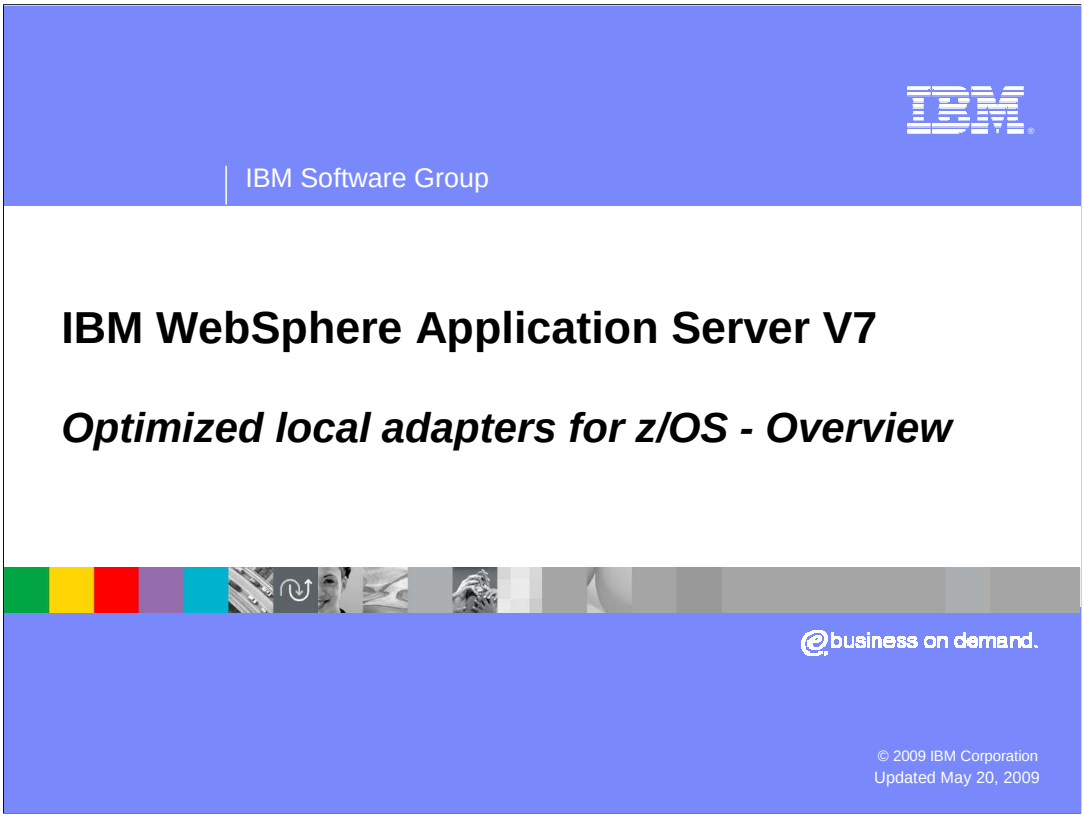
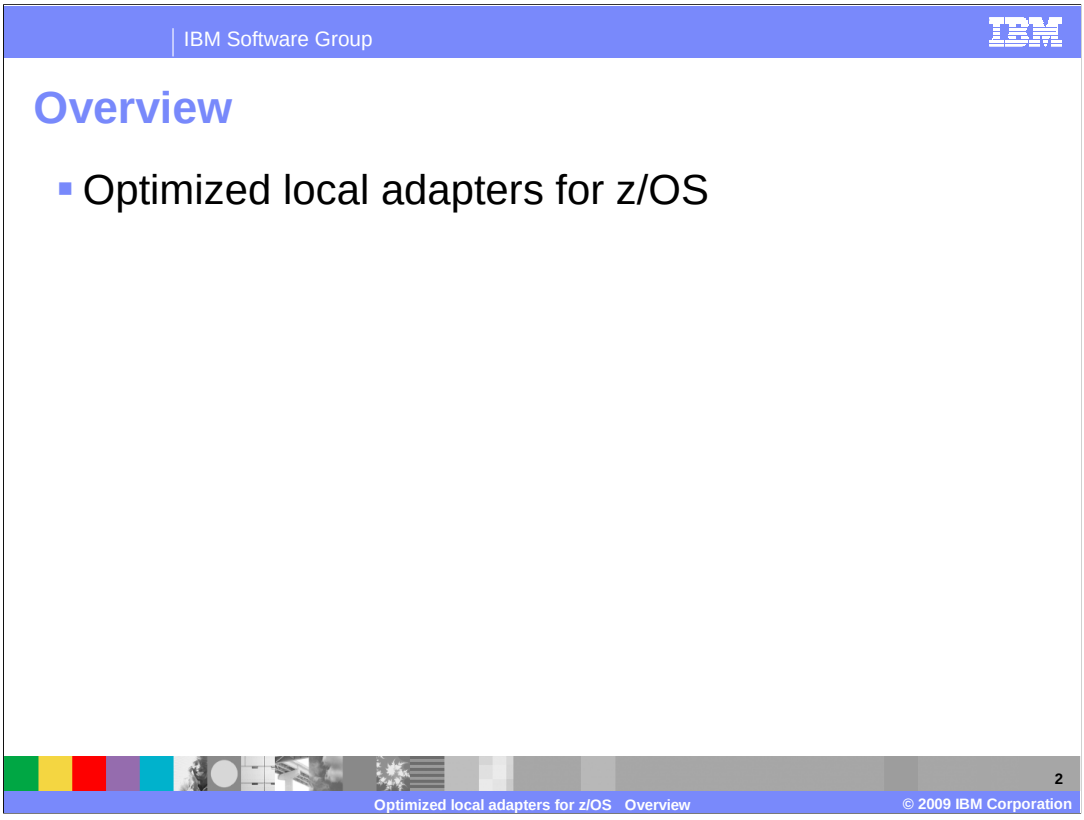
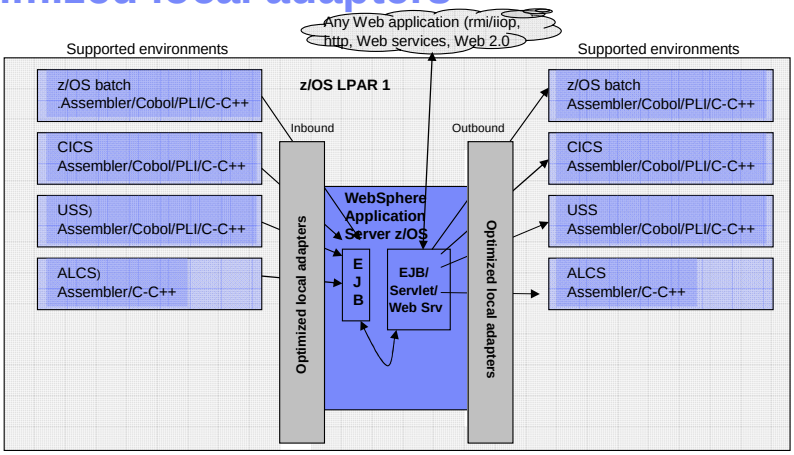


