GIGASPACES

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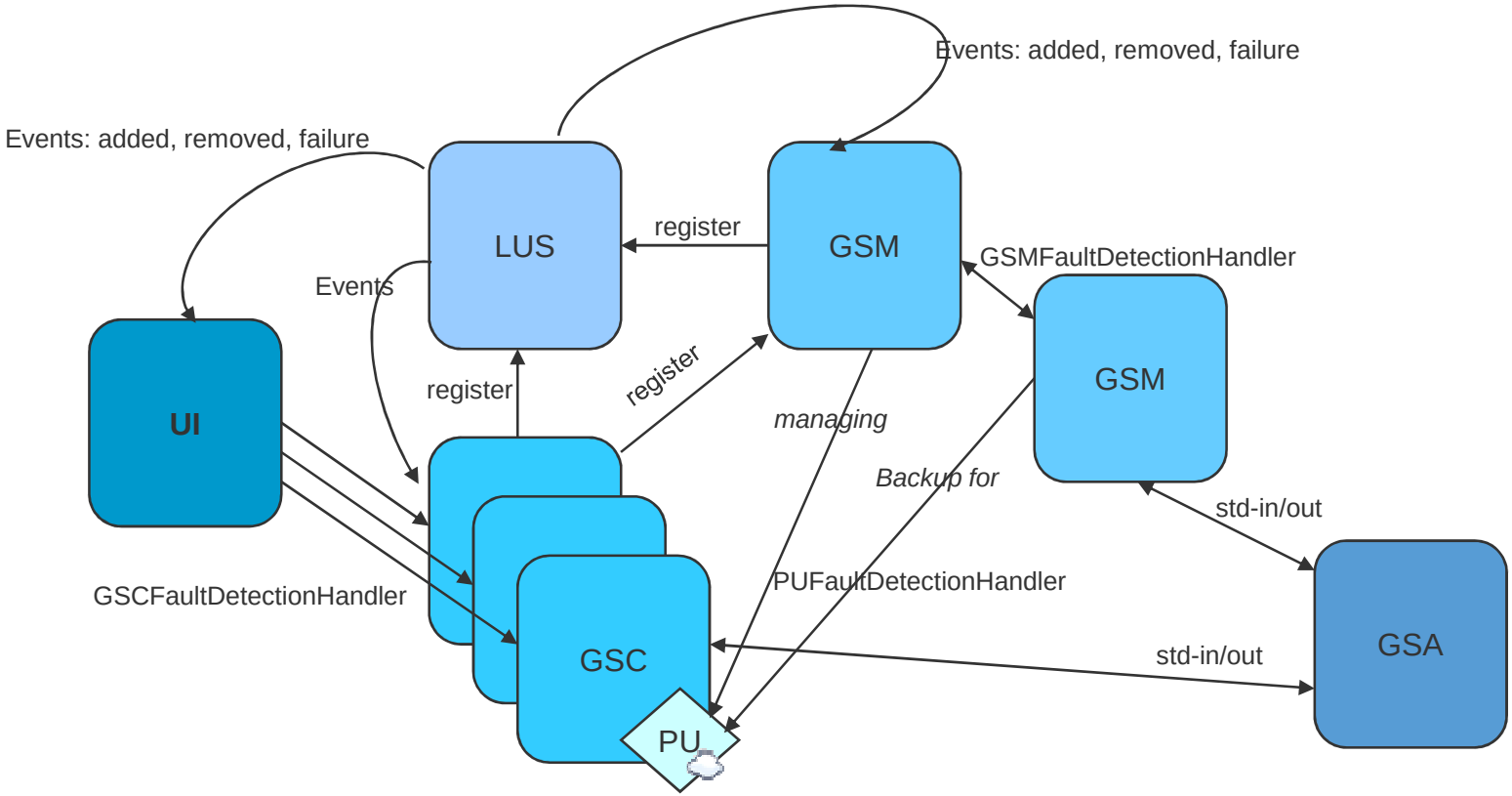
SCALE ANYWHERE.

