

DB2 V10 upgrade experience @ Colruyt

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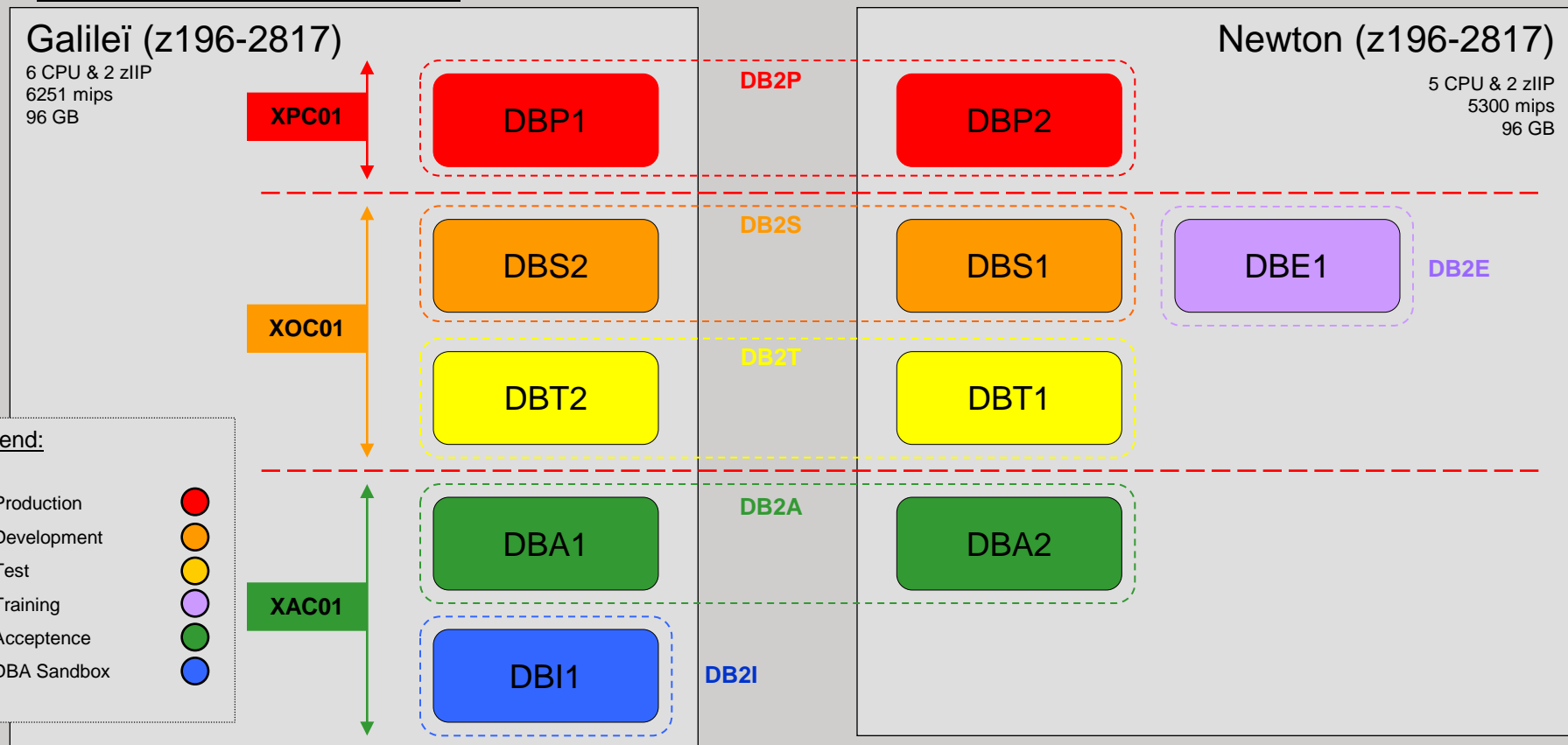
- Who are we
- Migration plan
- Issues
- Performance
- New features

Who are we...

	Retail	Wholesale & Food service	Other
Belgium	<p>colruyt <small>laagste prijzen meilleurs prix</small></p> <p>DreamLand DreamBaby</p> <p>OKay BIO-planet ColliShop Collect&Go <small>servicecolruyt</small> <small>servicecolruyt</small> <small>webshops</small> colruyt.be</p>	<p>SPAR</p> <p>alvo</p> <p>FOODINVEST <small>best practices in foodservice</small></p> <p>COLLIVERY <small>UW BOODSCHAPPEN THUIS</small></p> <p>Mini market</p> <p>Colex</p>	<p>DATS Symeta <small>smart Print + Doc solutions</small></p> <p>24 <small>servicecolruyt</small></p> <p>WE POWER <small>WIND ENERGY PARTNER</small></p> <p>intrion</p>
France	<p>colruyt <small>prix • qualité</small></p> <p>coccinelle <small>SUPERMARCHÉ</small></p> <p>DreamLand</p>	<p>coccinelle <small>SUPERMARCHÉ</small></p> <p>panier Sympa</p> <p>PRO à PRO</p>	<p>DATS</p> <p>24 <small>servicecolruyt</small></p>
Luxembourg	<p>colruyt <small>Tiefstpreise meilleurs prix</small></p>		

Who are we...

- DB2 Architecture



Migration plan

- New customer since 2008 → started in DB2 V9
 - No existing migration plans
- Setup DBA sandbox (DB2I) environment (January 2012)
- Pre-migration tasks (January 2012 – February 2012)
 - Upgrade Third party Tools
 - Check for necessary V9 PTF's
 - Check for incompatibilities / ZPARM changes
 - DSNTIJPA
- Migration to Conversion Mode (February 2012 – June 2012)
 - With preventive maintenance prior to migration DB2P
- Migration to New-Function Mode (August 2012 – October 2012)

Migration plan

Premigration Tasks

- Migration Third Party Product
 - IBM Utility Suite
 - Log Analysis Tool
 - Query Monitor Tool
 - Administration Tool
 - Tivoli Performance Monitor
 - DB2 Connect
 - Upgraded from V9.1 to V10.1
 - » V9.7 FP3a required for new functions
 - Replication Tools
 - Windows Client Tools
 - Datastudio
 - AQT / Toad

