Monitoring at BNP Paribas Fortis

GSE DB2 23 March 2017

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Introduction
Software used

• DB2 V11
• IMS V13 DB/DC
• MQ V7
• WAS
• BMC Tools V11
• Omegamon 5.3 used for Performance Warehouse
• IBM Utilities V11
• Tivoli System Automation
Introduction

Mainframe Database Implementation at BNPP Fortis

Distributed application

IMS Connect

Workstation 3270 - emulation

MQ

Transaction Manager IMS

Application program

Query

DBMS IMS

Locks

Store

IMS Database

IMS Log

DBMS DB2

Locks

Store

DB2 Log

DB2 Database

Mainframe
Introduction
Introduction
Availability monitoring

LPAR failure
- Restart Light of DB2
- IMS FDBR recovery
- Automatic Recover indoubt with FDBR info
  IMSID=IMT2 SSID=DBT2 Action=ABORT  NID=IMT2.001147370000CCAD
  IMSID=IMT2 SSID=DBT2 Action=COMMIT NID=IMT2.001147360000CCB8
  DFS4168I FDR FOR (IMT2) DATABASE RECOVERY COMPLETED

  -db2id DISPLAY GROUP
  -db2id RECOVER INDOUBT(imsid) ACTION(ABORT/COMMIT) NID(imsid.num)

- LPL recovery
Availability monitoring

DB2 failure
• Suspend MQ
• Restart DB2
• LPL recovery
• Resume MQ

IMS failure
• Suspend MQ
• IMS FDBR recovery
• Automatic Recover indoubt with FDBR info
• Restart IMS
• Resume MQ
Availability monitoring

availability checks

• Every 15 minutes
  – Check critical transactions
  – Check DB availability
  – Exceptions defined for planned unavailability
  – Automatic alerting

• Daily reporting on DEADLOCK and TIMEOUT
Availability monitoring

Maintenance from Sat 23:00 to Sun 06:00

DB2 objects are split in two groups

• platinum : Sun 02:00 to Sun 06:00
  – Objects used during complete maintenance period
  – Automatically determined based on historical data

• silver : complete period
Performance monitoring

Transaction queuing for all classes (every minute)
• Standard region setup for normal work
• When queuing extra regions will be started
• Stop extra regions when workload drops
• Alerting when all extra regions are started and still queuing (exceptions allowed)

When region occupation is to high (70% = high/30% normal), extra regions are also started to prevent queuing
Performance monitoring

Electronic Banking End-to-End monitoring
• Transaction response time
• When timeouts detected (30 sec)

LPAR capacity monitoring
• Done with BMC ICAP
• Web banking LPAR’s have higher weight
• Increments by 2 MSU
Performance Data

Daily Access path checking
- Tablespace scans
- Index scans with 0 matching columns
- List of SQL using more than 100 CPU sec/day
Performance Data

Standard DB2 SMF data

• The SMF records are loaded by plex
  • PLXC – daily about 850,000 (multiple subsystems)
  • PLXB – daily about 10,000,000
  • PLXA – daily about 400,000,000

• All volume data is summarized by hour

• Data retention
  • Kept for at least 100 days
  • Package information is kept 150 days
  • Plan data is kept for 200 days
Performance Data

BMC APPTUNE info

- Collected during selected periods
- Kept for about 14 months
- Aggregated by period of 8 hours
- Contains information by statement AVG/MIN/MAX
  - CPU
  - Elapsed
  - Wait
  - Getpage
  - ...
- Daily/weekly follow-up of statements with high deviation
- Daily check of huge CPU SQL
Performance Data

Combined IMS/DB2 data

- Based on A4 IMS record of IMS ATF
- Daily compare of transaction
  - Data previous month for comparable workday
  - Relative CPU
  - Total CPU
  - Number of executions
- Monthly Top 50 total CPU consumption
  - Transactions
  - BMP
Samples

Daily executions Electronic Banking

- NBREXECs
- Linear (NBREXECs)

Date Range: 1/09/2016 to 1/03/2017
Samples
Questions ?