&lt;checkComponentIntegrityResults&gt;</td>
<td>Check integrity of package components</td>
</tr>
<tr>
<td>package.service.audit</td>
<td>&lt;auditPackage&gt;</td>
<td>&lt;auditPackageResults&gt;</td>
<td>Audit package</td>
</tr>
<tr>
<td>cmponent.pkg_comp.list</td>
<td>&lt;getComponents&gt;</td>
<td>&lt;getComponentsResults&gt;</td>
<td>List components in package</td>
</tr>
<tr>
<td>cmponent.pkg_comp.delete</td>
<td>&lt;deleteComponent&gt;</td>
<td>&lt;response&gt;</td>
<td>Delete package component</td>
</tr>
<tr>
<td>cmponent.pkg_util.list</td>
<td>&lt;getUtilityComponents&gt;</td>
<td>&lt;getUtilityComponentsResults&gt;</td>
<td>List scratch/ rename utility records in pkg</td>
</tr>
<tr>
<td>cmponent.pkg_util.delete</td>
<td>&lt;deleteUtilityComponent&gt;</td>
<td>&lt;response&gt;</td>
<td>Delete scratch/ rename utility record from pkg</td>
</tr>
<tr>
<td>package.cmp_desc.list</td>
<td>&lt;getChangeDescriptions&gt;</td>
<td>&lt;getChangeDescriptionsResults&gt;</td>
<td>List change descriptions for components in package</td>
</tr>
<tr>
<td>package.forms.refreeze</td>
<td>&lt;refreezeForms&gt;</td>
<td>&lt;response&gt;</td>
<td>Refreeze previously unfrozen forms in package</td>
</tr>
</tbody>
</table>
**Component Life Cycle Services**

The ComponentLifeCycleServices Web service supports the component life cycle services of ZMF. It is described in the file ZMFCOMPONENTLIFECYCLESERVICES.wsdl.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>package.forms.unfreeze</td>
<td>&lt;unfreezeForms&gt;</td>
<td>&lt;response&gt;</td>
<td>Unfreeze forms in frozen package</td>
</tr>
<tr>
<td>package.non_src.refreeze</td>
<td>&lt;refreezeNonSource Component&gt;</td>
<td>&lt;response&gt;</td>
<td>Refreeze nonsource component in package</td>
</tr>
<tr>
<td>package.non_src.unfreeze</td>
<td>&lt;unfreezeNonSource Component&gt;</td>
<td>&lt;response&gt;</td>
<td>Unfreeze nonsource component in package</td>
</tr>
<tr>
<td>package.prm_ovly.list</td>
<td>&lt;getPromotionOverlays Results&gt;</td>
<td>&lt;response&gt;</td>
<td>List components overlaid by promotion</td>
</tr>
<tr>
<td>package.scr_ren.refreeze</td>
<td>&lt;refreezeUtility Component&gt;</td>
<td>&lt;response&gt;</td>
<td>Refreeze scratch/rename utility record in package</td>
</tr>
<tr>
<td>package.scr_ren.unfreeze</td>
<td>&lt;unfreezeUtility Component&gt;</td>
<td>&lt;response&gt;</td>
<td>Unfreeze scratch/rename utility record in package</td>
</tr>
<tr>
<td>package.src_lod.refreeze</td>
<td>&lt;refreezeSource Component&gt;</td>
<td>&lt;response&gt;</td>
<td>Refreeze source component in package</td>
</tr>
<tr>
<td>package.src_lod.unfreeze</td>
<td>&lt;unfreezeSource Component&gt;</td>
<td>&lt;response&gt;</td>
<td>Unfreeze source component in package</td>
</tr>
</tbody>
</table>
Component Version Management Services

