

Handelsbanken Uses WAP with IMS for Internet Banking

by Sten Rohlin, IMS System Programmer, Handelsbanken

In a part of the world where 60 percent of the population carries a cell phone, Svenska Handelsbanken, in a strategic partnership with IBM, is the first bank to deliver a working WAP (Wireless Application Protocol) application. WAP is an open industry standard for mobile Internet services.

Handelsbanken, one of the largest Nordic banks, has extended its existing Internet banking service beyond the PC to a variety of mobile devices. This extension of service allows Handelsbanken's customers to:

- Access stock information in different forms
- Access account information
- Transfer money
- Buy and sell stock
- Pay bills anytime, anywhere

In the first phase, this service was delivered via Nokia's new WAP-enabled smart media phone.

All three companies in this partnership played a critical role in the new service.

Handelsbanken offered their customers a unique opportunity to use wireless banking services. For

Handelsbanken, this new WAP-based service is only one part of the bank's overall customer service strategy: a broad range of banking services to enable customers to conduct banking business when, where, and how it best suits them.

IBM provided the application development tools and specialized software to translate the information from the bank's back-end system into a highly condensed form that can be sent to a mobile phone. In addition, IBM provided project management, design, and programming skills to the overall project.

Nokia provided the server through which the information is sent on the wireless network, as well as the state-of-the-art phones that will receive the information. Figure 1 on page 2 shows the components that all three companies provided Handelsbanken's WAP system.

Using a WAP-enabled phone, the customer is connected through the GSM network to a Cisco router. Data is transferred through a firewall to a Microsoft Windows NT server, where the WAP application serves as a gateway to the host machine. The WAP gateway transfers the data through TCP/IP to the WebSphere Application Server (WAS) which, in turn, communicates with both

IMS and DB2. The communication with IMS is handled through a call to MQSeries, while the communication with DB2 is handled using JDBC. IMS provides the banking services; the typical response time is approximately two seconds.

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Handelsbanken, Sweden

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There is a second feature to this application that allows stock rates, news, and information to be transmitted to the WAP-enabled phone. An S/390 application, running every 30 seconds, requests stock rates from a company called NewMedia. Handelsbanken's analysts, using a web browser over the Internet, provide news and securities information. Handelsbanken will use DB2 to store the stock rates, news and information.

All of the wireless e-banking services from Handelsbanken will be based on WAP, the de-facto global standard for enabling Internet communications and advanced telephony services on digital mobile phones, pagers, personal digital assistants, and other wireless devices. By 2003, analysts

estimate that the number of wireless subscribers around the world will pass the one billion mark. Analysts also predict that more than half of mobile devices shipped between now and 2003 will be WAP-enabled. Because WAP is an open standard, it can work on any type of wireless device or wireless network. It gives manufacturers, content providers, and service providers a common global platform on which to build, and it offers consumers a broad array of services.

For more information on Svenska Handelsbanken, please see our website at: <http://www.handelsbanken.se>.

Sten Rohlin
IMS System Programmer, Handelsbanken

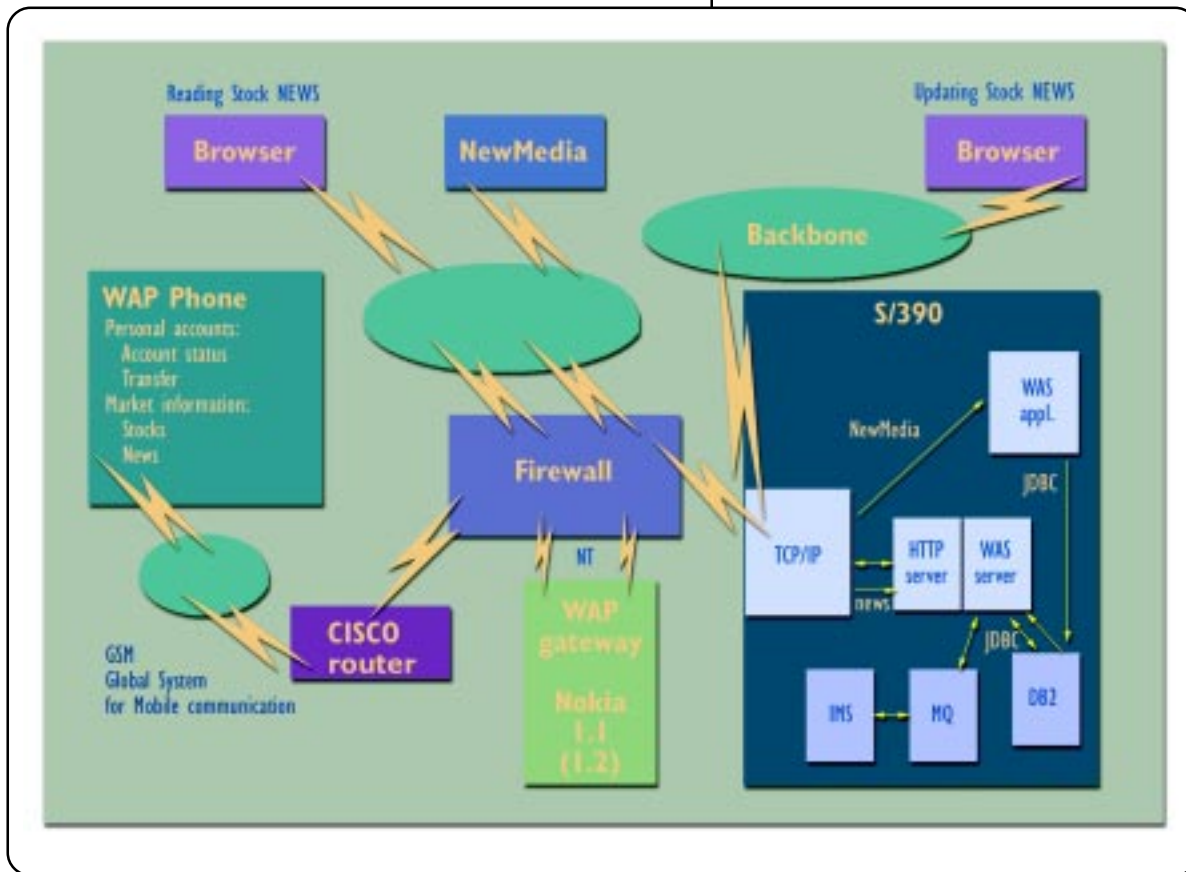


Figure 1. Handelsbanken's WAP System

An Interview with Charles Lickel, Vice President, IBM Worldwide Data Management Development

The IMS Newsletter was fortunate to be able to interview Charles Lickel, Vice President, IBM Worldwide Data Management Development. He is also the Site General Manager for IBM's Silicon Valley Laboratory, where IMS is developed. Charles Lickel's responsibilities encompass all of data management development — including the IMS and DB2 engines as well as IBM's data management solutions: Content Management, Business Intelligence, and Data Management tools. IBM Data Management has development labs in Silicon Valley, California, and a number of smaller locations in the U.S.; Toronto, Canada; Germany, and Japan.

