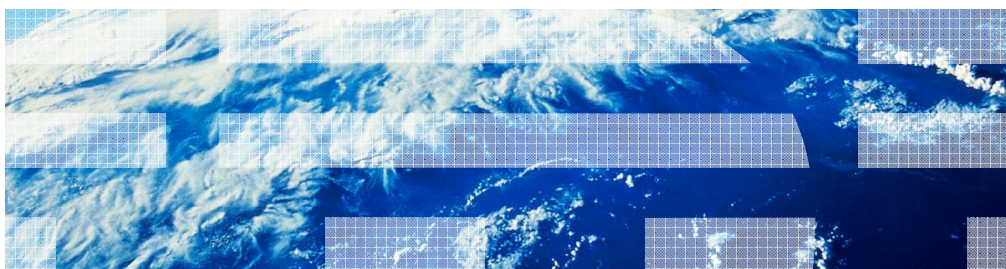


## WebSphere Commerce V7 Feature Pack 5

### Handling order management system outage



This presentation introduces how WebSphere Commerce handles order capture during a Sterling Order Management System (OMS) outage.

## Table of contents

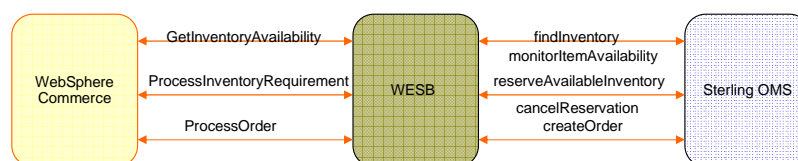
- High level functions provided for handling Sterling OMS outage
- Sterling **OMS** and WebSphere Enterprise Service Bus outage detection
- Handling OMS outages in shopping flows
- Configuration

There are three products involved in WebSphere Commerce and Sterling integration: WebSphere Commerce, WebSphere Enterprise Service Bus and Sterling Order Management System (OMS). There might be a situation where WebSphere Enterprise Service Bus, Sterling OMS, or both are not available such as a hardware failure or power outage. While this type of situation seldom occurs, a solution is provided by Feature Pack 5 to help you handle a temporary outage. This solution allows WebSphere Commerce to continue to capture orders from your online storefront even during the Sterling OMS outage.

This presentation first introduces the high level functions provided for this solution. It then talks about how WebSphere Commerce detects Sterling OMS state, and how WebSphere Commerce handles a Sterling OMS outage in the shopping flows. The presentation concludes with the steps for enabling this solution.

## High level functions provided

- Allow a WebSphere Commerce store to accept orders when Sterling OMS is not available
  - This is done by swallowing exceptions due to an OMS outage in these flows
    - Get inventory availability flow
    - Reserve inventory / cancel inventory reservation flow
    - Order transfer flow



- Detecting the system state of Sterling OMS is done through a heartbeat by hitting the URL of static pages on the Sterling OMS server
- WebSphere Commerce holds the orders accepted during the outage, and will not transfer them until Sterling OMS is available

The integration between WebSphere Commerce and Sterling Commerce involves several flows between WebSphere Commerce and Sterling OMS. These flows include the get inventory availability flow, the reserve or cancel inventory reservation flow, and the transfer orders flow.

If Sterling OMS is not available during these flows, the code in WebSphere Commerce generates an exception, such as a `TimeoutException` or `IOException`. If you want WebSphere Commerce to continue to accept online orders during a Sterling outage, it must swallow these exceptions.

In order to know whether an exception should be swallowed or not, WebSphere Commerce first needs to detect the Sterling OMS system state to see if it is ON or OFF. WebSphere Commerce should only swallow exceptions when the Sterling system is OFF. To detect the Sterling state, WebSphere Commerce invokes a very simple static JSP page on the Sterling OMS server. WebSphere Commerce looks at the HTTP status code in the response. If the status code is 200, WebSphere Commerce treats Sterling OMS as ON; otherwise Sterling OMS is treated as OFF.

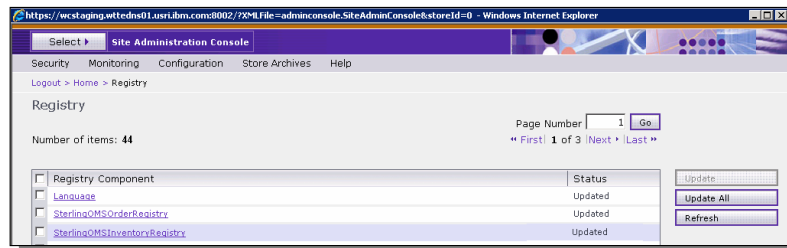
If WebSphere Commerce detects the Sterling OMS state is off, it keeps accepting orders from its storefront, but will not transfer these orders to Sterling OMS until the system becomes available again.