The ComponentVersionManagementServices Web service supports ZMF's component staging versions facility. WSDL file ZMFComponentVersionManagementServices.wsdl describes this service.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>component.service.checkout</td>
<td>&lt;checkoutComponent&gt;</td>
<td>&lt;response&gt;</td>
<td>Check component out of package</td>
</tr>
<tr>
<td>component.service.compare</td>
<td>&lt;compareComponents&gt;</td>
<td>&lt;compareComponentsResults&gt;</td>
<td>Compare package components</td>
</tr>
<tr>
<td>component.service.copy</td>
<td>&lt;copyComponents&gt;</td>
<td>&lt;response&gt;</td>
<td>Copy components.</td>
</tr>
<tr>
<td>component.service.lock</td>
<td>&lt;lockComponent&gt;</td>
<td>&lt;response&gt;</td>
<td>Lock component</td>
</tr>
<tr>
<td>component.service.recomp</td>
<td>&lt;recompileComponent&gt;</td>
<td>&lt;response&gt;</td>
<td>Recompile component</td>
</tr>
<tr>
<td>component.service.relink</td>
<td>&lt;relinkComponent&gt;</td>
<td>&lt;response&gt;</td>
<td>Relink component</td>
</tr>
<tr>
<td>component.service.rename</td>
<td>&lt;renameComponent&gt;</td>
<td>&lt;response&gt;</td>
<td>Rename component</td>
</tr>
<tr>
<td>component.service.scratch</td>
<td>&lt;scratchComponent&gt;</td>
<td>&lt;response&gt;</td>
<td>Scratch component</td>
</tr>
<tr>
<td>component.service.unlock</td>
<td>&lt;unlockComponent&gt;</td>
<td>&lt;response&gt;</td>
<td>Unlock component</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>component.ssv_ver.list</td>
<td>&lt;getStagingVersions&gt;</td>
<td>&lt;getStagingVersionsResults&gt;</td>
<td>List staged versions of components in package</td>
</tr>
<tr>
<td>component.ssv_ver.retrieve</td>
<td>&lt;retrieveStagingVersion&gt;</td>
<td>&lt;retrieveStagingVersionResults&gt;</td>
<td>Retrieve staged version of component</td>
</tr>
</tbody>
</table>

Component Information Management Services

The component information management services of ZMF are supported by the ComponentInfoManagementServices Web service. It is described by the WSDL file ZMFComponentInfoManagementServices.wsdl.
Component Security Services

The ComponentSecurityServices Web service supports the component-level security features of ZMF. It is described in the ZMFComponentSecurityServices.wsdl file.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>cponent.apl_cdsc.list</td>
<td>&lt;getComponent Descriptions&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>List application component descriptions</td>
</tr>
<tr>
<td>cponent.chg_desc.list</td>
<td>&lt;getComponentChange Descriptions&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>List component change descriptions</td>
</tr>
<tr>
<td>cponent.prm_hist.list</td>
<td>&lt;getComponentPromotion History&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>List component promotion history</td>
</tr>
<tr>
<td>cponent.history.list</td>
<td>&lt;getHistory&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>List complete component history</td>
</tr>
<tr>
<td>cponent.history.listbase</td>
<td>&lt;getBaselineHistory&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>List history for baselined version of component</td>
</tr>
<tr>
<td>cponent.history.listconc</td>
<td>&lt;getConcurrentUser History&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>List history for components in concurrent development</td>
</tr>
<tr>
<td>cponent.history.listcurr</td>
<td>&lt;getCurrentHistory&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>List history for active components</td>
</tr>
<tr>
<td>cponent.history.listshrt</td>
<td>&lt;getShortHistory&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>List short component history</td>
</tr>
<tr>
<td>cponent.pkg_wrkl.list</td>
<td>&lt;getWorklist&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>List component user work list</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>cponent.apl_secr.check</td>
<td>&lt;checkSecurity&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>Check user authorization to edit component</td>
</tr>
<tr>
<td>cponent.apl_secr.list</td>
<td>&lt;getAuthorizedUsers&gt;</td>
<td>&lt;getResponse&gt;</td>
<td>List authorized users for component</td>
</tr>
</tbody>
</table>
Data Set Management Services

