WebSphere Virtual Entreprise

Tendances Logicielles

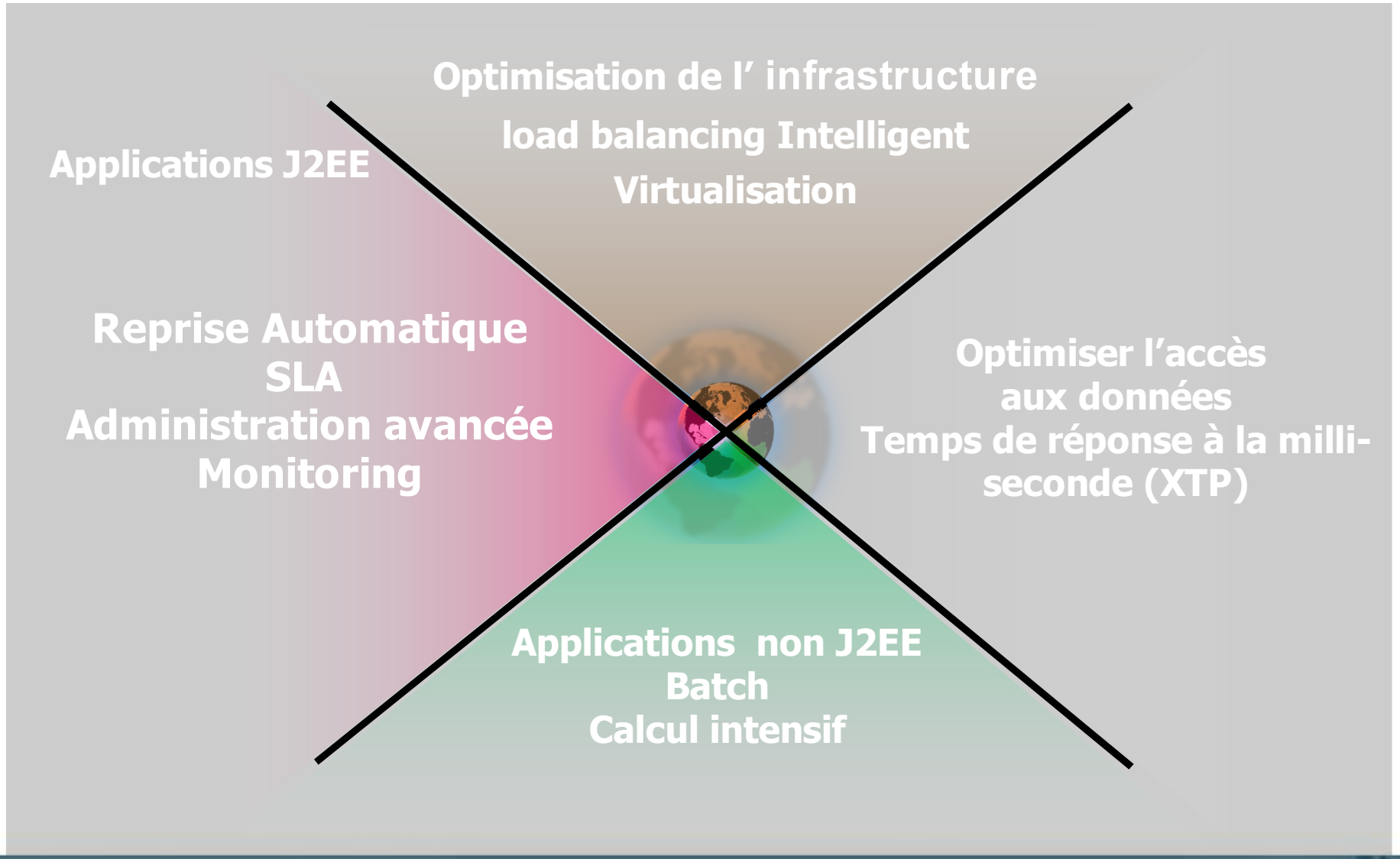
L'architecture pour répondre aux besoins métier

Les besoins à couvrir

- Optimisation des coûts par la consolidation des serveurs
  - Au travers du partage de serveurs physiques, permettre la virtualisation des serveurs applicatifs
  - Augmenter le taux moyen d'utilisation des serveurs physiques (de 10 à 60, 80% ….)
- Amélioration de la maintenance et des opérations
  - Permettre aux équipes d'exploitation « Middleware » d'être plus efficaces
  - Fournir des outils avancés de versioning et de monitoring des applications
  - Centraliser les opérations d'installation d'application
- Amélioration de la qualité de service et de la disponibilité
  - Adapter automatiquement la puissance serveur au flux des requêtes
  - Améliorer le taux d'utilisation moyen du matériel
  - Appliquer une approche de niveau de service pour appuyer le contrat d'engagement

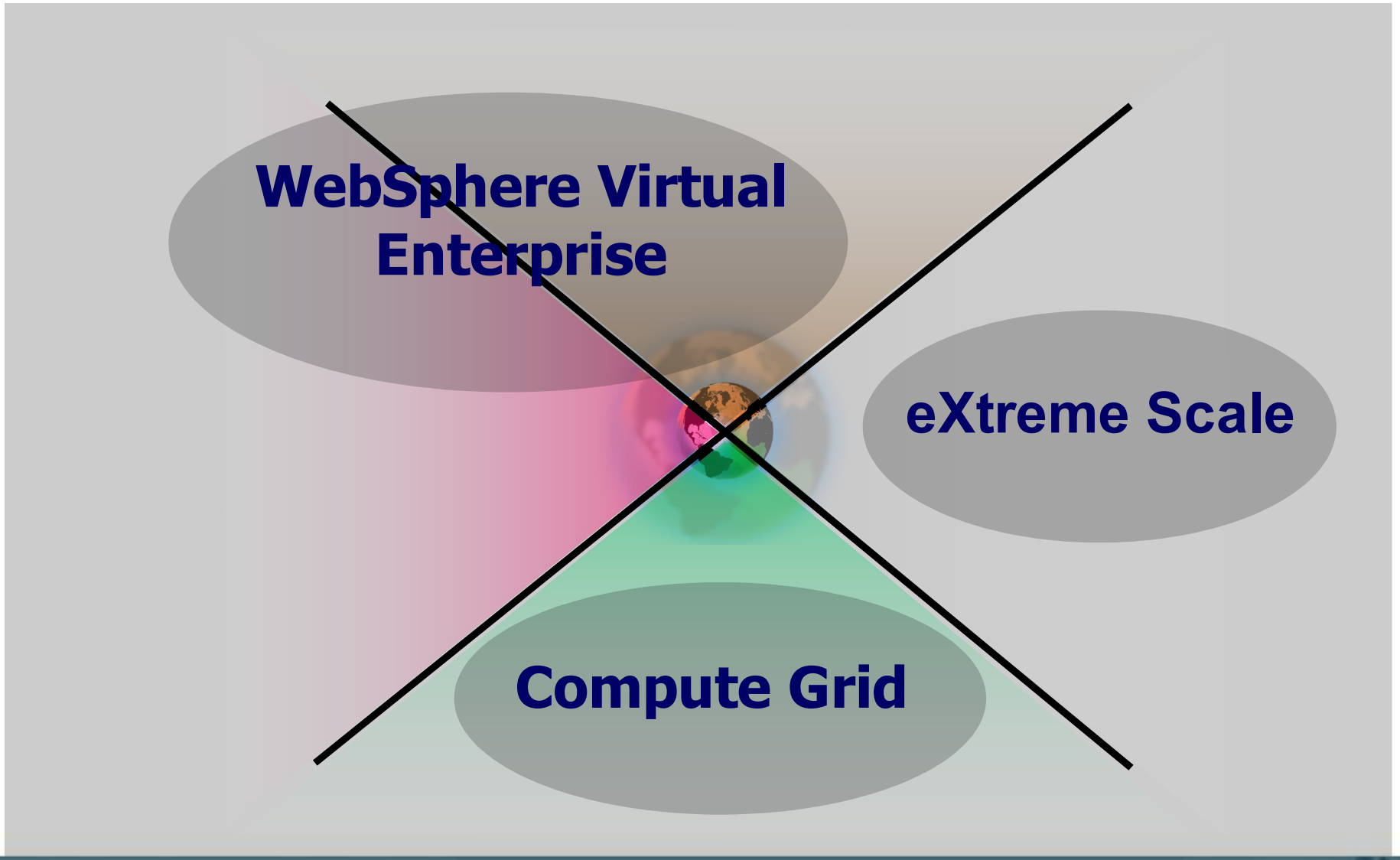
L'approche innovante d'IBM pour couvrir ces besoins

Fournir une infrastructure opérationnelle permettant de ….