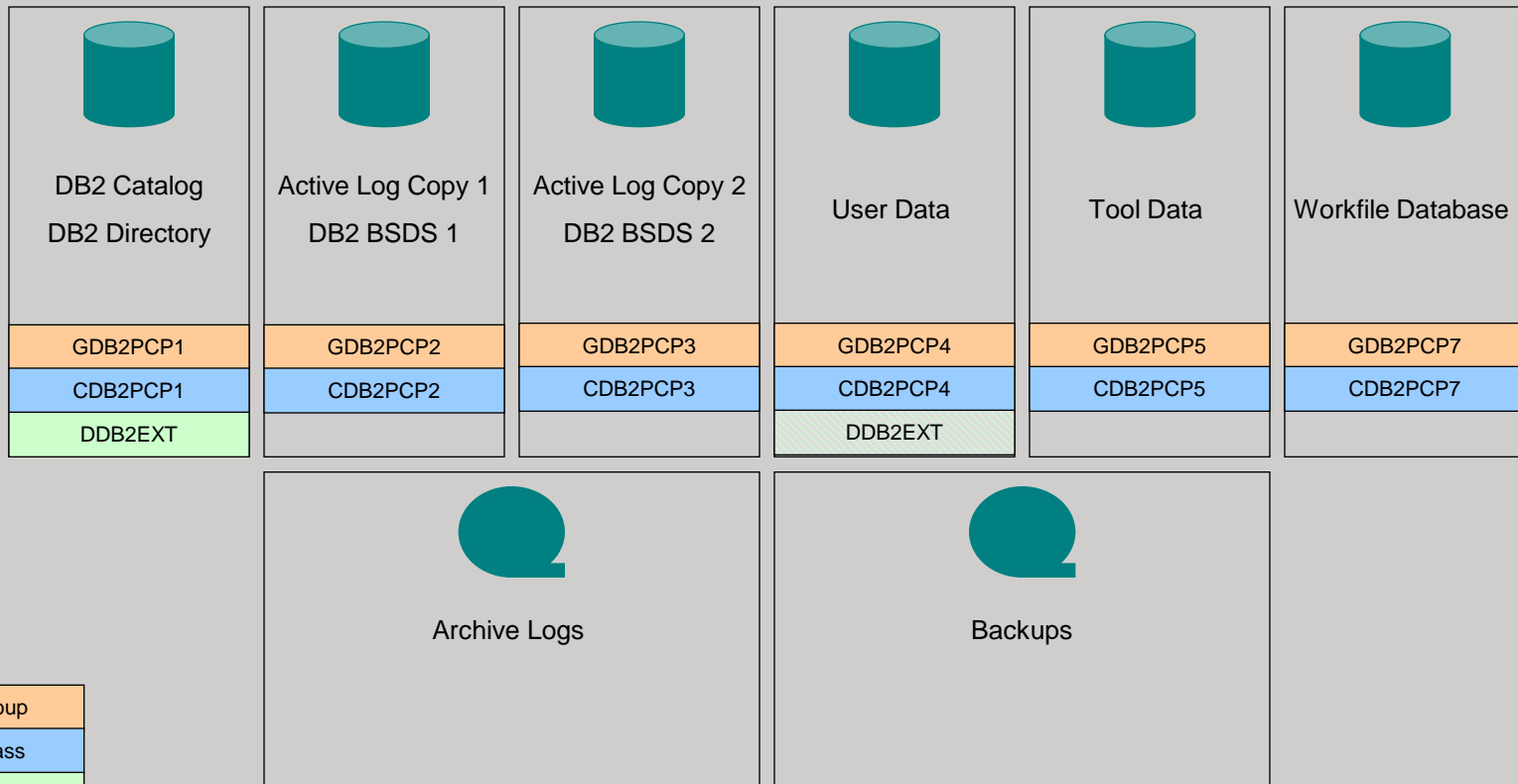
Migration plan

Premigration Tasks

- Check for necessary V9 PTF's
 - Current on maintenance (December 2011))
- Check for incompatibilities / ZPARM changes
 - A few ZPARM changes were done before migration started
 - Altered minimal/default values
 - Modified DSN3SATH
 - Deprecated DSNAEXP → move to new EXPLAIN privileges (TODO 2013)
- DSNTIJPA
 - Some PLANS that contained DBRMs
 - Migration of EXPLAIN tables
- SMS managed Catalog & Directory
 - Already implemented in V9 through SMS rules
 - Extended addressability

Migration plan

SMS Environment Setup



Migration plan

Migration to Conversion Mode

- DSNTIJXZ
 - Update default ZPARM input member (DSNTIDxx)
 - Buffer Pool Settings
- Ensure that no DB2 work is running
 - Cancelled utilities !!
- DSNTIJMV / DSNTIJRW
 - New / Modified WLM environments
- DSNTIJEX
 - Recompile security exit DSN3SATH
- DSNTIJTC
 - Migrate to Conversion Mode
- Rebind all packages
 - Rebind with PLANMGMT (EXTENDED)
 - Available since DB2 V9



4 hours

Migration plan

Issues in Conversion Mode

- Issues with IBM Tools
 - IBM Administration Tool generating faulty scripts
 - IBM Query Monitor displaying incorrect elapsed times

- Utility jobs abending with 00C4
 - Every time dynamic sort space allocation occurred
 - Workaround: specify SORTDEVT & SORTNUM
 - Problem CA-ACF2 interface

- IDLE THREAD TIMEOUT
 - ABEND=04E REASON=00D3003B
 - Threads were kept active even after commit
 - Are forced out of DB2 (IDHTHOIN = 120 sec)
 - UK78127 → was applied
 - Fault in planning
 - REBIND job ran when member 1 was migrated
 - WLM choose to run on member 2
 - Rebind all fixed the issue
 - Migration plan was adapted

Migration plan

Issues in Conversion Mode

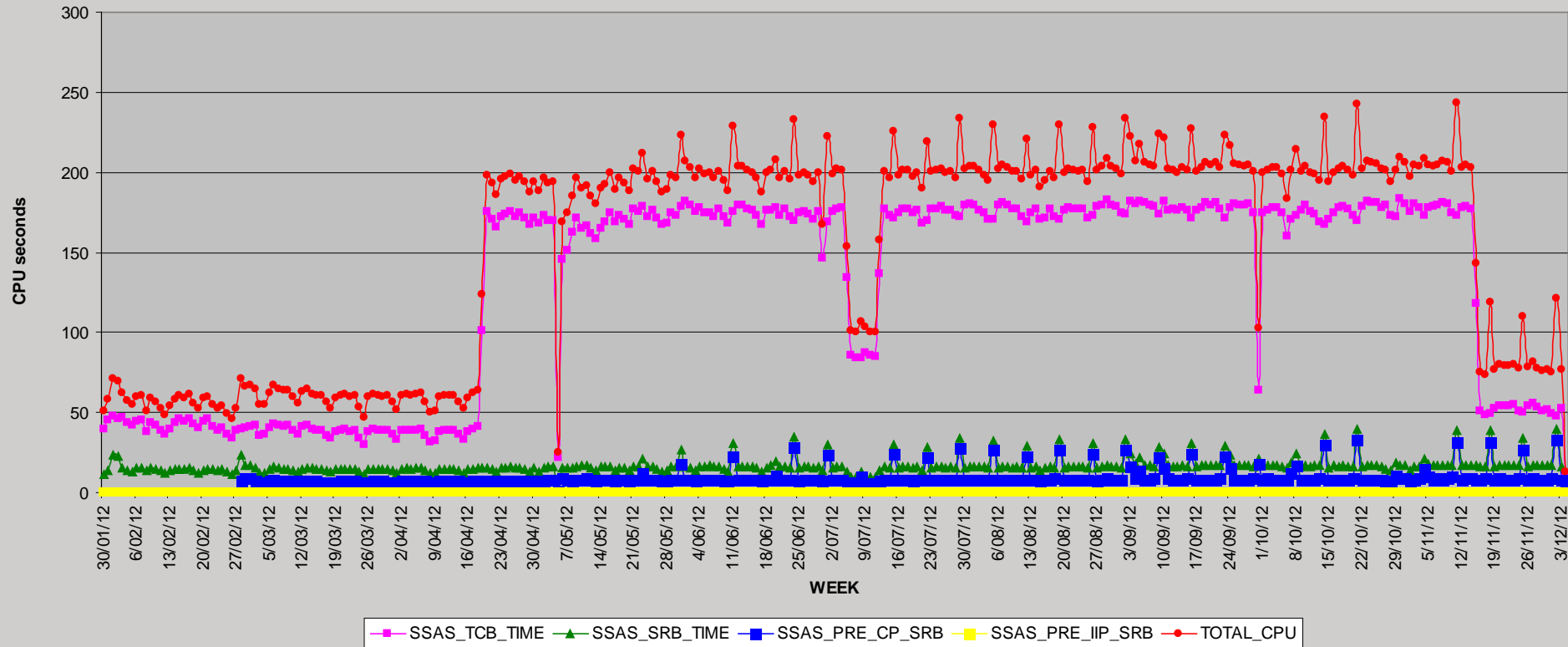
- High CPU consumption in MSTR STC - SRB
 - Attributed to internal memory management for statistics
 - PTF UK80191 resolves the problem
 - Currently being implemented