The DatasetManagementServices Web service supports the dataset management features of ZMF. It is described in the ZMFDatasetManagementServices.wsdl file.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>dss.service.allocate</td>
<td>&lt;newDataset&gt;</td>
<td>&lt;response&gt;</td>
<td>Allocate dataset</td>
</tr>
<tr>
<td>dss.service.delete</td>
<td>&lt;deleteDataset&gt;</td>
<td>&lt;response&gt;</td>
<td>Delete dataset</td>
</tr>
<tr>
<td>dss.service.info</td>
<td>&lt;getDatasetProperties&gt;</td>
<td>&lt;getDatasetProperties Results&gt;</td>
<td>List allocation properties of dataset</td>
</tr>
<tr>
<td>dss.service.list</td>
<td>&lt;getDatasetMembers&gt;</td>
<td>&lt;getDatasetMembers Results&gt;</td>
<td>List dataset members</td>
</tr>
<tr>
<td>dss.service.mbrdel</td>
<td>&lt;deleteDatasetMember&gt;</td>
<td>&lt;response&gt;</td>
<td>Delete dataset member</td>
</tr>
<tr>
<td>dss.ispfile.info</td>
<td>&lt;getIspfInformation&gt;</td>
<td>&lt;getIspfInformation Results&gt;</td>
<td>List ISPF properties of dataset</td>
</tr>
</tbody>
</table>

Database Management Services

The DatabaseManagementServices Web service supports the DB2 and IMS database development features of ChangeMan ZMF. It is described in the WSDL file ZMFDatabaseManagementServices.wsdl.

DB2 Database Management Services

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>db2admin.apl_actv.list</td>
<td>&lt;getAppIDB2ActiveLibraries&gt;</td>
<td>&lt;getAppIDB2ActiveLibrariesResults&gt;</td>
<td>List active DB2 libraries for application</td>
</tr>
<tr>
<td>db2admin.apl_logl.list</td>
<td>&lt;getAppIDB2LogicalSubsystem&gt;</td>
<td>&lt;getAppIDB2LogicalSubsystemResults&gt;</td>
<td>List DB2 logical subsystem for application</td>
</tr>
<tr>
<td>db2admin.gbl_logl.list</td>
<td>&lt;getGlobalDB2LogicalSubsystem&gt;</td>
<td>&lt;getGlobalDB2LogicalSubsystemResults&gt;</td>
<td>List global DB2 logical subsystem</td>
</tr>
<tr>
<td>db2admin.gbl_phys.list</td>
<td>&lt;getGlobalDB2PhysicalSubsystem&gt;</td>
<td>&lt;getGlobalDB2PhysicalSubsystemResults&gt;</td>
<td>List global DB2 physical subsystem</td>
</tr>
</tbody>
</table>
Chapter 4  Developer Services

IMS Database Management Services

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>imsovrd.apl_dbd.list</td>
<td>&lt;getApplDBDOverrides&gt;</td>
<td>&lt;getApplDBDOverrides Results&gt;</td>
<td>List IMS DBD overrides for application</td>
</tr>
<tr>
<td>imsovrd.apl_psb.list</td>
<td>&lt;getApplPSBOverrides&gt;</td>
<td>&lt;getApplPSBOverrides Results&gt;</td>
<td>List IMS PSB overrides for application</td>
</tr>
<tr>
<td>imsovrd.gbl_dbd.list</td>
<td>&lt;getGlobalDBDOverrides&gt;</td>
<td>&lt;getGlobalDBDOverrides Results&gt;</td>
<td>List global IMS DBD overrides</td>
</tr>
<tr>
<td>imsovrd.gbl_psb.list</td>
<td>&lt;getGlobalPSBOverrides&gt;</td>
<td>&lt;getGlobalPSBOverrides Results&gt;</td>
<td>List global IMS PSB overrides</td>
</tr>
<tr>
<td>imsovrd.pkg_dbd.list</td>
<td>&lt;getPackageDBDOverrides&gt;</td>
<td>&lt;getPackageDBDOverridesResults&gt;</td>
<td>List IMS DBD overrides for package</td>
</tr>
<tr>
<td>imsovrd.pkg_psb.list</td>
<td>&lt;getPackagePSBOverrides&gt;</td>
<td>&lt;getPackagePSBOverridesResults&gt;</td>
<td>List IMS PSB overrides for package</td>
</tr>
<tr>
<td>package.ims_acb.list</td>
<td>&lt;getPackageACBBuildStatements&gt;</td>
<td>&lt;getPackageACBBuildStatementsResults&gt;</td>
<td>List IMS ACB build statements for package</td>
</tr>
<tr>
<td>package.ims_crgn.list</td>
<td>&lt;getPackageControlRegion&gt;</td>
<td>&lt;getPackageControlRegionResults&gt;</td>
<td>List IMS control region for package</td>
</tr>
</tbody>
</table>