## Detect the system state (heartbeat) of Sterling OMS

The Sterling OMS state, or the heartbeat of OMS, is detected by hitting static pages on the OMS server. Sterling allows you to deploy the Sterling Inventory system and Order system on a single server, or on two separate servers. If they are deployed separately, WebSphere Commerce needs to get each system's heartbeat through a separate URL. If they are deployed on a single server, you can use a single URL for both systems' heartbeat. This is configurable in WebSphere Commerce.

In order to check the WebSphere Enterprise Service Bus state, WebSphere Commerce hits the static pages through WebSphere Enterprise Service Bus. So if WebSphere Commerce cannot connect to WebSphere Enterprise Service Bus, it treats both the Sterling inventory system and order system as OFF. WebSphere Commerce considers a system to be ON only when the response HTTP code to the heartbeat request is 200.

## Registries and scheduler job for system state detection



- Registries indicating system state of Sterling OMS
  - SterlingOMSOrderRegistry
  - SterlingOMSInventoryRegistry
- Heartbeat scheduler job SterlingOMSUpdateSystemState
  - Trigger Inventory / Order system state detection
  - Update the registries

There are two new registries created for this solution, SterlingOMSOrderRegistry and SterlingOMSInventoryRegistry. These two registries hold the Sterling inventory system state and Sterling order system state.

There is also a new scheduler job, **SterlingOMSUpdateSystemState**, created in Feature Pack 5. This scheduled job triggers Sterling inventory system and Sterling order system state detection, and updates the inventory and order registries.

## Get inventory availability flow

- Checks inventory system state registry
  - If **OFF**, WebSphere Commerce uses the value stored in INVCNF.FALLBACKINVSTAT as the inventory availability
  - If **ON**, WebSphere Commerce calls Sterling OMS API to get inventory information through WebSphere Enterprise Service Bus
    - If an exception occurs, WebSphere Commerce calls the heartbeat
      - If return from heartbeat is OFF:
        - » Update registry to OFF
        - » Add a new scheduler job to run the heartbeat
        - » Use value in INVCNF. FALLBACKINVSTAT as inventory availability

This slide shows how the registries and scheduler job are used in the **Get inventory availability** flow.

When WebSphere Commerce tries to get the inventory availability data from Sterling, it first checks the inventory registry.

If the registry value is OFF, WebSphere Commerce does not try to get the inventory data from Sterling. Instead, it checks the fallback inventory status column of the inventory configuration table, and uses that value as the inventory availability. The possible fallback values are Available, Backordered or Unavailable.

If the registry value is ON, WebSphere Commerce tries to call the Sterling API to get the inventory information. If the call is successful, WebSphere Commerce uses the inventory availability data from the call. If an exception occurs during the inventory call, WebSphere Commerce calls the heartbeat URL. If the inventory system's heartbeat indicates it is OFF, WebSphere Commerce updates the inventory registry status to OFF. It then schedules a new job to run the heartbeat. The scheduler job keeps checking the heartbeat and adding a new scheduler job until the heartbeat indicates the Sterling inventory system is ON.

## Inventory reservation flow

- Checks inventory system state registry
  - If **OFF**, WebSphere Commerce **bypasses** Sterling OMS API call for reserving inventory
  - If **ON**, WebSphere Commerce calls Sterling OMS API for the inventory reservation
    - If an exception occurs, WebSphere Commerce calls the heartbeat
      - If return from heartbeat is OFF:
        - » Update registry to OFF
        - » Add a new scheduler job to run the heartbeat

This slide shows how the Inventory reservation flow handles an outage.

During inventory reservation, WebSphere Commerce first checks the inventory registry. If the registry value shows the inventory system is OFF, WebSphere Commerce bypasses the Sterling OMS API call for inventory reservation.

If the registry value shows the inventory system is ON, WebSphere Commerce tries to reserve the inventory by calling the Sterling API. If the API call is successful, the inventory is reserved in Sterling OMS. If an exception occurs during the call, WebSphere Commerce calls the heartbeat. If the heartbeat shows the Sterling inventory system state is OFF, WebSphere Commerce updates the inventory state registry. It then adds a new scheduler job to run the heartbeat. The scheduler job keeps checking the heartbeat and adding a new scheduler job until the heartbeat indicates the Sterling inventory system is ON.

## Cancel inventory reservation flow

- Checks inventory system state registry
  - If **OFF**, WebSphere Commerce **bypasses** Sterling OMS API call for inventory reservation cancelation
  - If **ON**, WebSphere Commerce calls Sterling OMS API for the inventory reservation cancelation
    - If an exception occurs, WebSphere Commerce calls the heartbeat
      - If return from heartbeat is OFF:
        - » Update registry to OFF
        - » Add a new scheduler job to run the heartbeat

Similar to the inventory reservation flow, WebSphere Commerce first checks the inventory registry when canceling an inventory reservation. WebSphere Commerce only cancels the inventory reservation when the inventory system is ON.