La solution IBM

1 solution intégrée, ou 3 solutions indépendantes



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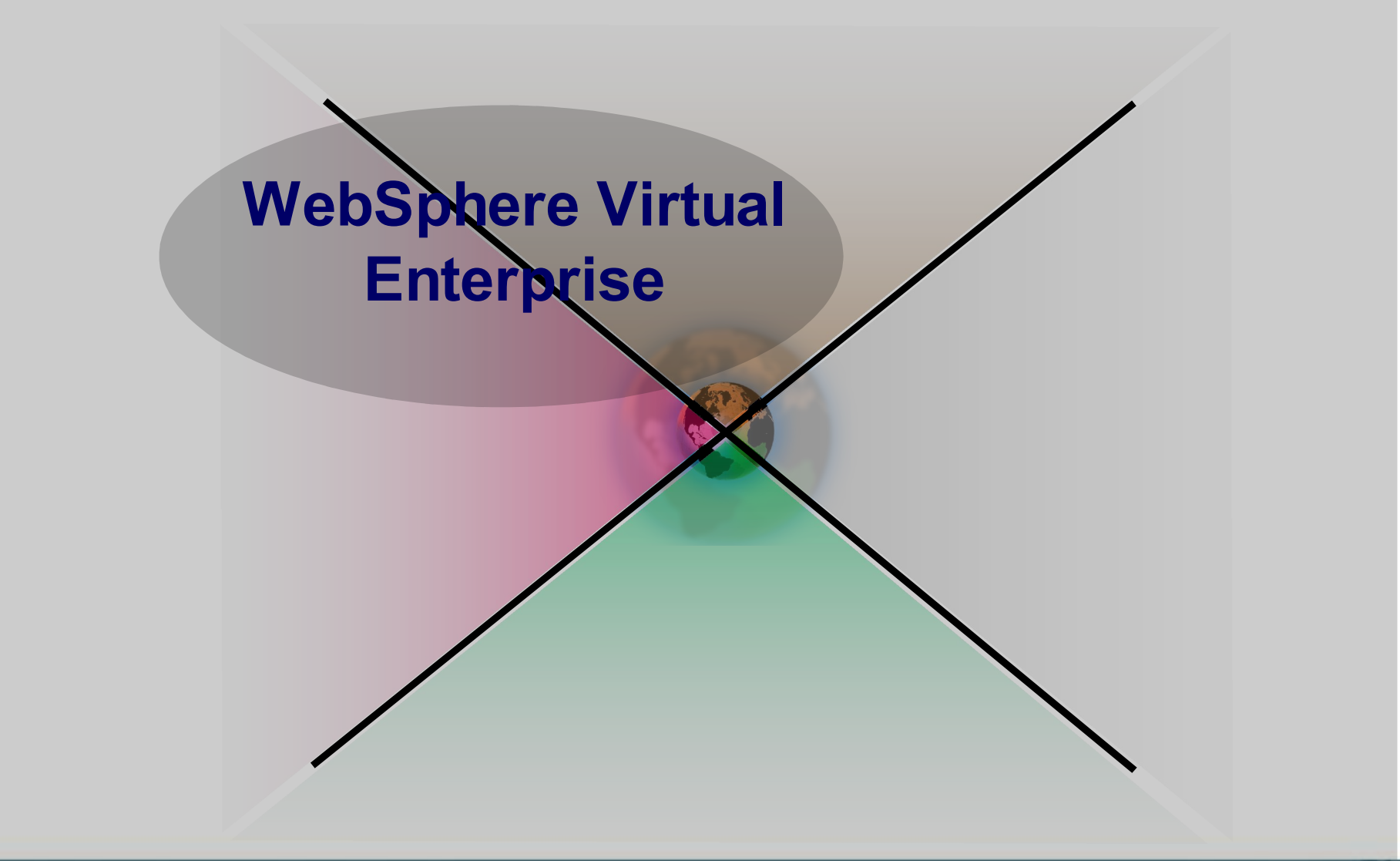
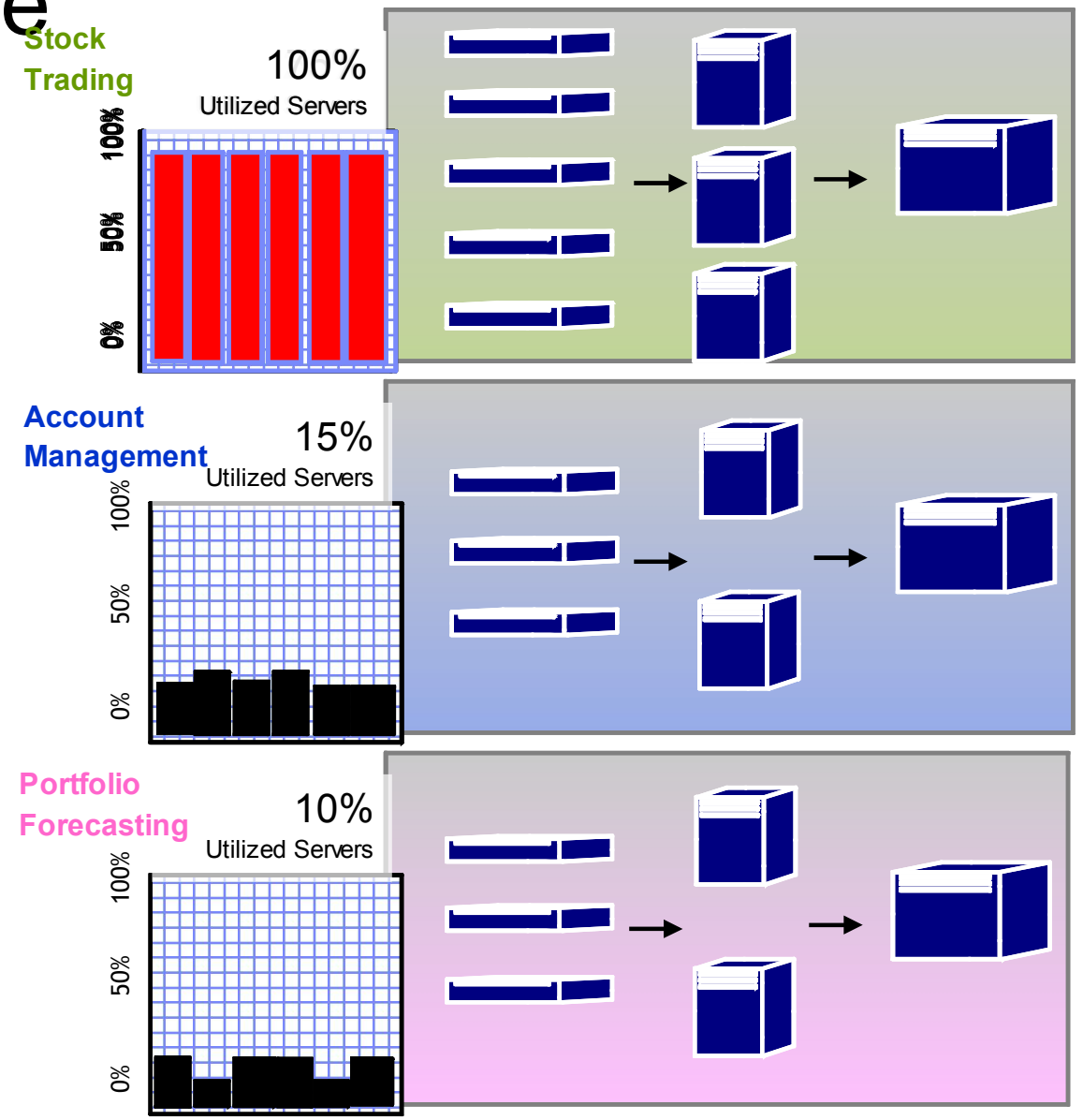
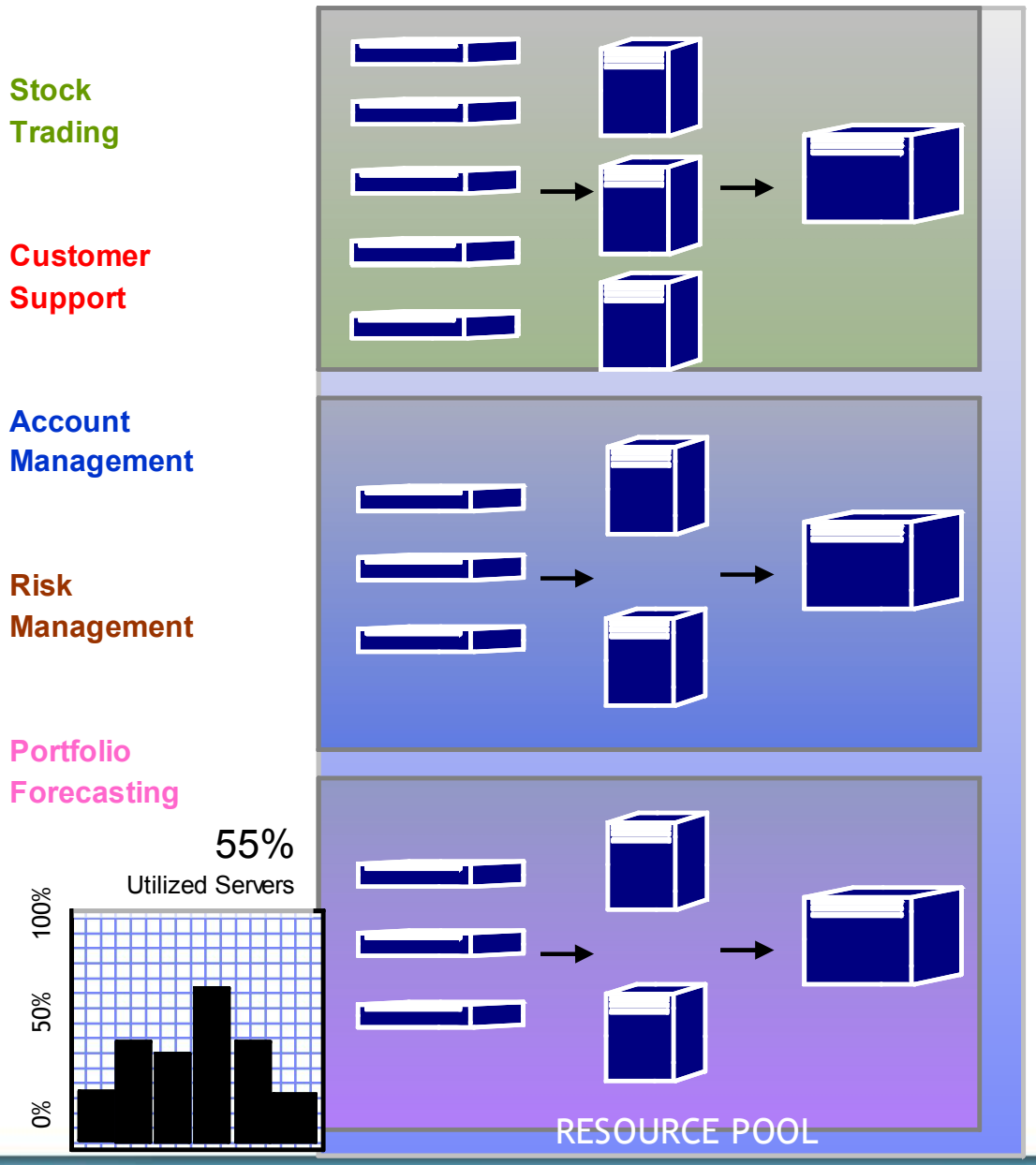


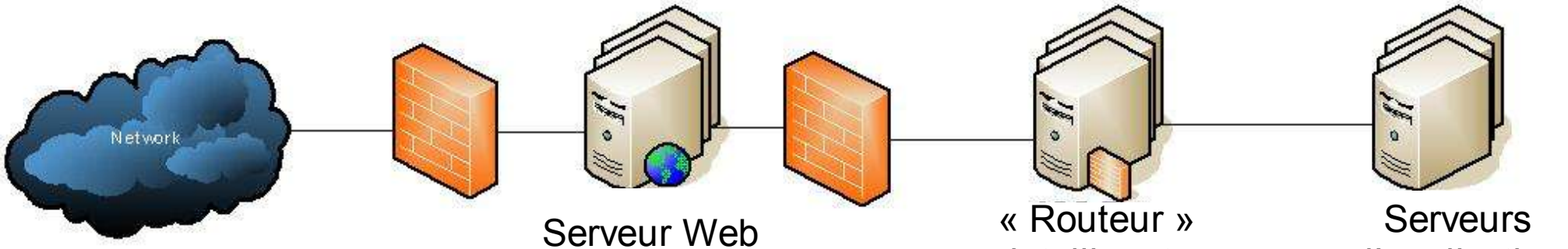
Le principe


Stock Trading
100%
Utilized Servers
100%
50%
0%
Account Management
15%
Utilized Servers
100%
50%
0%
Portfolio Forecasting
10%
Utilized Servers
100%
50%
0%