This presentation shows the new optimized local adapter for z/OS® feature.



Following is a brief overview for the optimized local adapter function for z/OS, available in WebSphere® Application Server V7.0.0.4.

Optimized local adapters



Introduces fast local calling to/from z/OS native languages and WebSphere Application Server z/OS applications supporting all z/OS environments.

- Supports global transactions, security propagation, WLM context passing
- Establishes infrastructure that can be used under higher level programming models (that is: Web services, SCA, and so on)

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The diagram above shows the current list of supported environments where you can use the optimized local adapter. Optimized local adapters allow calls into WebSphere Application Server from z/OS batch, USS and a CICS® environment running z/OS native languages such as Cobol, c and assembler. Bi-directional calls are supported. Also supported is a product called ALCS which is another transaction processing environment that can run on z/OS. Global transactions, security and WLM contexts are supported where appropriate either inbound or outbound. Optimized local adapters allow batch applications to access the WebServices and SCA capabilities of WebSphere Application Server. Optimized local adapters have established a foundation to support future applications that takes advantage of optimized binary pipes between a client address space and WebSphere Application Server or WebSphere Application Server and an external address space.

Optimized local adapters features

- Enhanced performance
  - Introduce a high performance cross memory-based API set
    - supports synchronous bi-directional calls from/to a program running in any address space
    - Supports applications in WebSphere Application Server
  - Provide improvements in performance/throughput over Web services/SOAP for local calls
  - Support large messages between address spaces and reduce copies
  - Integrate closely with the WebSphere Application Server stack
    - provides a grooved channel into/out of the WebSphere Application Server from other address spaces (very low latency)
  - Built-in ready to use optimized path on WebSphere Application Server for exploiters (HLL apps and subsystems) to use as a binary protocol between their endpoints and those under WebSphere Application Server when co-located on z/OS.

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The main feature offered with optimized local adapters is a high speed, high performance cross memory set of API's. The API's are used to call bi-directionally between a program running in any address space and an application running in WebSphere Application Server. Basically, optimized local adapters are offering a high speed message pipe that is using cross memory message copies. The technology being used to offer this function is WebSphere Application Server local communication. This is the same communication that is used to communicate between your WebSphere Application Servers; the function is being extended to include your client address space. Optimized local adapters achieve performance improvements because there is no intermediary message representation.

Optimized local adapters features

- Enhanced qualities of service
  - Support fast propagation of security and workload context between WebSphere Application Server and external address spaces.
  - Support global transactions – two-phase commit between environments - where applicable when calling into WebSphere (CICS to WebSphere Application Server)

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Currently when calling WebSphere Application Server from CICS, and Quality of Service (QOS) is a requirement, you would use a Web service. Unfortunately with a Web service there are message conversions that occur that causes significant overhead preventing customers from utilizing this function, optimized local adapters use a message format that does not require any conversion. This API would be used if you want to make a finer grained call between WebSphere Application Server and CICS.

The security context, transaction context and WLM context are propagated from CICS into WebSphere Application Server. With the security context there is no reason to re-authenticate with WebSphere Application Server if you have authenticated from CICS. The same is true for security authentication from WebSphere to CICS. Currently, both transaction and WLM contexts are only supported from CICS to WebSphere Application Server.

Optimized local adapters

- Extend WebSphere Application Server on z/OS stack to legacy applications
  - Improve support for HLL programs running under LE
    - assembler- non-LE programs
    - Java™ applications running in another JVM on the same z/OS system.
  - Makes WebSphere Application Server capabilities (for example: Web services stack, Web 2.0 capabilities, and so on) more accessible.
  - Provide capability to easily interact with WebSphere Application Server-based applications on z/OS from batch and USS environments.

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A goal of the optimized local adapters is to extend WebSphere Application Server stack to your z/OS legacy applications. This allows your existing applications to grow and give you the flexibility to manage your environment. An example of this might be if you have a native application program written in Cobol that runs in CICS that you want to migrate to WebSphere, but migrating the application all at once is not practical. If you need to maintain a QOS, like security or transactions while performing the migration, high speed connectors will allow you to take small pieces of an application and migrate it to WebSphere without incurring as big of a performance overhead as you would have if you were using SOAP or Web services calls.

Optimized local adapters

- Basic goal for external address spaces using APIs:
  - Minimize configuration and setup while allowing them to use WebSphere application server stack services (EJBs, Web services, Web 2.0 features)
  - JVM, LE runtime, USS, and sockets/TCPIP are not required in the client address space