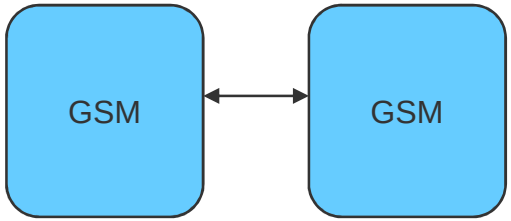
ServiceGrid Fault Detection Handler & Space Active Election
-
Common Scenarios and Tuning

March 2009
GigaSpaces XAP 6.6

Service Grid – Components and fault-detection handlers

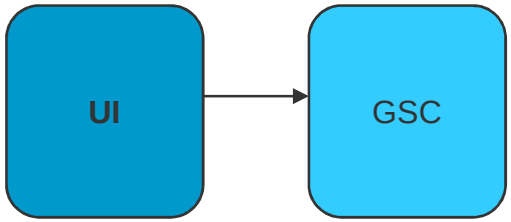


Service Grid – FDH Configurations



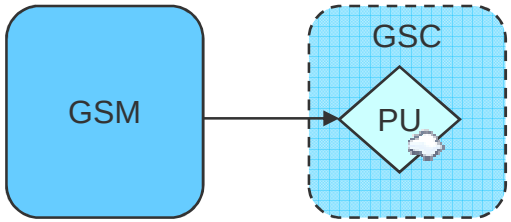
GSMFaultDetectionHandler:
com.gigaspaces.grid.gsm.GSMFaultDetectionHandler.invocationDelay=1000 (ms),
com.gigaspaces.grid.gsm.GSMFaultDetectionHandler.retryCount=1
com.gigaspaces.grid.gsm.GSMFaultDetectionHandler.retryTimeout=500 (ms)

Configurable using system property or modifying services.config



GSCFaultDetectionHandler:
com.gigaspaces.grid.gsc.GSCFaultDetectionHandler.invocationDelay=10000 ms,
com.gigaspaces.grid.gsc.GSCFaultDetectionHandler.retryCount=0
com.gigaspaces.grid.gsc.GSCFaultDetectionHandler.retryTimeout=0 ms

Configurable using system property or modifying services.config



PUFaultDetectionHandler:
org.openspaces.pu.container.servicegrid.PUFaultDetectionHandler.invocationDelay=5000 (ms),
org.openspaces.pu.container.servicegrid.PUFaultDetectionHandler.retryCount=3
org.openspaces.pu.container.servicegrid.PUFaultDetectionHandler.retryTimeout=500 (ms)

Configurable using SLA Member Alive indicator:

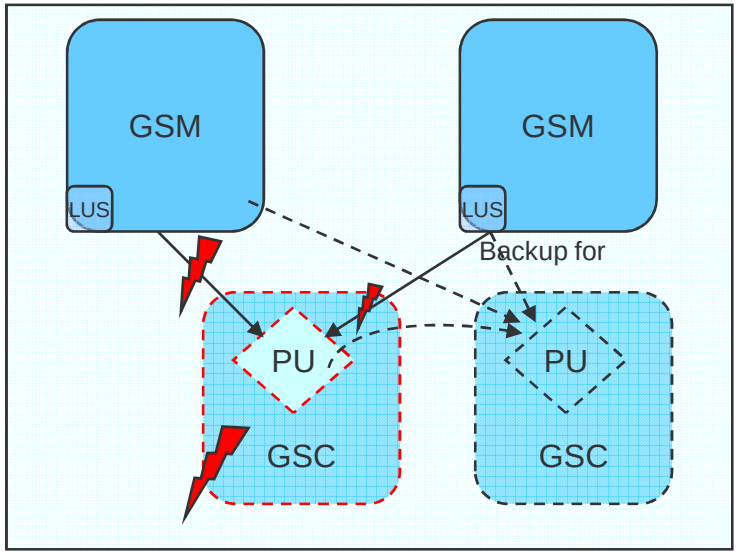
```
<os-sla:sla>
   <os-sla:member-alive-indicator invocation-delay="5000" retry-count="3" retry-timeout="500" />
</os-sla:sla>
```

