



IBM Software Group

## **WebSphere® Process Server V6.0 WebSphere Integration Developer V6.0**

### ***IBM WebSphere Adapter V6.0 for Siebel Business Applications***



@business on demand.

© 2006 IBM Corporation  
Updated May 9, 2006

This presentation covers the IBM WebSphere Adapter for the Siebel Business Application. Other presentations provide an overview of all the WebSphere Adapters, including installation and deployment of WebSphere Adapters and details of common function.

## Agenda

- Overview and Architecture
- Outbound Operations
- Inbound Operations and Event Manager
- Business Objects
- Error Handling
- Transaction and Security
- Problem Determination
- Summary



The agenda for this presentation is shown here. Installation and deployment of the Siebel Adapter is covered in a separate presentation common for all WebSphere Adapters.

# ***Overview and Architecture of IBM WebSphere Adapter for Siebel Business Applications***

This section will provide an overview of the WebSphere Adapter for Siebel.

## Siebel application overview

- Siebel application architecture is a layered structure containing
  - ▶ 1. User Interface Objects Layer
  - ▶ 2. Business Objects Layer
  - ▶ 3. Data objects Layer
- Business Object layer includes business services, business components, business objects and integration objects
- A Siebel business service is an entity in Siebel that encapsulates and simplifies the use of a set of functionality
- Adapter supports only Business Services and integration objects through business services in this release
- The adapter uses the Java™ APIs provided by the Siebel Java Data Bean to communicate with the Siebel Object Manager for data exchange
  - ▶ Siebel Java Data Bean exposes the Siebel Business Services



Siebel application architecture has 3 layers.

1. The User interface Object layer deals with the visual elements users interact with.
2. The Business Objects layer includes the business services, business components, business objects and Siebel integration objects. A Siebel business service is an entity in Siebel that encapsulates and simplifies the use of a set of functionality.
3. The third layer is the Data objects layer.

In this release, the WebSphere Seibel adapter supports only business services and any integration objects through the business services.

To allow external applications to exchange data with the Siebel application, Siebel provides a set of interfaces known as Siebel Object Interfaces. The APIs, in the Siebel provided Siebel Java Data Bean layer (jar file) handles the exchange of data by using the Siebel business objects and business components. The adapter uses the jar file to communicate with the Siebel Object Manager for data exchange.

## Siebel business service

- A Siebel business service is an entity in Siebel that encapsulates and simplifies the use of a set of functionality
- A business service is much like an object in an object-oriented programming language.
- Siebel business services are not tied to specific objects, but rather operate on objects to achieve a particular goal
- Business service has properties and methods (with arguments) and maintains a state



Siebel business service is like an object in an Object Oriented programming language, having a set of functions that can be invoked. Siebel business service is not tied to a specific object but operates on one or more objects to achieve a particular function.

## Siebel business service (cont.)

- Siebel business services are based on following types of higher level classes:
  - ▶ CSSEAIDataSyncService – Used for data synchronization services
  - ▶ CSSService – Any business service. This is typically extended for by other services
    - An example would be the CSSEAISiebelAdapter class which inherits from CSSService class and maps to the EAI Siebel Adapter business service.
  - ▶ CSSEAITEScriptService - Used for data transformation services
  - ▶ CSSEAISiebelAdapter – Used for the EAI Siebel Adapter
- The adapter only supports business services that are of the above specified class types
- These business services includes generic business services such as the 'EAI Siebel Adapter', Applications Services Interfaces such as 'Siebel Contact' and other built-in or custom business services



Siebel business services are based on the 4 types of higher level classes shown on this page.

The CSSEAIDataSyncService is used for data synchronization services.

The CSSService represents any business service. Other services extend this class.

