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SOA

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Mardi 7 juillet 2009
(4ème édition du SOA Summit)
IBM Forum – Paris La Défense

Middleware Service Product Line

Performance & Scalability Testing

Current Needs :

The IT infrastructure is in constant challenge to meet business needs

Scalability issues, development of new functionalities, mergers/acquisitions…

The infrastructure should meet performance needs and guarantee quality of service

…downsizing, software/hardware modifications…

ROI remains a key element is deciding to invest in IT development

Optimizing Opex vs Capex

Infrastructure needs ➔ ***IBM's industrialized approach for "Performance & Scalability Testing"***

Type of Tests :

- ✓ Proof of Concepts
- ✓ Unit Tests
- ✓ Integration Tests
- ✓ Functional Tests
- ✓ Performance Tests
- ✓ Scalability Tests

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➔ Our offering :

The service line…	*…is designed to…*	*…and meet the following needs :*
« Performance & Scalability Testing »	▪ Analyze the current system (applications, network…) ▪ Identify infrastructure bottlenecks ▪ Issue recommendations and guidelines in order to modify the current design and optimize performance and resource utilization ▪ Identify gaps between the “best practices” and the current infrastructure design	▪ Identify performance and availability issues “root causes” due to faulty infrastructure design ▪ Identify technical limitations and business impacts on the infrastructure, in case of: ❑ Peak of charge on an existing application (i.e. going from intranet to the internet…) ❑ Adding additional business functionalities to an existing application (i.e. merger/acquisition…) ❑ Modifying the hardware architecture (i.e. downsizing from Z to P…) ❑ Modifying the software architecture (i.e. from client/server to N-tier architecture, migrating RDBMS, oracle to DB2…)

« Infrastructure Heathcheck Workshop » comes to you !

Free diagnostic tool …

From several K€ to more than 1 M€

How :

Our solutions can help address these challenges, reduce risks and ensure the performance of the strategic business solutions

Performance & Scalabilty Testing

Testing Infrastructure

An ***infrastructure « leasing mode »*** where you can conduct testing services (performance, scalability, migration…)

Testing Services

A ***global approach in a « project mode »*** with experts, tools, infrastructure and coordinated services (onsite & offsite services)

On site & Off site Services

- 15 years of experience, hundreds of engagements
- 250 experts on IBM technologies (SW & HW)

Benefits & Differentiators :

Benefits

- Identify design weaknesses in early stages
- Reduce costs related to frequent faults and “downtimes”
- Reduce testing costs with an industrialized testing infrastructure and methodology

Differentiators

- Industrialized dedicated **Testing Center** @ Montpellier
- Multiple engagements all business sectors
- Large experience on different testing environments
- Access to IBM labs

Reactivity – Flexibility – Efficiency

➔ An industrialized offering …

The PSSC europeen center – Products & Solutions Support Center – at Montpellier demonstrate our added value via adapted Presentations, Training Sessions, Architecture Design and **Performance & Scalabilty Testing**

Platforms

- IBM Mainframe (z10, z9), Power (P6, P5) and Modular technology
- IBM System Storage technology (DS, XIV, NAS)
- Network : Cisco, Adva, Brocade

Expertise

- zOS, zVM, zLinux, Sysplex, CICS, IMS, TSO,
- Linux, AIX, VMware,
- DB2, Oracle, SAP, WebSphere, Tivoli
- Workload simulation : RPT, Loadrunner

Facilities

- Secured environment
- Remote access
- Dedicated
- Suitable

… with support to several Hardware needs …

- Support to mixed infrastructures : **x, p , z, i , storage …**
- High-End (x3850 M2 & x3950 M2), Blades, iDataplex

…

x3850-M2
x3650-QC
x3950 64w
x3950 128w
x3550 2W-DC
x3650 2W-DC
x3755
x3850 4W-DC
x3950 16W-DC
x330 2 ways 1.13 ghz
x335 2 ways 2.4ghz
x336
x336 DC
x346
x365
x366
x366 DC
x460 SC 16w

BC-H
HS21 DC
HS21 QC
LS41
LS20
LS21
JS21
Blades Center Storage
HS21-XM QC
JS22
BC 8677-2XG
Blade Center +7HS40
Blade Center + 14JS20
Blade Center Telco
Blade Center + 14HS20
idataplex