IMS Newsletter: How do you see the role of data management in IBM's overall business?

Charles Lickel: Quite simply, data management forms the cornerstone of IBM's e-business framework and our e-business direction.

IBM's whole e-business strategy for partnering with customers to make their businesses e-businesses has the data management products at its base. This strategy begins with the database engines (IMS and DB2), which are at the core of our commerce servers, and extends to our higher-level data management solutions.

Our Business Intelligence solution allows customers to analyze Web transaction data to understand who are their best customers and serve them better.

And our Content Management offerings let customers fully integrate unstructured information, such as voice, video, images, and documents, with the structured tabular information traditionally kept in data bases.

So data management solutions are key to our e-business strategy.

IMS Newsletter: How does IMS play into that strategy?

Lickel: A key part of e-business is the ability to do business transactions. The need to do business transactions was there before the Web, and it's even greater now. With the Web, you have hundreds of millions of customers accessing a company's information. So the ability to allow transactions with an acceptable response time and to do so in a scalable and reliable way becomes paramount. Businesses no longer can have outages, either planned or unplanned, because the Web is up 24/7/365. That's where you fully leverage a system like IMS.

When we look at IMS Connect — which we began to ship recently — it now supports over 3000 transactions per second using TCP/IP. That's an extraordinary transaction rate for a single platform environment like IMS. That transaction rate allows customers to take traditional IMS systems and use technologies like Web servers, XML, and TCP/IP to enable their existing IMS transactions for the Web. So customers can not only leverage the enormous investment they've made over the years, but also use Java™ and VisualAge tools to develop the IMS transactions of the future. So you have the dual benefit of leveraging the past and simplifying the future. Based on that, customers continue to see strong growth of transactions in the IMS environment and IMS remaining at the core of their business.



IMS Newsletter: What do you see in the future for IMS?

Lickel: If you believe that e-business and Internet have a robust future—and I think we all believe that—then IMS certainly has one, too. IMS will continue to be at the heart of our customers' largest banking and transportation applications. It will continue to grow and evolve as it has in the past.

IBM will continue to invest in IMS to make sure it continues to play its central role in e-business. Recent additions have been IMS Connect, new development tooling, and continued improvement in availability.

Also, our Data Management tools business has delivered a set of tools to address the cost-of-ownership issues that many customers are concerned about.

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Running IMS Conversations Using IMS Connector for Java

IMS Connector for Java Version 3.5.0 provides IMS customers with new function that allows them to run their IMS conversations from the Internet. This function was shipped in the 3.5.0 Enterprise Edition of IBM's award-winning Java development environment, VisualAge for Java. The Spring 1999 issue of the IMS Newsletter introduced VisualAge for Java and IMS Connector for Java. At that time, IMS Connector for Java supported only non-conversational transactions.

In the Internet environment, an IMS conversation consists of a connected series of interactions between a browser and an IMS conversational application program. Each interaction is also called an iteration of the conversation; each interaction results in an IMS message being sent to and received from the IMS conversational application program. In IMS conversations, the first IMS message sent to the IMS application program contains the transaction code. As the conversation progresses, the IMS application program saves data in the SPA (scratch pad area), and the end user provides additional data for the conversation via the browser.

Internally, the flow of control and messages for conversational transactions is similar to the flow of control of non-conversational transactions. The sequence of non-conversational flow was presented in the Summer 1999 issue of the IMS newsletter. The sequence is illustrated in Figure 1.

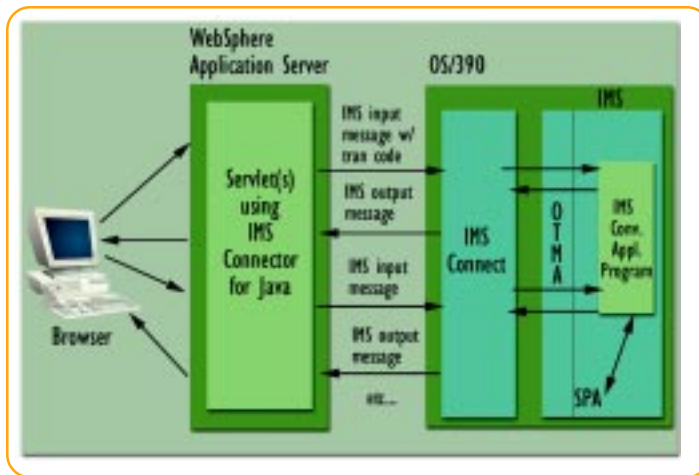


Figure 1. Message and Control Flow

To summarize:

1. Input data flows from the browser, via HTTP, to IBM's WebSphere Application Server.
2. The WebSphere Application Server then schedules a servlet to receive the data from the browser.
3. The servlet passes the data to IMS Connector for Java, which builds an OTMA message containing the IMS input message using the data from the browser.
4. IMS Connector for Java sends the message to IMS Connect.
5. IMS Connect, using XCF, then passes the input message to IMS via OTMA.

The Web-Based IMS Conversation

There are several ways to model IMS conversations for the Internet. A typical model is a web application consisting of:

- An HTML page that provides data for the initial input message of the IMS conversation.
- Multiple JSPs (Java Server Pages). Each JSP typically displays the data of an intermediate output message of the conversation. The JSP page also provides data for the subsequent (intermediate) input message of the conversation. This dual function is made possible by an HTML FORM statement in the JSP.
- One or more servlets that are scheduled by WebSphere Application Server and used to execute iterations of the IMS conversation.

