The vMatrix: Server Switching

(work in progress – ROC’03)

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http://www.thevmatrix.com

Stanford University – Computer Systems Lab – LISA 2002
Static Servers (ala Circuit Switching)
Server Switching (ala Packet Switching)

FINANCE & SPORTS

Load Balancer

vMatrix Oracle

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Server Drop (ala Packet Drop)

FINANCE & SPORTS

Load Balancer

vMatrix Oracle

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Problem with moving services

- Software Dependencies
- Hardware Dependencies
- People Dependencies
What is The vMatrix?
## Virtual Machine Monitors

<table>
<thead>
<tr>
<th>Virtual Machine 1:</th>
<th>Virtual Machine 2:</th>
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<tbody>
<tr>
<td>vCPU, vMem, vDisk, vNet</td>
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<table>
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<tr>
<th>OS1: Windows 2000</th>
<th>OS2: Linux</th>
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<tr>
<th>Oracle, IIS</th>
<th>MySQL, Apache</th>
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Real Machine (CPU, Memory, Disks, Network)
Advantages

- Efficient Resource Utilization
- Backward Compatibility
- On-Demand Spike Absorption
- Faster Recovery

Disadvantage

- VM files are very large (order of gigabytes)!
- VM Software is not free 😊
Lifecycle of a server VM

1. A large number of virtual servers are stored as dormant files a SAN or Netapps

2. A number of virtual servers are activated in a shared RM so that developers & system admins can upgrade, debug, or patch them.

3. A virtual server is activated on a dedicated RM and exposed to live load.

4. A virtual server malfunctions and is thrown away.
The Matrix Farts