…

… an adapted engagement model …

Qualification
- Understand the customer requirements
- Validate objectives, success criteria
- Define architecture, testing tools
- Identify the needed resources, propose a schedule

Pricing
- Cost center
- Fee based on resources involved, type of support and duration
- Average engagement price : from 20k to >500k.
- Client price is customized according to the needs & targeted margin.
- Execution will start upon financial approval from requesting organization

Execution
- Environment setup (HW, middleware, tools, data load, application)
- Workload Simulation
- Tests execution – Metrics collected
- Skill transfer

Follow-up
- Results delivery & demonstration – remote or on site
- Technical Report
- Recommendations
- Asset creation when applicable

… an industrialized methodology

Strategy & Design

- *Project initialization*
- *Testing Approach and Strategy Definition*
- *Testing Campaign Design & Planning*
- *Testing Detailed Specifications*

Implementation

- *Testing Environment Installation*
- *Testing environment implementation (injectors, database loading…)*
- *Testing Scripts Implementation*
- *Testing Execution*

Results Management

- *Outputs Management*
- *Metrology Management*
- *Platform Improvements*
- *Tuning Actions*
- *Testing Reports and Presentations*

ITS & PSSC Resources:

- ITS Front-Office : Stratedy, Design & Results Management

- PSSC Back-Office : Design, Implementation & Results Management

Project Management

Transaction Processes tests campaign

Detailed TP test design

TP tests preparation

TP tests execution

TP test reporting

Performance tests study and design

Batch tests campaign

Detailed batch test design

Batch tests preparation

Batch tests execution

Batch test reporting

Typical Solution Description (1/2)

- **Offering Phases :** 3 main phases
  - Strategy & Design
  - Implementation
  - Results Management

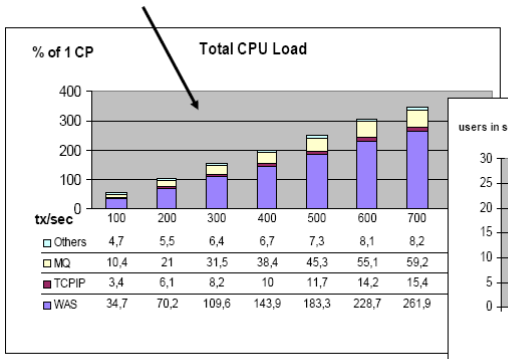
- **Project duration :** from a couple of weeks, to a couple of months

- **Human resources :** several skills could be engaged in the process, depending on the complexity of the environment
  - IBM Resources
    - Project Manager / Test Architect / End-to-End Architect
    - IBM Test tools specialist
    - Diverse software and hardware specialists and experts
  - Customer Resources
    - Customer teams are part of the testing campaigns

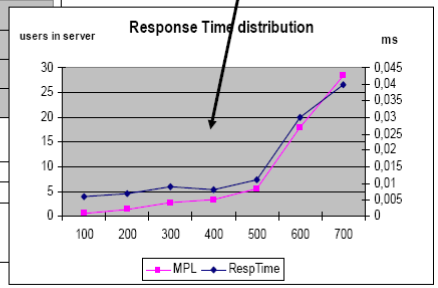
- **Deliverables** :
  - *Testing Services* : Mainly Testing Analysis Reports & Documentation
  - *Testing Infrastructure* : Others Deliverables (Platforms, Equipments, Software…)

Typical Report Contents (2/2)