If WebSphere Commerce made an inventory reservation when the inventory system was ON, it has no chance to cancel the reservation after the inventory system goes OFF. In order to cancel the reservation, you need to set an inventory reservation expiration rule in Sterling OMS and let the reservation time out on its own.



## Order transfer flow

- Checks order system state registry
  - If **OFF**, WebSphere Commerce will not transfer the order, sets order status to **Failed to Transfer**
  - If **ON**, WebSphere Commerce checks the order items' inventory reservation. WebSphere Commerce passes line item reservation information along with the order to Sterling OMS if inventory was reserved
- OrderRetransfer scheduler job
  - Transfer orders to Sterling OMS in batch mode when Sterling OMS is available

Order transfer happens when a shopper clicks the Submit button on the check out page. Once the payment is authorized and the order is created in the database, WebSphere Commerce starts to transfer the order to the Sterling order system.

The order transfer begins with WebSphere Commerce checking the order system state registry. If the registry's value shows the order system is OFF, WebSphere Commerce does not attempt to transfer the order. Instead, the order is kept in the WebSphere Commerce database and the order's status is set to **Failed to Transfer**.

If the order system is ON, before WebSphere Commerce transfers the order to Sterling OMS, it checks the order items' inventory reservation. If inventory has been reserved, WebSphere Commerce sends each line item's reservation information together with the order to Sterling OMS.

If an order system outage occurs, the WebSphere Commerce database might contain several "**Failed to Transfer**" orders. To transfer these orders, a new scheduler job, OrderRetransfer, has been created in Feature Pack 5. This scheduler job transfers orders to Sterling OMS in batch mode once the order system becomes available.

## Configuration for Sterling OMS outage – 1

- Make sure Inventory / Order system outage handling is enabled in `xml/config/com.ibm.commerce.order-fep/wc-admin-component.xml`

```

- <_config:DeploymentConfiguration xmlns:_config="http://www.ibm.com/xmlns/prod/commerce/foundation/config" xmlns:xsi="h
  xsi:schemaLocation="http://www.ibm.com/xmlns/prod/commerce/foundation/config ../xsd/wc-admin-component.xsd">
- <_config:extendedconfiguration>
- <_config:configgrouping name="SideBySideIntegration">
  <_config:property name="enable" value="Y" />
  <_config:property name="OMSHeartbeatInterval" value="300" />
  <_config:property name="OrderPendingOnTransferExpirationTime" value="86400" />
  <_config:property name="IsSystemOutageTolerable" value="Y" />
</_config:configgrouping>
- <_config:configgrouping name="TransferOrder">
  <_config:property name="accessProfile" value="IBM_TransferOrder" />
</_config:configgrouping>
</_config:extendedconfiguration>
</_config:DeploymentConfiguration>

```

- Set fallback inventory status to “AVL” or ‘BA’ in WC table INVCNF (default value is “UAVL”)
  - Update `INVCNF` set `FALLBACKINVSTAT = 'AVL'`;
  - Or
  - Update `invcnf` set `FALLBACKINVSTAT = 'BA'`;

To enable Sterling outage handling, you need to update the `wc-admin-component.xml` file for the order-fep component. You need to set the **IsSystemOutageTolerable** parameter value to “Y.” You also need to set the **OMSHeartbeatInterval** value and **OrderPendingOnTransferExpirationTime** values to your preferred intervals. The **OMSHeartbeatInterval** value is used by the Heartbeat Scheduler Job, and the **OrderPendingOnTransferExpirationTime** value is the default interval for the Order Scheduler Job.

You need to set the fallback inventory status in the WebSphere Commerce inventory configuration table. This value tells WebSphere Commerce what inventory availability data to use if the inventory system is not available, such as “In-Stock” or “Backordered.” You can also set the fallback inventory status to “Unavailable.” In that case, all products are shown as out of stock and shoppers are not able to submit their orders.

## Configuration for Sterling OMS outage - 2

Next you need to activate the Sterling OMS transport in the WebSphere Commerce administration console. This transport is used by the WebSphere Commerce JCA connector to connect to the WebSphere Enterprise Service Bus heartbeat services.

Since the inventory system and order system are handled separately, you need to add two URLs to the Sterling OMS transport, one for the inventory system heartbeat, and one for the order system heartbeat. These two URLs are used to connect to the WebSphere Enterprise Service Bus mediation module.

