CA IDMS Applications Do Web Services

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FORMULA OPEN SOFT

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COMPANY

FORMULA OPENSOFT

- A software company founded in 1994.

- Offices in The Netherlands and Belgium.

- Territory Europe.

- Represents a broad cross section of software companies, offering a mix of Database technology and Performance & Development tools.

- Specialised in providing data/application integration, connectivity, replication solutions for legacy mainframe systems (IDMS, CICS, IMS).
- For IDMS tooling we represent Vegasoft, BOS Software, EZ Legacy and HostBridge.

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INTRODUCTION

What is a Web Service?

- A web service is a called program or stored procedure that is accessed over the Internet (or Intranet). An IDMS web service is an IDMS program that is accessed over the Internet.

- A web service is not normally accessed directly by a human being using a web browser. Like other called programs, it is intended to be accessed by another application.

- Many, but not all (REST, ATOM, and just plain XML sent via HTTP), web services use SOAP (Simple Object Access Protocol) as a standard way of formatting request and reply messages. SOAP in turn relies on two more standards: HTTP and XML.

- fos/Web Services for IDMS takes care of the HTTP part for you. But you will need some knowledge of XML.

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Provider vs. Requester

- Provider:
  - A web service provider is called by an external requester.
  - In client/server terms, a provider is a server program.

- Requester:
  - A web service requester calls an external provider.
  - In client/server terms, a requester is a client program.

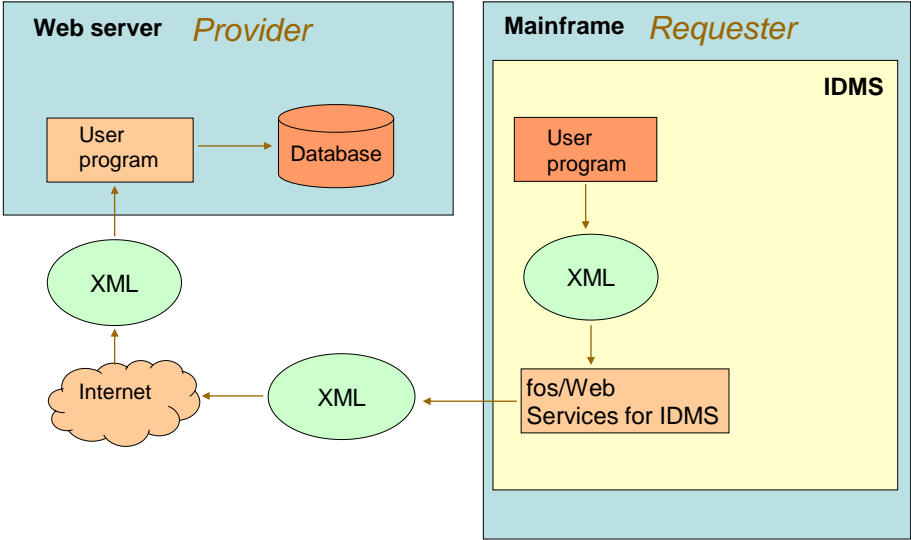- An IDMS program may be either a provider or a requester.

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Request and Reply Messages

- fos/Web Services for IDMS uses the SOAP protocol.

- With SOAP, a requester and provider exchange messages.

- The requestor sends a <u>request message</u> to the provider.

- The provider responds by sending a <u>reply message</u> back to the requester.

- If you have used MQSeries for web access to mainframe data, the concept is basically the same. But unlike MQSeries, fos/Web Services for IDMS does not require any additional software on the non-mainframe platform.

- It is possible to have a one-way web service, but this is rarely done.