IMS Connector for Java's web application model ensures that the end user's interactions with the browser pages and the associated servlet invocations are grouped together. In addition to the grouping of browser interactions and servlet invocations, IMS Connect requires that the same connection (for example, TCP/IP socket) be used for all iterations of a conversation. IMS Connector for Java provides classes that your servlet can use to control the browser and servlet grouping, as well as to ensure that the same connection is used throughout the conversation.

Figure 2, below illustrates how browser interactions and servlet invocations are grouped, and how the messages that comprise the iterations of the conversation are grouped on the same connection. These groupings are implemented by using classes that IMS Connector for Java provides.

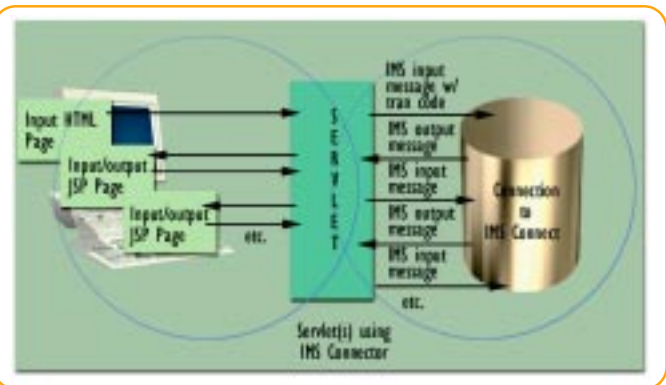


Figure 2. Browser and Servlet Groupings

The Summer 1999 issue of the IMS newsletter described how a servlet runs an IMS transaction by invoking the execute() method of an EAB (Enterprise Access Builder) command built by VisualAge for Java. The number of EAB commands used for a conversation and the number of servlets included in the web application varies and often depends on the complexity of the underlying IMS conversation. The web application designer should understand the possible iterations of the conversation and the input and output messages of each iteration.

For conversational transactions, IMS removes the transaction code from the initial input message and puts it in the SPA. Therefore, the data structures in IMS conversational application programs reflect only the data portion of the initial input message. Because VisualAge for Java uses COBOL data structures from IMS application programs to build record beans for an EAB command, VisualAge for Java now allows specification of the transaction code in its "Import COBOL to Record Type" SmartGuide.

Using Commands with Web-based IMS Conversations

A web-based IMS conversation can be ended from either the browser or the IMS application program. IMS Connector for Java provides a new interaction that allows the servlet to be written so the browser user can end the conversation, function that is similar to the /EXIT IMS command. Currently the /HOLD and /RELEASE commands are not supported for web-based conversations. The /DISPLAY CONV command displays both terminal-initiated and web-initiated conversations. This command /DISPLAY CONV can be used with the IMS Connect command VIEWHWS to display which connections (clients) are in conversation.

The addition of conversational support to IMS Connector for Java and IMS Connect expands the scope of IMS applications that can be accessed from the Web.

Judith Hill
IMS Senior Developer

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IMS Newsletter: What challenges do you see for IMS?

Lickel: The most prominent challenge is the skills issue. We need to continue to simplify IMS, to reduce the amount of unique skills needed, and the time it takes to train IMS application programmers and system programmers. Our focus has been on User Centered Design to improve its ease-of-use characteristics.

As long as IMS continues the leadership role of high-volume transaction processing, at a very affordable cost per transaction — I would say the most affordable in the industry — then it will continue to play a pivotal role.

And that's why continued innovation in IMS is critical. Any product in the industry today that doesn't innovate, that just lives on its past, will not have a very bright future. And IMS continues to show the type of innovation and leadership that I believe will yield a very bright and healthy future.

Editor's note: As this issue went to press, Charles Lickel was promoted to Vice President, Development Storage Systems Group, at IBM's Cottle Road facility in San Jose, California. Tom Rosamilia, from IBM's facility in Poughkeepsie, New York, has joined IBM's Silicon Valley Laboratory as Vice President, Worldwide Data Management Development, and General Manager. Look for an interview with Rosamilia in a future IMS Newsletter.



IMS Disaster Recovery Solutions

An enterprise's ability to recover and restore data after a disaster has long been part of data processing. Some years ago, a service outage of hours or even days could be tolerated. However, for the majority of services that are in use today, there is little, if any, tolerance for outages. With the increasing focus on e-business, minimizing the duration and follow-on effects of any disaster is crucial. Now, an enterprise's disaster recovery plan is considered an integral part of their overall "Continuous Availability" strategy.

IMS provides several solutions for disaster recovery.

- Software: Remote Site Recovery (RSR) feature. The software solution is DBMS aware.
- Hardware: Extended Remote Copy (XRC) and Peer to Peer Remote Copy (PPRC) and their extensions; Geographically Dispersed Parallel Sysplex (GDPS). The hardware solutions are DBMS neutral.

This issue of the IMS Newsletter focuses on the software solutions. The hardware solutions for IMS disaster recovery will be discussed in a future IMS Newsletter.

The IMS disaster recovery solutions, and the amount of data and service loss times for each solution, are shown in Figure 1, below.

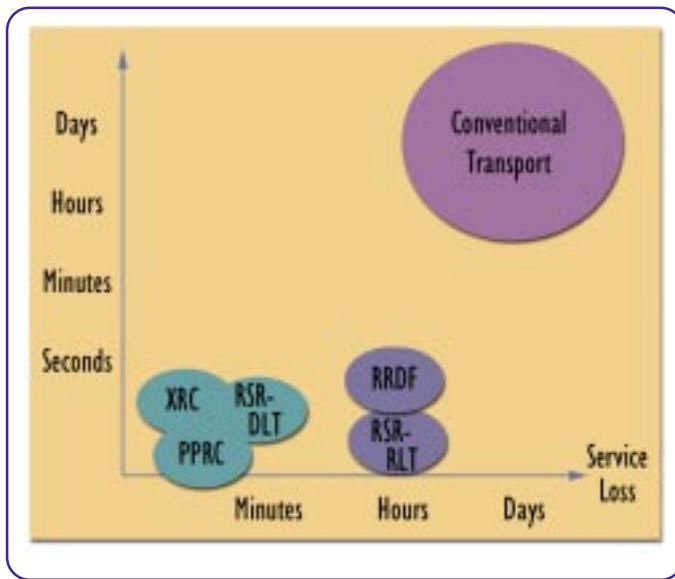


Figure 1. Hardware and Software Disaster Recovery Solutions for IMS

Physical Vs. Logical Off-Site Data Storage

For many enterprises, the weekly backup of data to tape and its subsequent shipment off-site is no longer a sufficient disaster recovery solution. In addition to the time taken to recover the databases, the loss of business data between the time of backup and the time of failure can be significant. That data loss might represent commitments made to customers, money paid out, or orders taken. Reducing the quantity of lost data is always a goal. In the weekly cycle, as much as an entire week's worth of data could be irretrievably lost.