- High CPU consumption in MSTR STC – TCB
 - Introduced after applying z/OS maintenance
 - DB2 gathers additional real storage information
 - z/OS fix UA63988 should reduce the CPU time required to gather this information
 - Currently being implemented
 - Drop of + 70% TCB CPU time in DB2A

Migration plan

High CPU consumption in MSTR STC – TCB TIME

MSTR - Total Consumption



Migration plan

Migration to New-Function Mode

- DSNTIJEN
 - Migrate to Enabling New-Function Mode
 - Converts the catalog tables
- DSNTIJNF
 - Migrate to New-Function Mode
- DSNTIJNG
 - Update DSNHDECP load module
- DSNTIJRT/DSNTIJRV
 - Install and verify DB2 supplied routines
- DSNTIJCL / DSNTIJMS
 - ODBC & JDBC support
- Rebind all packages
 - Rebind with PLANMGMT (EXTENDED)
- REORG Catalog & Directory



2 hours

Migration plan

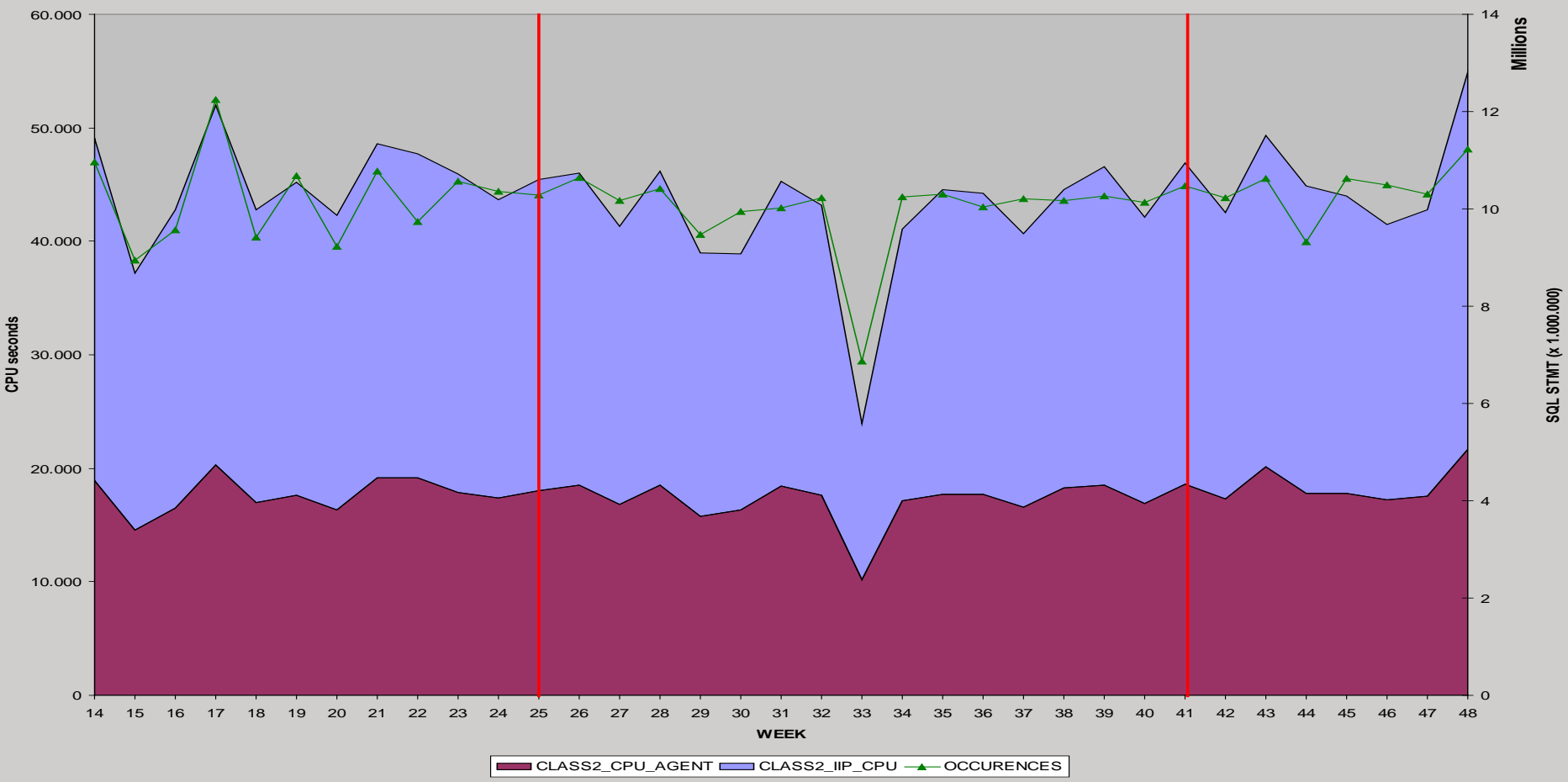
Issues in New-Function Mode

- DB2 connect Unlimited Edition V10.1
 - SQL1598N An attempt to connect to the database server failed because of a licensing problem.
 - The db2connectactivate utility activates the license and grants access to SYSIBM.DB2CON_LIC package
 - SYSIBM.DB2CON_LIC package:
 - » Will update a local file conlic.bin (if last entry is not older then 7 days)
 - CA-ACF2 interface as external security package
 - Grant to SYSIBM.DB2CON_LIC package was not done by db2connectactivate utility
 - After granting EXECUTE on package → everything OK