Fault Detection Handler logging
com.gigaspaces.grid.gsc.GSCFaultDetectionHandler.level = INFO
com.gigaspaces.grid.gsm.GSMFaultDetectionHandler.level = INFO
org.openspaces.pu.container.servicegrid.PUFaultDetectionHandler.level = INFO

Service Grid – Failover & Recovery

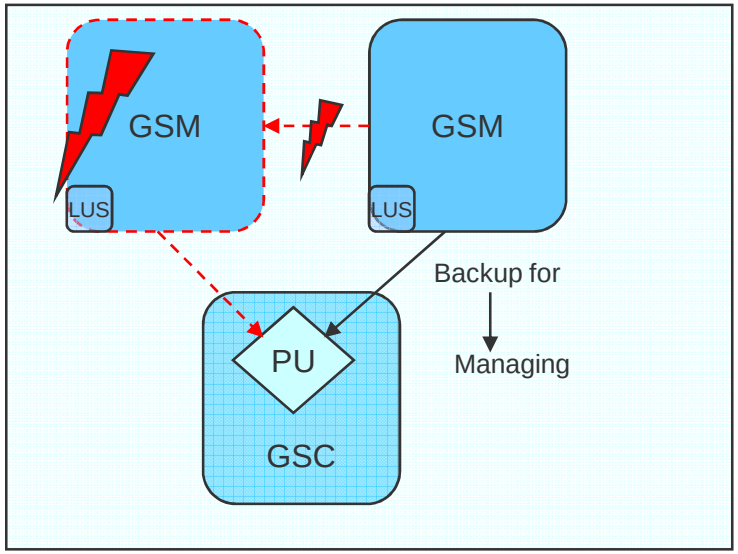
1

GSC fails; Managing GSM will re-instantiate the PU on another GSC



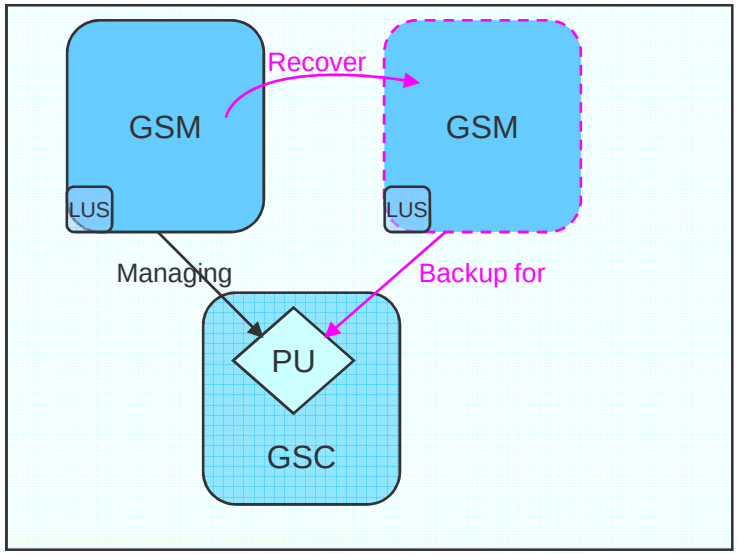
2

GSM fails; Backup GSM will become Manager for PUs previously managed



