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Advanced administration for DataPower B2B Gateway



Agenda

- Management B2B archive
- B2B High Availability and standby group control
- B2B Duplicate Elimination
- Unsupported features of ebXML CPA v2.0 in WebSphere DataPower XB60/XB62

Management B2B archive

Manually archive

- Manually archive can immediately archive data from database.
- In default domain -> archive all data in every application domains
- In application domain -> only archive data in that application domain
- The Trigger field in archive status will show “By manual”.

Automatic periodic archive

- “Disk Use Check Interval” is the polling cycle.
- All transaction older than “Archive Document Age” will be examined.
- Trigger archive criteria : either total number of transaction exceeds “Archive Minimum Documents” or total accumulated document size exceeds “Archive Minimum Size”.
- The “Trigger” field in Archive status will marked as “Auto (by Date)”.

Archive Minimum Size	<input type="text" value="1024"/>	KB
Archive Document Age	<input type="text" value="90"/>	Days
Archive Minimum Documents	<input type="text" value="100"/>	Documents
Disk Use Check Interval	<input type="text" value="60"/>	Minutes

Automatic partial archive at maximum disk usage threshold

- Trigger point : At the end of every transaction
- “Maximum Disk Usage for Documents” defines the threshold of document space.
- If the disk usage reach “Maximum Disk Usage for Documents”, B2B gateway will warning message “ Disk space used by persistent store is close to maximum” and start to archive
- Not all transaction will be archived. With this method, oldest transaction will be archived first. And when disk usage reduce and below the threshold, the archive will stop.
- The “Trigger” field will be marked as “Auto (by Size)”

Maximum Disk Usage for Documents

KB

Automatic archive at persistence store usage threshold

- The persistence store is used to store Meta data of ebMS message.
- If the persistence store is full, transaction can not be completed.
 - To avoid this critical situation, a larger size of persistence store should be considered based on capacity plan.
<http://www-01.ibm.com/support/docview.wss?uid=swg21329746>
 - The default setting is 1GB.
 - 5GB to 10GB is a reasonable setting (also need to calculate with capacity plan.)

Note : The persistence store size can't be retrenched. For example, after enlarge to 2GB, you can't retrench it to 1GB unless you reinitialize the appliance.

- There is another threshold for disk usage called persistence store usage threshold, it is defined internally and not configurable.
- When the persistence store usage reaches the threshold.

Configuration Tips

- Archive Monitor
 - When the appliance performs stress test or under heavily loading, after a long period of running, the message injection rate could out-pace the message archive rate. And the persistence store or document storage could be full.
 - B2B Gateway will become operational state down and new transaction will be rejected.
 - Enable Archive Monitor to set to limit the incoming message rate.
 - The default setting of Archive Monitor is on, consider to turn off only sure that loading is not heavy or not perform any stress test.

- Document Back up property
 - Document Back up property can control which type of documents to backup in every kind of archive method.
 - If all of AS message/MDN options are unchecked, the appliance will SKIP archiving all AS transactions.
 - If all of ebMS message/ACK options are unchecked, the appliance will SKIP archiving all ebMS transactions.

Documents to Back Up

- AS Inbound Message
- AS Outbound Message
- AS Inbound MDN
- AS Outbound MDN
- ebMS Inbound Message
- ebMS Outbound Message
- ebMS Inbound ACK
- ebMS Outbound ACK

General Recommendation for archive

- Frequently archive
 - Advantage
 - A frequently archive can make sure each archive task could be completed in a shorter time and minimize the performance impact.
 - Disadvantage
 - Network and system resource consumption
 - Once transaction archive, user can't examine these archived transaction from B2B Transaction Viewer, like "manual resend", "ebMS Status Request"
 - "Duplicate Elimination" function will not be effective because the metadata of previous transactions are removed from the system.
- How to frequently archive
 - Small value setting for "Maximum Disk Usage for Document"
 - Shorter check interval for "Disk Use Check Interval"
 - periodically manually archive
- For longer archive trigger time, it is recommended to turn on Archive Monitor to make sure there will no traffic peak during the archive operation.

Some other suggestions for document

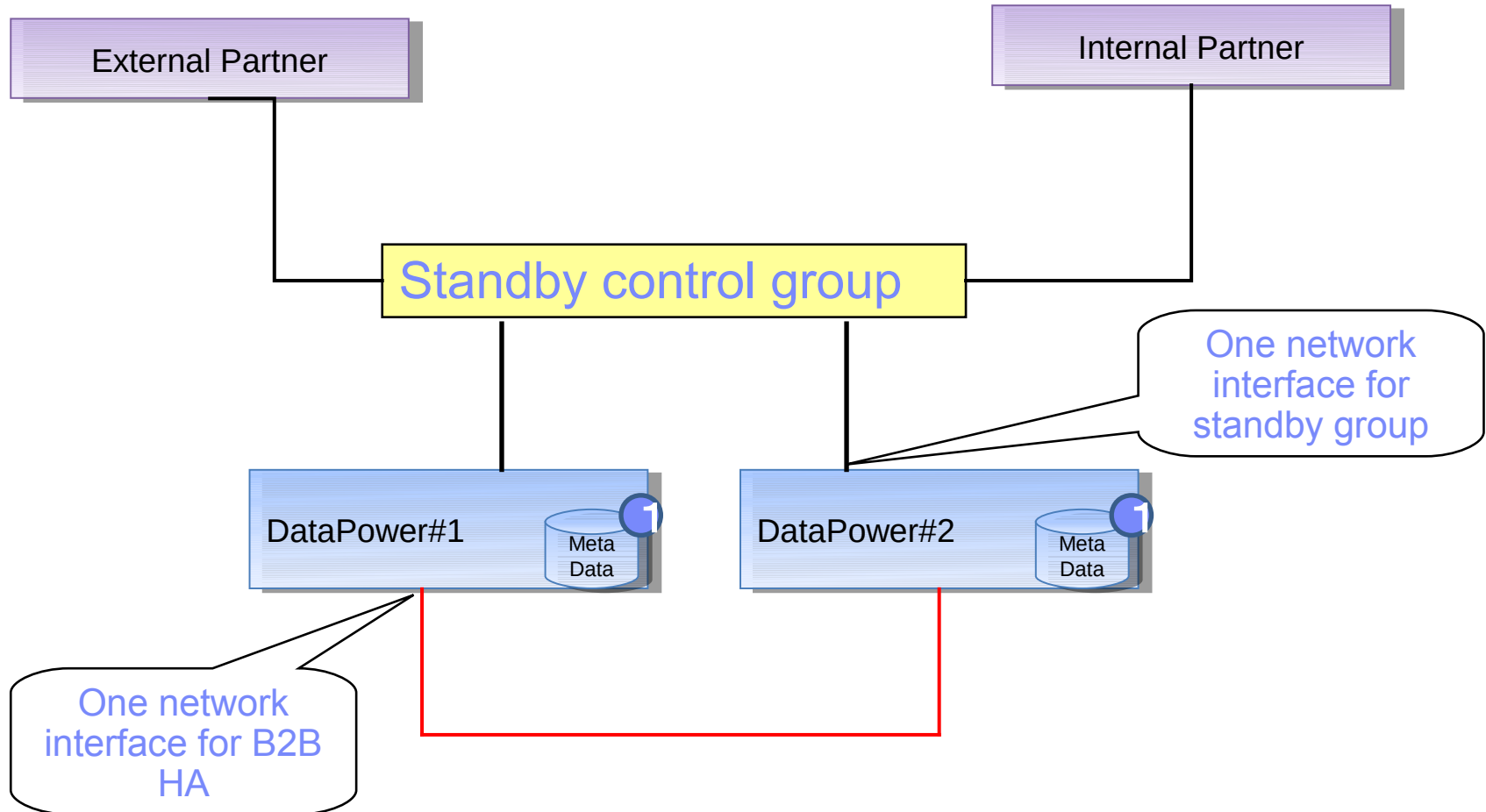
- B2B payload storage can be in local hard disk or in NFS.
- We have found in some cases with unstable NFS server or network, the document might lost. Because the NFS is not the reliable protocol. When there has failure during the transmission, data will lost.
- Using NFS as payload storage is the recommend configuration when using B2B HA.
 - If not using off-box storage, then the payload storage will not consistent in primary and secondary appliance.