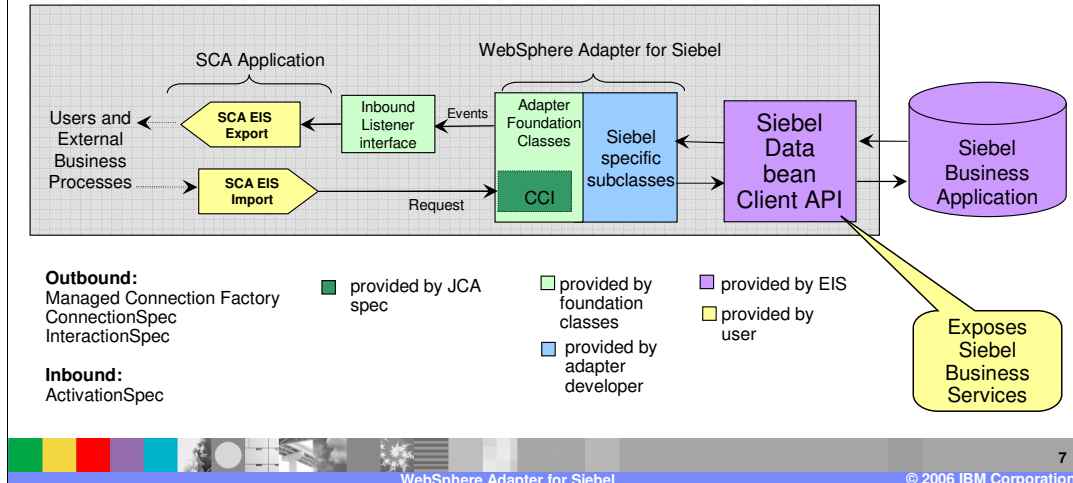
The CSSEAITEScriptService is used for data transformation services

The CSSEAISiebelAdapter is used by the "EAI Siebel Adapter" which is a generic business service in Siebel.

The adapter only supports business services that are of the above specified class types. Any service that does not fall into one of the 4 classes is not supported by the adapter.

## Adapter architecture

- IBM WebSphere Adapter for Siebel Business Applications implements the JCA version 1.5 specification, enabling bi-directional connectivity to Siebel Enterprise application



This diagram shows the high-level architecture of different components that play a role in the end to end invocation of the outbound or the inbound request. Using the Enterprise Service Discovery tool in the WebSphere Integration Developer, the SCA EIS components are the associated Business Objects that are created. For the outbound request, the SCA EIS Import component is created, and for the inbound request, the SCA EIS Export component is created.

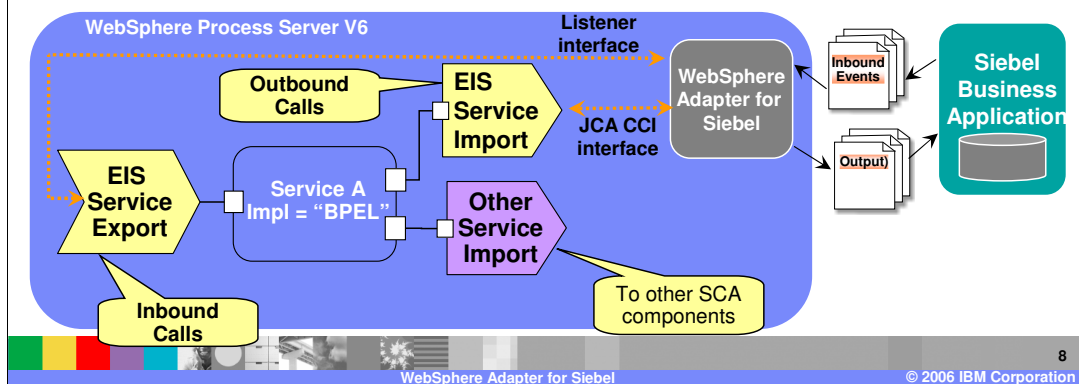
The SCA Clients interact with the SCA EIS Export and Import components to drive an outbound request or receive an inbound request, as shown in the diagram. The Adapter contains the implementation of JCA specifications and has extensions provided by the Adapter foundation classes. The SCA Export component passes a Business Object wrapped in a J2C CCI Record object. The Adapter extracts the Business Object from the Record object and determines the Siebel function to call along with its arguments. The Adapter uses the Siebel Java Data Bean JAR file to communicate with the Siebel Business services.

The two main interfaces to a JCA adapter are the Service Provider Interface (SPI) and the Common Client Interface (CCI). The SPI is the application server view of the adapter and contains the contracts necessary to work well with an application server, including Connection creation and matching, security, and work management.