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Web server *Provider*

User program → Database

Mainframe *Requester*

IDMS

User program ↓ XML

fos/Web Services for IDMS

XML → Internet ← XML

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INTRODUCTION

Provider / Requester Independence

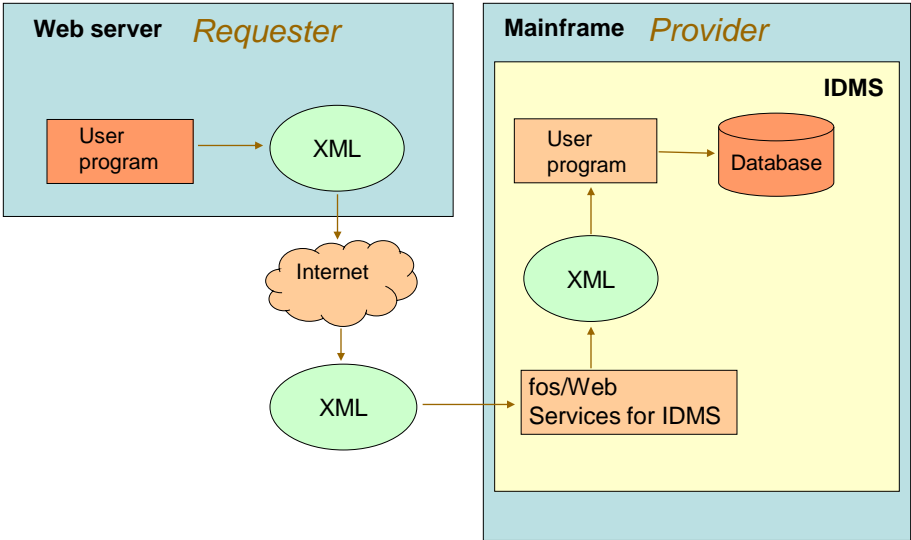A requester program does not need to know any of the following about the provider program:

– The programming language.
– The type of database used.
– The platform of either.

What does it need to know?

– The URL (Internet address) of the provider program.
– The format of the request and reply messages. This is achieved using a WSDL file.

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WSDL Files

- A WSDL (Web Services Description Language) file describes the request and reply message formats of a web service.

- A WSDL file is sometimes referred to as a contract. This is because it serves as the common interface, or "contract" between the requester and the provider.

- The creator of a web service provider program is responsible for creating the corresponding WSDL file.

- The requestor programmer is expected to read the WSDL file to determine how to write the request message and read the reply message.

- WSDL is not easy to read or write. There are a number of programming tools available to help you read and write WSDL.

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What does fos/Web Services for IDMS do for you?

For an IDMS provider program, fos/Web Services for IDMS does the following:

- Open a TCP/IP socket.
- Continuously listen for incoming requests.
- Reassemble the request message. (It often comes in pieces.)
- Extract the request message from the HTTP headers.
- Convert the request message from ASCII to EBCDIC.
- Call the user-written IDMS program, which creates the reply message.
- Convert the reply message from EBCDIC to ASCII.
- Add HTTP headers to the reply message.
- Send the reply message to the requester.

For an IDMS requester program, the process is similar, only in reverse order.

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What do you have to do yourself?

- Write the requester or provider IDMS program. This is a DC-COBOL program.

- If you are writing a requester program, you must first obtain a WSDL file for the external web service, and extract some information it. This is explained more fully in the "requester program" presentation.

- If you are writing a provider program, you must create a WSDL file that corresponds to your web service. You will then provide this WSDL file to the person(s) writing the external requester program.

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Security for provider programs

- TCP/IP ports:

  - The IDMS listener ports are locked down to specific requester IP addresses (recommended, depends on how firewalls are configured).

- Authentication:

  - An IDMS user ID and password must be included in every request message.
  - If signon fails, an error message is returned.

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Security for provider programs (continued)

- Authorization:

  - The user must belong to a security group called "WEBSERV-xxxxxxxx", where "xxxxxxxx" is the name of the service (user program) requested.
  - If the group does not exist (i.e. program "xxxxxxxx" is not a web service), an error message is returned.
  - If the user does not belong to the group, an error message is returned.

- Other:

  - The user ID is passed to the IDMS provider program, so that it can do further security checking if desired. The password is blanked out first.

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Extending the Requester capability

- This slide applies only to sites that have installed the IDMS SQL option.

- If you define your SOAP requester program as an SQL procedure, it can be called from CICS, batch, and web programs, as well as from ADS/O programs.

- The people who write the front-end programs (batch, CICS, etc.) don't need to know anything about web services, SOAP, or XML. They only need to know how to make an SQL call.

- This option is explained more fully in the "requester program" presentation.

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New Things to Learn

- The COBOL XML parser.

- The COBOL XML generator.

- A WSDL tool. (There are several available.)

thank you

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