B2B High Availability (B2B HA)

B2B High Availability configuration

- High availability is designed to handle faults in an unplanned outage gracefully to continue to provide intended functionality.
- MUST have requirements and installation sequence.
 - B2B payloads must be stored on an external drive subsystem.
 - DataPower standby Groups must be used
- Installation sequence
 - Install the primary appliance first
 - Configure payload to be stored off-box
 - Copy configuration from the primary appliance to the secondary appliance
 - Install the secondary appliance
- Configuration in standby control
 - Group number Must be the same in primary and secondary appliance.
 - Preempt Mode Must be on in standby control.
 - Priority setting in standby control Must be 100.
 - Make sure the values for First four authentication bytes and Last four authentication bytes in the primary are consistent with the values specified in secondary.

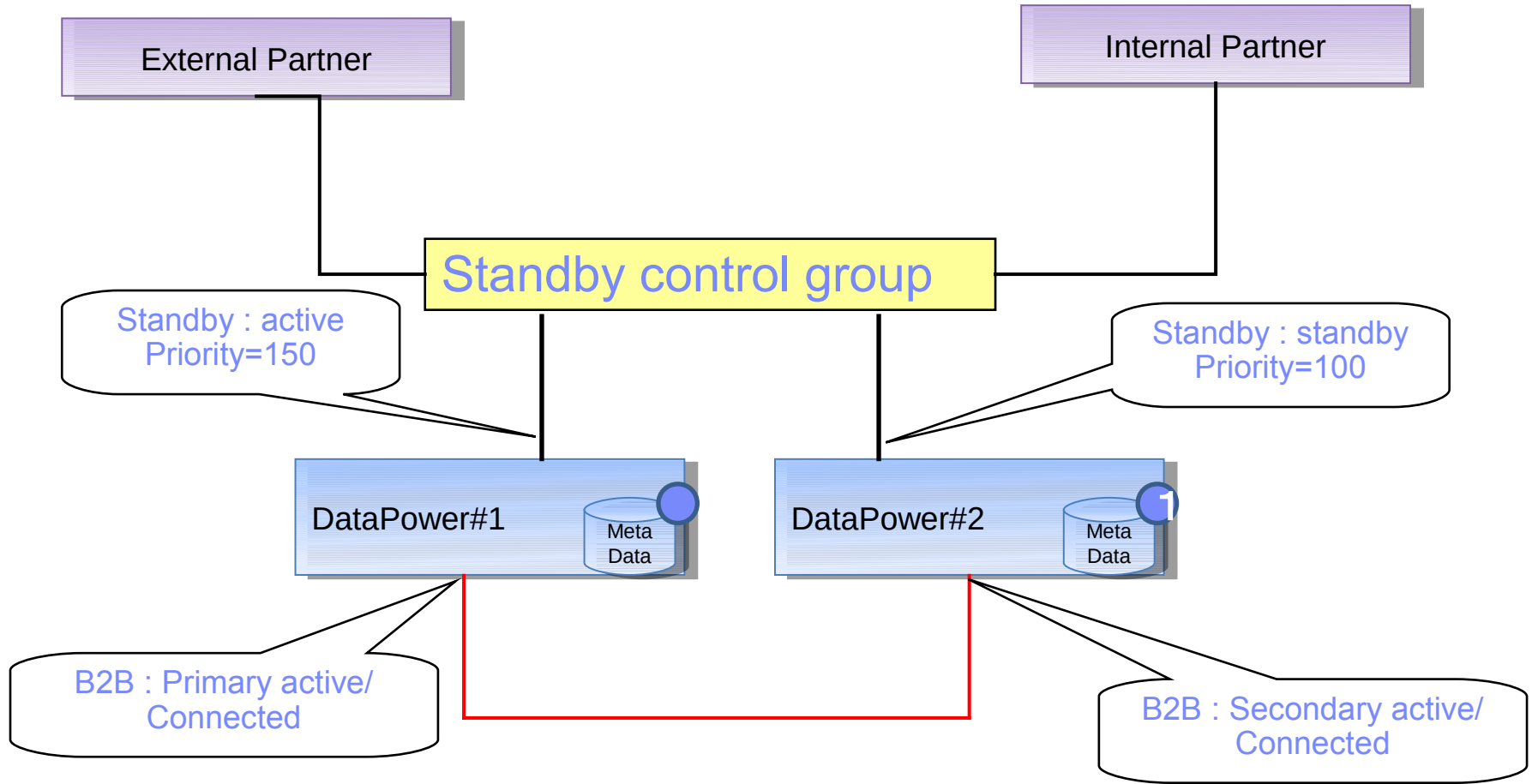
Configuration (1) : Use two network interfaces



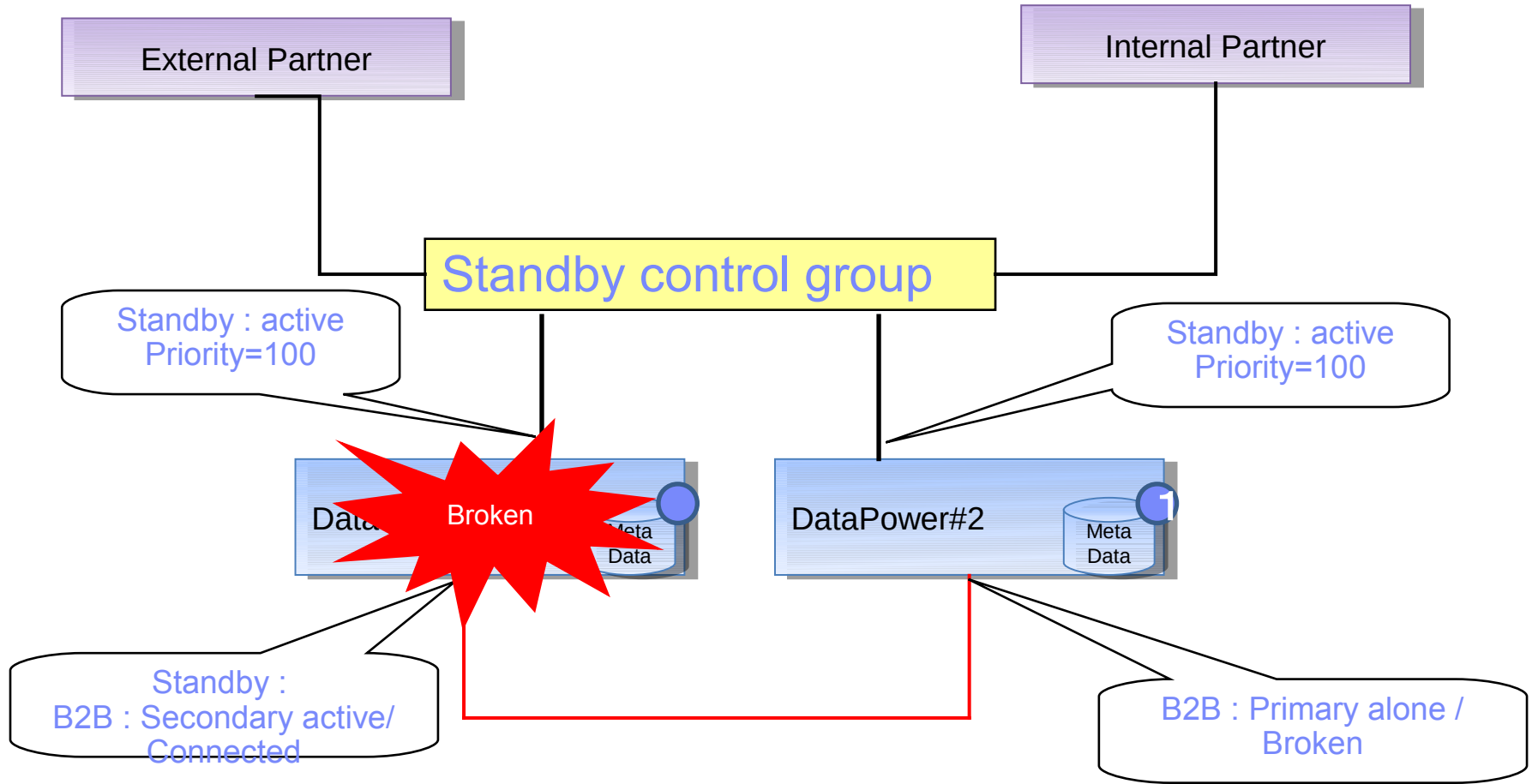
Configuration (1)

