IBM SolutionsConnect 2013

L'IBM TechSoftware nouvelle génération

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IBM Client Center Paris

#solconnect13

Transformez vos opportunités en succès

IBM

FlashSystem to Boost Your Business

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IBM STG – Flash Center of Competency

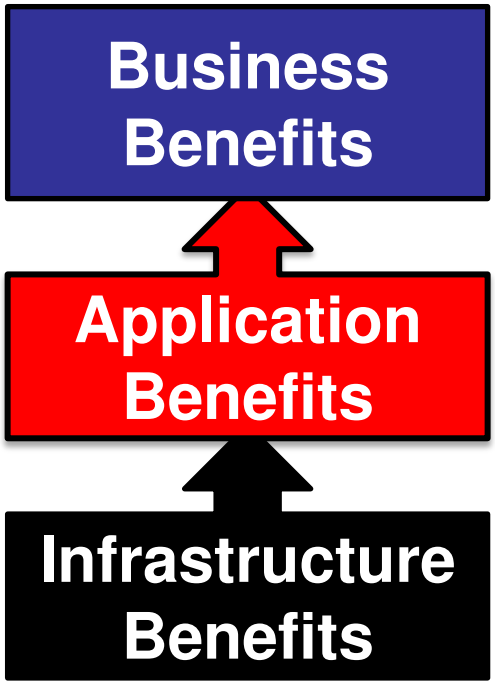
@eneyberg

Agenda

- Business value of flash technology
- IBM flash portfolio
- Deployment strategies and customer use cases
- Review / Q&A

Why Flash? It's All About Applications!

- Increase **application** performance
  - Make users more productive
  - Increase "serial" performance
- Scale **applications** further
  - Do more things with more users
  - Increase "parallel" performance
- Create new **applications**
  - Do more things with more data
  - More analytics → more insight
- Make **applications** more efficient
  - Do more with less spindles, CPU cores, license fees, etc



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Some Flash Acceleration Opportunities…

Banking
- Optimizing Offers and Cross-sell
- Customer Service and Call Center Efficiency

Insurance
- 360˚ View of Domain or Subject
- Catastrophe Modeling
- Fraud & Abuse

Telco
- Pro-active Call Center
- Network Analytics
- Location Based Services

Energy & Utilities
- Smart Meter Analytics
- Distribution Load Forecasting/Scheduling
- Condition Based Maintenance

Media & Entertainment
- Business process transformation
- Audience & Marketing Optimization

Retail
- Actionable Customer Insight
- Merchandise Optimization
- Dynamic Pricing

Travel & Transport
- Customer Analytics & Loyalty Marketing
- Predictive Maintenance Analytics

Consumer Products
- Shelf Availability
- Promotional Spend Optimization
- Merchandising Compliance

Government
- Civilian Services
- Defense & Intelligence
- Tax & Treasury Services

Healthcare
- Measure and Act on Population Health Outcomes
- Engage Consumers in their Healthcare

Automotive
- Advanced Condition Monitoring
- Data Warehouse Optimization

Chemical & Petroleum
- Operational Surveillance, Analysis & Optimization
- Data Warehouse Consolidation, Integration & Augmentation

Aerospace & Defense
- Uniform Information Access Platform
- Data Warehouse Optimization

Electronics
- Customer / Channel Analytics
- Advanced Condition Monitoring

Life Sciences
- Increase visibility into drug safety and effectiveness

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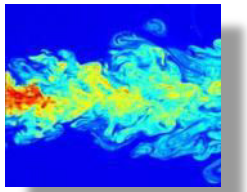
OLTP
Bases de données

Finance, gaming, facturation temps réel, real-time monitoring, accélération de requê

Flash helps you **maximize value** from software you use today… and tomorrow.