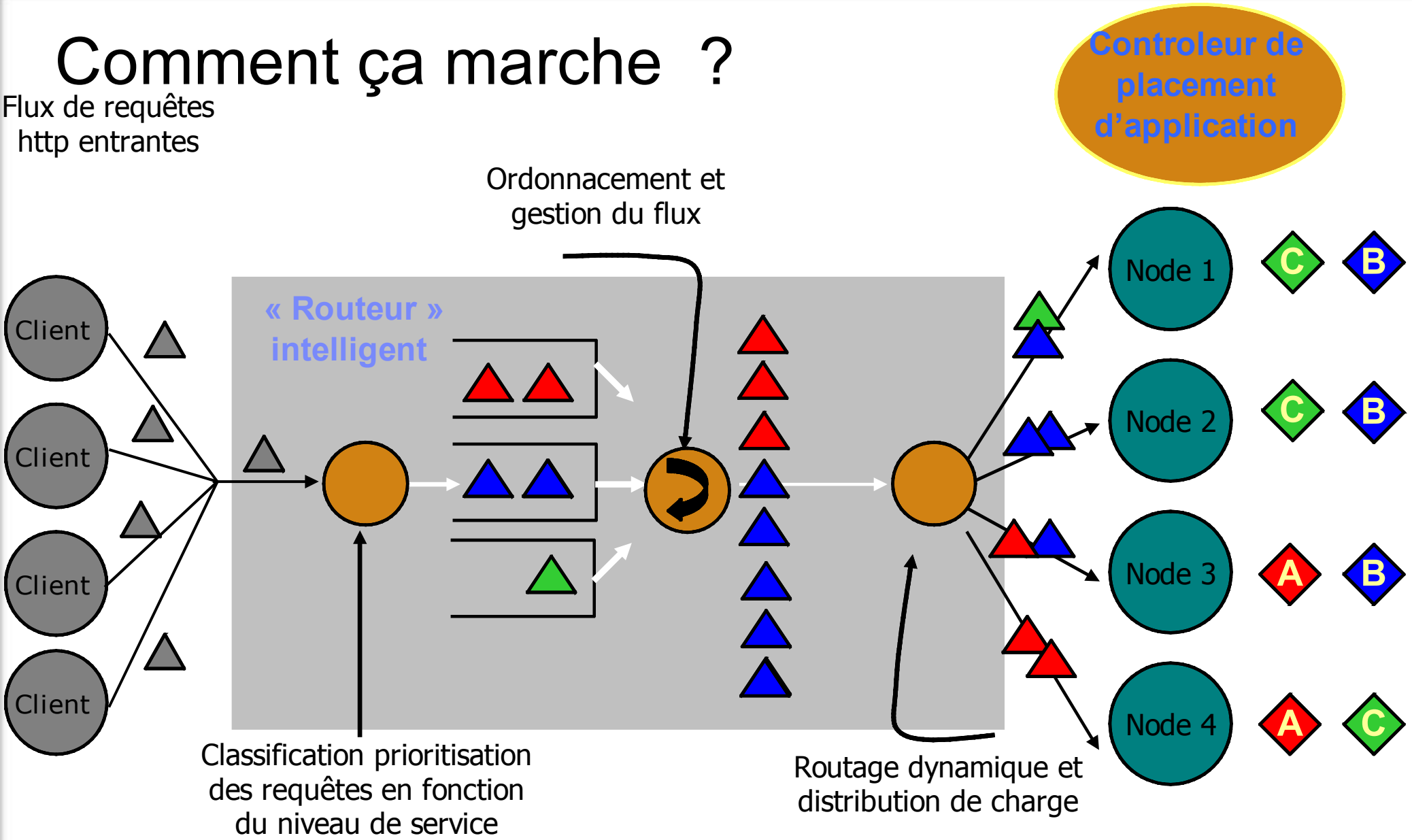
Le principe


Stock Trading
Customer Support
Account Management
Risk Management
Portfolio Forecasting
55%
Utilized Servers
100%
50%
0%
RESOURCE POOL

Topologie de la Solution



Comment ça marche ?



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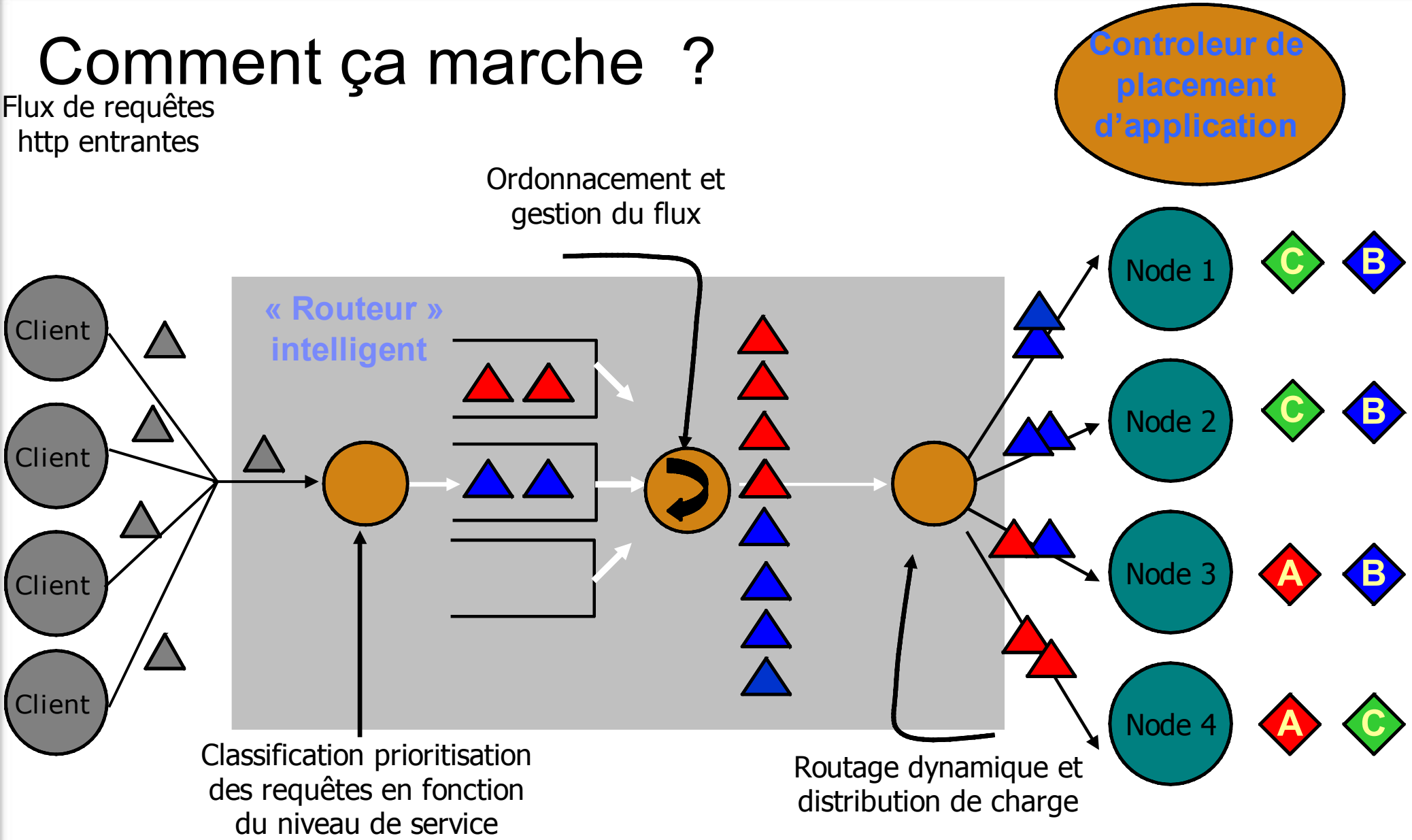
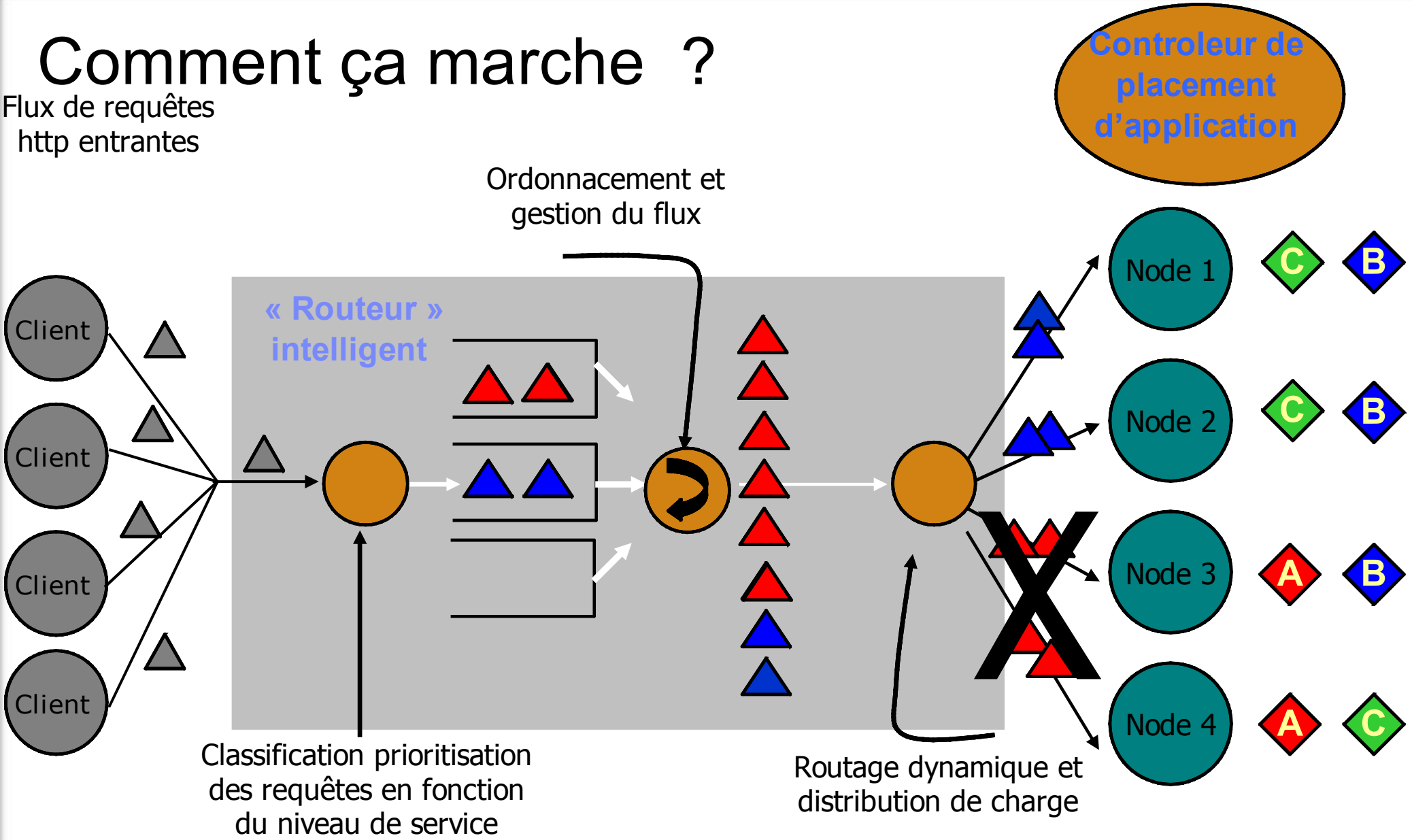
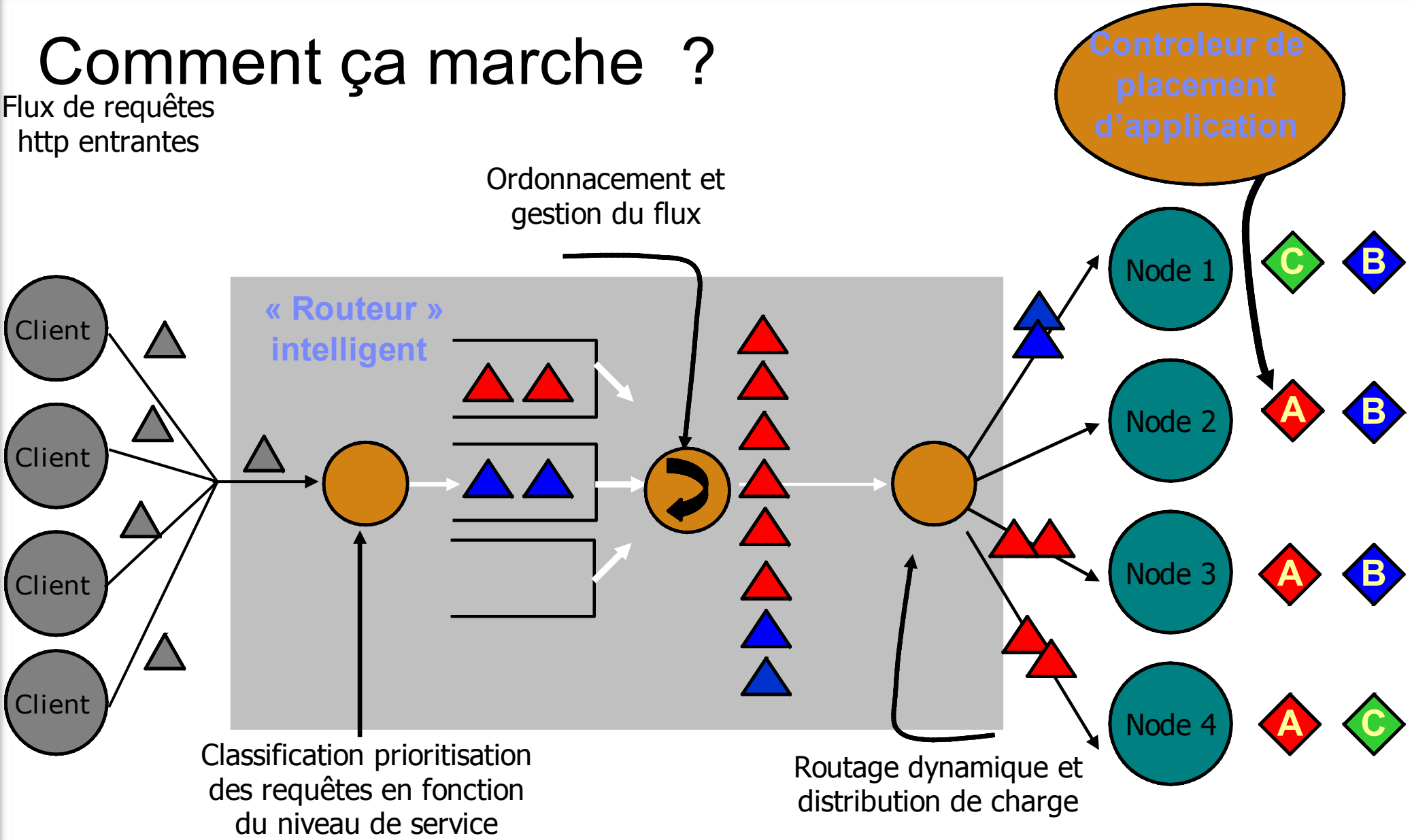