- Best practice for 4.0.1 and 4.0.2
- There are some known issues for 4.0.1 and 4.0.2 to configure B2B HA and standby together in one network interface
 - Disable Primary B2B HA network interface doesn't reset the standby group priority
 - Primary B2B HA shutdown doesn't become secondary after shutdown reload.
 - In some cases, when CPU loading is high and broke B2B HA will cause device to reboot.

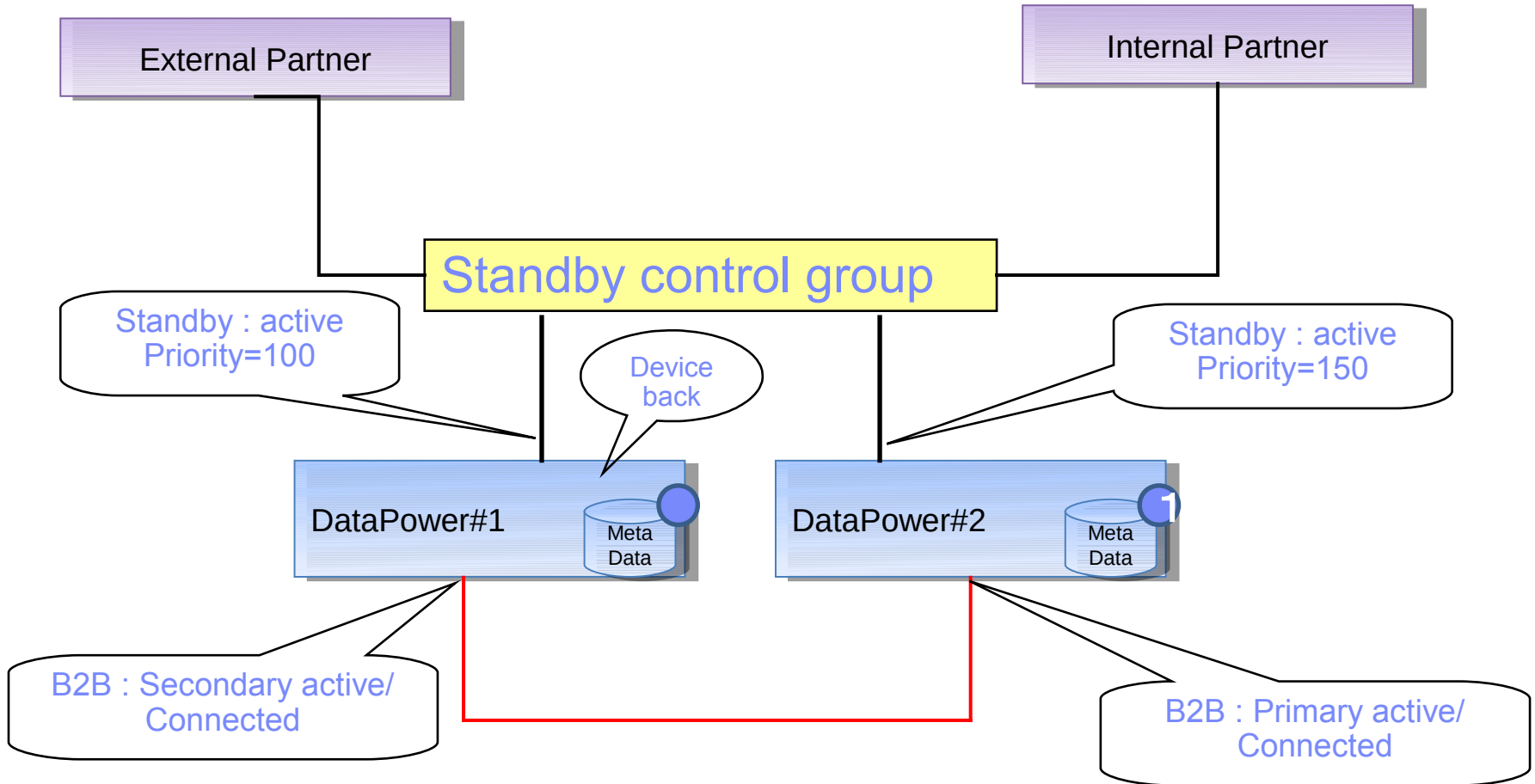
Configuration(1) failover : Normal state



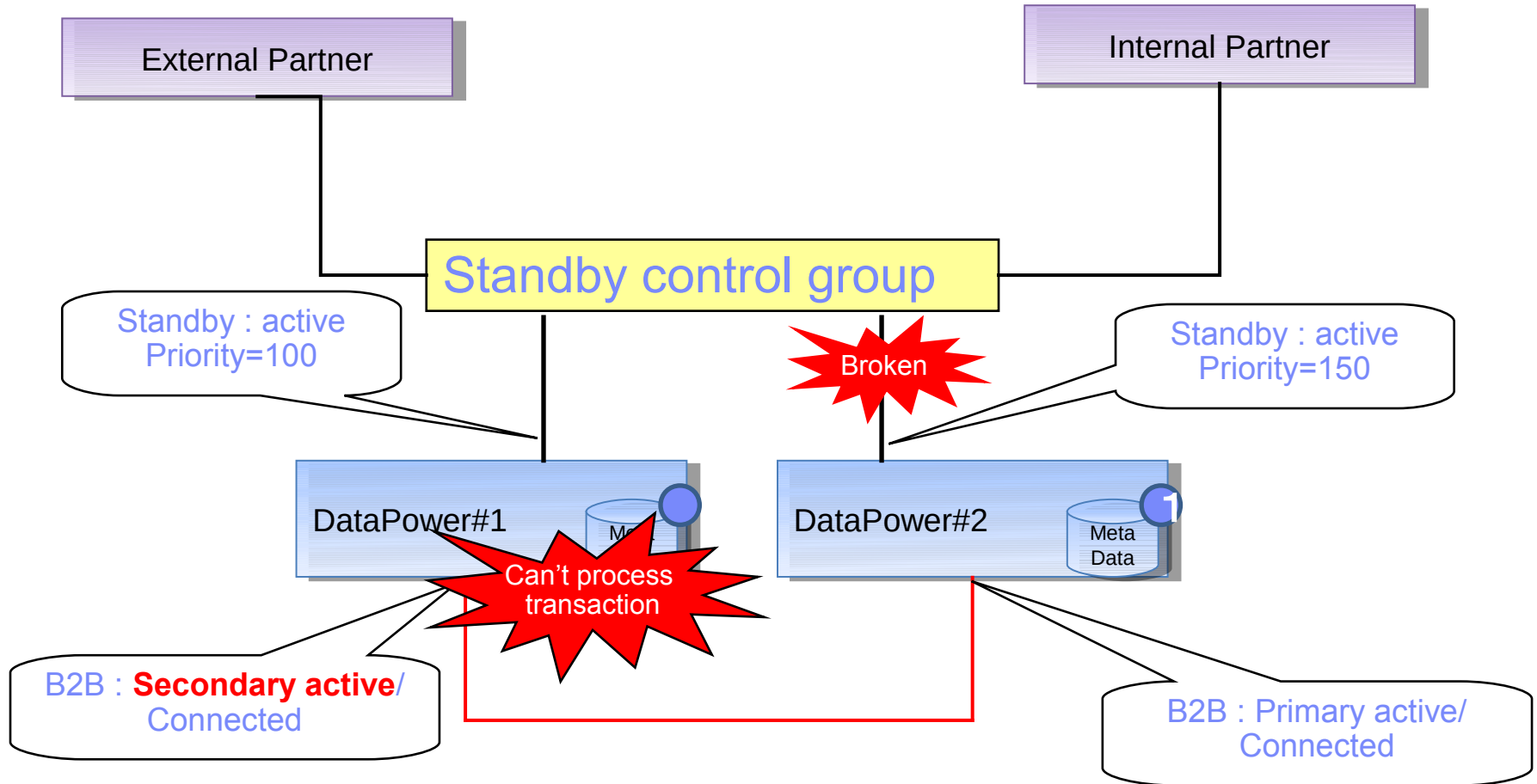
Configuration(1) failover : failover happened