Some installations have improved on the "weekly backup and off-site storage" situation by also shipping DBMS logs off-site after they are archived to tape. Even with this improvement, database recovery can still take hours or days, depending on the amount of data to be recovered. By shipping the log records off-site as they are created, an enterprise can significantly reduce data loss, limiting it to those log records not yet shipped. However, the database recovery time still remains at hours or days.

The IMS disaster recovery solutions described here emphasize *one* aspect of the copy process: whether the data is logically or physically copied. For XRC, PPRC, and GDPS, the data is physically copied. For RSR, the data is logically copied, which provides the ability to recover the databases even if updates to the databases themselves are not shipped. When you logically copy data, you need a start position from an image copy at the remote site.

It is important that the IMS state data be logically correct at the remote site. In other words, the DBRC RECON datasets at the remote site must accurately reflect the states of the databases and the logs at the remote site, not the states of the databases and logs at the active site. The same is true for the log at the remote site — it must reflect the states of the databases at the remote site, not the states of the databases at the active site. Therefore, physical copy methods must be configured so that all or none of the data is transferred.

IMS Remote Site Recovery

The design points for the IMS RSR feature include:

- Asynchronous and efficient tracking.
- Support for parallel sysplex.
- The ability to perform non-disruptive resynchronization.
- Site switching in under 60 minutes.

IMS RSR provides two features:

- RLT (Recovery Level Tracking), which establishes the ability to perform database recovery at the remote site.
- DLT (Database Level Tracking), which keeps the specified databases up to date with the logged change records as they arrive.

A comparison of RLT and DLT methodologies is shown in Figure 2, below.

IMS RSR establishes data transfer pipes between all IMS instances at the primary site (batch updaters, DBCTL and TM/DB) and the Log Router of the tracker subsystem at the remote site. Log blocks are transmitted as they are written to the OLDS or SLDS for batch. Batch jobs are also tracked when they update databases that are registered for tracking

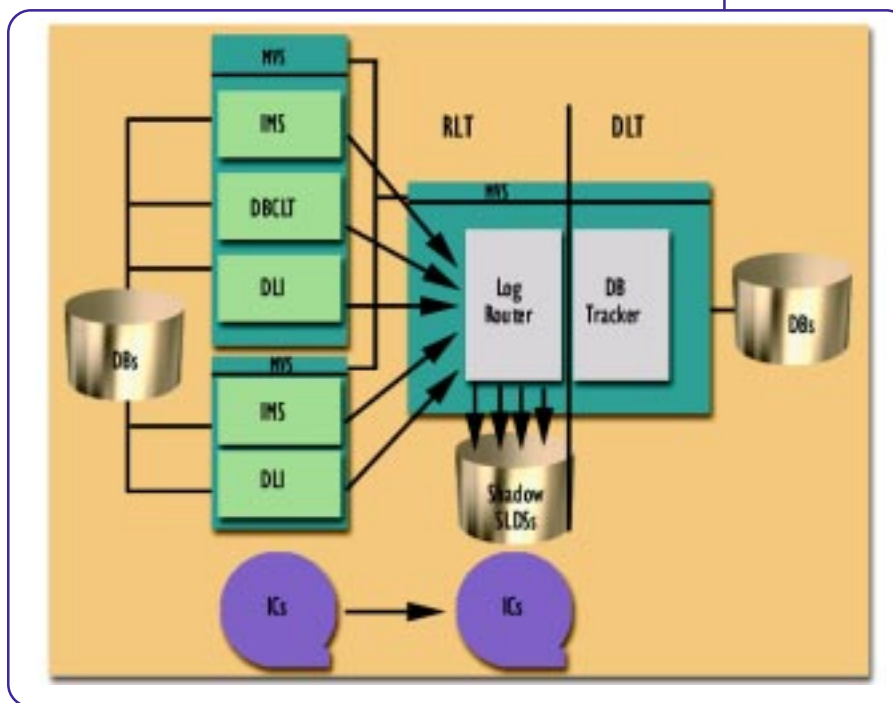


Figure 2. IMS RSR RLT and DLT Comparison

in the RECON. The installation optimizes network bandwidth requirements by excluding useless log records, such as type 67, non-tracked database change records, and, if the installation wants to, input/output message records.

RLT creates “shadow logs” at the remote site and updates the remote RECON appropriately. The installation ships and registers the image copies for databases of interest. If disaster strikes, the remote RECON has sufficient information to support GENJCL RECOV for the databases using the shadow logs and the image copies. Lost data — which should only be a few seconds’ worth — is limited to the log records that didn’t make it to the remote site.

With DLT, which includes all the function of RLT, the log records for databases registered for database level tracking are also routed to the DB Tracker components. Recovery of the DLT- tracked databases at the remote site is supported if a database becomes unavailable through media failure. However, the DLT-tracked databases cannot be used for any other purpose while in tracking status.

Online Forward Recovery takes place automatically for databases in DLT mode at the remote site following an interruption in tracking the changes. The RECON database registrations show whether the individual database is registered for RLT, DLT, or no tracking.

RSR recognizes that a break in the network might prevent log records from being shipped to the remote site when they are created, so it has an extensive Gap Recovery process

The Gap Recovery process is automatically invoked and does not require operator intervention; however, commands are available to trigger this process and to display the status of any gaps.