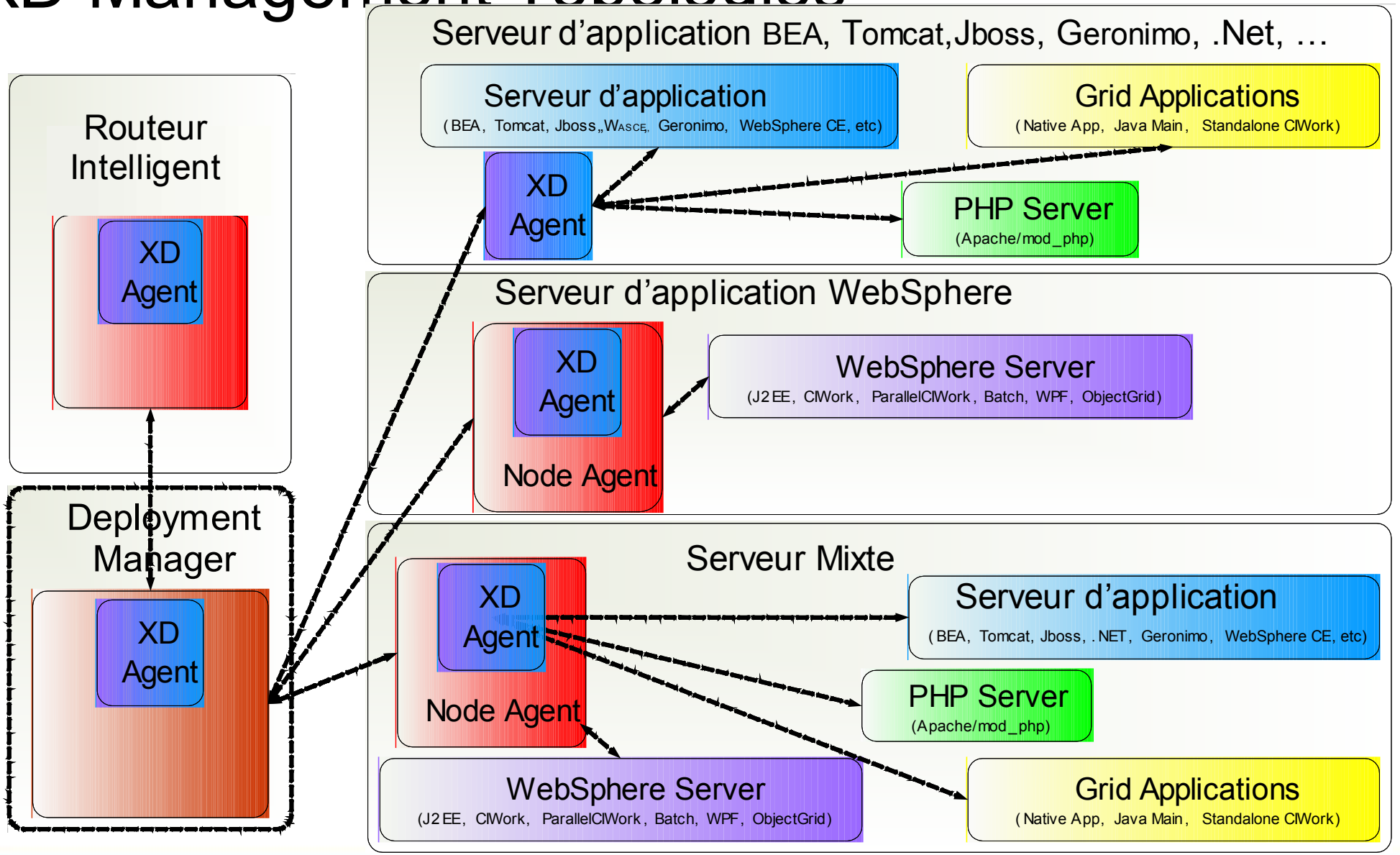
Comment ça marche ?



Comment ça marche ?

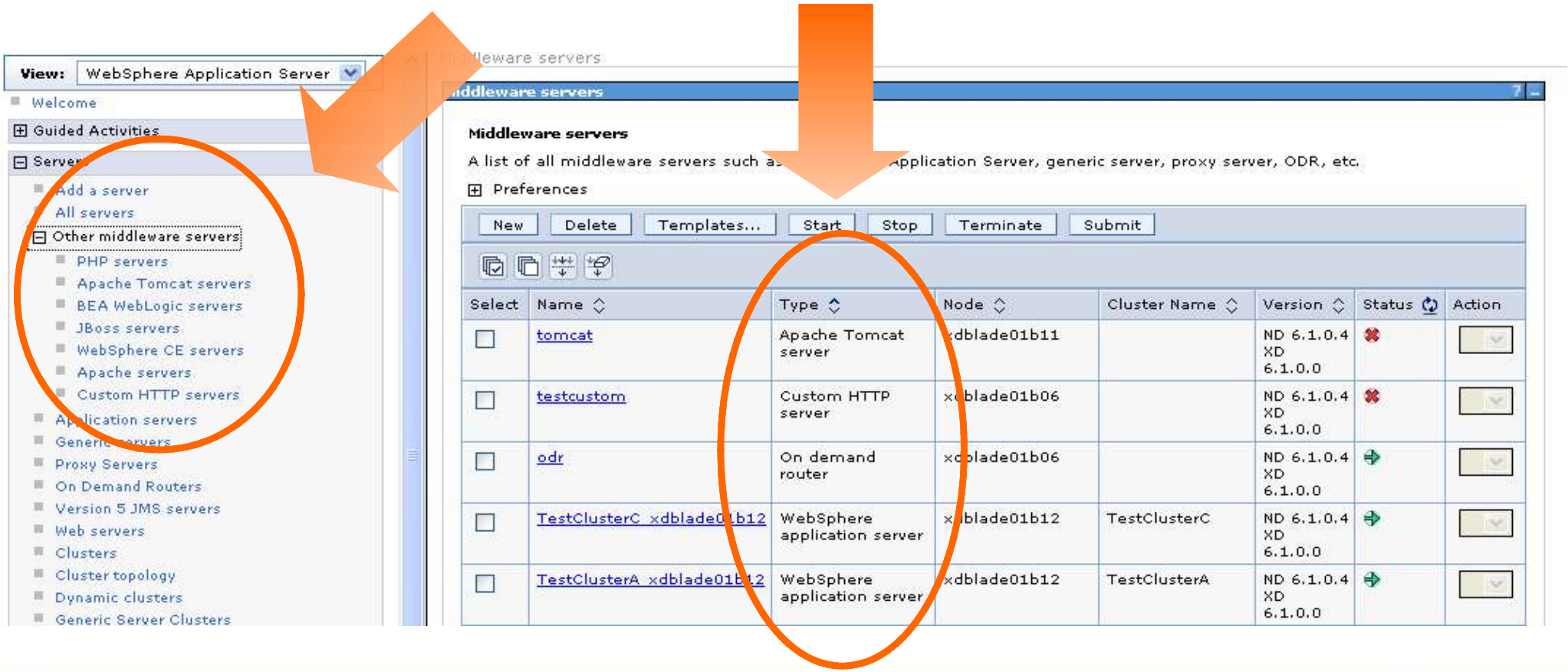


XD Management Topologies



Administration unique et centralisée des opérations

Un ensemble d'interfaces communes pour permettre aux administrateurs d'interagir avec les serveurs WebSphere et les autres serveurs d'application