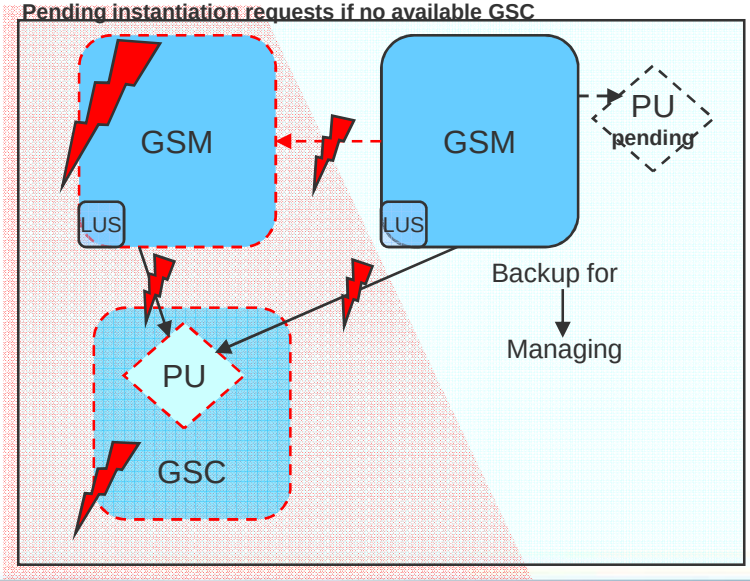
3

GSM recovers; Will become backup for all managed PUs



4

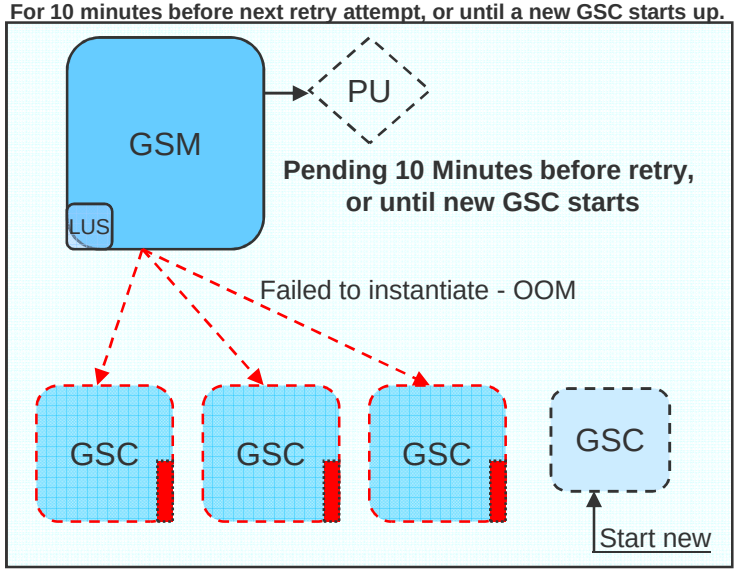
GSM & GSC failure; Backup GSM will manage PUs, Pending instantiation requests if no available GSC



Service Grid – Common Cases

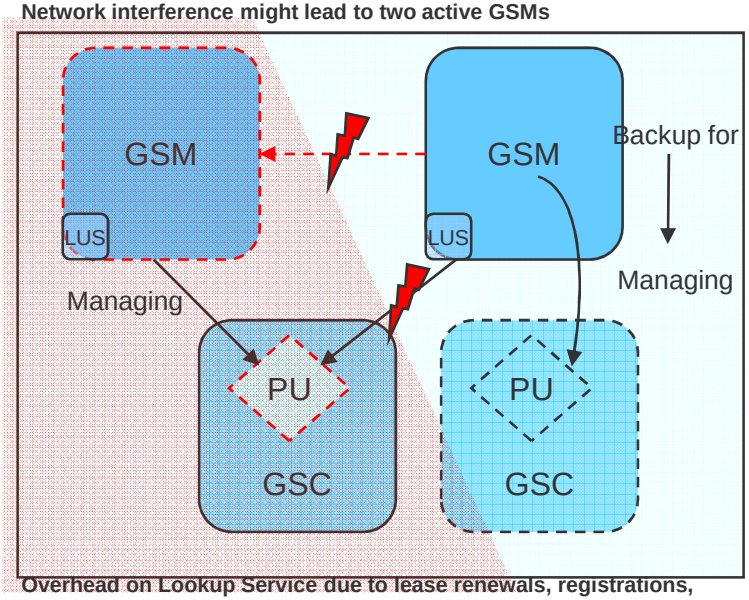
5

GSM fails to instantiate PU due to memory shortage; Request is in pending
For 10 minutes before next retry attempt, or until a new GSC starts up.