Consommation CPU

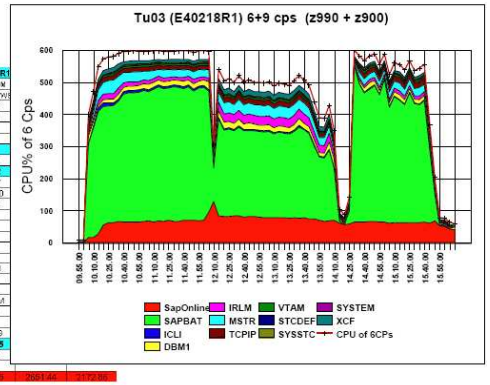


Temps de reponse Utilisateurs



Performance Monitoring

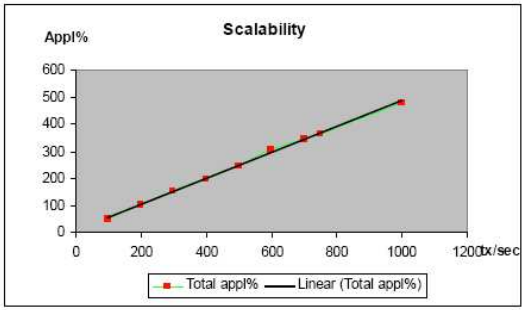
Distibution de la consomation CPU

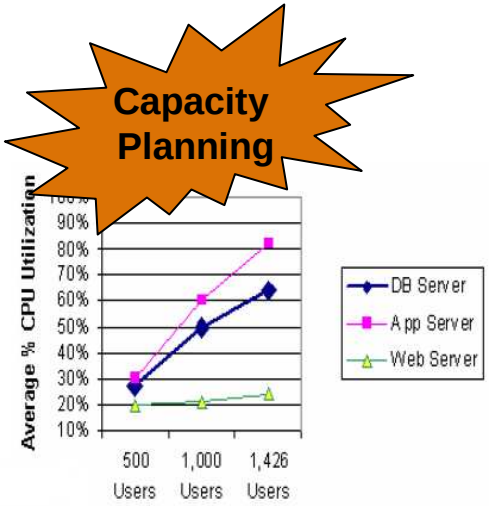


Feuille de suivie des test

Runid	C31201R1	C31201R2	C31203R1
Base characteristics	BP2=60M	BP2=90M	BP2=60M
	1JVM per WS	1JVM per WS	1JVM per WS
#CPs on WEBS+APPS	3+13	2+13	1+13
#VUsers	1426	1000	500
#WebServers	2	2	1
#AppServers	1	1	1
#active CP	5	5	5
Measured Interval (sec)	2400	2400	2400
CPU	64.62	45.34	25.82
Service policy (APPL %)	312	288.1	128.7
Dasd rate	683.50	555.00	316.10
C/R	0.97	0.97	0.98
RDB2DBM	11.3	9	5.1
RDB2DIST	12.2	9.1	4.8
RDB2IRLM	0	0	0
RDB2MSTR	0.1	0.1	0
RDB2SPAS	0	0	0
RDDFDBF or RDDFPS	275.3	207.0	110.3
RNET	2.2	2.2	1.7
RTCPIP	8.8	7.7	4.5
DB2 total SQL (complete run)	462.2M	339.6M	178.7M
Loadrunner Total Thruput (MB) (interval)	417	296	166
Loadrunner Avg Thruput (KB/sec) (interval)	174	124	61
Loadrunner Total Hits (interval)	70478	52664	25669
Loadrunner ETR (Hits/sec) (interval)	29.366	21.693	10.695
Total Tx (interval)	25602	18928	9320
ITR (Tx/sec)			
Mips used using SU/sec	1528.23	1018.26	548.19

Capacity Planning





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Offering Adaptability

Services Type/Amount

« Testing Services » Mode

+ Testing Know-How/Methodology
+ Expertise
+ Reports, Documentation
+ Analysis, Recommendations

HW, SW & Application Setup + Overall Project Management

HW & SW Setup + Sharing of Roles & Responsabilities

HW Setup + Basic Maintenance Support

« Testing Infrastructure » Mode

+ Infrastructure on Demand
+ Reactivity
- Expertise
- Testing Know-How/Methodology

Engagement Type

Typologie des prestations « customisées »

Montant (*)	Description – Quelques exemples (*)
10k-30k	- Accès distant à une config p570+DS4K pendant 3 semaines avec support admin infrastructure
30k-100k	- Accès distant à une config mainframe+disque pendant 2 mois avec support admin infrastructure - Mise en œuvre et exécution d'un test de capacity planning mono-scenario pour une application web pendant 4 semaines
100k-200k	- Mise en œuvre et exécution d'un test en config 3-Tiers (Intel, z10, DS8K) pendant 10 semaines (support admin, tuning infra & RDBMS, outil de tests)
200k-500k	-Mise en œuvre et exécution d'une campagne de test (multi scenarios) sur config p595+DS8K+Blade pendant 2 mois - Accès distant à une config mainframe+Power+disque pendant 6 mois avec support admin infrastructure
>500k	- Accès distant à une config p595+DS8K pendant 1 an avec support admin infrastructure

(*) ces indications sont données à titre d'exemples – la phase de qualification permet de définir une proposition de coût basé sur les ressources humaines utilisées, l'infrastructure acquise et la durée.