Configuration(1) failover : failover back

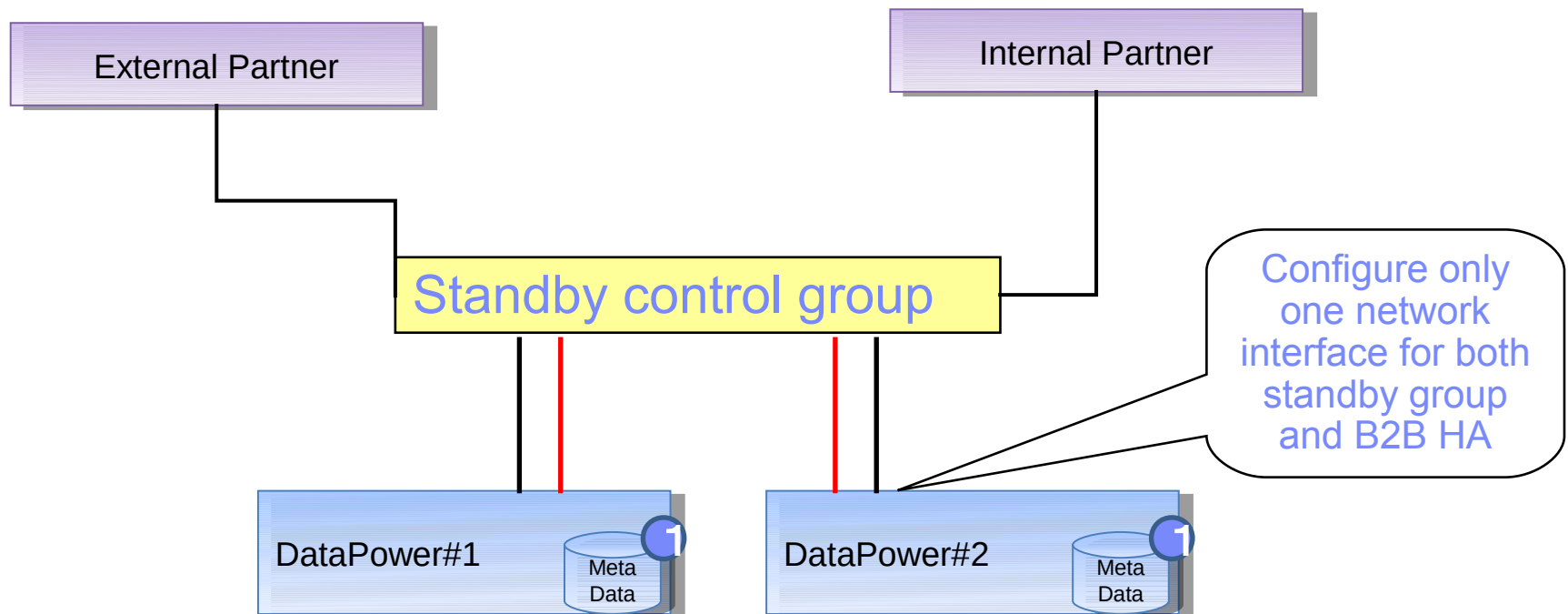


Issue in configuration(1) : failover doesn't happen but transaction still fail

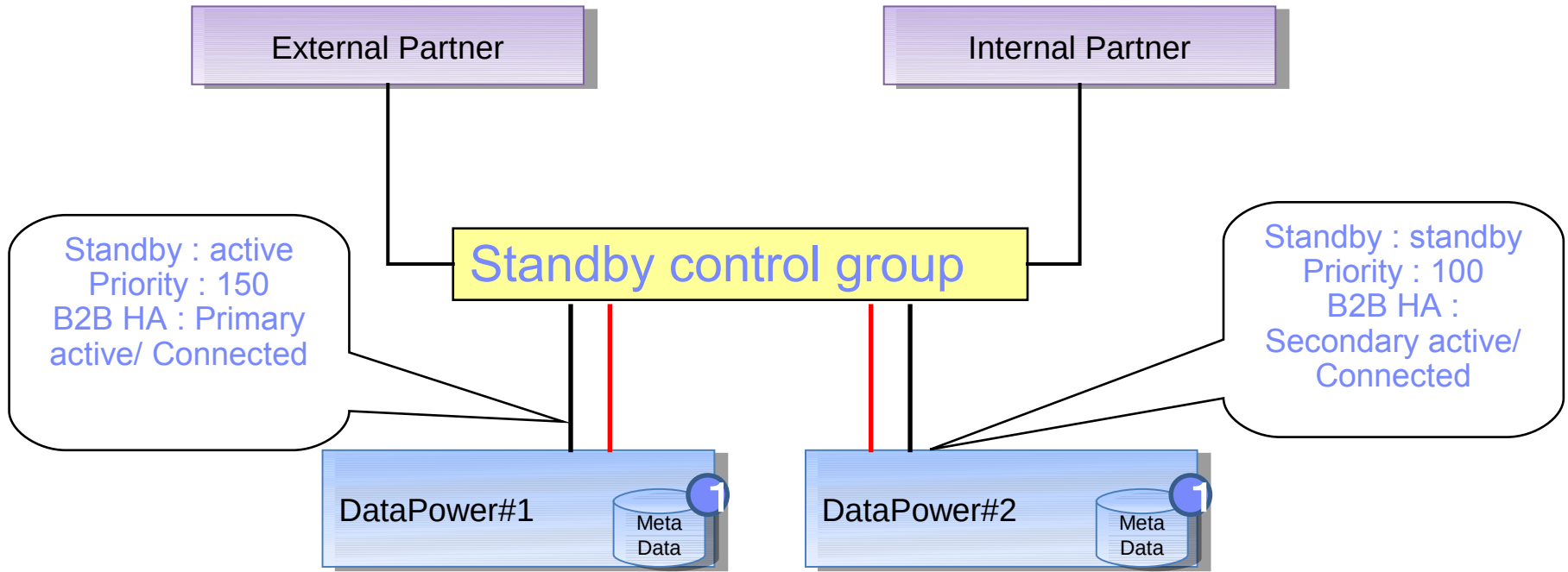


Configuration (2) : Use only one network interface

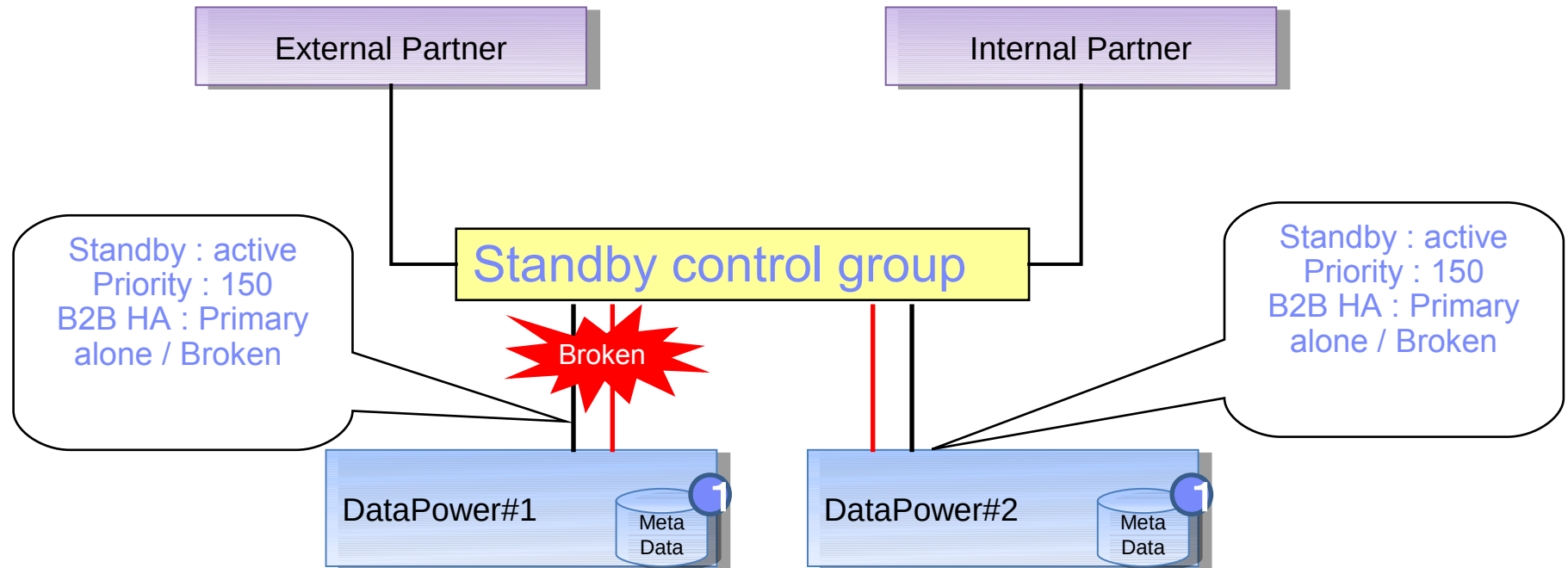
- Best practice for firmware 5.0.0 and later.
- In firmware 5.0.0.0 and later, those known issues in 4.0.1 and 4.0.2 are fixed
- To avoid “fail back issue”, we recommend to configure standby group and B2B HA in one network interface.