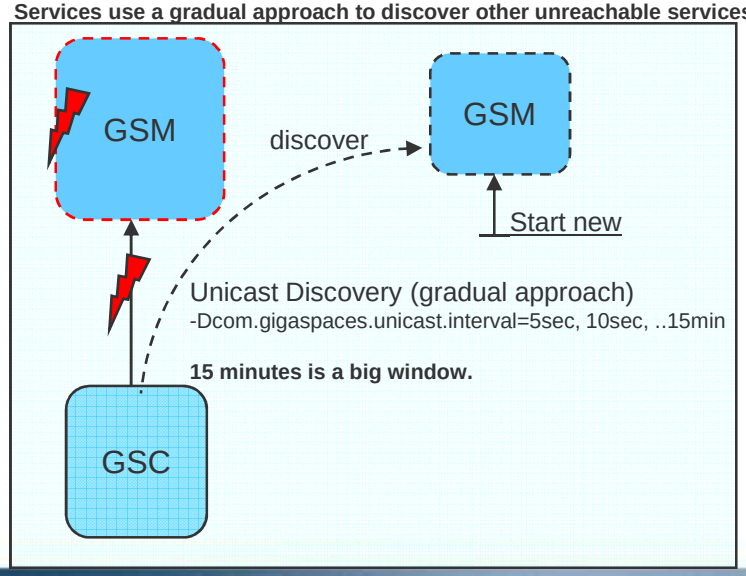
6

Network interference might lead to two active GSMs



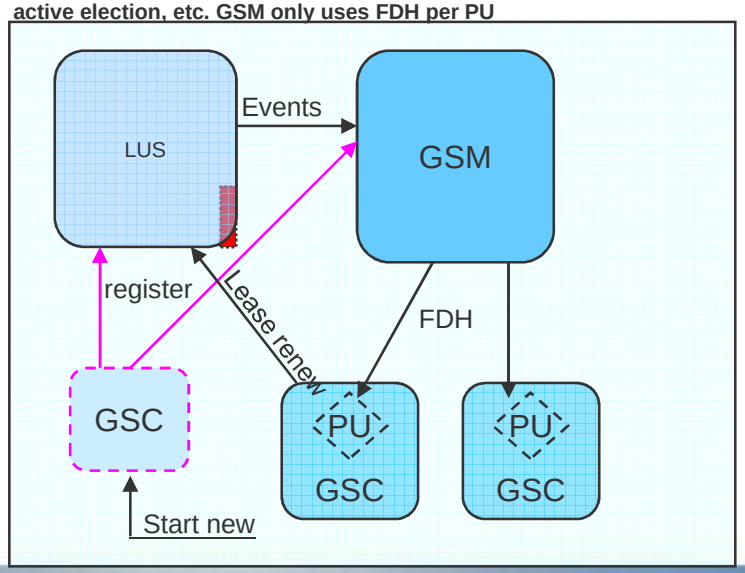
7

Multicast disabled; Using only Unicast Discovery with configured locators.
Services use a gradual approach to discover other unreachable services.