The CCI is designed to provide a common view of data and interaction with the adapter and defines the data model and provides a common mechanism to interact with the adapter.

## EIS import and export services

- EIS Import (for outbound) and EIS Export (for inbound) SCA components provide a uniform view of the EIS services external to the module
- Business Objects are generated by EMD, and are used by SCA components and the adapter
- This allows components to communicate with the variety of external EIS systems using consistent SCA programming model
- Interacting with the adapters through the use of SCA components and BOs fit the goals and the vision of SOA solutions



The Enterprise Service Discovery tool in WebSphere Integration Developer creates an EIS Import SCA component for an outbound request, and an EIS Export SCA component for an inbound event request. The Business Objects for the outbound or inbound requests are also created. Using the SCA components for the adapter, they can be wired with other SCA components to create a business application.

In the diagram, the SCA component representing "Service A" is wired with the Adapter EIS Export and EIS Import component. Also shown is the wiring from Service A to other SCA components through the Import. The implementation of Service A could be BPEL or any other support implementation such as "plain old Java object" (POJO) or Human task.

For SCA clients, the adapter functionality is exposed through the EIS Import and EIS Export SCA components.



## ***Siebel outbound operations***

This section covers the outbound operations.

## Outbound – High level flow

- Adapter models Siebel function calls as Business Objects (BOs)
- SCA client passes the BO to the adapter using the JCA CCI Record object
  - ▶ BO is wrapped in the JCA CCI Record
- Adapter extracts the BO and determines the Siebel interface to call from the metadata within the BO
  - ▶ The adapter converts the business object data to the appropriate Siebel function call.
- Adapter runs the function on the designated Siebel Business Application system
- Outbound operation to be performed on the Siebel business object instance is specified as a function name in the interaction spec
- Outbound business services supported by the adapter, such as:
  - ▶ EAI Siebel Adapter
  - ▶ Siebel Application Services Interfaces



The high level flow of the outbound operations is specified on this page.

The adapter models the Siebel function call as Business Objects (BO). The SCA client wraps the BO inside the JCA CCI Record object, since the J2C specification does not support BO passed as parameters.

The adapter extracts the BO from the Record, determines the Siebel function to call and extracts the parameters represented as metadata within the BO.

The adapter then runs the function on the Siebel Business Application.

## Siebel business service: 'EAI Siebel Adapter'

- It is a general purpose business service that allows reading and writing integration objects

EAI Siebel Adapter Method	Description
Synchronize	Makes the values in the application match those in the business object
Insert	Creates the integration object
Update	Updates the integration object, and synchronizes all children
Upsert	Performs synchronize, but no deletes are done.
Delete	Performs a delete of the integration object
Query	Retrieves the integrations objects that match the input business object
QueryPage	Performs a query but only returns a number of records.
Execute	Performs a combination of operations on the components of the integration object

11

WebSphere Adapter for Siebel

© 2006 IBM Corporation

This table lists the methods supported by the EAI Siebel Adapter. As indicated earlier, the EAI Siebel Adapter is a general purpose business service that allows reading and writing other Siebel integration objects.

## Siebel application services interfaces

- Built-in business services that provide integration object specific services – Some examples are as follows:
  - ▶ Siebel Account – Integrates with the Account Interface integration object
  - ▶ Siebel Contact – Integrates with the Contact Interface integration object

Built-in Business Service Method	Description
QueryByExample	Retrieves the integration object based on non key values
QueryById	Retrieves the integration object based on the primary row id
InsertOrUpdate	Inserts or updates the integration object depending on if it already exists

The methods for the built-in business service are listed in this table. For the EAI Siebel Adapter general purpose business service, either the QueryByExample or QueryById method could be used to retrieve the specific Siebel integration object.

# ***Siebel inbound operations and event manager***

This section covers the inbound operations.