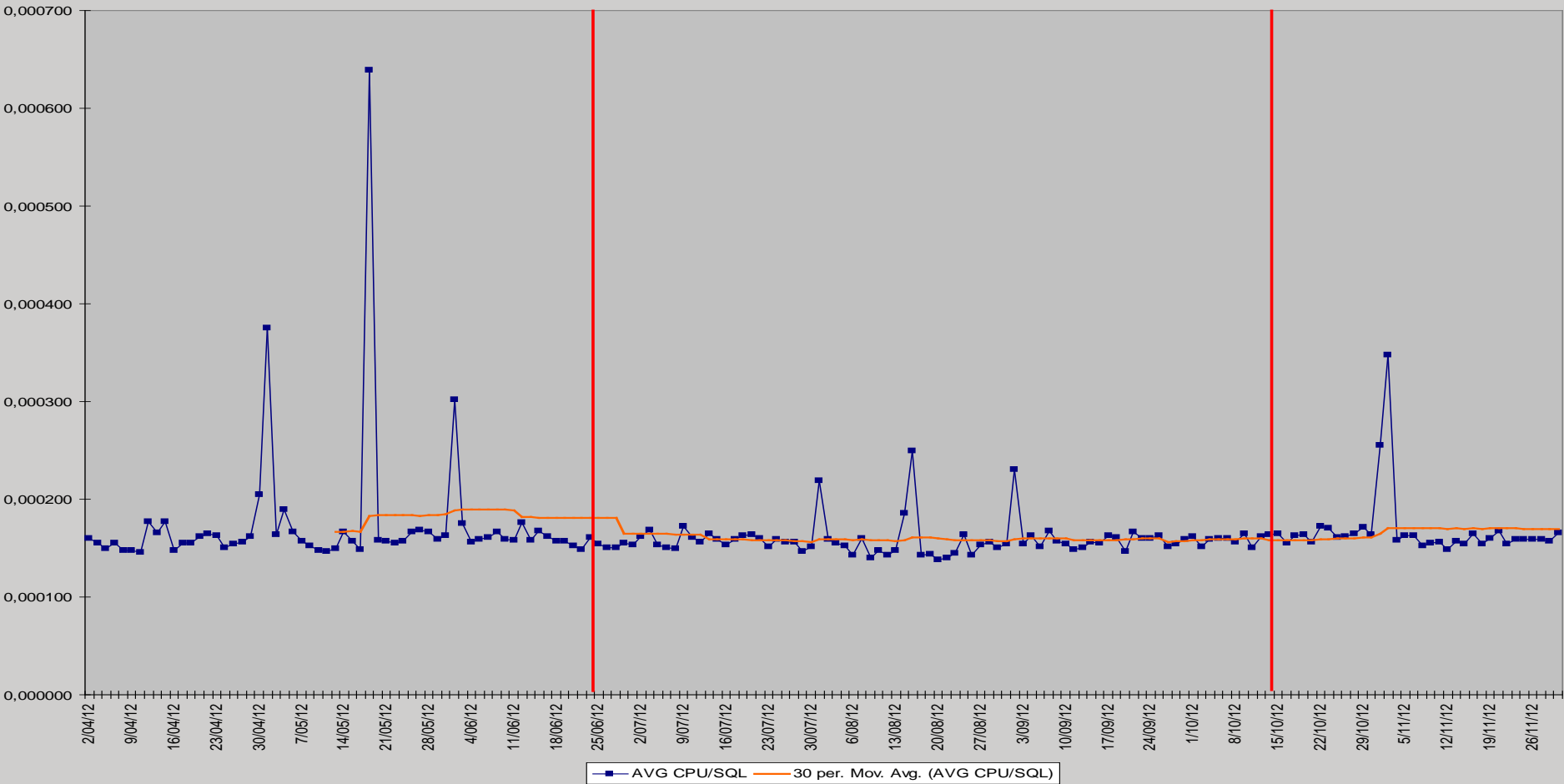
Performance

- SQL Performance comparison:
 - Weekly sum CPU consumption by thread type
 - Daily Average CPU consumption per SQL statement by thread type
 - Thread types:
 - DRDA
 - CICS
 - BATCH (PL/I)

DRDA performance



DRDA performance (weekdays only)

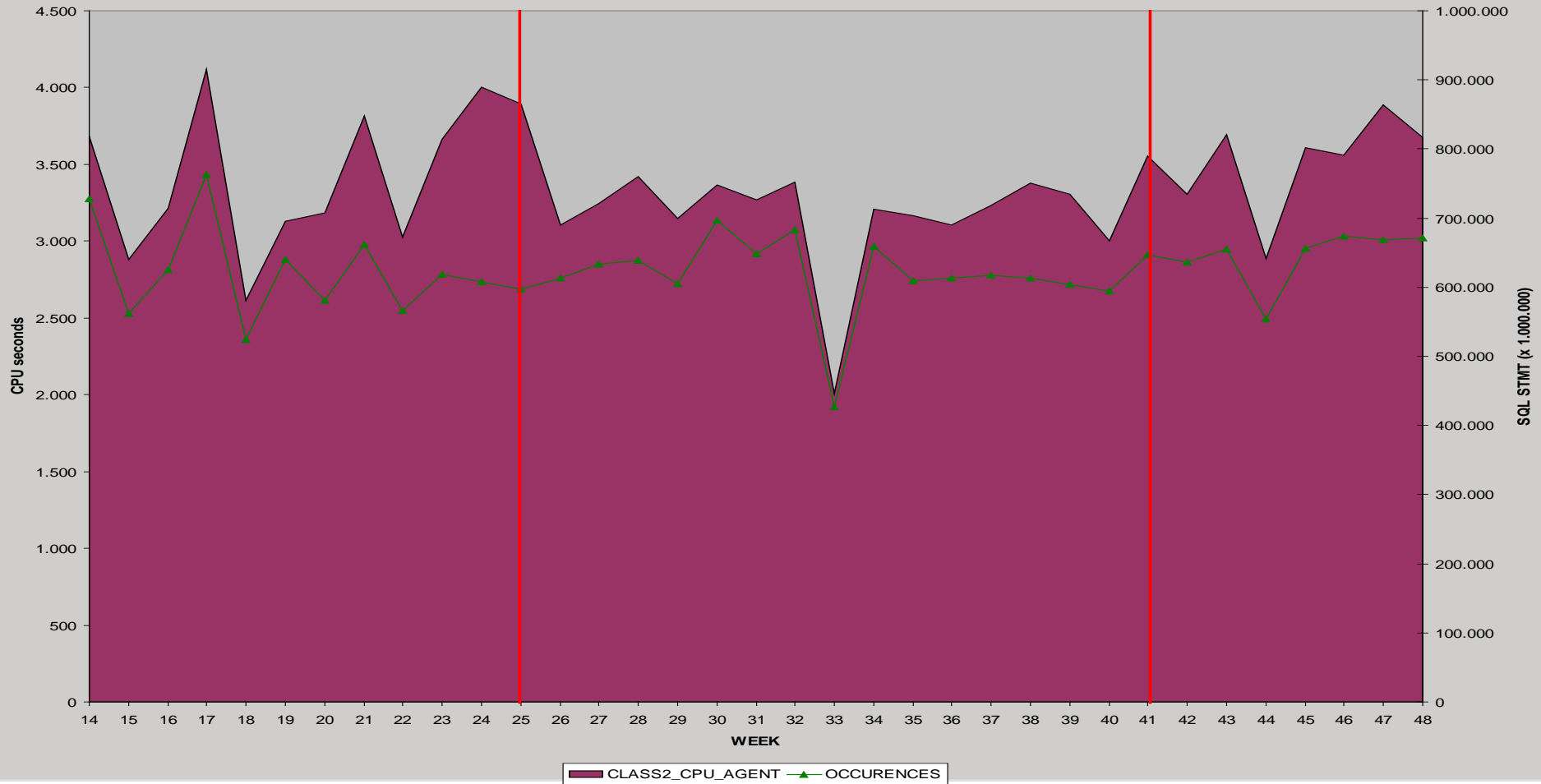


DRDA Performance (weekdays only)