RSR uses CPU resource at the remote site while it is tracking. RLT use at the remote site is about 5% of the active site’s CPU. The CPU use at the active site for the log block transmission is typically less than 1% of the active site’s CPUs. Exact numbers are determined by log volume and VTAM RU size definitions.

DLT use at the remote site is typically 10-15% of the active site’s CPU; this includes the RLT cost of shadowing the logs. The extra CPU usage results from the application of database changes to the spinning copies. Exact numbers depend on the change activity and DLT choices.

RSR provides several advantages:

- It requires minimal bandwidth because only necessary database changes are shipped.
- It can be tailored for individual databases as DLT, RLT, or not covered.
- All VTAM distances are supported.
- It tolerates transmission outages and fills gaps automatically.

Along with the advantages, be aware that RSR:

- Involves operations personnel in set-up.
- Supports only IMS data.

Regardless of the IMS disaster recovery solution you use, data recovery is essential to providing business continuity. Any disaster recovery plan that you implement now is sure to pay off in the future.

Pete Sadler

IMS World Wide Technical Service Specialist

IMS Services from IGS Integrated Technology Services

The IBM Global Services IMS National Practice team offers fee-based technical consulting services to help you complete your IMS projects and assist with your IMS daily support. Our IMS professionals have in-depth knowledge and hands-on experience in IMS and IMS related products and will work with you to tailor your service to provide the right combination of general and/or specific activities to meet your needs.

Installation, Migration, and Maintenance Services

Our version-to-version migration services include installation of either IMS V6 or IMS V7, optionally combined with installation or upgrade of your IMS Tools, and migration into your specified IMS system(s). Identification of OS/390 and IMS-related product compatibility maintenance for your current IMS system and IMS exit and USERMOD review are included along with planning, installation, and migration to your selected IMS level. Version-to-version migration services are expected to be our most frequently requested services as the end of support dates approach for the Local DLI PRPQ (June 30, 2001) and IMS V5 (September 30, 2001).

As an example, IGS Integrated Technology Services' IMS National Practice team recently migrated TMC HealthCare to the IMS V7 GA level and into production in January, 2001. IGS Integrated Technology Services executed a complete IMS V5 to IMS V7 installation and migration that included an IMS Tools installation and migration into all TMC HealthCare IMS environments.

Maintenance upgrade services that bring your existing IMS system up to a current service level are also available. This is popular with customers who are integrating multiple IMS systems with dissimilar service levels or who are upgrading their IMS systems in preparation for, or as part of, an overall OS/390 system upgrade. This service can also be contracted as an initial phase to position your existing system for a follow-on version-to-version migration.

Both maintenance and version-to-version services can be tailored to provide you with the exact combination of planning, installation, migration, and hands-on training of your staff that you need to meet your business requirements. Flexible scheduling can provide one contiguous project or multiple project phases to allow for staged migration into several IMS environments. Services can be contracted well in advance to allow you to plan your projects for the entire 2001 year.

Performance and Tuning Services

Performance and tuning, either proactive or to address performance problems, are another popular service. We review your IMS systems and make recommendations to resolve your problem and/or improve the overall performance of your IMS environment. This service can be contracted for IMS DB/DC and DBCTL systems. Performance and tuning for your IMS batch jobs and IMS Tools are also available and can be contracted separately or combined with an IMS performance and tuning service.

More Services

In addition to the above services, we also offer: Extended Availability Services - Reviews and recommends performance and procedural enhancements to increase your hours of continuous availability.

Disaster Recovery Services — Assists in creating or analyzes an existing disaster recovery strategy; optionally assists with disaster recovery tests.

IMS Tools Assessment & Conversion Services — Assists in evaluating IMS Tool products; optionally includes conversion and migration to new products.

New Feature/Function Enablement — Assists in enabling new capabilities (such as ETO, data sharing, or HALDB) in your existing IMS system(s).

IMS Staff Coverage Services — Provides experienced IMS personnel to help accomplish special projects, provide day-to-day coverage or perhaps catch up on a backlog of varied tasks.

Need an IMS Service not listed above? The IMS National Practice team includes IMS specialists that have over 20 years each of hands-on experience as both customers and IBMers in all aspects of IMS support. Our fee-based services are customized to provide you with whatever combination of IMS planning, installation, maintenance, migration, performance, new feature/function enablement, and/or systems and database support you require.

For information on IGS IMS National Practice services, contact Winston Tobias at (216) 664-7271 or e-mail an information request to wtobias@us.ibm.com.

Barbara Frost
IMS and IMS Tools Specialist, IBM Global Services



Is There Something More We Can Do for You?

As part of the IBM Data Management Software Development Services organization, the Silicon Valley Laboratory's IMS product organization continues to offer formal services to all IMS users worldwide. Our IMS Development Services group is made up of highly experienced technicians from the World Wide IMS advocate team, the IMS development team, the IMS Performance group, and the IMS technical support team.

Here is your chance to have the expertise from IBM's Silicon Valley Laboratory come onsite and assist you!

Currently, we have several ways of providing you with technical assistance in managing your daily and future IMS business needs. We are available to you based on hourly, daily, or fixed price contracts, by both telephone consultations and on-site engagements.

We also offer the following alternative IMS services to help you.

- We work with our education organization to provide classes tailored to your individual demands. Examples include:
 - IMS Parallel Sysplex Workshop
 - IMS Diagnostic Approaches
- We can also help you in areas like these:
 - IMS system analysis and reviews
 - Data sharing and application workload management
 - Shared queues
 - High/continuous availability
 - DBCTL implementation
 - IMS system health check
 - Performance and tuning
 - Disaster Recovery
 - IMS Tools consulting and migration
 - IMS Web solutions / e-business requirements
 - Local on-site software support

The World Wide IMS Development Services group is committed to providing world-class software support services to resolve today's complex IMS problems and issues, increase system availability, bolster productivity, and enhance customer satisfaction.

To learn more about the World Wide IMS Development Services group and how we can be of service, contact Donald Streicher at (408) 463-2192, or by e-mail at dmservices@us.ibm.com.