Impact Analysis Services

The ImpactAnalysisServices Web service supports the impact analysis features of ZMF. It is described in the ZMFImpactAnalysisServices.wsdl file.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>impact.bun.list</td>
<td>&lt;getImpactBunList&gt;</td>
<td>&lt;getImpactBunList Results&gt;</td>
<td>List information about application/libtype/baseline correlations</td>
</tr>
<tr>
<td>impact.component.list</td>
<td>&lt;getImpactComponentList&gt;</td>
<td>&lt;getImpactComponentListResults&gt;</td>
<td>List information in I/A table about baselined components</td>
</tr>
<tr>
<td>impact.table.list</td>
<td>&lt;getImpactTableList&gt;</td>
<td>&lt;getImpactTableList Results&gt;</td>
<td>List information about I/A relationships</td>
</tr>
</tbody>
</table>
Schedule Services

The ScheduleServices Web service supports the scheduling features of ZMF. It is described in the ZMFScheduleServices.wsdl file.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>schedule.service.delete</td>
<td>&lt;deleteSchedule&gt;</td>
<td>&lt;deleteScheduleResults&gt;</td>
<td>Delete scheduler records</td>
</tr>
<tr>
<td>schedule.service.list</td>
<td>&lt;getSchedule&gt;</td>
<td>&lt;getScheduleResults&gt;</td>
<td>List scheduler records for package</td>
</tr>
<tr>
<td>schedule.service.hold</td>
<td>&lt;holdSchedule&gt;</td>
<td>&lt;holdScheduleResults&gt;</td>
<td>Hold package installation job</td>
</tr>
<tr>
<td>schedule.service.release</td>
<td>&lt;releaseSchedule&gt;</td>
<td>&lt;releaseScheduleResults&gt;</td>
<td>Release previously held package installation job</td>
</tr>
<tr>
<td>schedule.service.update</td>
<td>&lt;updateSchedule&gt;</td>
<td>&lt;updateScheduleResults&gt;</td>
<td>Update scheduler records</td>
</tr>
</tbody>
</table>
Chapter 4  Developer Services
Chapter 5

Administrator Services

Mapping Table

Conventions

The tables in this chapter summarize the mappings between ZMF Web Services API tag names and ZMF XML Services tag names for ChangeMan ZMF administrator services. The following conventions apply:

- The Web Services API service tag name shown in these tables evokes the corresponding XML Services service.code.message triplet in the leftmost column.
- All Web Services requests use the <request> method tag, which encloses service-specific parameter tags.
- Web Services reply messages use the method tag names shown in the table for the particular service. Method tags named <response> have the standard status response format. Method tags with other names enclose service-specific parameter tags, followed by the standard <response> tag.
- Parameter tag names are identical to those shown for the corresponding XML Service request or result in the ChangeMan ZMF XML Services User’s Guide.
- All tag names for ChangeMan ZMF administrator services must be qualified with the cmn namespace prefix.

See Chapter 2, "Concepts", for more information about ZMF Web Services tag syntax.

This chapter describes the following ChangeMan ZMF administrator Web Services:

<table>
<thead>
<tr>
<th>Approver Notifications</th>
<th>39</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Library Administration</td>
<td>40</td>
</tr>
<tr>
<td>Developer Environment Administration</td>
<td>40</td>
</tr>
<tr>
<td>Install Site Administration</td>
<td>41</td>
</tr>
</tbody>
</table>

Approver Notifications

The ApproverNotificationAdminServices Web service supports the user notification features of ZMF in read and execute modes. Updates and deletions are not allowed from a Web client. The WSDL file ZMFApproverNotificationAdminServices.wsdl describes this service.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>approver.apl.list</td>
<td>&lt;getApplApprovers&gt;</td>
<td>&lt;getApplApproversResults&gt;</td>
<td>List application approvers</td>
</tr>
</tbody>
</table>
## Change Library Administration