Typologie des prestations « light pré-packagées »

Couverture des deux plate-formes Z & P :

Montant (*)	Description – Quelques exemples (*)
7.5 K€ / week	**Config 1 - z/OS** *Single z/OS V1.10 LPAR, 4 to 6 CP Shared, 6 GB or 8 GB Memory, 600 GB storage (system and userdata) , set of software is installed (DB2, WebSphere Application Server, WPS, Message Broker, ESB, CICS, MQ & monitoring tools)*
7.5 K€ / week	**Config 2 - Linux on System z** *One guest hosted on a z/VM LPAR; up to 4 CP shared, 4 GB memory, up to 14 GB storage; software code (WebSphere, Oracle, DB2…) downloadable from a NFS. SUSE and Redhat versions of Linux are available*
7.5 K€ / week	**Config 3 - Oracle Solutions on System z** *Oracle AS on one Linux guest + Oracle RAC 10g on 2 Linux guests (cluster), 4 CP per Linux guest, 4 GB memory, up to 300 GB storage*
5.5 K€ / week	**Config 4 - Power partitions** *P6 or P5, from 1 to 4 partitions, up to 12cpu, up to 128GB memory, 100GB internal disks + up to 1TB external disks.* o *AIX 5.3 or 6.1or Linux on Power (SLES 10 or RedHat 5.1)* o *DB2 v9 or Oracle 10g, 11g, 11gRAC, WAS 6.1* o *Workload Generator on Modular Systems*

(*) : ces indications sont données à titre d'exemples – la phase de qualification permet de définir une proposition de coût basé sur les ressources humaines utilisées, l'infrastructure requise et la durée.

Example #1 : Remote Testing infrastructure

The Customer Needs (French Telecommunication Cie)

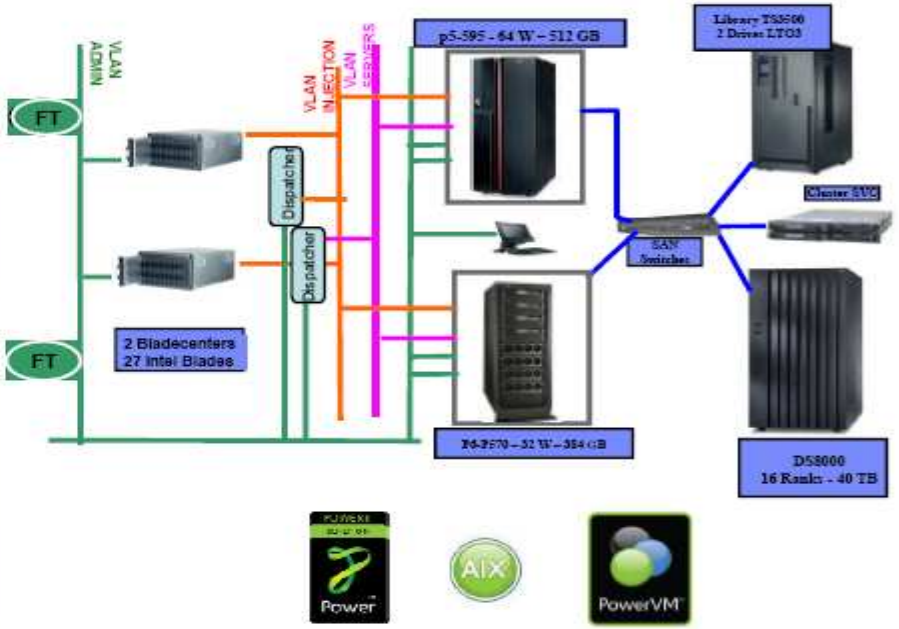
- Offload testing activities from their datacenter due to capacity contrainsts
- Benefit from PSSC expertise on Power & Storage performance & tuning
- Long term partnership over multiple years with annual reconduction

The Project

- Recreate test bed for CRM application based on Power/DS8K platforms
- 3 years collaboration
- New versions validation prior going live
- Capacity planning tests with workload simulation
- Explore new Power Virtualization features

The Results

- ~1M€ / year of GTS revenue
- Reinforced partnership IBM / Client
- Relief of datacenter & people load at customer
- Very high customer satisfaction
- PSSC seen as Client laboratory for new solutions