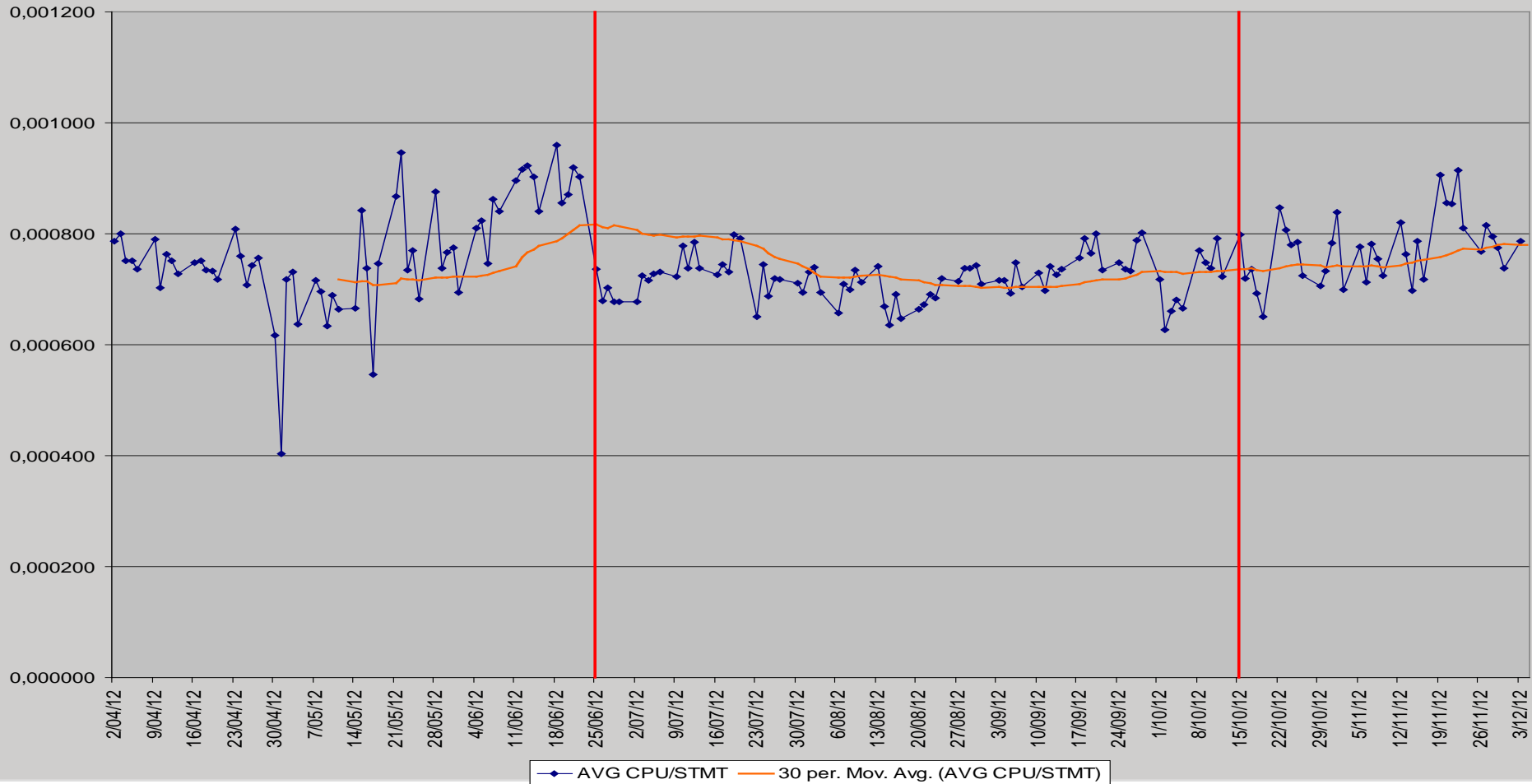
- DRDA Performance conclusion:

	V9	V10	
	NFM	CM	NFM
AVG_CPU_SQL	0,000174	0,000159	0,000172
%	100,00%	91,13%	98,88%
		93,44%	
AVG_IIP_SQL	0,000273	0,000229	0,000253
%	100,00%	83,87%	92,81%
		86,53%	

CICS performance



CICS performance (weekdays only)