## Inbound operations: High level Flow

- Inbound operations are based on events being triggered when any record in the Siebel Business application is created, updated or deleted
- Event notification requires the creation of event in the Siebel database
  - ▶ “IBM Events” Siebel business component is the default table used to track events happening in the Siebel EIS – the component and table name can be customized, but not the schema
  - ▶ Event component lists the type of event, the corresponding business object and the status of the event
  - ▶ Triggers will need to be placed on the base Siebel business objects - Siebel supports Visual Basic scripts and Siebel eScript embedded in the Siebel Business Component event handlers to populate the event table



Inbound operations are based on events being triggered when a Siebel record or object is created, modified or deleted. The Siebel developer must create a custom Siebel business component to store the events that are being triggered as a result of the updates to the Siebel records. The schema for the custom Siebel business component cannot be changed. A sample custom Siebel business component, called, “IBM Events” is provided with the adapter.

Triggers must be inserted in the Siebel business object that is to be watched for events. Sample triggers are also provided. Siebel supports Visual Basic scripts and Siebel eScript for writing event triggers.

## Inbound operations: High level flow (cont.)

- Adapter polls the Siebel event component for new events and fetches the events
  - ▶ “Once and only once” event delivery is supported with XA transactions using the Event staging table (database)
- Adapter retrieves the Siebel integration object represented by the event
- The Siebel integration object values are populated in the business graph
- Each event in the staging table is then delivered to the registered endpoints, passing the Business graph to the endpoint.
  - ▶ The delivery could be part of a unique XA transaction controlled by WebSphere Process Server
- The endpoint can then look in the BO within the graph and run the logic to handle the event
  - ▶ The endpoint has access to the Siebel integration object through the BO



The adapter polls for the events looking in the custom Siebel business component that was created to store events within Siebel. The adapter uses its own event staging table and the custom Siebel business component for events to support “once and only once” event delivery. The details of the “Once and only once” event delivery are covered in the common adapter details presentation.

When a new event is detected by the adapter, based on the event status, the adapter retrieves it and stores it in its event staging table. The adapter retrieves the integration object represented by the event, wraps it in a Business object and calls the registered endpoint for that event, passing the business object to the endpoint.

## Event table schema

Fields	Description	Example
Object Key	The unique identifier which identifies the business object row for which the event was created.	AccountId=1-20RT
Object Name	The business graph for which the event was detected.	EIAccountInterfaceBG
Event Type	The type of the event	Create
Priority	Event priority	1
Status	Event Status. Initially set to READY_FOR_POLL.	0
Description	Any comment associated with the event – Not required	Account Interface Event
Event Id	Id of the event row.	
Event Timestamp	The time stamp for the event. Format MM/dd/yyyy HH:mm:ss	02/24/2005 11:37:56

Listed in this table is the schema for the custom Siebel business component that was created to store events within Siebel. These events are created by the triggers inserted in Siebel business object that is to be watched for events.



## ***Business objects***

This section covers details of Business objects.

## Business object (BO) naming convention

- The naming convention for the BOs includes the concatenation of several words, as follows:
  - ▶ Prefix - an optional prefix, which will be placed at the start of the business object name
  - ▶ Business Service Name – The business service for the business object. The user can specify if they would like to ignore the business service name while the objects are being generated
  - ▶ Integration Object – The underlying Integration Object for the Siebel Message container business object
  - ▶ Integration Component – The underlying Integration component for the Siebel Message container business object
  - ▶ Method Name – The method that this business object was generated against



During the generation of the Business Objects using the Enterprise Service wizard, the names of the BOs are based on the convention shown on this page. You will notice the generated BOs to have long names, since they contains the Business Service name, integration object, integration component and method name.

***Configuration:  
Siebel properties for RAR deployment  
descriptor, managed connection and  
activation spec***

Common properties were covered In the WebSphere Adapter common details presentation. This section covers the Siebel specific attributes.

## Managed connection factory properties (for outbound)

Property	Description
User Name	User name to login to the Siebel EIS
Password	Password for the corresponding user name
Siebel Connect String	<p>Connection string needed to connect to Siebel EIS</p> <p>For Siebel 7.5.x (uses default port 2320, hence no port # specified)            Protocol://machinename/enterprisename/objectmanager/servername            Example: siebel://mysiebel.ibm.com/siebel/SSEObjMgr_enu/sebldev1</p> <p>For Siebel 7.7.x (uses port 2321 which is not a default):            protocol://machinename:portnumber/enterprisename/objectmanager</p>
Language	Language to be used - Example: enu
resonateSupport	Specifies whether the adapter should use Attach/Detach calls on the SiebelDataBean. Default: True

Some of the specific Siebel Adapter custom properties are shown here. The description for most of them is self explanatory.