Donald Streicher
 Manager, IMS Planning and Field Support

IMS's zSeries 64-bit Real Storage: Offering Large Real Memory Support

The new zSeries architecture gives IMS the ability to provide large real memory support up to 256 GB for 64-bit for its OSAM and Log Buffers. With the zSeries architecture, expanded storage is now combined with central storage, thereby eliminating paging between expanded and central storage. All buffers for OSAM databases are page-fixed above the 2 GB bar. When IMS runs in an zSeries environment, log buffer storage will only be fixed above 2 GB if the OLDS block size is a multiple of 4096. The virtual storage for these buffers remains below the 2 GB bar or in 31-bit mode.

Prior to the zSeries, customers were limited to only 2 GB for real storage due to the 31-bit addressing limitations of the ESA/390 architecture. This real storage limitation of 2 GB was an inhibitor for many high-end customers.

APAR PQ42127 in IMS V7 provides page fixing OSAM and Log Buffers above the 2 GB bar when used with the zSeries processors with more than 2 GB of real storage.

Barbara Klein
 IMS Senior Planning and Brand Manager

OTMA Exits for Two-Phase Destination Resolution

Introduction

Two optional OTMA output routing exits are provided in IMS for application output to the ALT-PCB:

- DFSYPRX0, the prerouting exit, performs an initial search for the output destination.
- DFSYDRU0, the destination resolution exit, determines the final destination for an OTMA output message.

With these two exits, the IMS ALT-PCB output message can be directed to a non-OTMA destination or to any OTMA client. Figure 1, shown below illustrates the relationship between the two OTMA user exits, and how IMS handles the return codes from the exits.

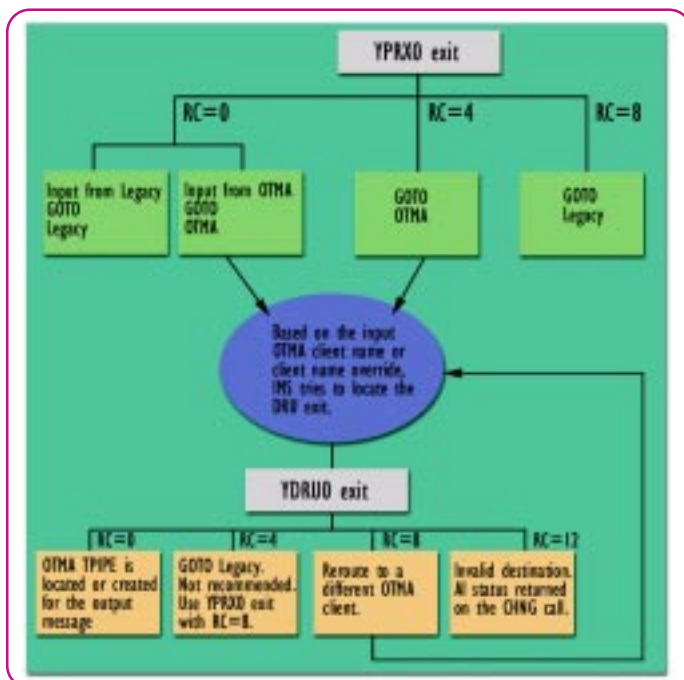


Figure 1. Two Phase Destination Resolution Flow

Phase 1 - Prerouting Process

In the first phase, IMS searches for an initial destination for an ALT-PCB output message to determine if the OTMA route or a legacy route should be used. The processing algorithm varies, depending on whether or not the OTMA DFSYPRX0 user exit exists in the IMS system. An example of the algorithm used when the user exit is not in the IMS system is:

```

IF destination is system console or MTO
  Use legacy route to determine the destination
ELSE
  IF the input message is from OTMA
    GOTO phase 2
  ELSE
    Use legacy route to determine the destination
  
```

However, if a DFSYPRX0 user exit is in the IMS system, the exit can override the default algorithm and specify either the legacy or the OTMA route regardless of the origination of the input message. If the input message is not from OTMA and the exit specifies the OTMA route, the exit must provide the OTMA client name. The exit is not invoked if the destination is a system console or MTO.

Phase 2 - Final Destination Resolution

In the second phase, IMS determines or changes the destination of an ALT-PCB output message. If the OTMA route was specified during the prerouting process, the algorithm used in phase 2, when the DFSYDRU0 user exit is not in the IMS system, is:

```

IF SMB is found
  Destination is the SMB
ELSE
  Destination is the OTMA TPIPE
  specified in the message
  
```

However, if DFSYDRU0 is available in the IMS system, it can override the final destination if that destination is not a transaction (SMB). A new OTMA transaction pipe can be created to send the output message. The output message can also be rerouted to a different OTMA client by specifying the client name.

Hints

Here are some hints for using these two OTMA exits:

- Use OTMAMD=Y in the IMS PROCLIB member FSPBxxx to direct your OTMA message to a different DFSYDRU0 exit directly from the PRX0 exit without rerouting it. This parameter is available in IMS versions 6 and later.
- Use OTMASP=Y in the IMS PROCLIB member DFSPBxxx to always create a SYNC TPIPE for the ALT-PCB output message.
- The name of the DFSYDRU0 exit can be overridden by the user or an OTMA client.
- Each OTMA client can have its own DFSYDRU0 exit.
- The SCD address is available in the input parameter for both OTMA user exits.
- The address of the first segment of output message is not passed to the two user exits.

Jack Yuan
IMS Senior Developer

New in IBM Data Base Tools for IMS

On January 19, 2001, the Data Management Tools group delivered three great new tools for IMS: IMS High Performance Sysgen Tools for z/OS, IMS Command Control Facility for z/OS, and IMS Message Format Service Reversal Utilities for z/OS. All of these tools can be used with IMS Versions 5, 6 or 7, and run on both OS/390 and z/OS.

IMS High Performance Sysgen Tools

IMS High Performance Sysgen Tools for z/OS consist of three utilities: Fast Sysgen, Merge Clone, and Sysgen Compare.