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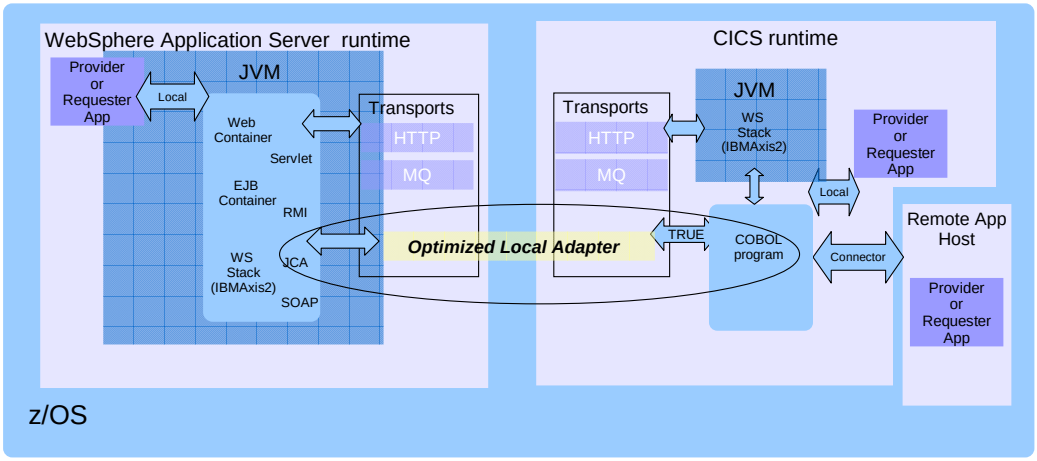
Another goal of optimized local adapters is to minimize requirements on your client application. The client environment in z/OS batch processor or USS applications have made it so you do not have to include extras, such as a JVM, LE runtime or TCPIP in your application. Optimized local adapters provide low level API's that a customer can use to get into WebSphere Application Server that do not bring significant overhead into your client environment.

WebSphere Application Server/CICS bidirectional



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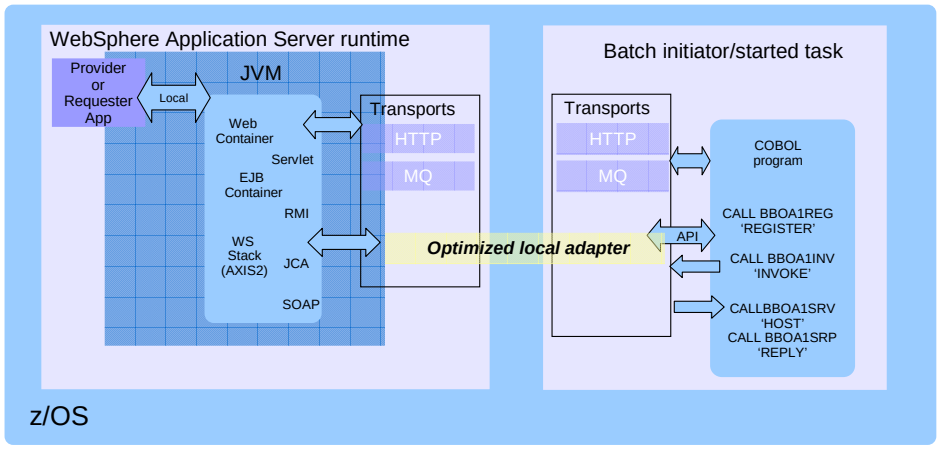
Above is a diagram demonstrating optimized local adapters between a WebSphere Application Server runtime and a CICS runtime. The CICS runtime, connecting to WebSphere Application Server uses supporting CICS communications called true, which is a task related user exit. CICS provides a set of APIs if you want to be a resource manager.

The use of CICS task related user exit (TRUE) mechanism provides a clean separation of connector thread from CICS threads and allows the system to get control at CICS commit/sync points and propagate to WebSphere Application Server.

With this capability, an application can drive a Java method in WebSphere Application Server as a proxy for making an outbound Web service call and use the Axis2 stack (WS-* QoS) and deployment capabilities if the required QoS capability is not yet available in CICS.

WebSphere Application Server/batch bidirectional



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Extending the WebSphere Application Server stack and its capabilities to applications running under batch, TSO, USS increases the value proposition for WebSphere Application Server on z/OS. This is an easy to use programmable interface that allows programs in these environments to call Java methods in WebSphere Application Server. The reach of these legacy applications synchronously extends without them having to embed their own stacks for things like SOAP and Web service..

Customers can use the development, administration and deploy tools already available in WebSphere Application Server for creating and deploying applications based on new Web technologies and make these readily callable from legacy applications.

Summary

- Optimized local adapters provide performance benefits
  - Low level API calls

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In Summary, the optimized local adapter component of WebSphere Application Server version 7 provides low level APIs to reduce message overhead from a native z/OS environment into WebSphere Application Server.

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