The ChangeLibraryAdminServices Web service provides read-only access to the change library administration features of ZMF. The service is described in the WSDL file ZMFChangeLibraryAdminServices.wsdl.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>notyfile.service.download</td>
<td>&lt;downloadNotificationFile&gt;</td>
<td>&lt;downloadNotificationFileResults&gt;</td>
<td>Download approver notification file</td>
</tr>
<tr>
<td>user.service.notify</td>
<td>&lt;notifyUser&gt;</td>
<td>&lt;response&gt;</td>
<td>Send user notification</td>
</tr>
</tbody>
</table>

## Developer Environment Administration

The DeveloperEnvironmentAdminServices Web service provides access to the developer environment administration features of ZMF. Most functions are read-only. However, build parameters may be updated at the application and global level from a Web client. The service is described in the ZMFSiteAdminServices.wsdl file.

<table>
<thead>
<tr>
<th>XML Services Service.Scope.Message</th>
<th>Web Services API Service Tag</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>baselib.service.list</td>
<td>&lt;getBaselineLibraries&gt;</td>
<td>&lt;getBaselineLibrariesResults&gt;</td>
<td>List baseline libraries</td>
</tr>
<tr>
<td>promlib.library.list</td>
<td>&lt;getPromotionLibraries&gt;</td>
<td>&lt;getPromotionLibrariesResults&gt;</td>
<td>List promotion libraries</td>
</tr>
<tr>
<td>prodlib.service.list</td>
<td>&lt;getProductionLibraries&gt;</td>
<td>&lt;getProductionLibrariesResults&gt;</td>
<td>List production libraries</td>
</tr>
<tr>
<td>language.apl.list</td>
<td>&lt;getApplLanguageParsers&gt;</td>
<td>&lt;getApplLanguageParsersResults&gt;</td>
<td>List language parsers for application</td>
</tr>
<tr>
<td>language.gbl.list</td>
<td>&lt;getGlobalLanguageParsers&gt;</td>
<td>&lt;getGlobalLanguageParsersResults&gt;</td>
<td>List global language parsers</td>
</tr>
<tr>
<td>libtype.apl.list</td>
<td>&lt;getApplLibraryTypes&gt;</td>
<td>&lt;getApplLibraryTypesResults&gt;</td>
<td>List application library types</td>
</tr>
<tr>
<td>libtype.gbl.list</td>
<td>&lt;getGlobalLibraryTypes&gt;</td>
<td>&lt;getGlobalLibraryTypesResults&gt;</td>
<td>List global library types</td>
</tr>
<tr>
<td>parms.apl.list</td>
<td>&lt;getApplParms&gt;</td>
<td>&lt;getApplParmsResults&gt;</td>
<td>List build parameters for application</td>
</tr>
</tbody>
</table>
Install Site Administration

The SiteAdminServices Web service provides read-only access to the install site administration features of ZMF. It is described in ZMFSiteAdminServices.wsdl.