- The *Fast IMS System Generation Utility* operates either online or as a single step batch job to perform IMS MODBLKS type sysgens. This utility reduces the time needed to perform IMS sysgens for application resource changes (transactions, programs, databases, and route codes), and consumes far less CPU time. Since the Fast IMS System Generation Utility quickly builds updated MODBLKS and MATRIX data sets, you can easily process a sysgen to include updated application resources by simply updating the existing IMS sysgen and security source, and entering the IMS command “/MODIFY PREPARE MODBLKS FASTGEN.” The utility can also be executed in batch mode. In batch mode, the updated definitions can be implemented via an IMS online change or in a cold start of the IMS subsystem. When executed in online mode, the Fast IMS System Generation Utility uses the IMS online change functionally to implement the updated resource definitions.
- The *Merge Clone Utility* process creates IMS APPLCTN, TRANSACT, and DATABASE IMS sysgen macros. The utility reads the IMS MODBLKS data sets and combines the definitions of up to 64 connected IMS systems. The Merge Clone utility ensures that each application resource is defined with compatible values across each copy of IMS. For example, transactions are compared across each IMS system definition; any differences are identified, reported, and corrected for consistency. The Merge Clone utility automatically coordinates database ACCESS= specifications and MSC SYSID= values. The utility determines, based on PSB PROCOPT values and DATABASE ACCESS= specifications, which transactions can run on which IMS systems. When a transaction can run locally based on its PROCOPT specifications and the allowed database access for that IMS system, the transaction is set as a local transaction. Otherwise, the transaction is routed (via MSC) to an IMS system that meets the required database access requirements.
- The *Sysgen Compare Utility* compares two sets of MODBLKS and MATRIX data sets, determines whether any differences exist, and the resource definitions that differ.

IMS Command Control Facility

The IMS Command Control Facility for z/OS batch processor can run as an IMS BMP, IMS DL/I batch, or standard MVS batch job. It can execute commands across as many as 64 IMS regions on any number of MVS images. IMS commands are read from an input data set and processed one at a time across all requested regions. The IMS Command Control Facility can analyze command responses for database /STA, /STO, /DBD, and /DBR commands. It performs analysis by interrogating the DFS0488I message and checking for acceptable return codes. The IMS Command Control Facility can perform further analysis on database /DBD and /DBR commands by checking DBRC and verifying the database is not open to any subsystem with Update or Exclusive access. Failed commands will be retried a user-specified number of times with a user-specified time interval between each retry. The IMS Command Control Facility also provides an ISPF interface that you can use to issue commands to an IMS subsystem interactively. Commands to any IMS region type (DB/DC, DC/CTL, or DB/CTL) running in any MVS system can be issued and command responses are returned to the ISPF session.

IMS Message Format Reversal Utilities

IMS Message Format Services (MFS) Reversal Utilities for z/OS consists of two components: MFS Reversal, and MFS Compare.

MFS Reversal is designed to convert MFS MID/MOD/DIF/DOF control blocks back into IMS MFS utility control statements. If you have lost your MFS source library or suspect a difference between the generated control blocks and source, this utility can help you recover the source and compare deltas. In addition to decoding MFS control blocks, the utility provides useful summary reports of IMS FORMAT library, which display the relationships among members.

MFS Compare is designed to compare two sets of MFS source libraries to quickly highlight differences between the libraries. This utility can be very useful for validating what MFS source library is actually operating in a particular IMS environment.

Elmer Rohde

IMS Database Tools Marketing Specialist



IMS Documentation in Portable Document Format (PDF)

In the Spring of 2000, IMS User Technology (IMS UT) made the IMS library available to customers for the first time in Adobe Acrobat's Portable Document Format (PDF). Every book in the IMS library for versions 5, 6, and 7 is now available in PDF, in addition to the standard BookManager format from the IMS Web site (www.ibm.com/ims), and through the IMS Licensed Product Kits (LK3T-3526-00 for IMS V7, LK3T-2326-02 for IMS V6, and LK3T-3489-01 for IMS V5).

Why IBM is Pursuing a Softcopy Strategy

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What's Available in PDF

The following IMS PDFs are available from the Library page of the IMS Web site at www.ibm.com/ims:

- IMS V5, V6, and V7 libraries
- IMS Redbooks
- IMS Presentations
- IMS Newsletters

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- Data Management Tools
<http://www-4.ibm.com/software/data/db2imstools/>
- DB2 Product Family
<http://www.ibm.com/db2>
- VisualAge for Java
<http://www-4.ibm.com/software/ad/vajava/library.htm>
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<http://www.ibm.com/websphere>

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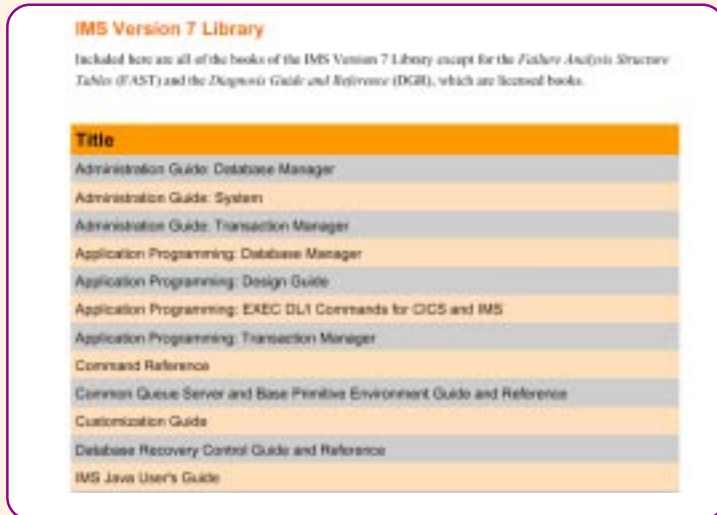


Figure 1. Use the PDF Bookshelf

The PDF bookshelf must be in the same directory as the PDF books for that library. Download the bookshelf and all of the IMS library PDFs into the same directory on your hard drive, then click on a title to open that book. When the PDFs get updated on the Web as a result of a library refresh, simply replace the outdated PDFs with the news ones in your local PDF directory. The PDF Bookshelf is compatible with all updated versions of the PDFs. Figure 1 shows what the IMS Version 7 PDF Bookshelf looks like.

Hai-Nhu Tran
Software Engineer, IMS User Technology

The Latest in IMS Education

Moving to IMS V7? Then you won't want to miss the three day course, IMS V7 Product Enhancements (CM701). Lectures cover significant enhancements and their benefits, and include, among other topics, installing IMS V7 and migrating to it from previous releases. Experienced IMS system programmers, IMS DB and TM systems administrators, IMS application designers, and IMS operators responsible for planning, installing, or implementing IMS V7 will find this offering most valuable.