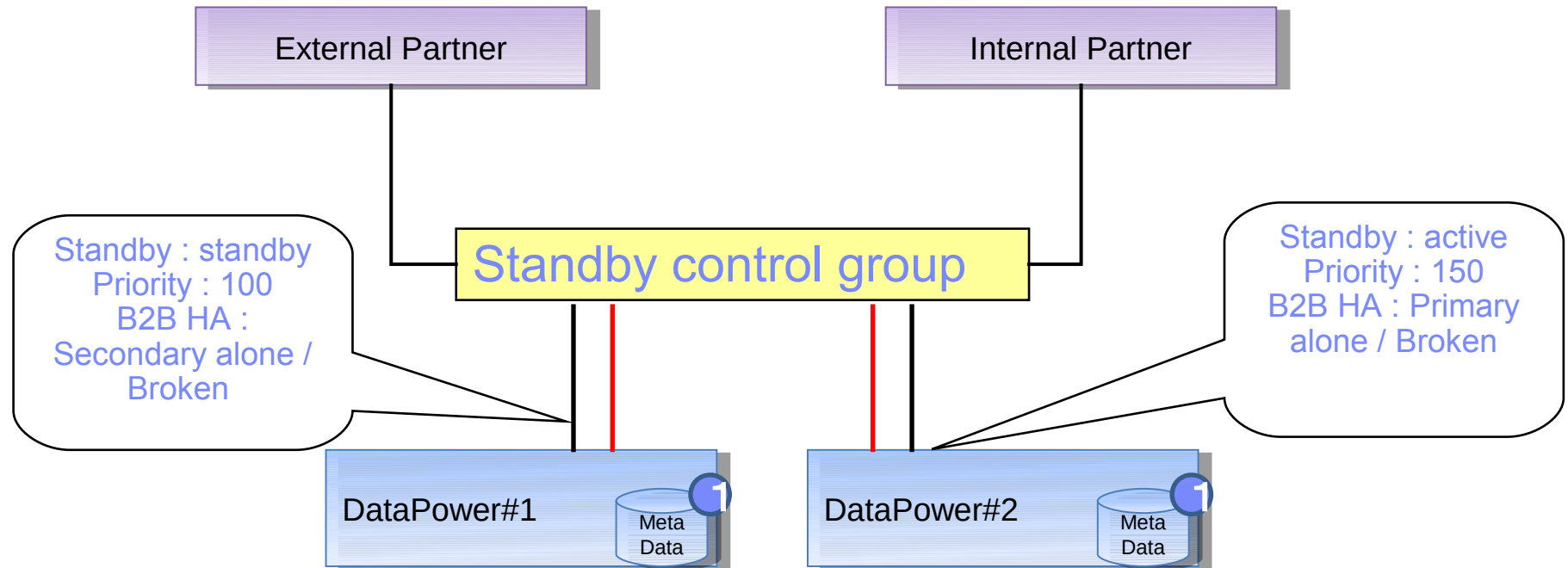
Configuration (2) : Failover



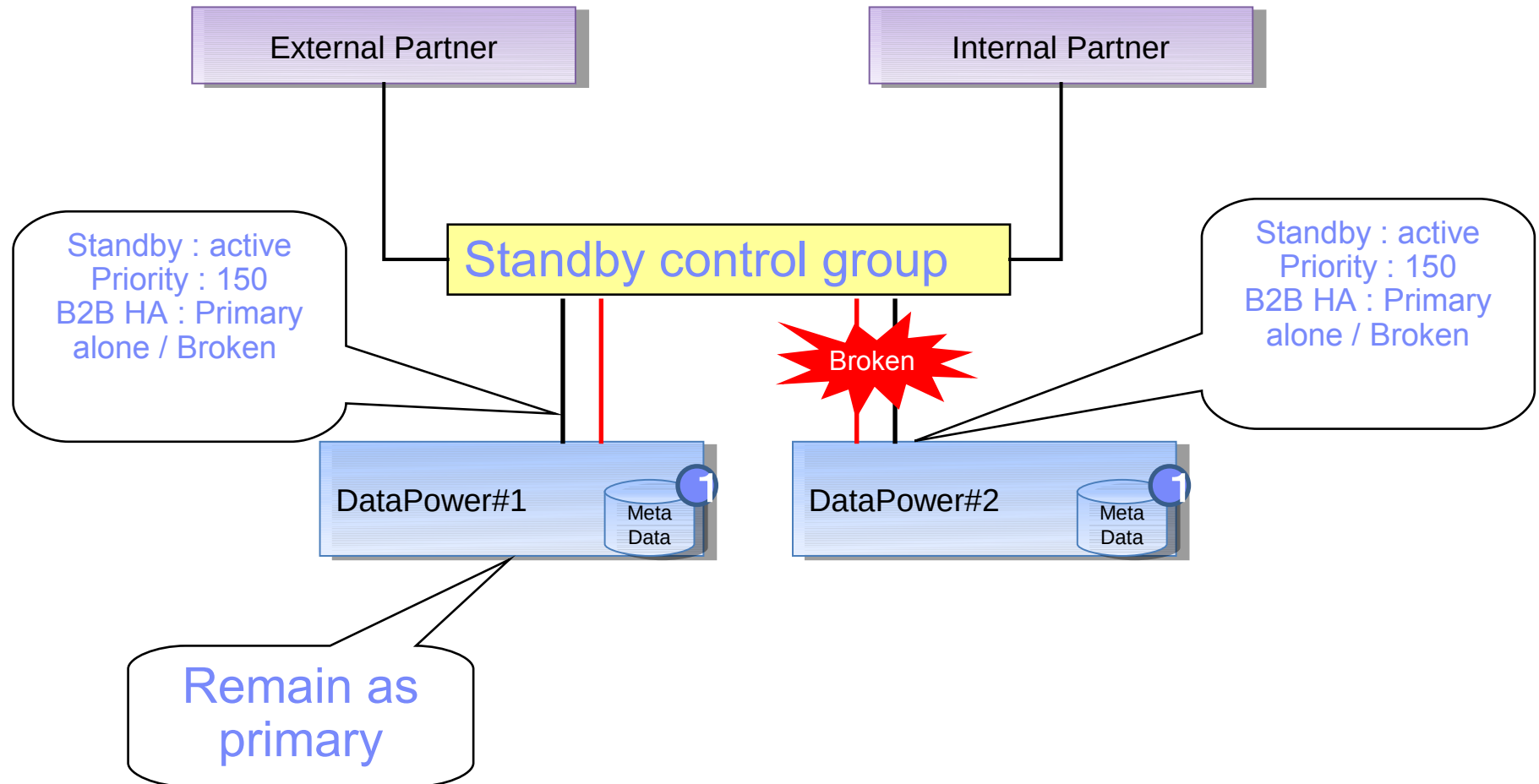