The Siebel connect string has its own format, as shown in the table with examples.

Resonate Support is a feature exposed by the Siebel Application to allow for more efficient use of Siebel Connections. Instead of doing expensive login and logoff operations on the connection, a Siebel Client can detach and attach a Siebel Java DataBean (connection). This is transparent to the user, and happens when the application server does a clean up of the connection then later on attempts to re-establish a connection. If resonateSupport is set to true, then instead of doing a login or logoff during this phase, the adapter will attach and detach, respectively.

## Activation specification properties (for inbound)

Property	Description
User Name	User name to login to the Siebel EIS
Password	Password for the corresponding user name
Siebel Connection String	<p>Connection string needed to connect to Siebel EIS</p> <p>For Siebel 7.5.x (uses default port 2320, hence no port # specified): Protocol://machinename/enterprisename/objectmanager/servername Example: siebel://mysiebel.ibm.com/siebel/SSEObjMgr_enu/sebldev1</p> <p>For Siebel 7.7.x (uses port 2321 which is not a default): protocol://machinename:portnumber/enterprisename/objectmanager</p>
Siebel Repository	Name of the Siebel repository – Example: "Siebel Repository"
Language	Language to be used - Example: enu
Event Component Name	Specifies the name of the Siebel Component for the event table
resonateSupport	Specifies whether the adapter should use Attach/Detach calls on the SiebelDataBean. Default: True

The properties for the inbound ActivationSpec are shown in the table. They are same as the outbound except a new one called the Event Component Name, which specifies the name of the Siebel custom event component that has been created to store the events from the Siebel components.

## ***Error handling***

This section covers the error handling.

## Error handling

- Any Siebel Exception thrown while a business service runs will be caught by the adapter
  - ▶ Message obtained from the exception is processed and logged
- Resource adapter will throw exceptions based on the error that occurred during request processing
  - ▶ The Exception is a subclass of ResourceException



Exceptions thrown by Siebel application are caught by the adapter and the message from the exception is processed and logged. The adapter in turn will throw an exception to the client, based on the error. All adapter exceptions are sub class of ResourceException.

## Outbound error exceptions

- `InvalidRequestException` – There were problems with the processing of the business object data by Siebel EIS
- `BusinessObjectProcessingException` – There were problems with processing the business object. This typically occurs when attempting to go back and froth from property set to business objects
- `MissingMetadataException` – There were problems with the metadata in the business object. They were missing, incomplete or incorrect. The message contained may be more descriptive
- `ConnectionFailedException` – There was a failure to use the connection during processing
- `LoginFailedException` – The attempt to login to the Siebel EIS on a new connection request failed
- `ResourceException` – This will be thrown for any and all other type of problems



This page lists all the outbound error Exceptions that the adapter throws.



## Inbound error handling

- `InvalidRequestException` – There were problems with the processing of the business object data by Siebel EIS
- `BusinessObjectProcessingException` – There were problems with processing the business object. This typically occurs when attempting to go back and froth from property set to business objects
- `MissingMetadataException` – There were problems with the metadata in the business object. They were missing, incomplete or incorrect. The message contained may be more descriptive
- `ConnectionFailedException` – There was a failure to use the connection during processing
- `LoginFailedException` – The attempt to login to the Siebel EIS on a new connection request failed
- `ResourceException` – This will be thrown for any and all other type of problems, or errors in the Event Store



This page lists all the inbound error Exceptions that the adapter throws.

## ***Transaction and security***

This section covers the transaction and security support.

## Transaction and security

- Transaction
  - ▶ Siebel application does not support local or XA transaction
  - ▶ Hence this feature is not supported by the adapter
- Security
  - ▶ For outbound, use the WebSphere Process Server J2C Authentication Alias to specify the user id and password to connect to the Siebel application
  - ▶ Inbound does not use J2C Authentication Alias – instead uses user id and password on the ActivationSpec



Siebel application does not support transactions, so there is no end to end transaction available from the adapter to and from the Siebel application.