<table>
<thead>
<tr>
<th>XML Services</th>
<th>Web Services API</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service.Scope.Message</td>
<td>Service Tag</td>
<td></td>
<td></td>
</tr>
<tr>
<td>parms.apl.update</td>
<td>&lt;updateApplParms&gt;</td>
<td>&lt;response&gt;</td>
<td>Update build procedures for application</td>
</tr>
<tr>
<td>parms.gbl.list</td>
<td>&lt;getGlobalParms&gt;</td>
<td>&lt;getGlobalParmsResults&gt;</td>
<td>List global build parameters</td>
</tr>
<tr>
<td>parms.gbl.update</td>
<td>&lt;updateGlobalParms&gt;</td>
<td>&lt;response&gt;</td>
<td>Update global build procedures</td>
</tr>
<tr>
<td>procs.apl.list</td>
<td>&lt;getApplBuildProcedures&gt;</td>
<td>&lt;getApplBuildProceduresResults&gt;</td>
<td>List application build procedures</td>
</tr>
<tr>
<td>procs.gbl.list</td>
<td>&lt;getGlobalBuildProcedures&gt;</td>
<td>&lt;getGlobalBuildProceduresResults&gt;</td>
<td>List global build procedures</td>
</tr>
<tr>
<td>reasons.service.list</td>
<td>&lt;getReasonCodes&gt;</td>
<td>&lt;getReasonCodesResults&gt;</td>
<td>List reason codes for approval actions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XML Services</th>
<th>Web Services API</th>
<th>Reply Method Tag</th>
<th>ZMF Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service.Scope.Message</td>
<td>Service Tag</td>
<td></td>
<td></td>
</tr>
<tr>
<td>calendar.service.list</td>
<td>&lt;getSiteInstallCalendar&gt;</td>
<td>&lt;getSiteInstallCalendarResults&gt;</td>
<td>List site install calendar</td>
</tr>
<tr>
<td>site.apl.list</td>
<td>&lt;getApplSites&gt;</td>
<td>&lt;getApplicationSitesResults&gt;</td>
<td>List install sites for application</td>
</tr>
<tr>
<td>site.gbl.list</td>
<td>&lt;getGlobalSites&gt;</td>
<td>&lt;getGlobalSitesResults&gt;</td>
<td>List global install sites</td>
</tr>
<tr>
<td>promlib.site.list</td>
<td>&lt;getPromlibSites&gt;</td>
<td>&lt;getPromlibSitesResults&gt;</td>
<td>List install sites for promotion libraries</td>
</tr>
</tbody>
</table>
Index

Symbols

<logoff> tag 25
<logon> tag 23
<response> message 20

A
Adobe Acrobat 8
affected applications
  add to package 30
  delete from package 30
  update for package 30
Apache Axis 6, 11
Apache Tomcat
downloads 13
  examples 14, 15
APIs for ZMF
  Web Services 17, 18
  XML Services 17, 18
application services
  check component build procedures 32
  list approvers 39
  list build parameters 40
  list build procedures 41
  list component build procedures 32
  list component descriptions 34
  list install sites 41
  list language parsers 40
  list library types 40
  update build procedures 41
approval services
  described 39
  list application approvers 39
  list reason codes 41
array results 18

B
build services
  list application build parameters 40
  list application build procedures 41
  list global build parameters 41
  list global build procedures 41
  update build procedures for application 41
  update global build procedures 41

C
change library administration 40
code samples 6, 22
compatibility 13
component security services 34
component services
  browse 32
  build 32
  check build procedures 32
  check in 32
  check out 33
  check user authorization 34
  compare 33
  copy 33
  delete from package 31
  delete scratch(rename utility record 31
  list application-level component descriptions 34
  list authorized users 34
  list baseline history 34
  list build procedures 32
  list change descriptions 34
  list change descriptions for package 31
  list complete history 34
  list for package 31
  list history for active components 34
  list history for components in concurrent development 34
  list promotion history 34
  list promotion overlays 32
  list scratch(rename utility records 31
  list short history 34
  list staged versions 33
  list user worklist 34
  lock 33
  recompile 33
  refreeze forms 31
  refreeze nonsource 32
  refreeze scratch(rename utility records 32
  refreeze source 32
  relink 33
  rename 33
  retrieve staged version 33
  scratch 33
  unfreeze forms 32
  unfreeze nonsource 32
  unfreeze scratch(rename utility records 32
  unfreeze source 32
  unlock 33
Index

D
database management services 35
dataset services 35
  allocate dataset 35
delete dataset 35
delete member 35
list allocation properties 35
list ISPF properties 35
list members 35
DB2 services
  list active libraries for application 35
  list global logical subsystem 35
  list global physical subsystem 35
  list logical subsystem for application 35
developer environment administration 40

e
Eclipse integrated development environment (IDE) 12

F
functions supported 19
  administrator functions 19
  developer functions 19
  Enterprise Release Option (ERO) functions 19

H
history listings
  active components 34
  baseline 34
  change descriptions 34
  complete 34
  component promotions 34
  component user worklist 34
  concurrent development 34
  short 34
host session management 18, 26