Configuration (2) : Failover



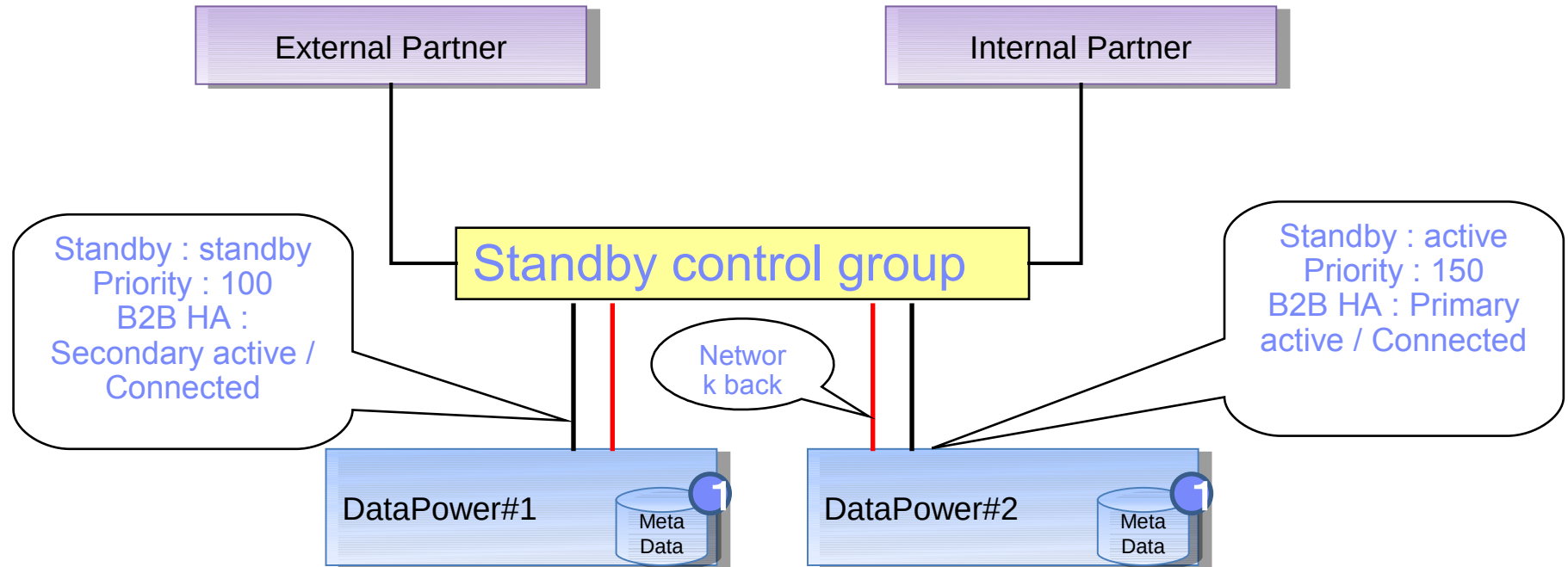
Configuration (2) : Failback doesn't happen