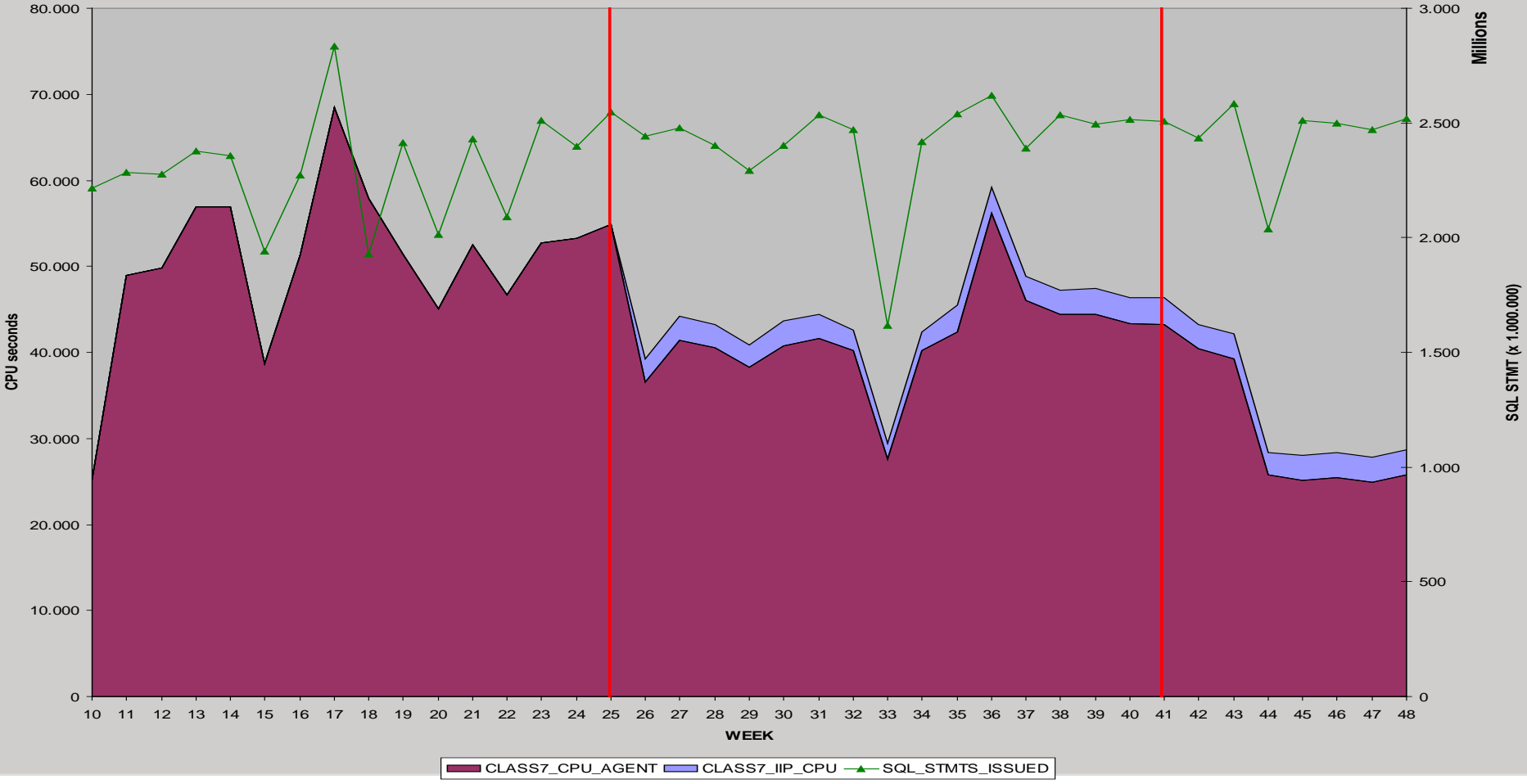


CICS Performance (weekdays only)

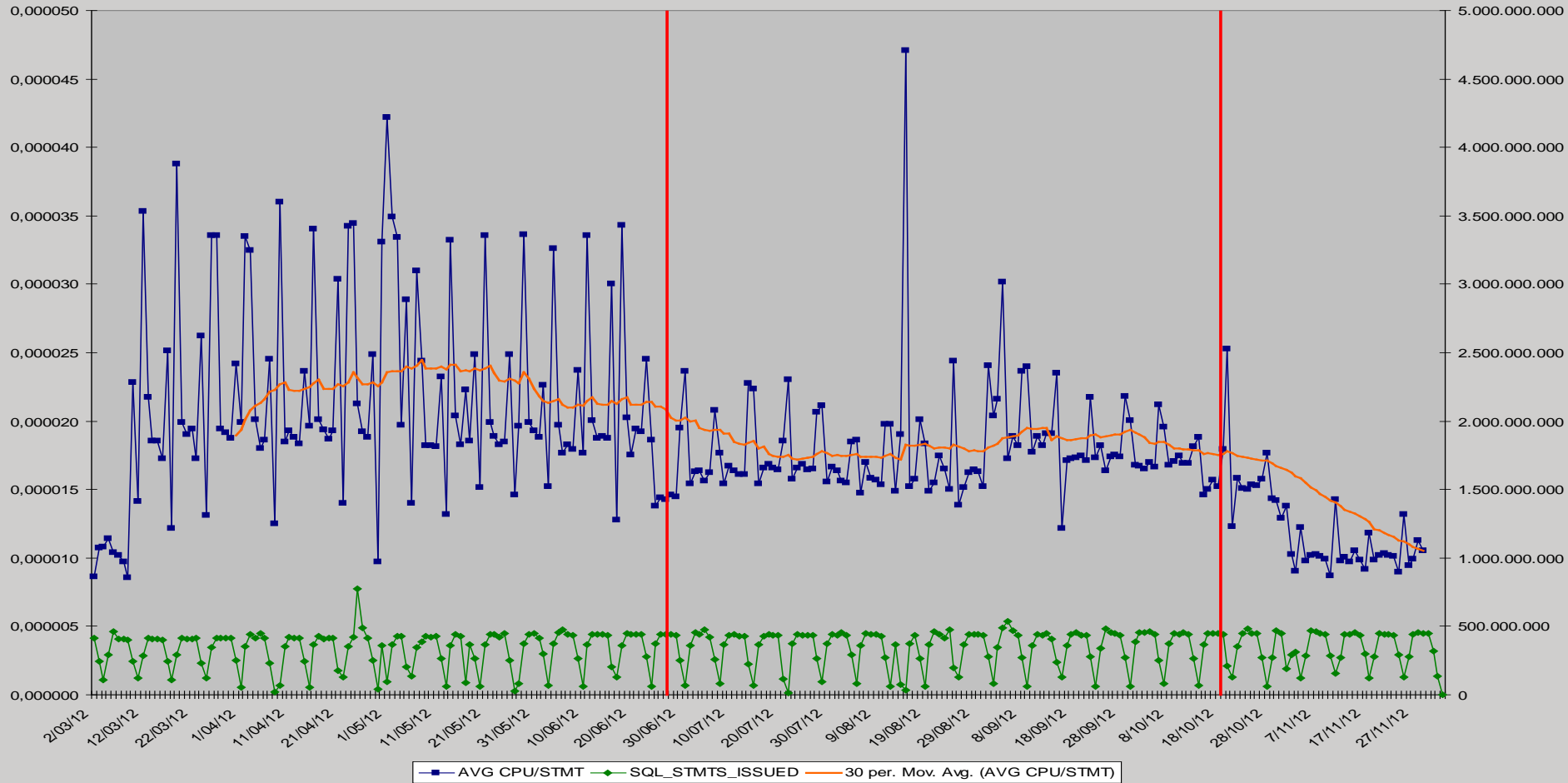
- CICS Performance conclusion:

	V9	V10	
	NFM	CM	NFM
AVG_CPU_SQL	0,000766	0,000721	0,000774
%	100,00%	94,13%	101,04%
		96,12%	

BATCH performance



BATCH performance



BATCH Performance

- BATCH Performance conclusion:

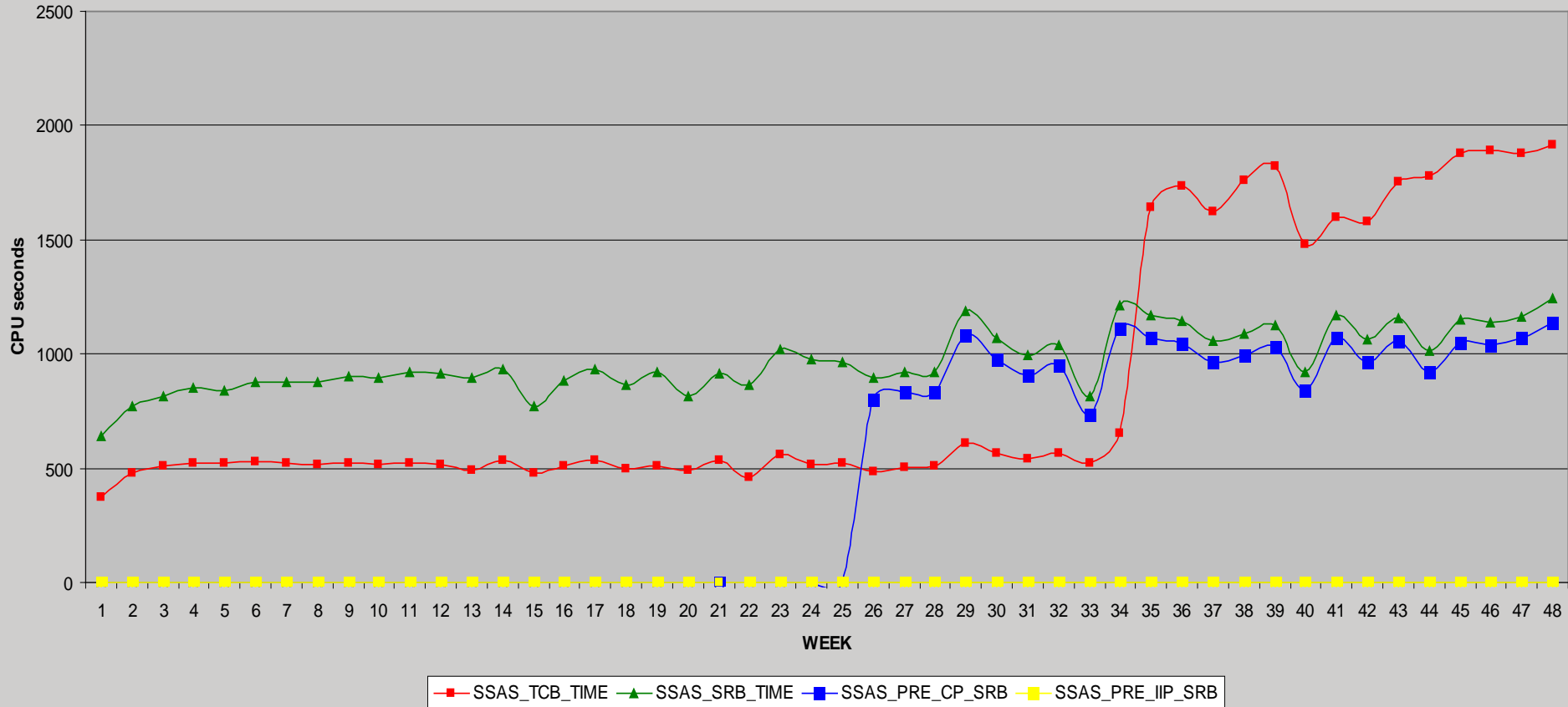
	V9	V10	
	NFM	CM	NFM
AVG_CPU_SQL	0,000022	0,000180	0,000012
%	100,00%	83,54%	57,36%
		75,80%	

Subsystem Performance - MSTR

- MSTR CPU consumption increased:
 - After CM:
 - Due to DB2 internal memory management process
 - PREEMPT SRB
 - Fixed in UK80191 → currently being applied
 - +45% for TOTAL_MSTR_CPU
 - After Z/OS maintenance: (25/08/2012)
 - z/OS PTF UA60825
 - Fixed in UA63988 → applied in XOC01
 - +300% in TCB_MSTR_CPU

Subsystem Performance - MSTR

MSTR - Total Consumption DB2P

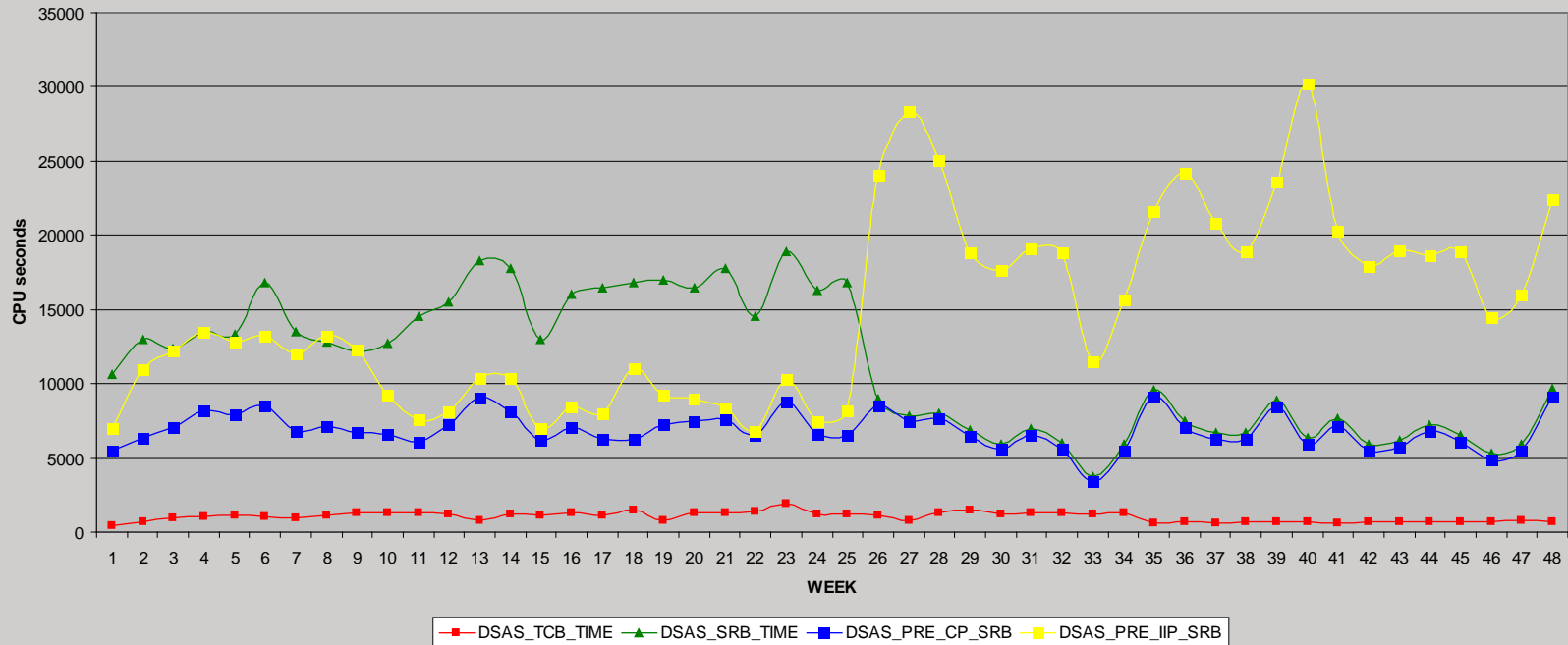


Subsystem Performance – DBM1

- DIST CPU consumption moved to zIIP:
 - DBM1_SRB_CPU
 - -50%
 - DBM1_SRB_IIP
 - +200%
 - DBM1_TOTAL_CPU
 - Netto saving of 40%