## Configuration for Sterling OMS outage - 3

SCA modules > WCToSSFSMediationModule

Use this page to configure the details of a Service Component Architecture (SCA) module. An SCA module is connected to service requesters through exports and to service providers through imports. Both imports and exports have interfaces, which define access points to and from the SCA module.

Configuration

**General Properties**

Module  
WCToSSFSMediationModule

Application name  
WCToSSFSMediationModuleApp

Version

Cell ID

**Module components**

- Imports
  - WCInventoryServicesImport
  - WCPriceServicesImport
  - SCHeartbeatImport
    - Interfaces[WSDL]
    - Binding
      - HTTP
  - SSFSAPIsImport

On the WebSphere Enterprise Service Bus side, you need to set the HTTP binding for the SCHeartbeatImport Service Component at the method level.

You need to set the Endpoint URL for the getInvSysHB (Get Inventory System Heartbeat) method to point to a static page on the Sterling inventory system. This is shown in the bottom left screen on the slide.

Similarly, you need to set the Endpoint URL for the getOrdSysHB (Get Order System Heartbeat) method. This is shown in the bottom right screen on the slide.

## Configuration for OMS outage - 4

Select ▾ Site Administration Console

Security Monitoring Configuration Store Archives Help

Logout > Home > Scheduler > New Scheduled Job

---

New Scheduled Job

Job command  
SterlingOMSUpdateSystemState ▾

Job parameters  
runScheduler=true&sterlingSystem=Order

Year Month Day  
Start Date 2012 05 01 18 Start time 10:00

Associated user

Allowed host

Schedule interval

Job attempts

Seconds to retry

Scheduler policy  
Run only once ▾

Job priority (1 is lowest, 10 is highest)  
5 ▾

Application type  
▾

Select ▾ Site Administration Console

Security Monitoring Configuration Store Archives Help

Logout > Home > Scheduler > New Scheduled Job

---

New Scheduled Job

Job command  
OrderRetransfer ▾

Job parameters

Year Month Day  
Start Date 2012 05 01 18 Start time 10:00

Associated user

Allowed host

Schedule interval  
30

Job attempts

Seconds to retry

Scheduler policy  
Run only once ▾

Job priority (1 is lowest, 10 is highest)  
5 ▾

Application type  
▾

Finally, you need to add the SterlingOMSUpdateSystemState and OrderRetransfer scheduled jobs to the WebSphere Commerce scheduler. These jobs are used for inventory and order system state detection and for order retransferring.

## Summary

- Solution to handle OMS outage
- Enablement steps

During this presentation, you learned how a Sterling OMS outage can be handled for the WebSphere Commerce and Sterling Commerce integration. You also learned the configuration steps to enable this solution.

## Feedback

Your feedback is valuable

You can help improve the quality of IBM Education Assistant content to better meet your needs by providing feedback.

- Did you find this module useful?
- Did it help you solve a problem or answer a question?
- Do you have suggestions for improvements?

Click to send email feedback:

[mailto:iea@us.ibm.com?subject=Feedback\\_about\\_HandlingSterlingOutages.ppt](mailto:iea@us.ibm.com?subject=Feedback_about_HandlingSterlingOutages.ppt)

This module is also available in PDF format at: [../HandlingSterlingOutages.pdf](..../HandlingSterlingOutages.pdf)

You can help improve the quality of IBM Education Assistant content by providing feedback.



## Trademarks, disclaimer, and copyright information

IBM, the IBM logo, ibm.com, and WebSphere are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of other IBM trademarks is available on the web at "[Copyright and trademark information](http://www.ibm.com/legal/copytrade.shtml)" at <http://www.ibm.com/legal/copytrade.shtml>

Sterling Commerce, is a trademark or registered trademark of IBM International Group B.V., an IBM Company.

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

THE INFORMATION CONTAINED IN THIS PRESENTATION IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. WHILE EFFORTS WERE MADE TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION CONTAINED IN THIS PRESENTATION, IT IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. IN ADDITION, THIS INFORMATION IS BASED ON IBM'S CURRENT PRODUCT PLANS AND STRATEGY, WHICH ARE SUBJECT TO CHANGE BY IBM WITHOUT NOTICE. IBM SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES ARISING OUT OF THE USE OF, OR OTHERWISE RELATED TO, THIS PRESENTATION OR ANY OTHER DOCUMENTATION. NOTHING CONTAINED IN THIS PRESENTATION IS INTENDED TO, NOR SHALL HAVE THE EFFECT OF, CREATING ANY WARRANTIES OR REPRESENTATIONS FROM IBM (OR ITS SUPPLIERS OR LICENSORS), OR ALTERING THE TERMS AND CONDITIONS OF ANY AGREEMENT OR LICENSE GOVERNING THE USE OF IBM PRODUCTS OR SOFTWARE.

© Copyright International Business Machines Corporation 2012. All rights reserved.