I
impact analysis services 36
  BUN list 36
  component list 36
  table list 36
IMS services
  list ACB build statements for package 36
  list control region for package 36
  list DBD overrides for application 36
  list DBD overrides for package 36
  list global DBD overrides 36
  list global PSB overrides 36
  list PSB overrides for application 36
  list PSB overrides for package 36
  update ACB for package 30
  update control region for package 30
install jobs
  add dependencies for package 30
  build for package 28
  delete dependencies for package 30
  hold 28
  list dependencies for package 29
  release 28
  update dependencies for package 30
install schedule
  list for package 29
  update for package 30
install site administration 41
install site services
  add site to package 30
  delete from package 30
  list calendar for site 41
  list global install sites 41
  list sites for application 41
  list sites for package 29
  list sites for promotion libraries 41
  refreeze sites for package 29
  unfreeze sites for package 29
  update sites for package 31
installation
  overview 11
  requirements 13
  steps 14

J
Java platform 13

L
language services
  list global parsers 40
  list parsers for application 40
library services
  list baseline libraries 40
  list global library types 40
  list install sites for promotion libraries 41
  list library types for application 40
  list production libraries 40
  list promotion libraries 40
logoff 25
logon 23
M
maintaining state 26
mapping Web Services to XML Services 19
message flow 17

N
namespaces 21
cmn 27, 39
ser 21
SERNET tags 21, 22
ZMF tags 21, 22
notification services
download notification file 40
send user notification 40

P
package component management 31
package configuration 30
package information 29
package life cycle 28
package search 28
package services
add new affected applications 30
add new install job dependencies 30
add new install site 30
add new participating package 30
approve 28
audit 31
back out 28
build JCL install job 28
check component integrity 31
create 28
delete 28
delete affected application 30
delete component 31
delete install job dependencies 30
delete install site 30
delete participating package 30
delete scratch/rename utility record 31
demote 28
demotion cleanup 28
freeze 28
hold package install 28
list affected applications 29
list approval actions 29
list change descriptions for components 31
list components 31
list components overlaid by promotion 32
list general parameters 29
list implementation instructions 29
list install job dependencies 29
list install schedule 29
list install sites 29
list library types 29
list linked packages 29
list package descriptions 29
list participating packages 29
list promotion history components 29
list promotion history for package 29
list scratch/rename utility records 31
list source to load member dependencies 31
list user variables 29
promote 28
promotion check 28
refreeze forms 31
refreeze general parameters 29
refreeze install sites 29
refreeze nonsource component 32
refreeze scratch/rename utility record 32
refreeze source component 32
release package install 28
revert 28
summary statistics 28
unfreeze forms 32
unfreeze general parameters 29
unfreeze install sites 29
unfreeze nonsource component 32
unfreeze scratch/rename utility record 32
unfreeze source component 32
update affected applications 30
update general description 30
update general parameters 30
update implementation instructions 30
update IMS ACB 30
update IMS control region 30
update install job dependencies 30
update install schedule 30
update install site 31
update participating package 30
update user variables 30
package summary 28
package validation 31
participating packages
add to complex package 30
delete from complex package 30
update in complex package 30

Q
query
all packages 28
limbo packages 28

Web Services Getting Started Guide
Index

R
reply messages 20
request messages 20
request/reponse message cycle 18

S
schedule services 37
   delete schedule 37
   hold schedule 37
   list schedule 37
   release schedule 37
   update schedule 37
security considerations 14
security services
   check user authorization for component 34
   list authorized users for component 34
SERNET 11
Service Oriented Architecture (SOA) 5, 6
site administration 41
SOAP (Simple Object Access Protocol) 6, 18
SOAP engine 6, 11

T
tag names 19
TCP/IP 18
thick client 18
thin client 18

W
WAR file 12, 15
WD4ZMF Eclipse plugin 13, 14
Web application archive (WAR) file 12
Web application server 11, 13
Web archive file (WAR) 15
Web Services API
   client types 18
   components 11
   described 17
   message flow 17
   methods 18
   overview 5
   protocols 18
   request/response message cycle 18
   services 18
   ZMF functions supported 19
Web Services Basic Profile 6
Web Services client development tools 13
Web Services Definition Language (WSDL) 18
WSDL (Web Service Description Language) 6, 12

X
XML Services API 11, 17, 18

Z
ZMF connector servlet 12, 18
ZMF for Eclipse plugin 13, 14