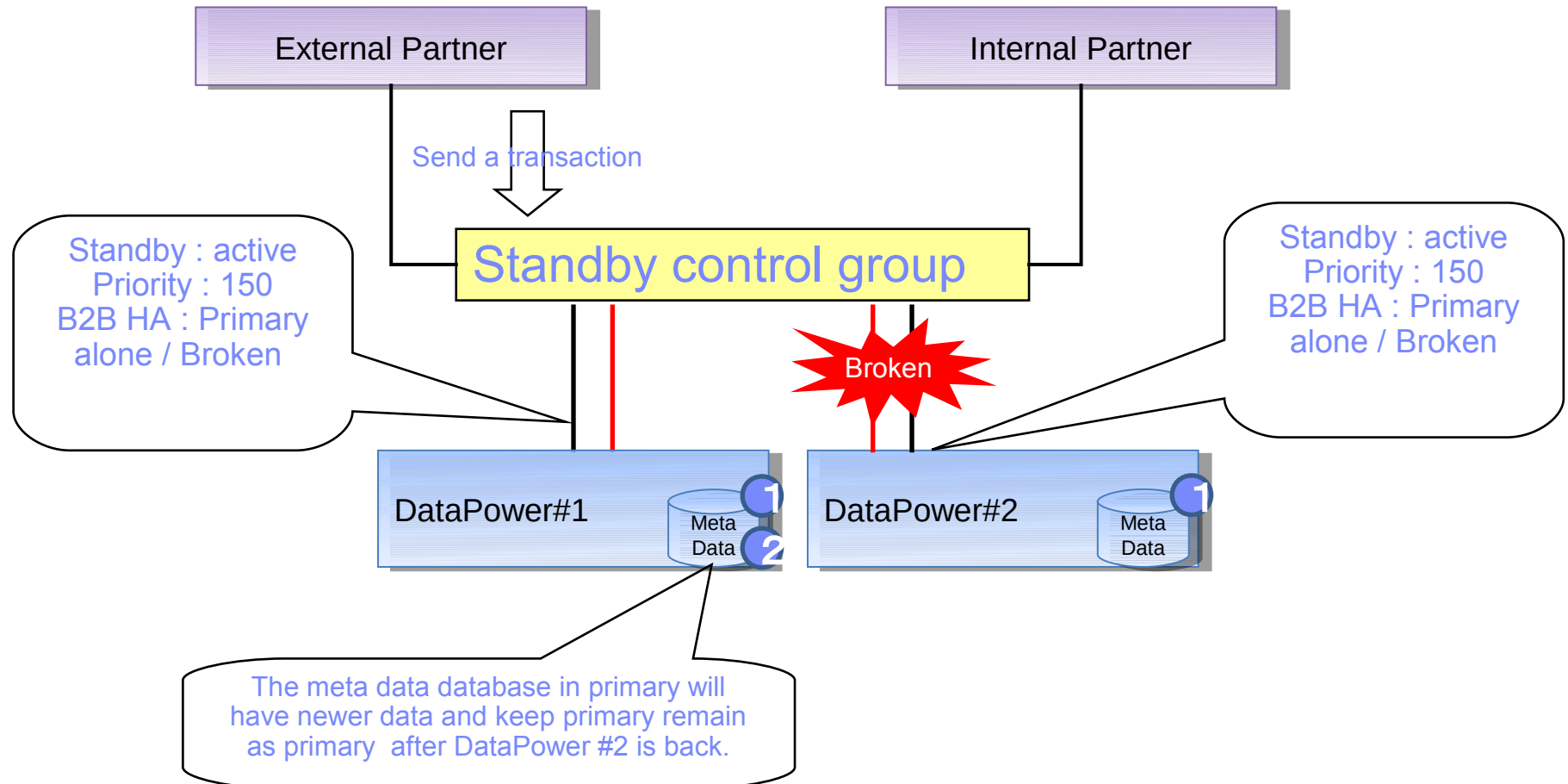
Issue in configuration (2) : Failover doesn't happen



Issue in configuration (2) : Failback happens



Issue in configuration (2) : Workaround for Failback



B2B Duplicate Elimination

What is duplicate elimination?

- Controls whether to request the receiving partner to check for duplicate messages for the outbound message. If enabled, the receiving business partner should ignore duplicate message received. The default is on.
- Configure in “Destination setting” tab of “Configure B2B Partner Profile”
 - If using ebMS protocol, you can find option “Request Duplicate Elimination” in “ebMS Reliable Messaging” area.
- Duplicate message detection bases on Message ID to detect duplicated message.
- When the incoming message with Message ID that exist in current meta data database, this message will be rejected with following error log.

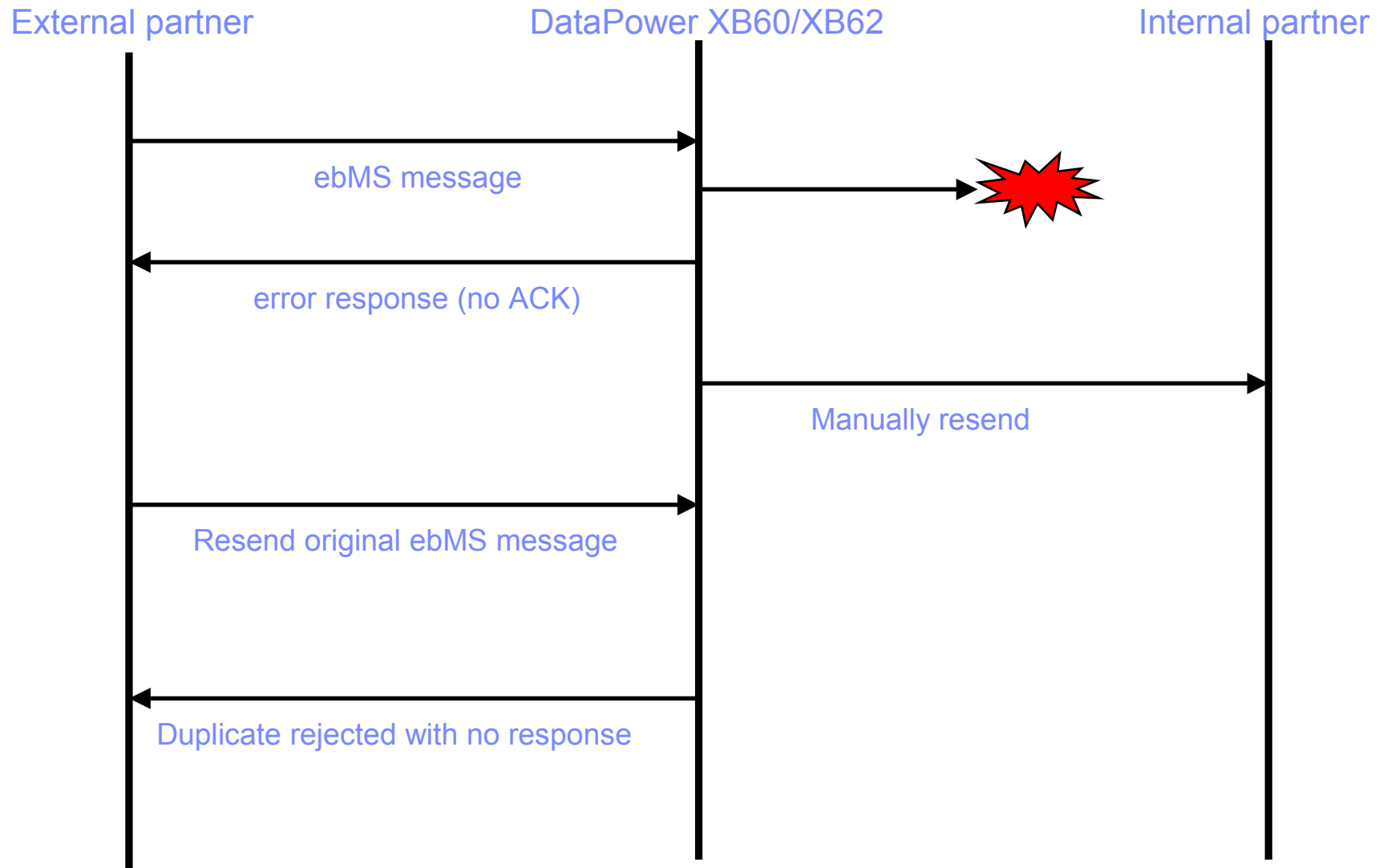
"Failed to retransmit the message for transaction ID xxxxxx. Rejecting a duplicate message. Transaction has the same message ID."

Issues with duplicate elimination

- When receiving same Message ID request, no matter the transaction is successful or fail. It always be rejected by duplicate elimination.
 - External partner resend the message for not getting ACK.
 - Using “Resend” feature in B2B Transaction Viewer to resend the message.

- Behavior for transaction
 - An ACK Message MUST NOT be returned for an Error Message.
 - DataPower return error message to external partner if not getting any response from internal partner.
 - “Resend” feature in B2B Transaction Viewer will not change the transaction status.