Les 3 catégories de support

… en fonction du middleware

1-Gestion complète du cycle de vie des applications

- *Création/suppression d'un instance de serveur d'application*
- *Gestion complète de la configuration*
- *Contrôle opérationnel et pilotage des serveurs d'application*
- *Déploiement des applications*
- *Supervision et visualisation de l'état de santé des serveurs d'application*
- *Gestion automatisée de la performance et de la reprise sur incidents .*

WebSphere
•Community Edition

WebSphere
•Application Server

2-Gestion assistée du cycle de vie

- *Templates de mise en oeuvre spécifique à chaque Middleware*
- *Contrôle opérationnel et pilotage des serveurs d'application*
- *Assistants à la configuration des serveurs d'application*
- *Supervision et visualisation de l'état de santé des serveurs d'application*
- *Gestion automatisée de la performance et de la reprise sur incidents .*

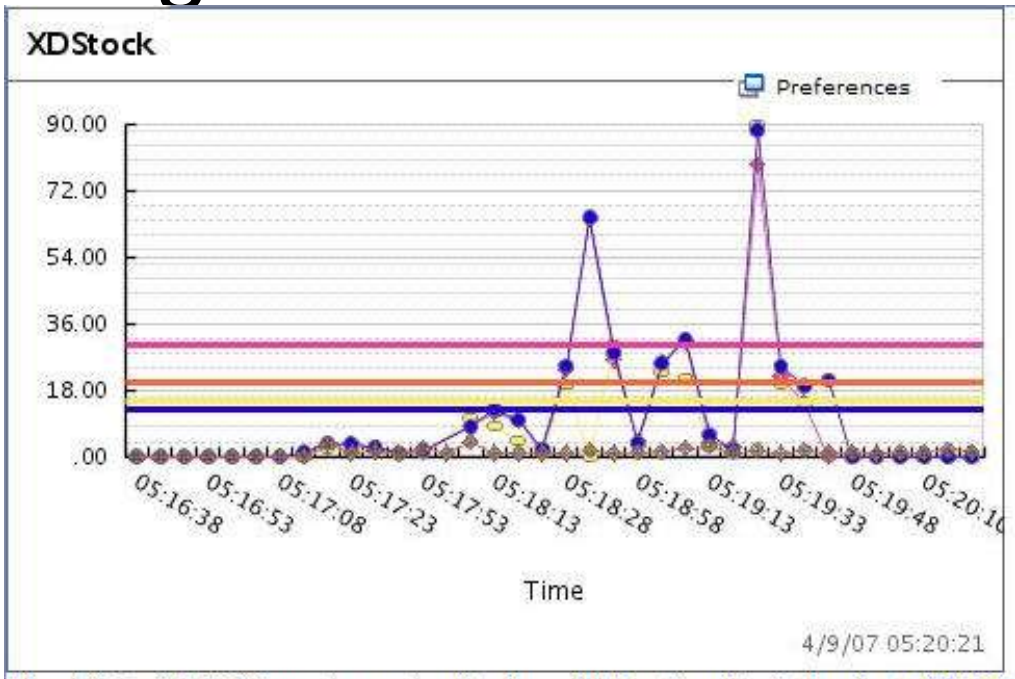
•Tomcat

3-Gestion générique du cycle de vie

- *Template générique de mise en oeuvre d'un nouveau middleware*
- *Les commandes opérationnelles et de définition de serveurs doivent être fournies*
- *Contrôle opérationnel et pilotage des serveurs d'application*

Les outils de reporting

- Prise de statistique au niveau de la cellule, du noeud, du serveur ou de l'application
- Possibilité de comparer deux prises de statistique
  - Expl temps réponse moyen entre deux versions d'une même application
- Échelle adaptée automatiquement
- Les objectifs de performances apparaissent avec les statistiques associées



The Adobe SVG Viewer is required to have full functionality in the chart. Click here for more information.

Add data | Change scope | Remove | View Table

Select	Pattern	Data Set Type	Data Set	Data Metric	Data Filter	Scale
☐		Service Policy	Platinum_SP	Avg. Response Times (ms)		100.0
☐		Service Policy	Bronze_SP	Avg. Response Times (ms)		100.0
☐		Service Policy	Silver_SP	Avg. Response Times (ms)		100.0
☐		Service Policy	Gold_SP	Avg. Response Times (ms)		100.0
☐		Service Policy Goal	Platinum_SP_Goal	Avg. Response Times (ms)		100.0
☐		Service Policy Goal	Bronze_SP_Goal	Avg. Response Times (ms)		100.0
☐		Service Policy Goal	Silver_SP_Goal	Avg. Response Times (ms)		100.0
☐		Service Policy Goal	Gold_SP_Goal	Avg. Response Times (ms)		100.0

Détection automatique avec reprise

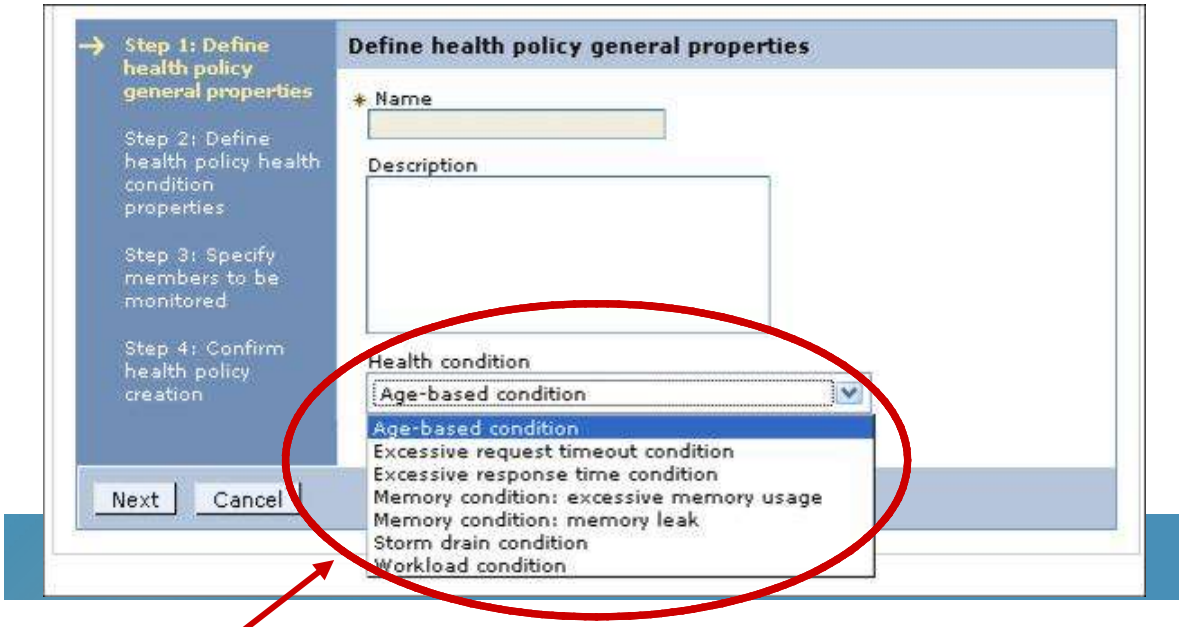
Challenge:
- ◇ Mieux maîtriser techniquement les opérations d'exploitation afin de faciliter l'administration
- ◇ Mutualiser la gestion des opérations et des applications sur une infrastructure hétérogène et distribuée de serveurs applicatifs.
- ◇ Anticiper et réagir sur des incidents classiques applicatifs, avant l'interruption de service
- ◇ Historique des statistiques, sizing, refacturation à la ressource consommée
- ◇ Réduire les coûts d'exploitations, d'administration

WebSphere XD propose un environnement d'administration intégré, facile d'accés

Health Management – Politiques de santé

Anticiper des instabilités classiques d'application avant l'interruption de service

- Health policies can be defined for common server health conditions
- Health conditions are monitored and corrective actions taken automatically
  - Notify administrator
  - Capture diagnostics
  - Restart server
- Application server restarts are done in a way that prevent outages and service policy violations



Health Conditions

- **Age-based:** *amount of time server has been running*
- **Excessive requests:** *% of timed out requests*
- **Excessive response time:** *average response time*
- **Excessive memory:** *% of maximum JVM heap size*
- **Memory leak:** *JVM heap size after garbage collection*
- **Storm drain:** *significant drop in response time*
- **Workload:** *total number of requests*

Health Management – Customiser les Conditions

Plus de fléxibilité et de critères de détection de disfonctionnement…

New and Enhanced!