Learn to Use MQSeries to Access IMS

The MQSeries Product is an important element of ebusiness solutions. Are you aware that you can use MQSeries to access IMS data? IBM Learning Services has new MQSeries courses that can be taken on-line or via CD-ROM. You select the format that works best for you. The following courses are now available:

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- MQSeries Application Programming in Java: Basic, 6 hours
CD ROM (MQ85C); Online Version (MQ85W)
- MQSeries Application Programming in Java: Advanced, 6 hours
CD ROM (MQ86C); Online Version (MQ86W)
- MQSeries System Administration, 12 hours
CD ROM (MQ84C); Online Version (MQ84W)

Updated Courses

The following courses have recently been updated:

- CM010 IMS Fundamentals (includes IMS V7 functionality); 3 days
- CM651 IMS Connectivity and Web Enablement Workshop (includes WebSphere); 3 days

To learn more, visit our curriculum spotlights at:

- <http://www.ibm.com/services/learning/spotlight/ims.html> (IMS V7)
- <http://www.ibm.com/services/learning/spotlight/mqseries.dl.html> (MQ Series)

Amiet Goldman
Senior Direct Marketing Strategist

Upcoming Redbooks

During the second quarter of 2001, the International Technical Support Organization (ITSO) will release two new IMS Redbooks.

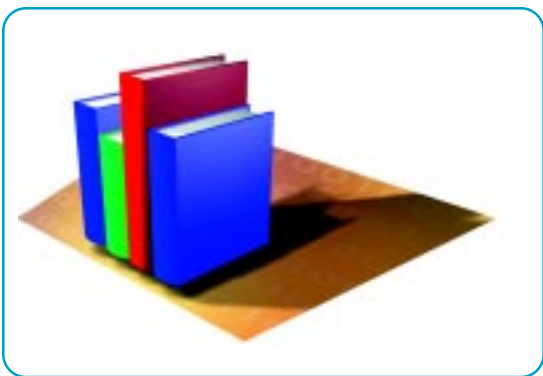
- A DBA's View of IMS Online Recovery Service (SG24-5751)

Provides a series of presentations on the new IMS ORS (Online Recovery Service) specifically tailored for the DBA. Topics include IMS recovery performance, using the ORS interface, and tips on operating ORS.

- IMS Version 7 and Java Application Programming (SG246123)

Intended for customers who want to exploit the Java language support provided by IMS V7. This book covers the base concepts of the Java environment, the S/390 software and hardware requirements that enable Java on the Enterprise platform, and how to download, install, and configure the Java-related application development environment for your workstation, IMS, and OS/390. Its primary audience includes IMS and Java application programmers who can now use Java to develop IMS application programs, and IMS system programmers who support IMS application development. This book will be helpful to any organization wanting to access IMS databases by using the Java programming language.

Rick Long
IMS Developer



Mark Your Calendars!

The IMS 2001 Technical Conference Goes to Miami, Florida October 22-25!

- Examine critical IMS TM and DB issues and learn how to implement end-to-end solutions with a growing set of IMS Tools for Application Development, Business Intelligence, Systems/Data management, and e-business enablement.
- Gain insight on the latest technologies used to build e-business applications: exploit the improved TCP/IP support of IMS Connect, and see how IMS Connector for Java works with VisualAge for Java to access IMS transactions over the internet.
- Learn about IMS V7 TM enhancements that increase capacity and performance efficiency in system resource utilization, and improve systems management.
- Get up to speed on IMS V7 DB improvements, including the new High Availability Large Database (HALDB) support, and the new IMS Online Recovery Service (ORS) facility for database recovery and availability.



This will also be your opportunity to hear directly from the IMS Family Product Manager, Bob Gilliam, on IMS strategy, recent IMS announcements, and future directions for IMS as a leader in the 21st Century.

In 3 1/2 days you can explore the full range of IMS technologies through informative elective sessions, an eye-opening keynote address, one-on-one interactions with product developers, demonstrations of new technologies at the Product EXPO, networking opportunities at every turn, plus a special evening social event.

For more information about the 2001 IMS Technical Conference, visit the conference website at:
<http://www.ibm.com/services/learning/conf/us/index.html>.

You won't want to miss it!

Amiet Goldman
Senior Direct Marketing Strategist



HOT Web Sites

IMS

<http://www.ibm.com/ims>

IBM Database Tools for OS/390 and z/OS

<http://www.ibm.com/software/data/db2imstools>

S/390 Application Development Solution (ADS)

<http://www.s390.ibm.com/ads>

IBM Enterprise Storage Server™ (Shark ESS)

<http://www.storage.ibm.com/hardsoft/products/ess/ess.htm>

<http://www.storage.ibm.com>

<http://www.ibm.com/support/techdocs>

IBM Technical Conferences

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<http://www.ibm.com/training/conf/us>

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<http://www.ibm.com/services/learning>

<http://www.ibm.com/services/learning/roadmaps/imsidx.html>

<http://www.ibm.com/services/learning/spotlight/ims.html>

<http://www.ibm.com/services/learning/spotlight/mqseries/dl.html>

SHARE Proceedings

<http://www.share.org>

Web Sites Mentioned in this Issue

VisualAge for Java

<http://www.ibm.com/software/ad/vajava/>

WebSphere Application Server

<http://www.ibm.com/software/webservers/appserv/>

IBM Redbooks

<http://www.redbooks.ibm.com>

IBM Global Services

<http://www.ibm.com/services/>

DB2

<http://www.ibm.com/db2>

Adobe (Acrobat Reader)

<http://www.adobe.com>

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I Know She is in Here...

In the Winter 2000 issue, we asked you to find the picture of my daughter in all of the previous four issues. The response was tremendous, and many of you were able to find her in all of the previous issues. In this issue of the IMS Newsletter, I have hidden another picture of my daughter.

We want to hear from you.

We will send an IBM IMS pin to every person who can find the picture of my daughter in this issue. You can view or download the IMS Newsletter from the IMS Web page at: <http://www.ibm.com/ims>.

If you would like to receive an IBM IMS pin, please e-mail your external postal address and picture location to: imsmtk@us.ibm.com

Or write to:

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Editor-In-Chief



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