In terms of security, for the outbound request, the J2C Authentication Alias within the WebSphere Process Server is used. The authentication alias name can be specified in WebSphere Integration Developer. The administrator must have that J2C Authentication Alias defined within the Process Server with its user id and the password to authenticate the Siebel application. Pre-defined J2C Authentication Alias “**SCA\_Auth\_Alias**” can be used for authentication.

For the inbound request, the user id and password properties specified on the inbound ActivationSpec is used. J2C Authentication Alias is not used for inbound operations.

## ***Problem determination***

This section is a review of Problem Determination. Problem Determination methodology, log and trace files are similar in all the WebSphere Adapters, and are covered in the common details section.

## Problem determination

- Covered in the Common Adapter details presentation – Recap:
  - ▶ WebSphere Process Server log files (SystemOut.log and SystemErr.log)
  - ▶ Adapter Log and Trace files configured in WebSphere Integration Developer EMD and using the RAR custom properties in the Administrative console of the Process Server
  - ▶ Different logging level and tracing levels can be set
- Enabling trace for Siebel Adapter in WebSphere Process Server:
  - ▶ Set the tracing level string as "com.ibm.j2ca.siebel.\*=finest"
- Before interacting with the Adapter, test the components in Siebel, where possible



Listed here are the log files for WebSphere Process Server. Note the trace string used to turn on tracing of the Siebel adapter, along with the levels.

Best practice is, where possible, to try to test the Siebel components like the custom event component, generation of event triggers within the Siebel backend before trying the end to end scenario with the adapter.

## ***Summary and references***

This section provides a summary and references.

## Summary and references

- Summary
  - ▶ Discussed Siebel Adapter in details covering the architecture, operations, Problem Determination
  
- References
  - ▶ Information Center
  - ▶ User Guide



In summary, this presentation covered the details of WebSphere Adapter for Siebel.

More information can be found in the user guide and the Information Center for the Adapter.

## Trademarks, copyrights, and disclaimers

The following terms are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both:

IBM	CICS	IMS	MQSeries	Tivoli
IBM (logo)	Cloudscape	Informix	OS/390	WebSphere
e(logo)/business	DB2	iSeries	OS/400	xSeries
AIX	DB2 Universal Database	Lotus	pSeries	zSeries

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are registered trademarks of Microsoft Corporation in the United States, other countries, or both.

Intel, ActionMedia, LANDesk, MMX, Pentium and ProShare are trademarks of Intel Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Linux is a registered trademark of Linus Torvalds.

Other company, product and service names may be trademarks or service marks of others.

Product data has been reviewed for accuracy as of the date of initial publication. Product data is subject to change without notice. This document could include technical inaccuracies or typographical errors. IBM may make improvements and/or changes in the product(s) and/or program(s) described herein at any time without notice. Any statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only. References in this document to IBM products, programs, or services does not imply that IBM intends to make such products, programs or services available in all countries in which IBM operates or does business. Any reference to an IBM Program Product in this document is not intended to state or imply that only that program product may be used. Any functionally equivalent program, that does not infringe IBM's intellectual property rights, may be used instead.

Information is provided "AS IS" without warranty of any kind. THE INFORMATION PROVIDED IN THIS DOCUMENT IS DISTRIBUTED "AS IS" WITHOUT ANY WARRANTY, EITHER EXPRESS OR IMPLIED. IBM EXPRESSLY DISCLAIMS ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT. IBM shall have no responsibility to update this information. IBM products are warranted, if at all, according to the terms and conditions of the agreements (e.g., IBM Customer Agreement, Statement of Limited Warranty, International Program License Agreement, etc.) under which they are provided. Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products in connection with this publication and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. IBM makes no representations or warranties, express or implied, regarding non-IBM products and services.

The provision of the information contained herein is not intended to, and does not, grant any right or license under any IBM patents or copyrights. Inquiries regarding patent or copyright licenses should be made, in writing, to:

IBM Director of Licensing  
IBM Corporation  
North Castle Drive  
Armonk, NY 10504-1785  
U.S.A.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. All customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

© Copyright International Business Machines Corporation 2006. All rights reserved.

Note to U.S. Government Users - Documentation related to restricted rights-Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract and IBM Corp.