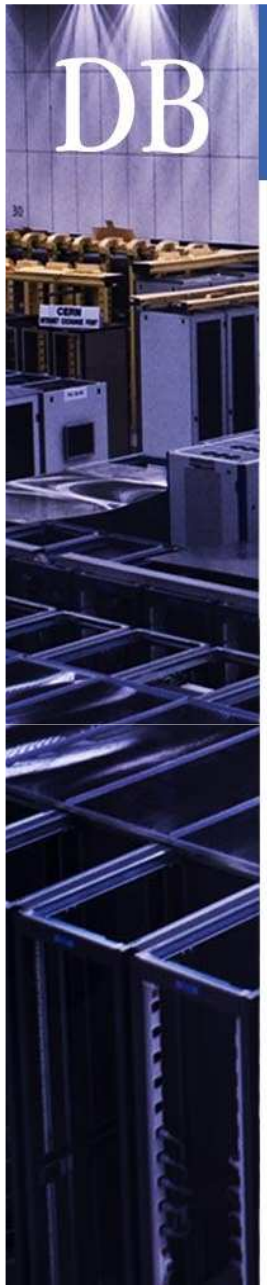
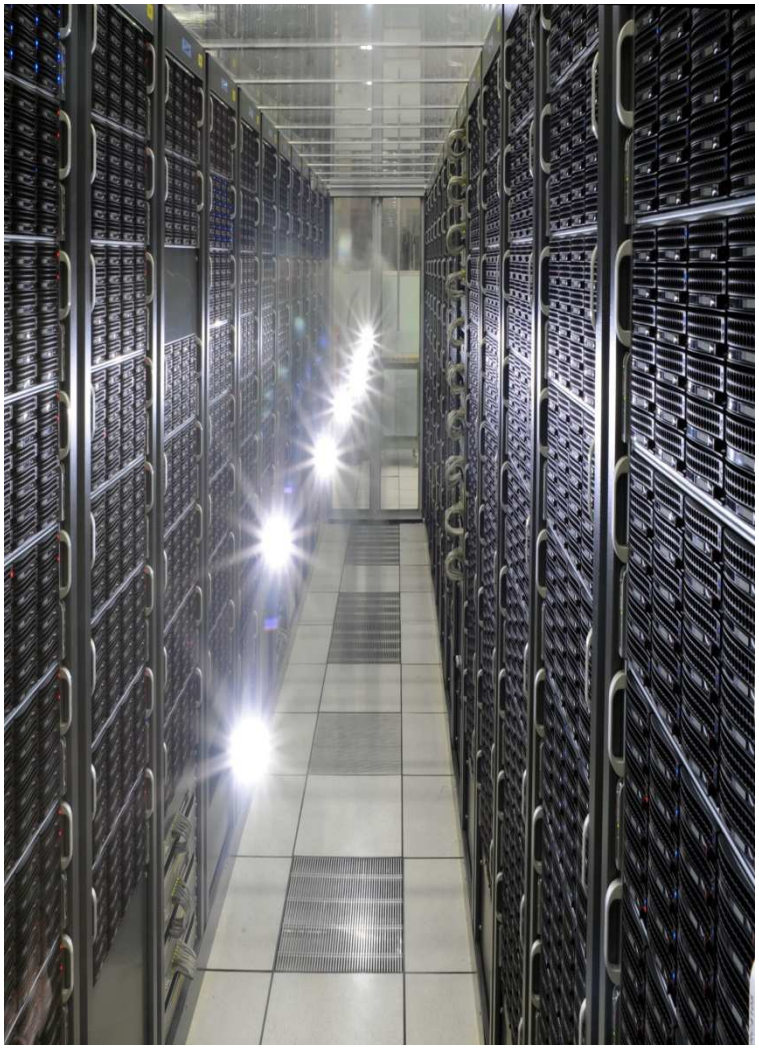


Server Virtualization at CERN IT-DB

Carlos Garcia Fernandez
Luigi Gallerani



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Database SERVICES

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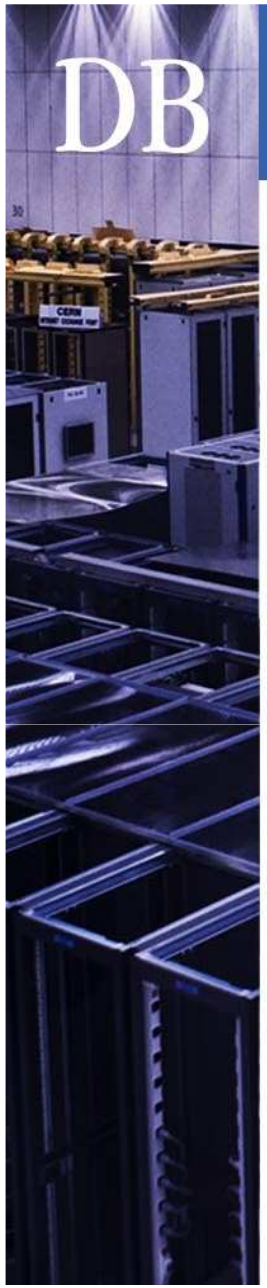