Custom expressions can be built which use metrics from:

- The On Demand Router, URI return codes
- Base PMI metrics, MBean operations and attributes (WAS only)

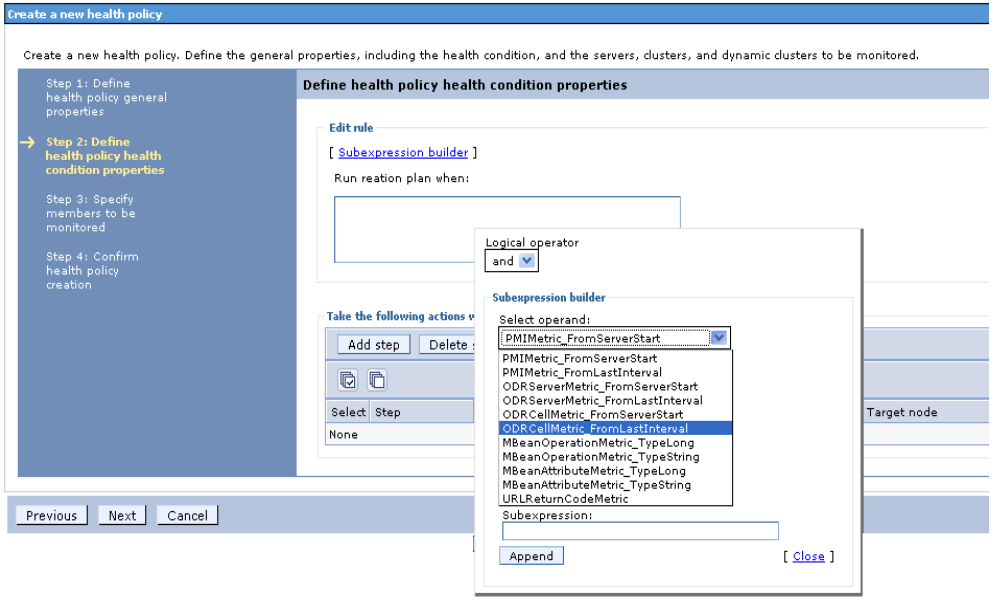
Complex expressions using a mix of operands is supported

```
C:\WebSphere\AppServer\bin>wsadmin
WASX7209I: Connected to process "dmgr" on node dabtcCellManager01 usi
nector;  The type of process is: DeploymentManager
WASX7029I: For help, enter: "$Help help"
wsadmin>$AdminTask createHealthAction { -name logItAction2 -nonJava {
e logit.exe -osNames "windows" -workingDir c:\logit\temp } }

wsadmin>$AdminConfig save

wsadmin>$AdminTask createHealthPolicy { -name testPolicy -reactionMod
 -addMember { {CELL dabtcCell02} } -addAction { {HEAPDUMP 1}{CUSTOM 2
n2 dabtcNode01 server1} } -addCondition { -type CUSTOM -expression "C
ric_FromServerStart$errors > 100L" } }

wsadmin>$AdminConfig save
```

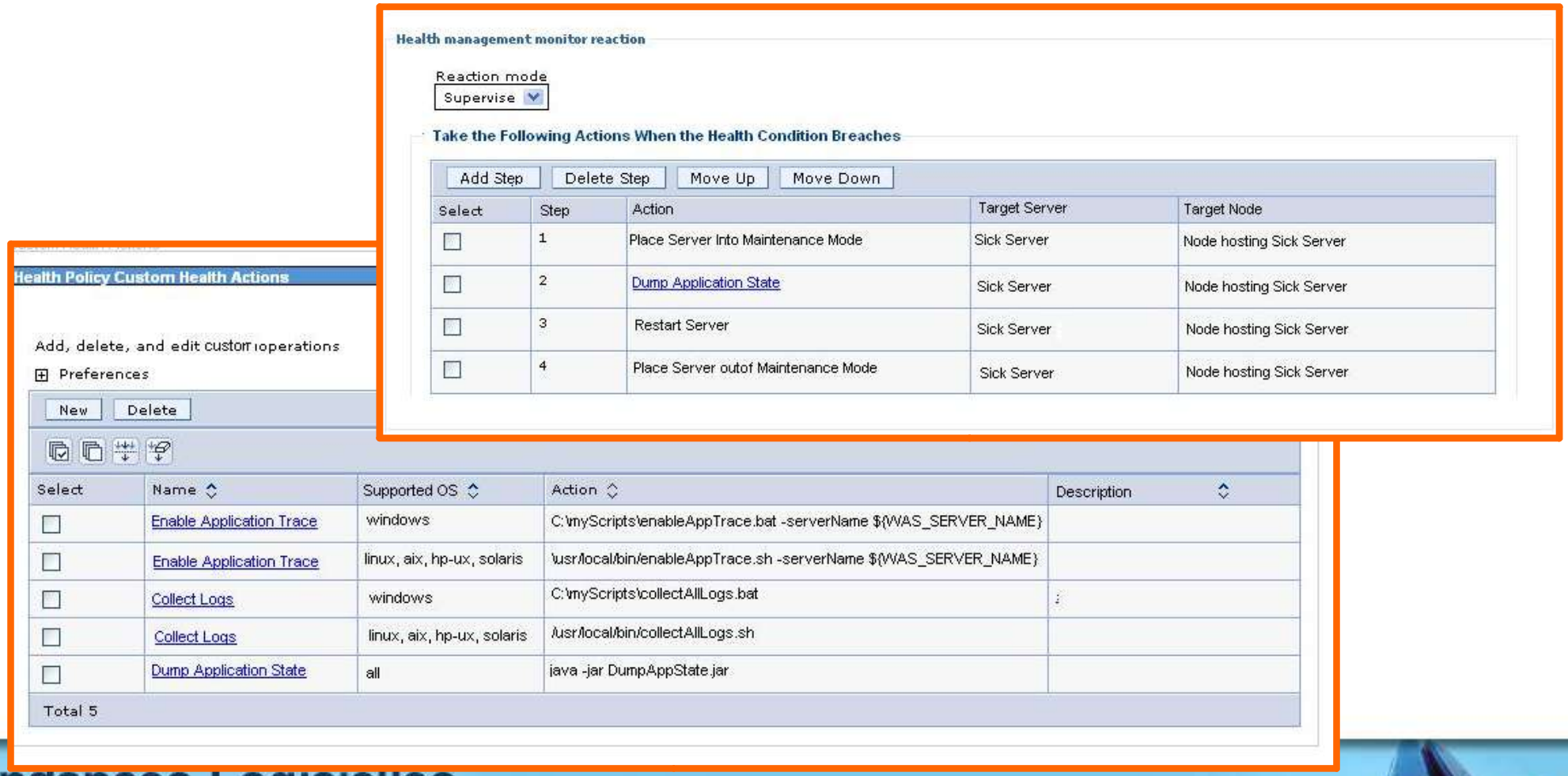


Health Management – Customiser les Actions

Avoir le contrôle!

New and Enhanced!

Provides flexibility by allowing the definition of custom actions allowing administrators to define an action plan to be carried out when the unhealthy situation detected.



Les statistiques

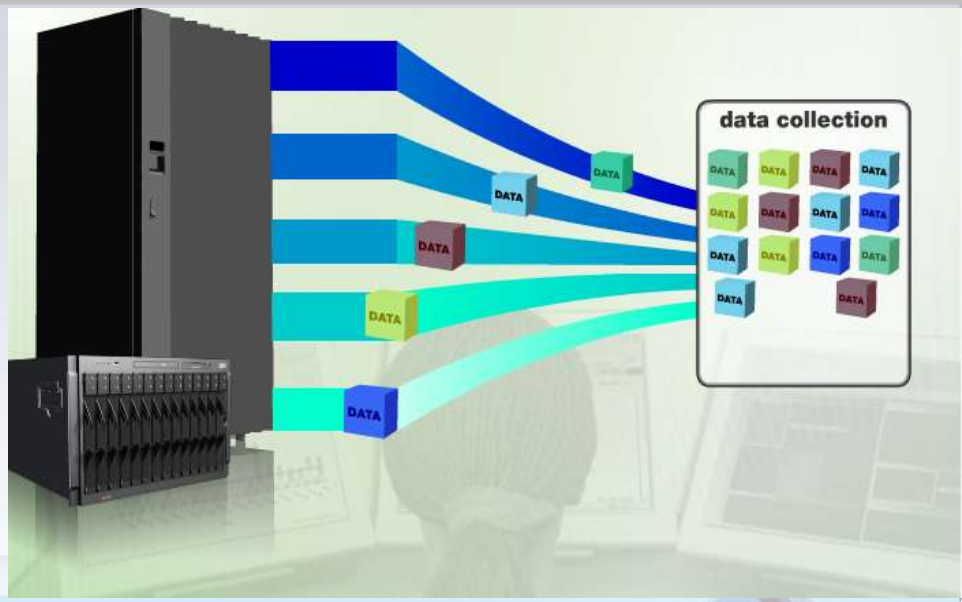
New and Enhanced!

Challenge:

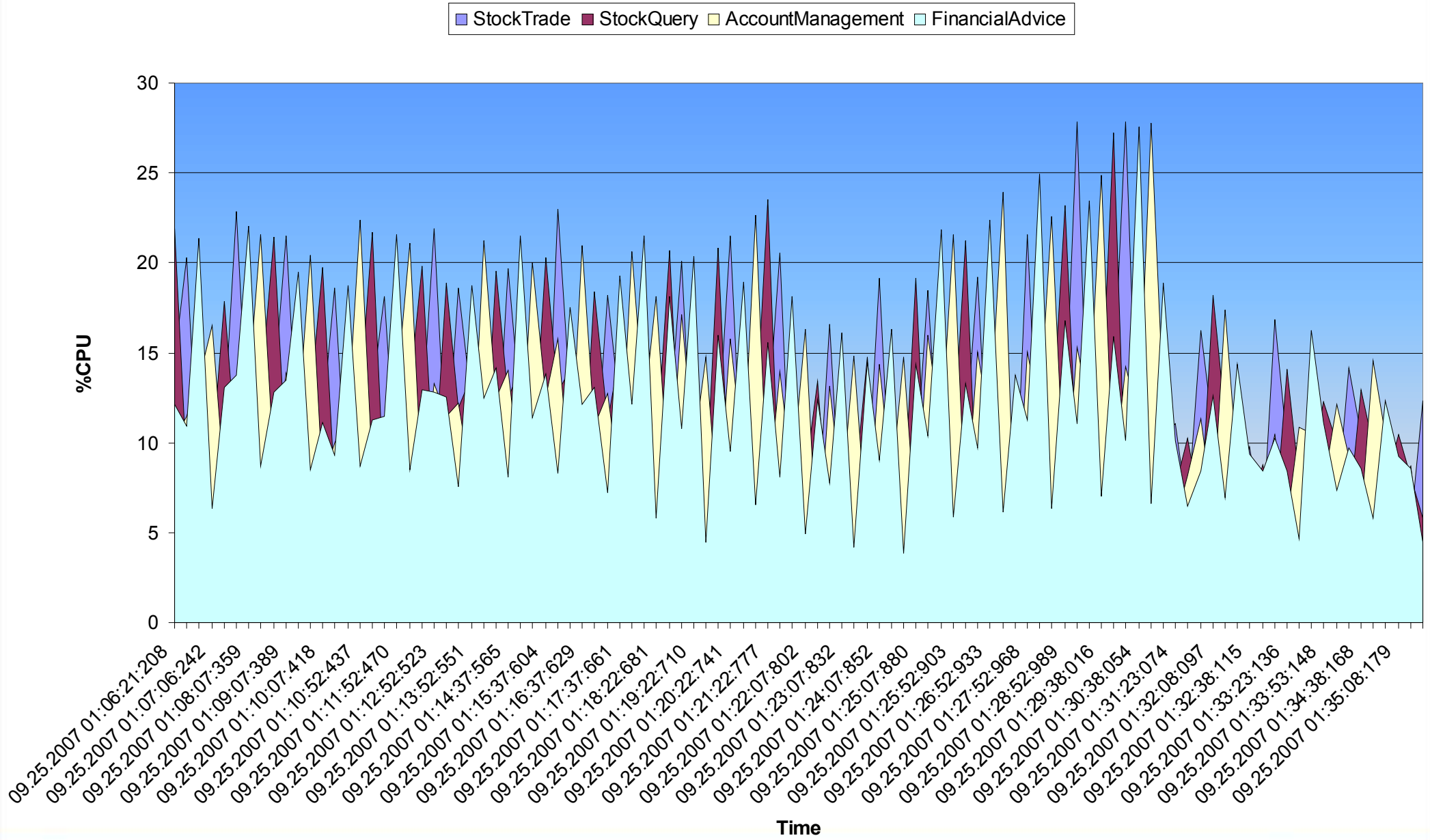
- A lot is going on in my environment. I need to be able to log information so I can do historical trend analysis of how my infrastructure is performing.
- My infrastructure resources are shared across multiple applications and users. I need an easy way to meter usage and appropriately chargeback to users and/or departments.