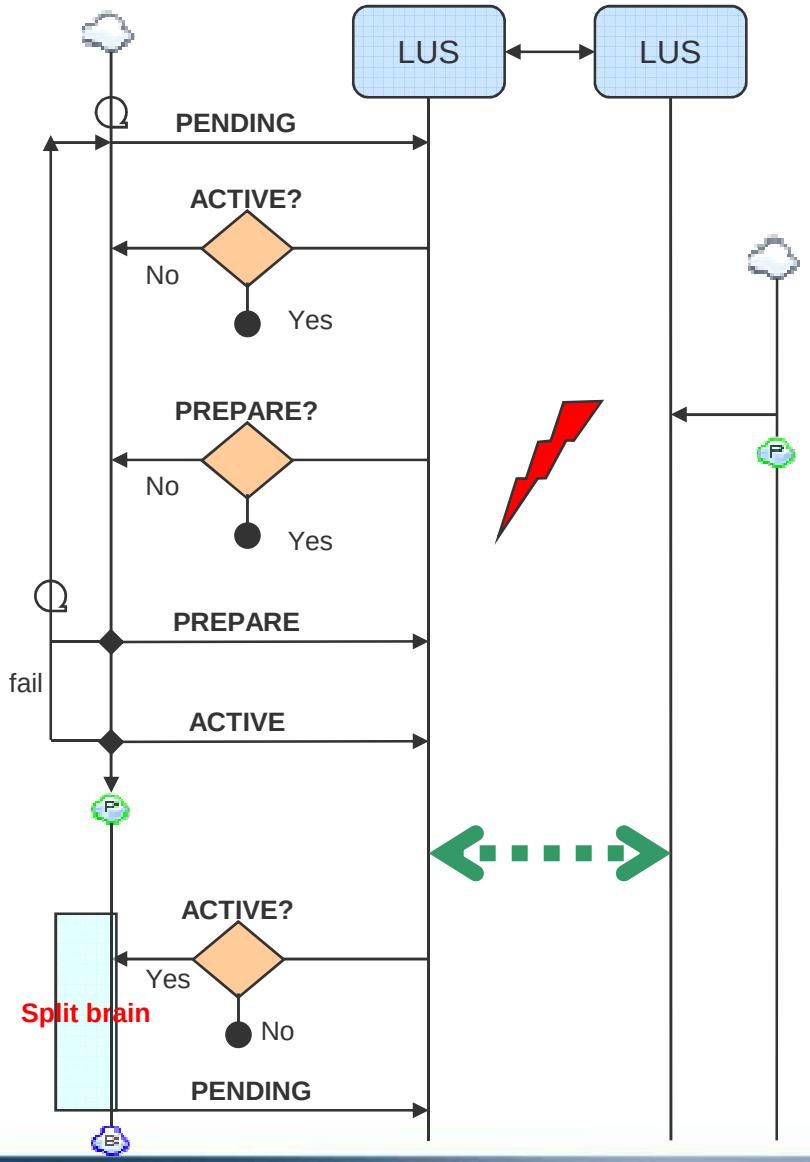


8

Overhead on Lookup Service due to lease renewals, registrations,
active election, etc. GSM only uses FDH per PU



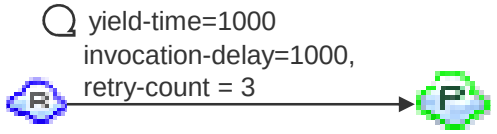
Space Active Election



Active Election states:

NONE - The service is not initialized yet.
PENDING - The service is a candidate to acquire PREPARE state.
PREPARE - The service is a candidate to acquire an ACTIVE state.
ACTIVE - The service becomes ACTIVE.

Split-brain is more likely to occur when there is more than one lookup service (runs within a GSM) that is managing the state of the active election.



Watchdog – for socket connection timeouts

-Dcom.gs.transport_protocol.lrmi.**connect_timout**
This system property defines a timeout (in [ms]) for the service's attempts to establish a socket connection. Default: **5000**

-Dcom.gs.transport_protocol.lrmi.**request_timeout**
This system property defines the timeout (in [ms]) for the backup space's requests to the primary space, to verify that the connection hasn't been broken. Default: **30000**