Example #2 : Solution Testing engagement

The Customer Needs (Spanish Insurance Cie)

Validate dual site implementation of their ERP solution required due to new business regulations

Evaluate target distance for second site implementation (10 & 20 kms)

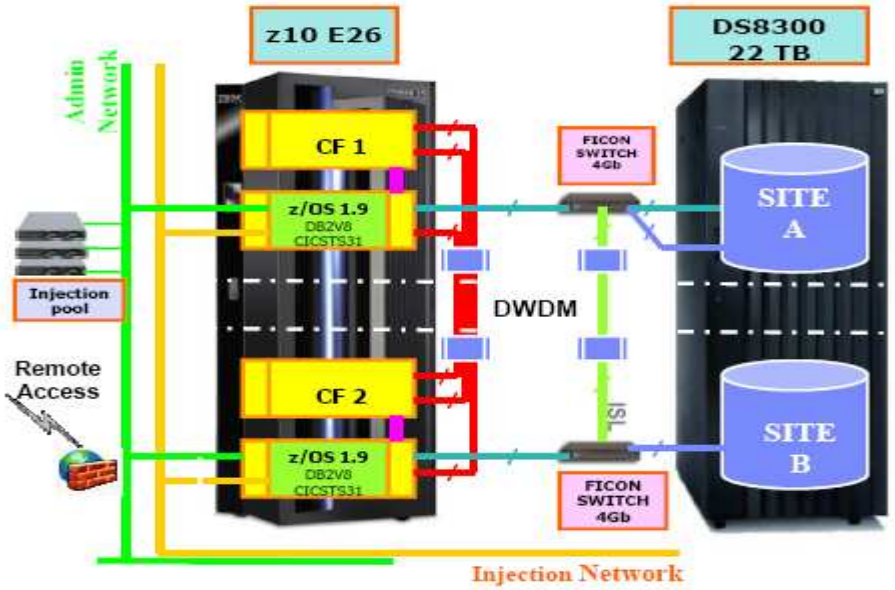
OCASO

The Project

- 2 months duration
- Production system cloned with NDA
- Tests based on a DB2/zOS CICS environment with Sysplex, targeting response time

The Results

- ~ 5M€ IBM revenue (STG+GTS)
- Customer delighted – skill transfer : knowledge on sysplex implementation.
- Decision to move to dual site.
- Faster Production implementation



Example #3 : Solution Testing engagement

The Customer Needs

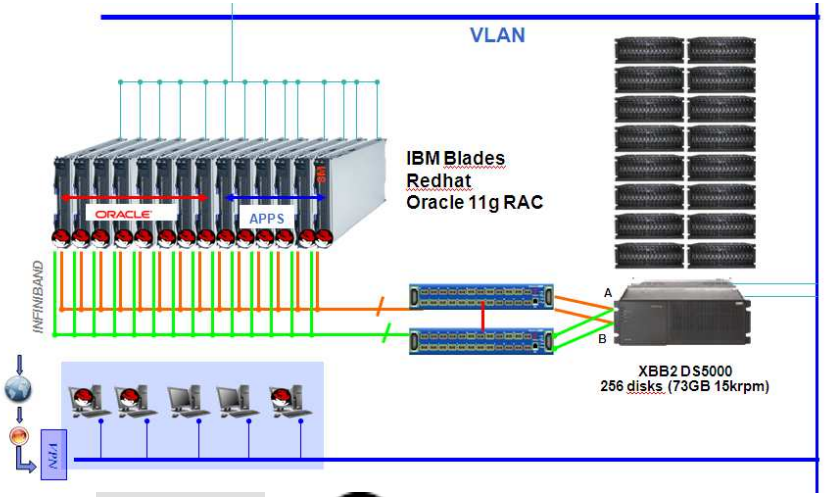
Reduce maintenance cost & optimize overall datacenter operability

Reduce infrastructure acquisition cost leveraging green technology

Validate architecture to support growing business needs

The Project

- 1 month duration for the test
- Performance & Scalability validation of the end-to-end platform architecture (BCH, VOLTAIRE, LSI) based on Oracle RAC inside an IBM blade center system



The Results

- Substantial TCO savings achieved while improving end user experience : Scalability, Power savings, Simplified management, Higher server utilization