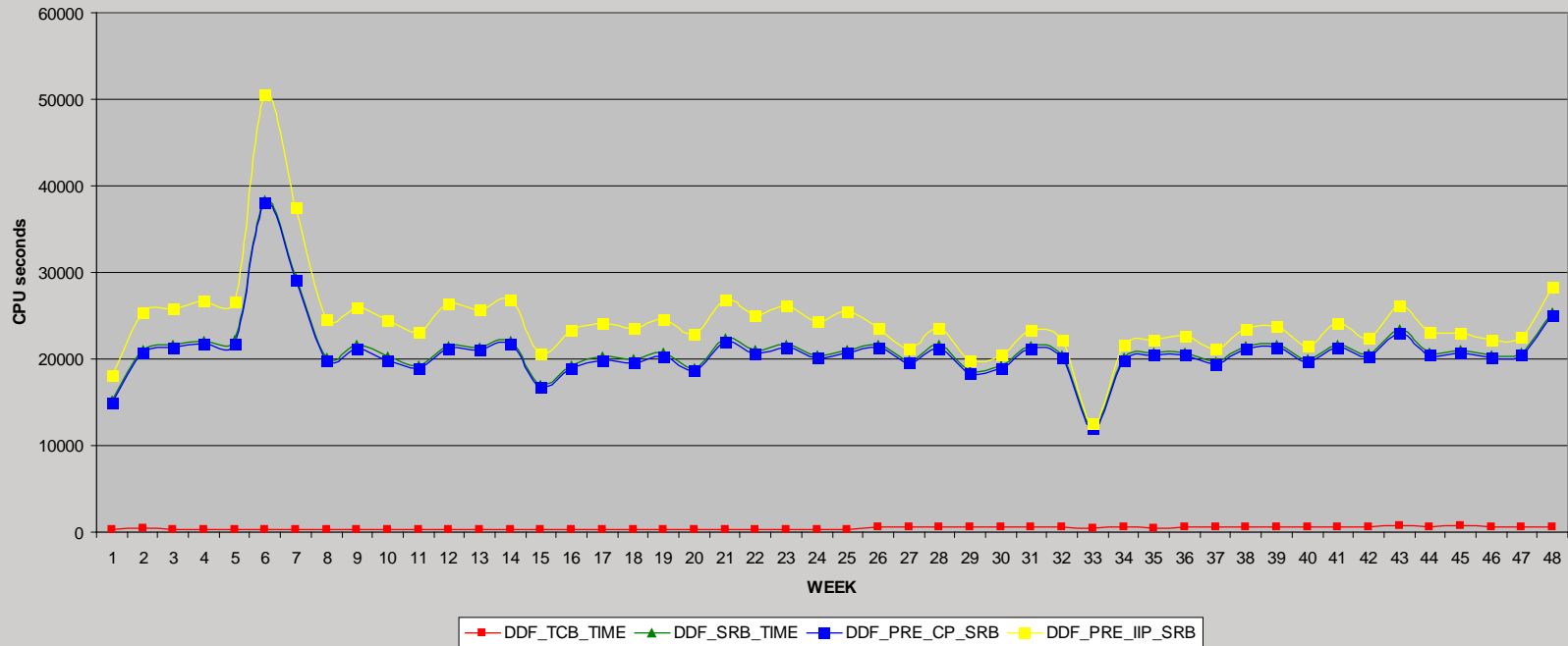
Subsystem Performance – DBM1

DBM1 - Total Consumption DB2P



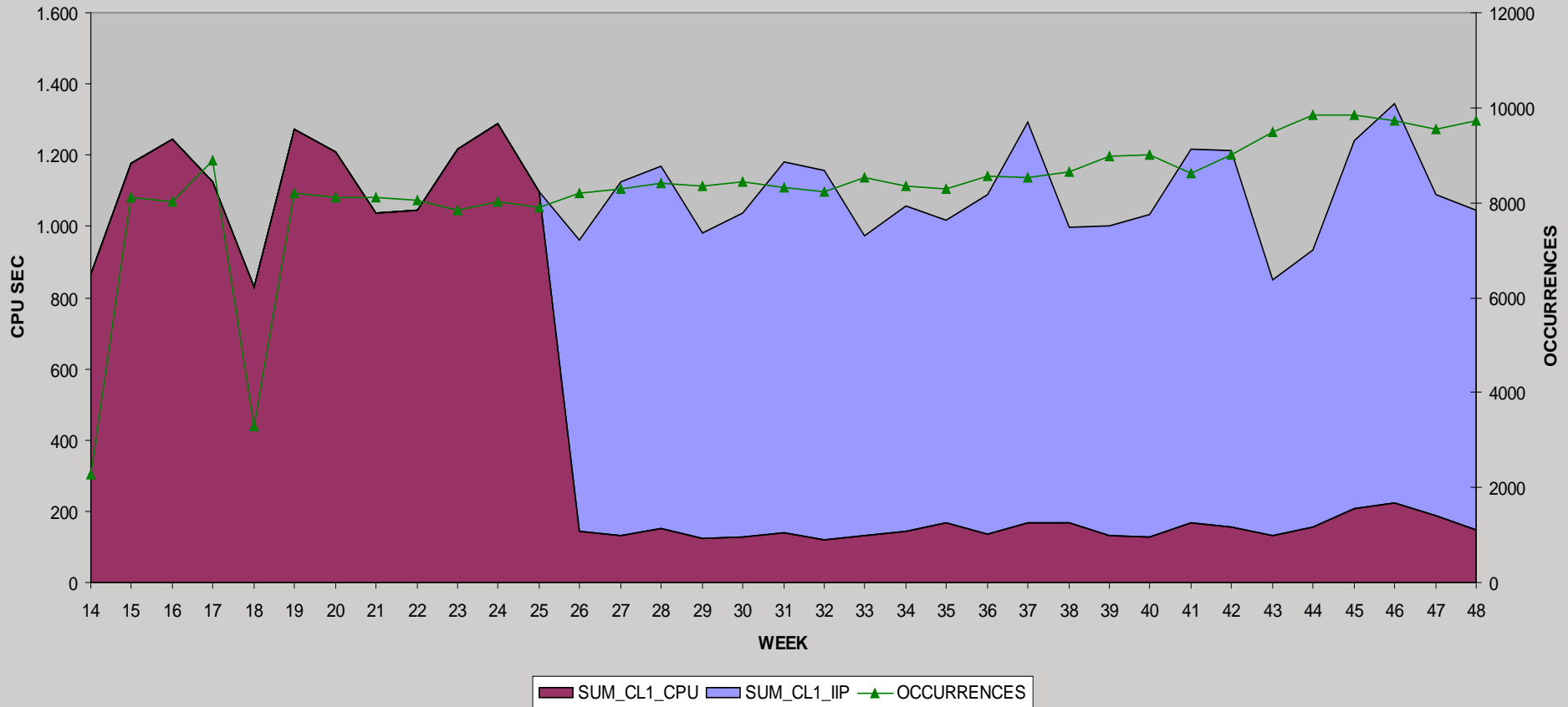
Subsystem Performance – DIST

DDF - Total Consumption DB2P



RUNSTATS

CPU/IIP TIME DB2 RUNSTATS



New-features

- REBIND options APREUSE/APCOMPARE
- New security privileges
- Temporal Data
- 1MB FRAME size
- Index INCLUDE
- ...



Questions ?