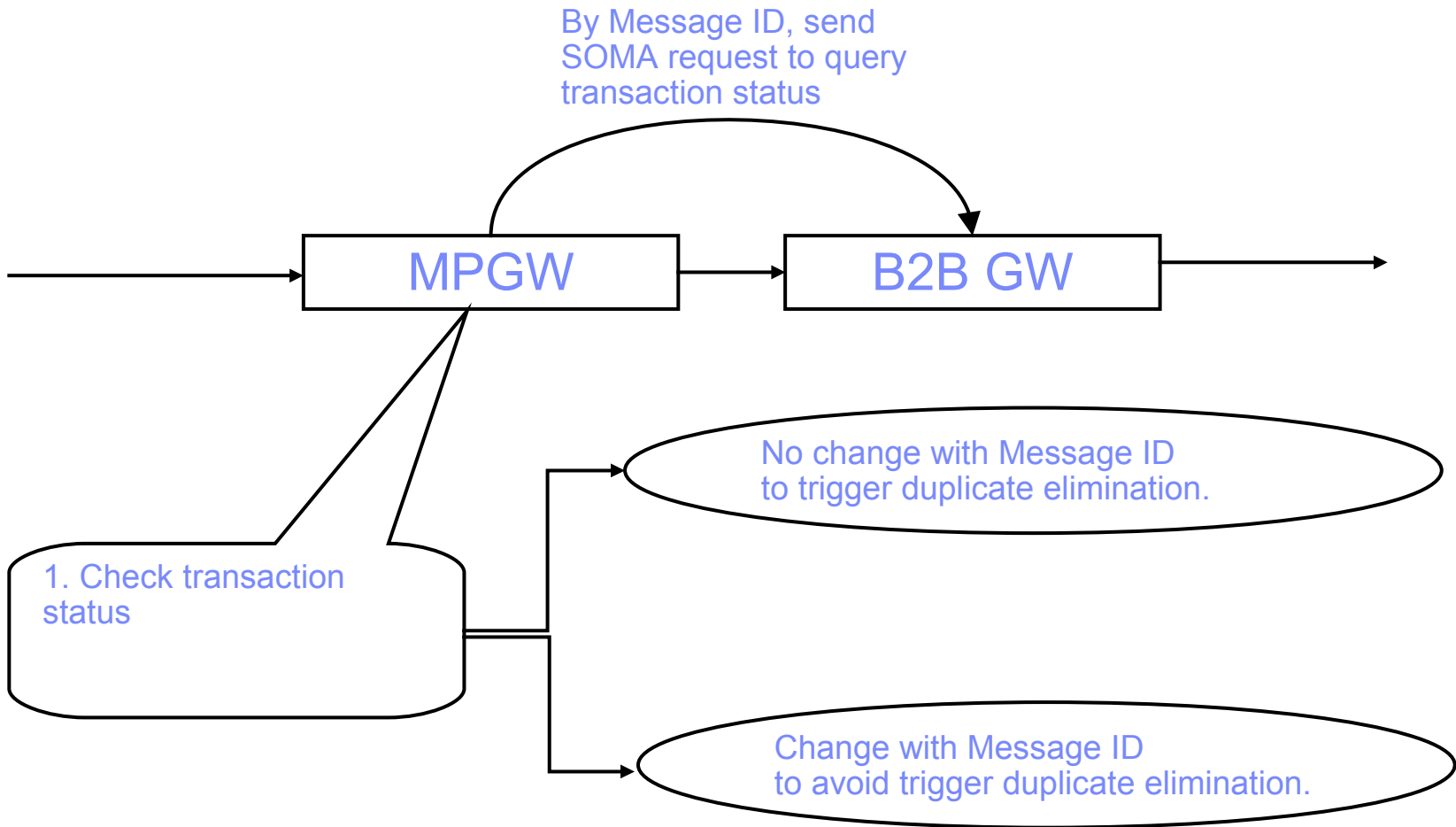
Issues with duplicate elimination



Workaround

- Archive
 - Since duplicate elimination bases on the Message ID in persistence store. Archive can clean up the persistence store and force message to be deliverer.
- MPGW + B2B gateway
 - Add a MPGW in front of B2B gateway to change the Message ID to avoid trigger duplicate elimination.
 - This MPGW can send a SOMA request internally to query previous transaction status by the Message ID to determine previous transaction is fail or success.
 - If previous transaction status is success, not change the Message ID (keep the duplicate elimination).
 - If previous transaction status is fail, change the Message ID.
 - Disadvantage of this workaround, multiple records will be created in persistence store.
- APAR IC85199
 - New feature to resolve fail transaction

Workaround



Unsupported features of ebXML CPA v2.0 in WebSphere DataPower XB60/XB62

Unsupported features

- ConversationConstraints attributes
 - CPA document properties such as state and duration of the agreement, and QoS-like parameters are not imported nor can be configured.
- The PartyInfo/@type attribute is not imported.
 - The tp:type attribute is not imported nor configurable. For example,
`<tp:PartyId tp:type="urn:oasis:names:tc:ebxml-cppa:partyid-type:duns">123456789</tp:PartyId>`
- The Package element is not imported
 - The Package element specifies document package details in Delivery Channel (how Message Header and MIME parts are packaged, with or without security, for transmittal over the transport). They can be identified in CPA PartyInfo and CanSend elements. The B2B Gateway currently does not import the Package element and there is nowhere to enable the package settings when packaging an outgoing messages.
- Only one DeliveryChannel can be configured and imported by the defaultMshChannelId
 - Only the DeliveryChannel identified by defaultMshChannelId will be imported. It will be used for sending standalone ebMS level signals (i.e., Acknowledgment, Error, StatusRequest, StatusResponse, Ping, Pong) that are to be delivered asynchronously. The imported DeliveryChannel will be configurable in B2B Gateway>ebXML tab and the Default MSH Signal Sender and Default MSH Signal Receiver. This is inherited by the ebCPPA specification.

Unsupported features (con't)

- TransportReceiver element
 - A TransportReceiver will be imported to be a Frontside Handler which is effective to a B2B Gateway object. This implies there is no means of restricting specific Frontside Handler to specific CPA-defined service.
- Endpoint element restrictions
 - For example,

```
<tp:TransportReceiver>  
...  
<tp:Endpoint tp:uri="https://www.CompanyB.com/servlets/ebxmlhandler/async"  
tp:type="allPurpose"/>  
...  
</tp:TransportReceiver>
```
 - ebCPPA spec stipulates that one or more Endpoint elements specify logical addresses where messages can be received. When importing a CPA file to DataPower B2B Gateway, only the 1st Endpoint element under TransportReceiver will be imported. Only the URI part will be imported to CPA Receiver Setting>Transport Settings tab>Local URI field. At transaction runtime, the Local URI is used to restrict which URI can be accepted.
- CanSend and CanReceive restrictions
 - Nested CanSend under CanReceive (or reversely) means synchronous document exchange of business document. This is not B2B Gateway-supported syncReplyMode semantics (none, mshSignalsOnly).
When importing one CanSend or CanReceive element which has more than one <ChannelId> child elements, only the first one is imported to the Action binding.

Reference

- WebSphere DataPower Release 4.0.1 ebXML CPA v2.0 Support
 - <http://publib.boulder.ibm.com/infocenter/ieduasst/v1r1m0/index.jsp?topic=/com.ibm.iea.wdata>
- WebSphere DataPower Release 3.8.1 B2B high availability (HA) theme
 - <http://publib.boulder.ibm.com/infocenter/ieduasst/v1r1m0/index.jsp?topic=/com.ibm.iea.wdata>
- Advanced guidance for WebSphere DataPower B2B gateway archive
 - <http://www-01.ibm.com/support/docview.wss?uid=swg21576630>
- Capacity Planning for WebSphere DataPower B2B Appliance XB60
 - <http://www-01.ibm.com/support/docview.wss?uid=swg21329746>
- Unsupport features of ebXML CPA v2.0 in WebSphere DataPower XB60/XB62
 - <http://www-01.ibm.com/support/docview.wss?uid=swg21597441>
- Redbook: DataPower SOA Appliance Administration, Deployment, and Best Practices
 - <http://www.redbooks.ibm.com/abstracts/sg247901.html?Open>