Infrastructures virtualisées

VDI, consolidation d'infrastructures virtualisées



Applications de calcul, HPC, BAO, …

Simulation, modeling, rendering, FS metadata, scratch space, video on demand…

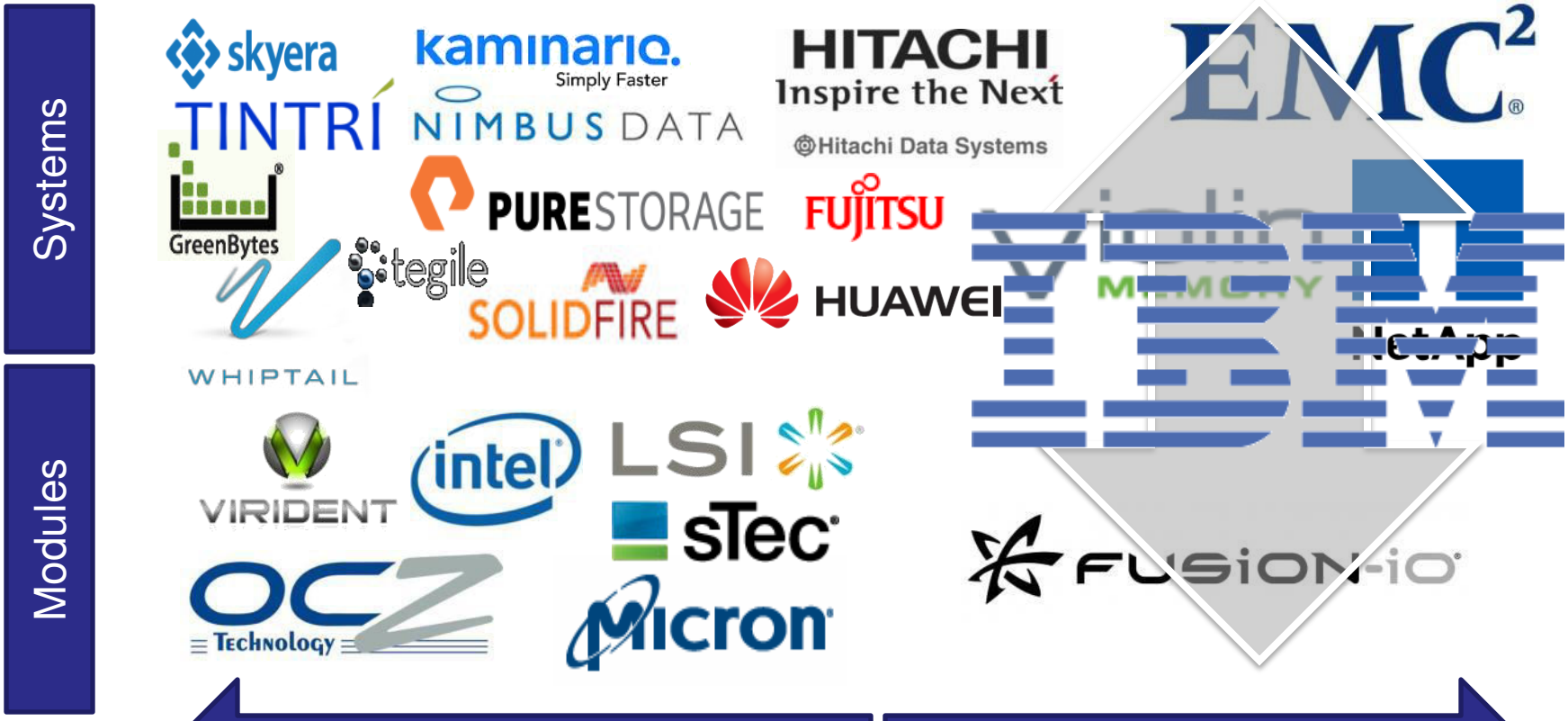
Analytique

Business intelligence, traitement de batch, système ERP, reporting, …

Infrastructures Cloud

On-demand computing, Distribution de contenu, web, caching, active file management…

Many Flash Companies…



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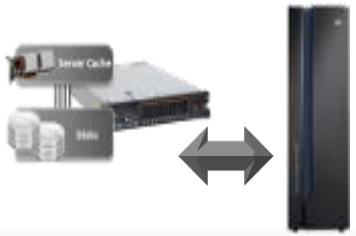
IBM Flash Portfolio

IBM FlashSystem
& Optimized Storage



IBM Flash Software

IBM Flash Drawers

IBM Flash Adapters
& SSDs

Complete set of
hardware
that enables
smarter, faster, more optimized
software

820 3D Tour!

IBM FlashSystem Family Specifications

Model	FlashSystem 810	FlashSystem 820
Capacity	2, 4, 6, 8, or 10 TB	12 or 24 TB (10 or 20 TB w/RAID)
Latency (r/w)	110/60 us	110/25 us
IOPS	550K @ 4K	525K @ 4K
Bandwidth	5 GB/s	5 GB/s
Data Protection	Variable Stripe RAID™	2D Flash RAID + Variable Stripe RAID™
Power	350 W	300 W
Form Factor	1U EIA x 22.5"	1U EIA x 25"
Interfaces	4x 8 Gb FC or 4x 40 Gb InfiniBand	

8xx use eMLC flash – best for most enterprise workloads

Equivalent SLC based systems (7xx) available for extreme write applications

x20 has more reliability tech and max capacities

IBM FlashSystem Family Values

Extreme Performance with MicroLatency™ • Macro Efficiency • Enterprise Reliability

- Fast
- Efficient
- Reliable

MicroLatency™ minimizes waiting: ~100 microseconds to value

20 TB, 500K+ IOPS, 5+ GB/s in 1U and <500 Watts

Industry leading Variable Stripe RAID™ and 2D Flash RAID

Storage "performance" is…

Metric	What It Really Means
IOPS (I/Os per second)	How many small activities (typically 4 kB requests) the system can handle in parallel* at a time *Traditionally proportional to spindle count*
Bandwidth (MBps / GBps)	How many big activities (typically 128 kB+ requests) the system can handle in parallel* at a time *Traditionally proportional to backend scalability*
Latency / response time (ms, µs)	How fast each individual activity happens *Traditionally proportional platter rotational speed*

* "Parallel" above is a simplification, but good enough for high-level discussion.