XD contains comprehensive data logging of applications, users and resources; in XD 6.1 content in logs is now configurable and aggregated for easily integrating with accounting and chargeback products

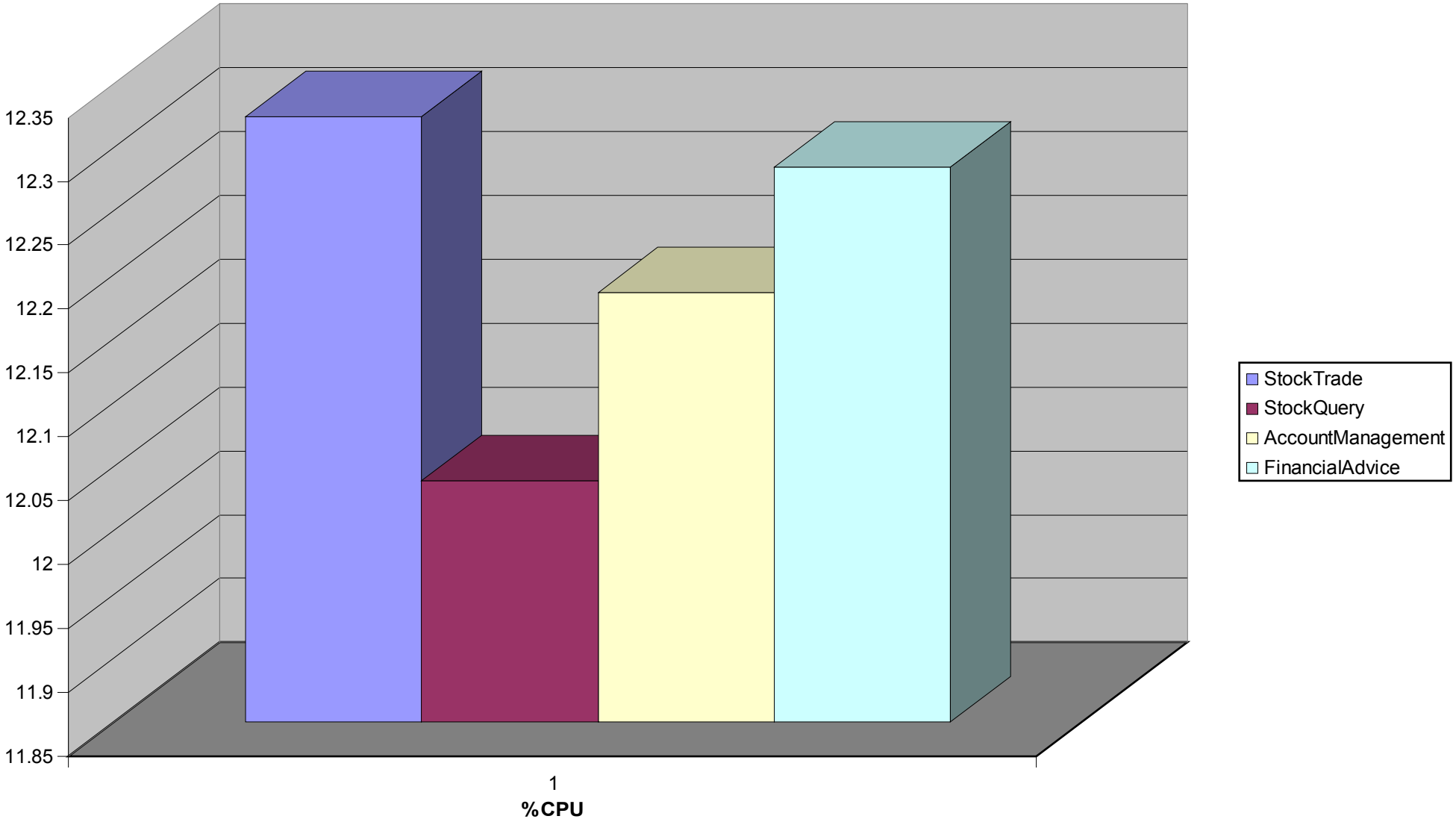
- **Comprehensive logging** of application, resource and workload information across XD's autonomic systems
- **Historical trend analysis** using either pre-packaged or customized reports with innovative visualization techniques
- **Integration with accounting and chargeback systems** such as Tivoli Usage and Accounting Manager



%CPU per Application



Average CPU per Application



Simplifier les Installations et le déploiement

New and Enhanced!

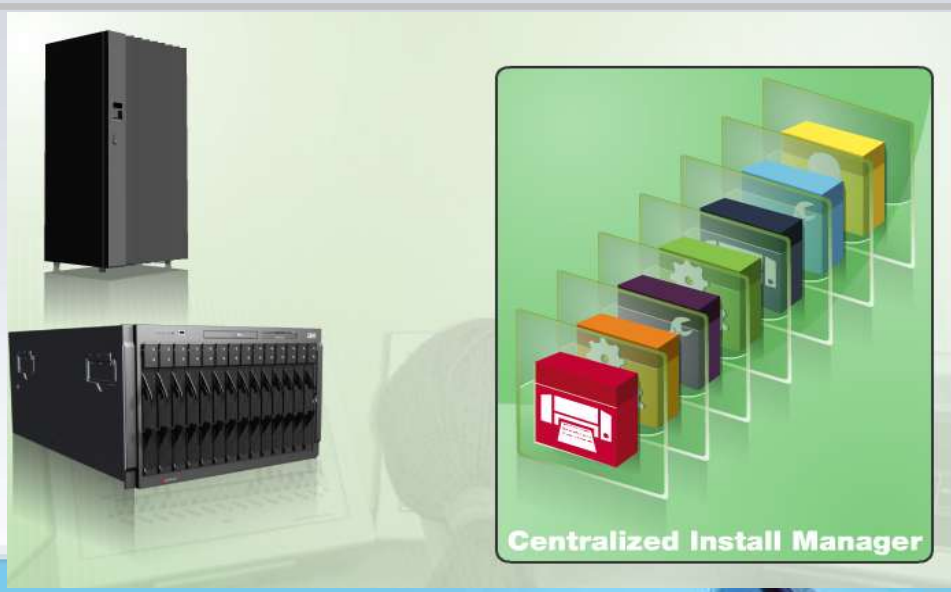
Challenge:

- ◇ I've got a lot of servers that I have to install, configure and deploy XD on and I don't want to have to create my own way of doing it!
- ◇ Patch management of my WebSphere application servers (WAS, ND) is challenging, takes too long, and I don't want to create my own way of doing it!

Solution → **Centralized Installation Manager**

Centralization of XD configuration and deployment XD across all application servers; centralization of patch management for WebSphere Application Server

- **Supports centralized installation** from the Deployment Manager to Nodes in the cell
- **Single install** to the Deployment Manager
- **Push install package from DMGR to endpoints**
  - Select a set of hosts and push XD to those endpoints
  - Installs appropriate endpoint code based on type of endpoint
  - Agent-less
- **Centralization of patch management**



Gérer les versions applicatives

Challenge:

- ◇ I want to support different versions of my applications for my users or customers for continuous availability
- ◇ I need a more agile production deployment process, where I can quickly back-off new application versions to prevent loss of service
- ◇ I'd like to better support iterative development; and potentially use my free resources in my production environment for application testing

Solution → **Application Edition Manager**

Dynamically introduce, run, and manage multiple versions of the same application in your infrastructure

- **Coordinates the activation of application editions** and the routing of requests to the application
- **Validation Mode** enables final pre-production testing of an application edition by a select group of users
- **Routing Rules** allow intelligent routing to multiple application editions in production

Edition Control Center

- *Applications > Edition Control Center*

Edition Control Center

The edition control center enables management and operational control over application editions, including interruption free application upgrade. An application edition is a version of an application comprised of distinct versions of modules and/or bindings. This page provides a summary view of each enterprise application, its editions, and their current state. Click on an enterprise application name to manage the individual editions of the selected application.

⊞ Preferences

Applications	Editions	Active	Validation
LREE	1	1	0
LongRunningScheduler	1	1	0
SimpleCIEar	2	1	0
XDStockTradeEdition	2	1	0
Total 4			

Edition Control Center: Manage Editions

Edition Control Center > Manage Editions

Manage editions of an application. The deployment targets for each edition were specified during the application install process. After install, an edition is initially in the inactive state. Inactive editions cannot be started. Activating an edition makes it eligible to be started. Validating an edition puts it into a special "validation mode" that configures the edition to run on a clone of its original deployment target. Validation mode requires assignment of a routing policy to the edition to control who may access it. Rolling out an edition performs an interruption-free upgrade of one edition to another on the same deployment target. Rolling out an edition that is in validation mode performs an interruption free upgrade of the edition on the deployment target from which the validation mode target was cloned. After the rollout, the clone is deleted. Deactivation makes an edition ineligible to be started. An edition must be stopped before deactivation.