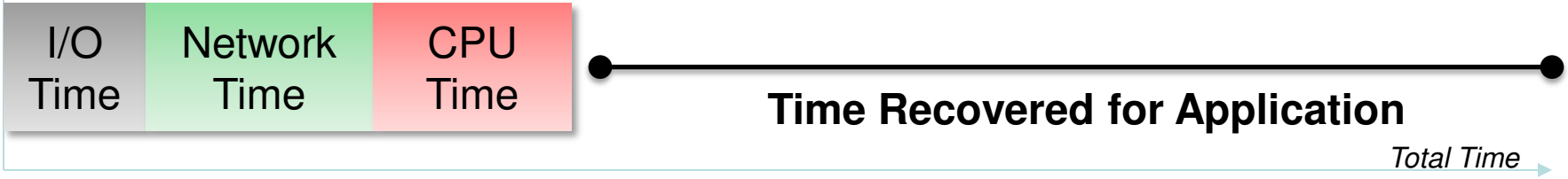
Importance de la latence

From an application's perspective, all client requests take time…

Better, faster CPUs help…

POWER7 BUILT ON Power

But what if you could fix the I/O bottleneck?



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Common FlashSystem Deployments

Flash en Stockage virtualisé	• Intégration transparente avec SVC / V7000 • Accelère tous les workloads applicatifs • Classe de très haute perfs sous Easy Tier • Bénéficie des fonctions intelligentes de SVC/V7K
Flash en parallèle du stockage existant	• Installation en parrallèle des baies existantes • Ecriture Miroir dans la baie Flash • Lecture privilégiée dans la baie IBM Flash • Préservation des fonctions de réplication 'légacy'
Baie Flash dédiée	• Baie Flash dédiée pour l'ultra haute perf I/Os • Accélère les bases Oracle, SAP, VDI, • Données les plus exigeantes en perfs

En parallèle du stockage existant

French Financial FlashSystem Client

Problèmatique:

Consolidation application financière de toutes les filiales européennes:
→ explosion des IO sur une base de données Oracle de 1TO
→Temps de réponse de la baie 'high end' dégradés de 6 à 12 ms
→ Traitements transactionnels et batch Oracle dégradés
→ Plainte des utilisateurs

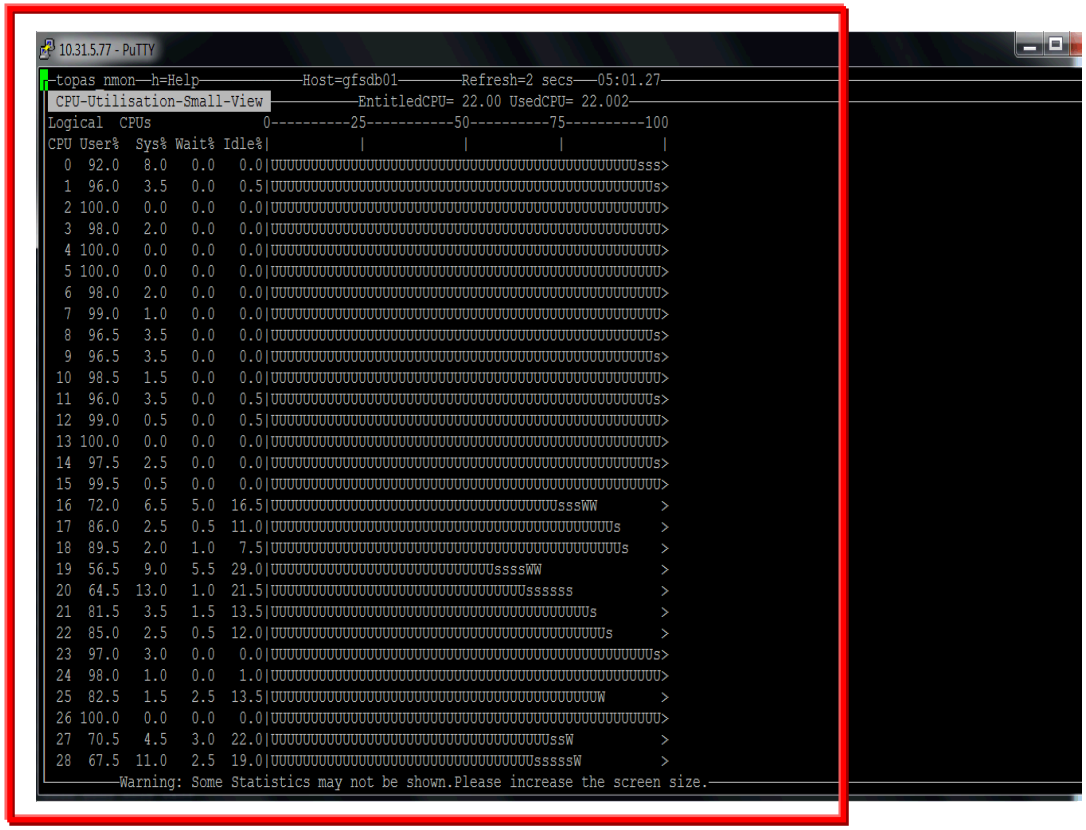
Solution:

Mise en miroir de la base Oracle entre la baie High End et la baie FlashSystem + Activation 'Preferred Read IO'
1 TO net utilisés → 4 heures d'implémentation

Benefices:

→ Problème résolu immédiatement sans tuning
→ Performances accélérées immédiatement
→ Utilisation maximale des 28 cœurs du serveur High End Unix

French FlashSystem Client – Results



28 cores at nearly 100% CPU utilization!

No tuning.

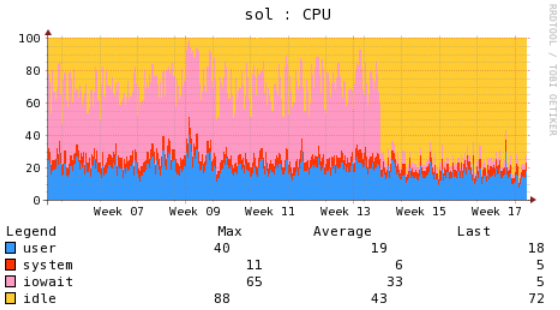
Baie Flash dédiée

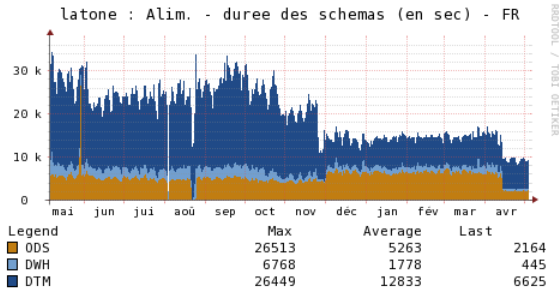
PriceMinister.com: e-commerce en France

Témoignage au CRIP le 19/06
Retour de 3 ans d'expérience sur 2 baies Texas Memory System

Rakuten group
PRICEMINISTER.COM

- **OLTP: pb de perf sur base Oracle de 7TO**
  (production OLTP site web)
  - **IO wait divisés par +10**
  - **Charge divisée par ≈3**
- **BI: pb de perf sur base de 3TO**
  (pilotage marketing et commercial)
  - **Temps d'alimentation BI divisé par 3**
  - **Certains rapports d' analyse MKTG passent de 49 min à 10 sec !**





Baie Flash dédiée

Conclusion du Directeur de la Production

Rakuten group PRICEMINISTER.COM

- 3 années de satisfaction de l'expérience FlashSystem
- Avantages de la solution:
  - Facilité d'intégration et d'utilisation
  - Performances au rendez-vous
  - Stabilité (1 arrêt en 3 ans)
  - Un support en France avec IBM
- Inconvénient:
  - On s'habitue vite ☺, difficile de revenir en arrière…

Acquisition en 2013 de 2 baies FlashSystem de dernières générations

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Review

- FlashSystem is simple shared storage, server agnostic
- Deploying FlashSystem adds business value by dramatically improving performance (specifically latency)
- It speeds up all applications where gains > costs, with a focus on:
  1. **Databases: IBM DB2** / Oracle, etc, and all the higher-level apps they support
  2. **Virtualization:** servers with VMware experiencing I/O blender effects
- 3 key tactical strategies - solve my performance problem **NOW**!
  - **Virtualized** – mainly for existing SVC/V7K customers with >5 SSDs
  - **In parallel with existing storage** – add performance and redundancy
  - **Dedicated flash** – maximum optimization but more effort, best with an easy to analyze environment like Oracle

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InfoSphere Information Server

IBM DB2

Une petite baie FlashSystem va booster votre solution logicielle IBM

IBM Smart Analytics System

Tivoli. software

PureSystems

Cognos. software

IBM GPFS

Q&A

ibm.com/systems/storage/flash