Application=**XDStockTradeEdition**

⊞ Preferences

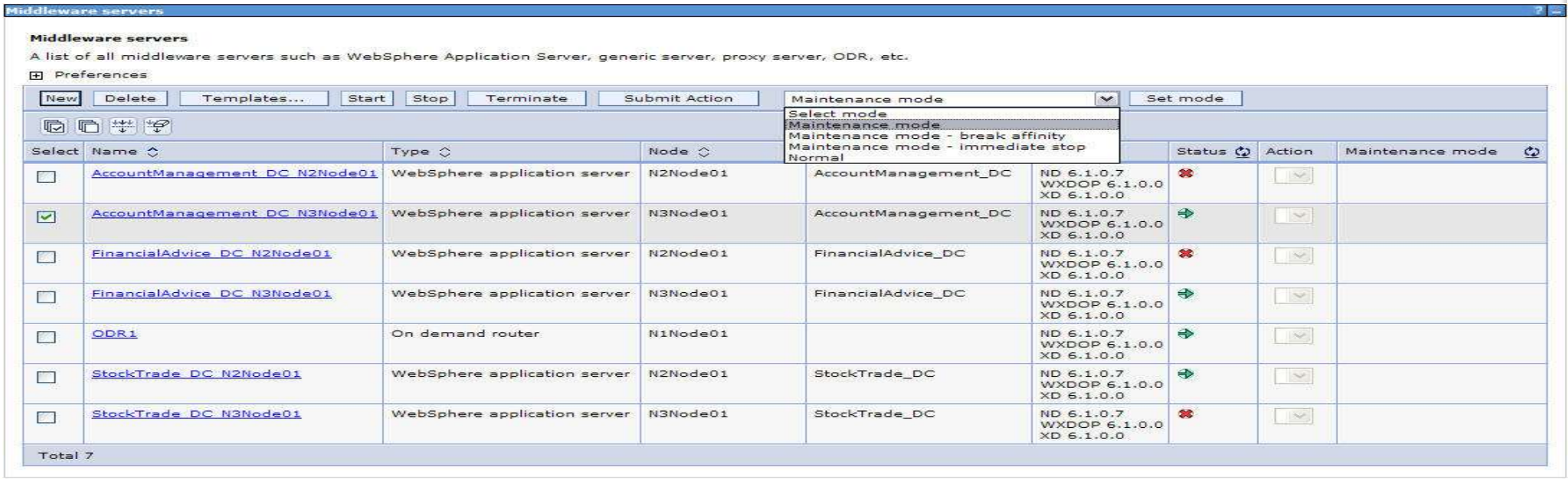
Activate | Validate | Rollout | Deactivate

Select	Editions	Description	Target	State
☐	1.0		WebSphere:cell=wsbeta156Cell01,cluster=StockTrade_DC	INACTIVE
☐	1.0.1		WebSphere:cell=wsbeta156Cell01,cluster=StockTrade_DC	ACTIVE

Total 2

Serveur en mode Maintenance

- XD provides the capability to isolate a running server (of any type) from production traffic. This allows for problem determination to be performed on the server or other maintenance without disruption to production traffic.
- If the server is a member of a dynamic cluster, a new cluster member will first be started before the server is placed into maintenance mode in order to assure the minimum policy on the dynamic cluster is met.

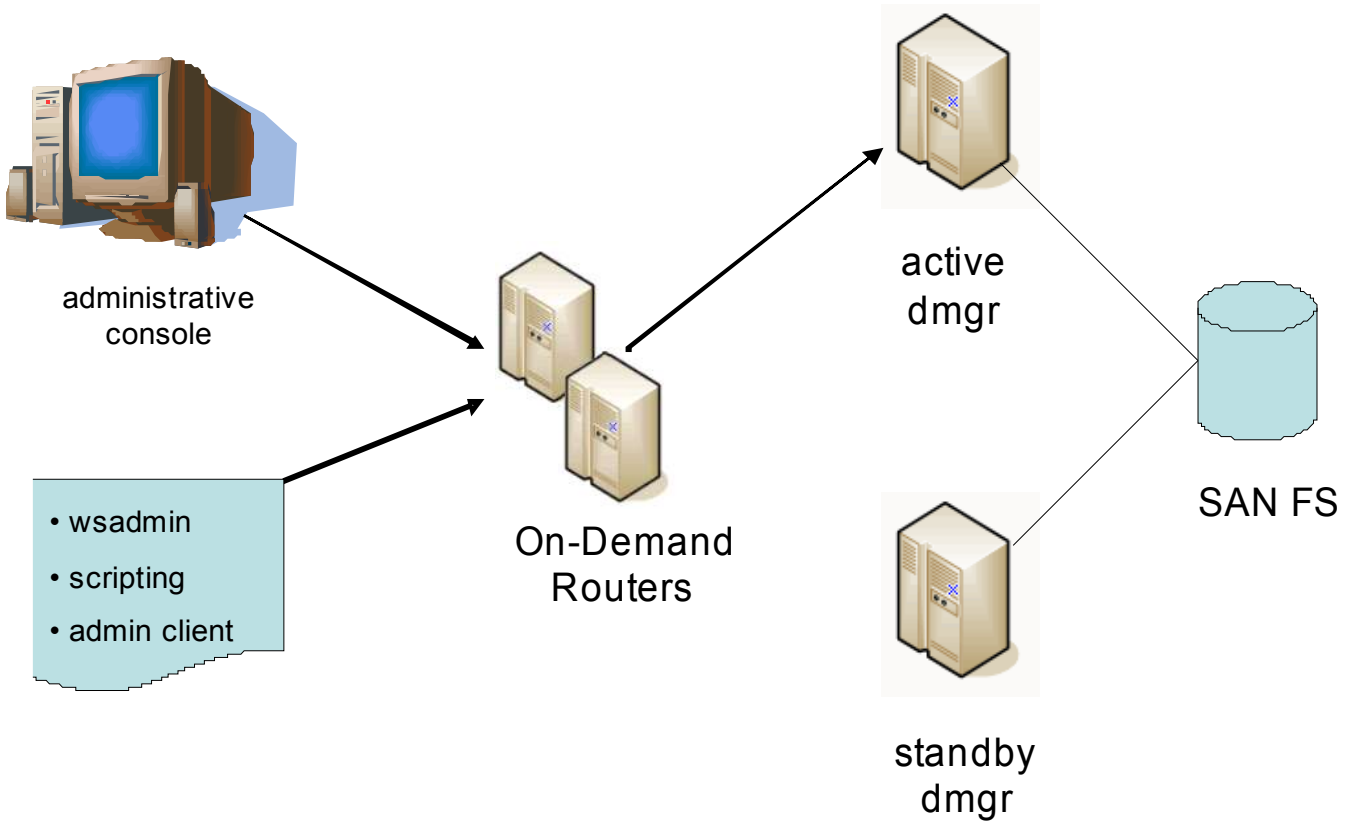


Haute Disponibilité du Deployment Manager

- Each deployment manager on a separate machine
  - Only one is active
  - Others are standby
- Shared file system required for dmgrs to share configuration repository
  - File system with recoverable locks required - e.g. SAN FS, DFS v4
- JMX traffic proxied through XD On-demand Router (ODR)
  - SOAP connector only
- HA ODRs recommended
  - (they're recommended for production XD configurations anyway)
- hadmgrConfig command line utility provided to perform configuration

Highly Available Deployment Manager

"Warm-standby Model"



TD Bank Financial Group

Increasing flexibility and manageability of web applications

TD Bank Financial Group

Problem

– Roll out new web-based applications that are adaptable, flexible, and manageable (can be self-monitored)

Solution

- WebSphere XD
- WebSphere Application Server ND

Primary XD features / benefits

✓ Ability to virtualize computing resources without impact to application design or execution
✓ More adaptable, flexible, and manageable applications
✓ Self-monitoring and self-healing
✓ Autonomic computing
✓ Adherence to enterprise security and privacy policies
✓ Supports mixed application architectures based on J2EE standards

Westpac

24 hour availability for online banking platform

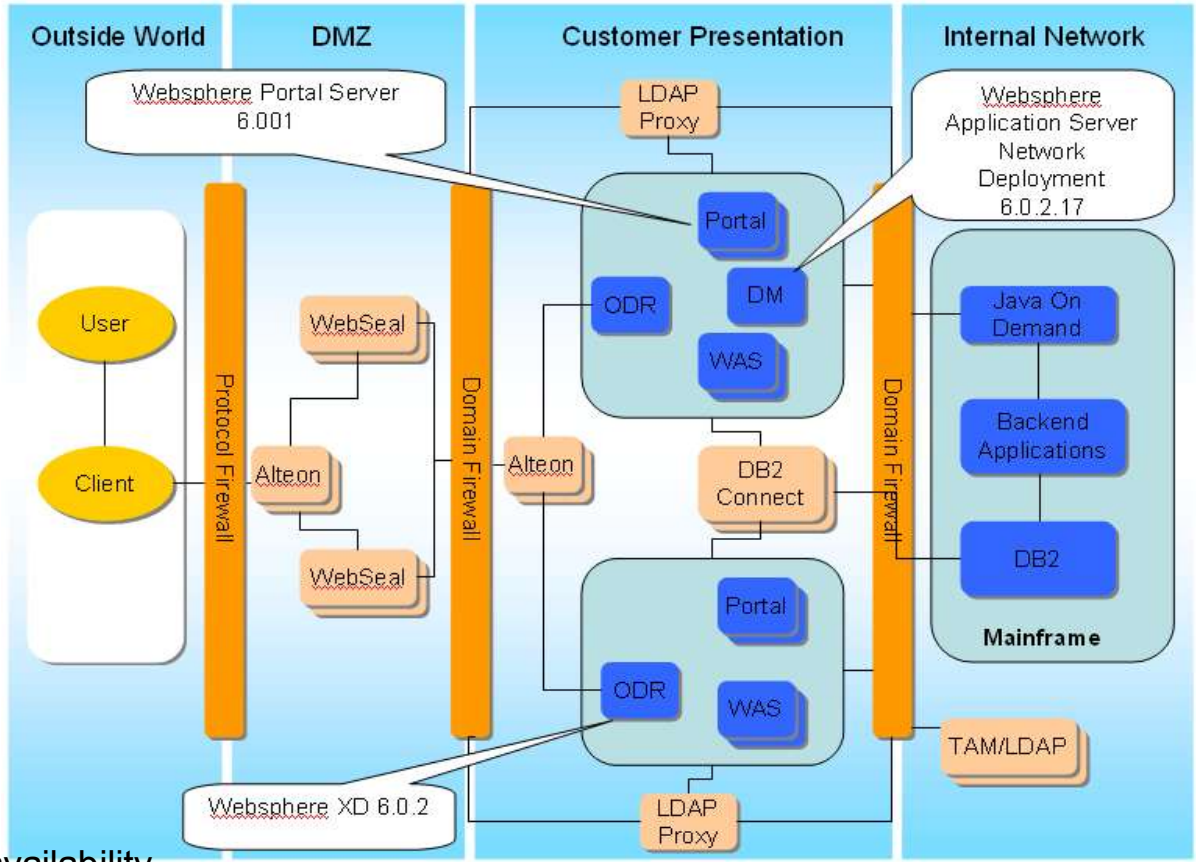
Westpac

Problem

- A secure, scalable and reliable environment for online banking applications

Solution

- New portal platform
- WebSphere Application Server ND
- WebSphere XD
- WebSphere Portal
- IBM servers and storage
- Tivoli identity management



Key XD Features / Benefits

- ✓ Self-managing intelligent technologies ensure high performance and continuous availability
- ✓ Improved speed to market for new applications
- ✓ Much simpler to manage on a daily basis
- ✓ System can be upgraded while running
- ✓ Improved performance and scalability
- ✓ Resources dynamically allocated based on business goals

Questions

Thank
You