Cluster architecture in production

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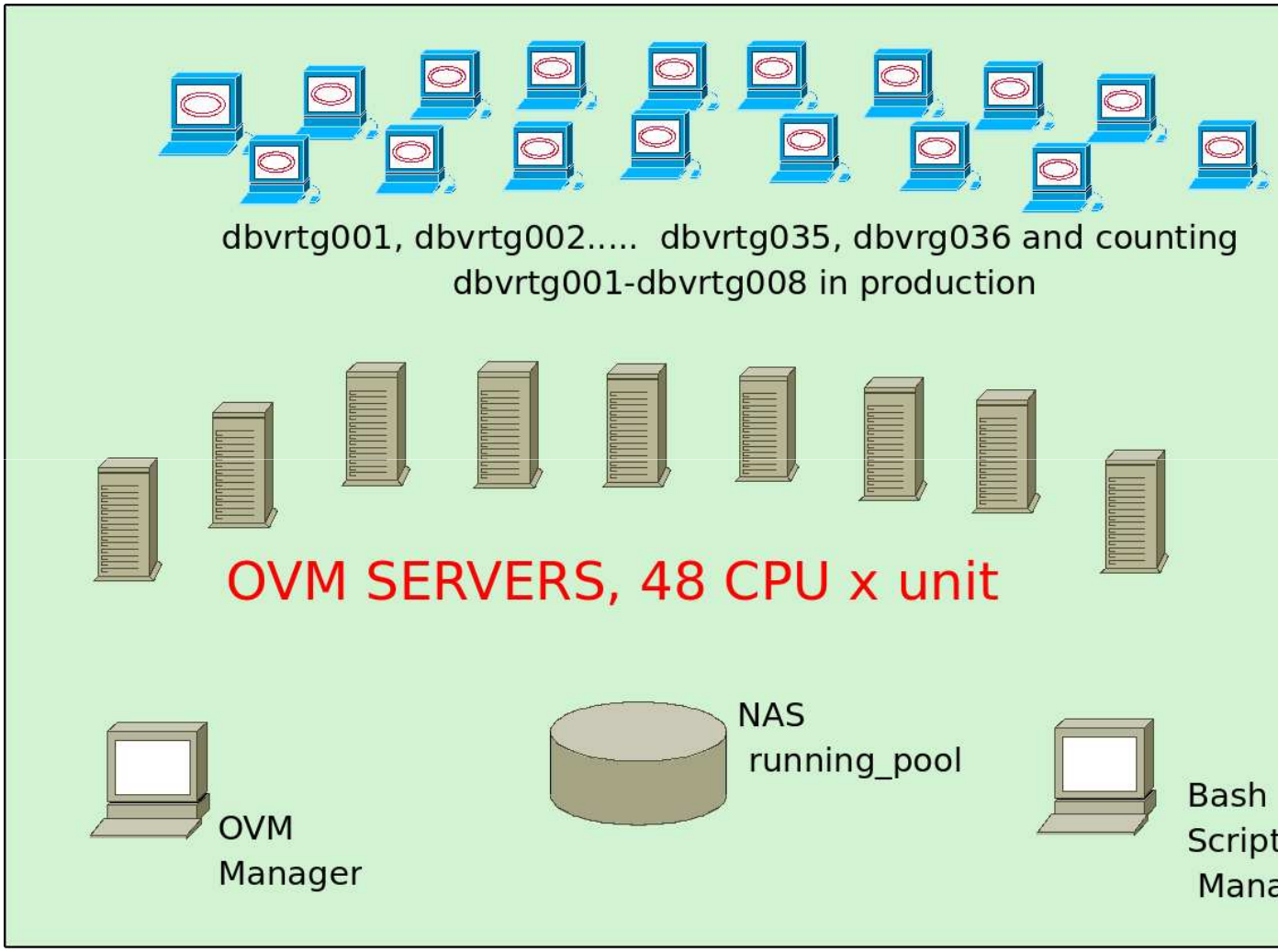

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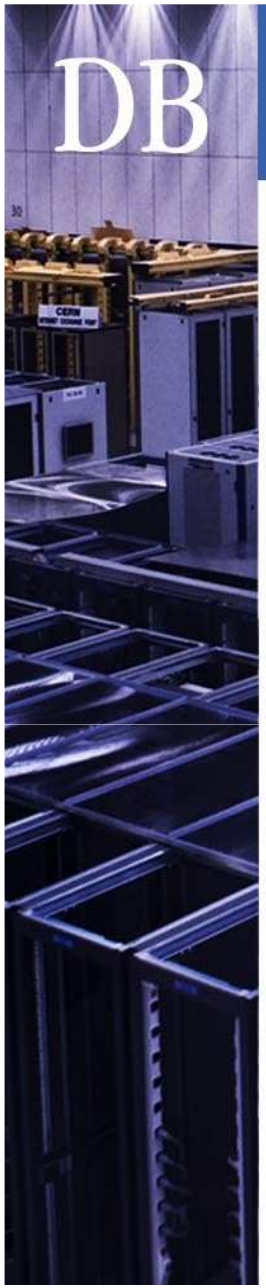

Network virtualization

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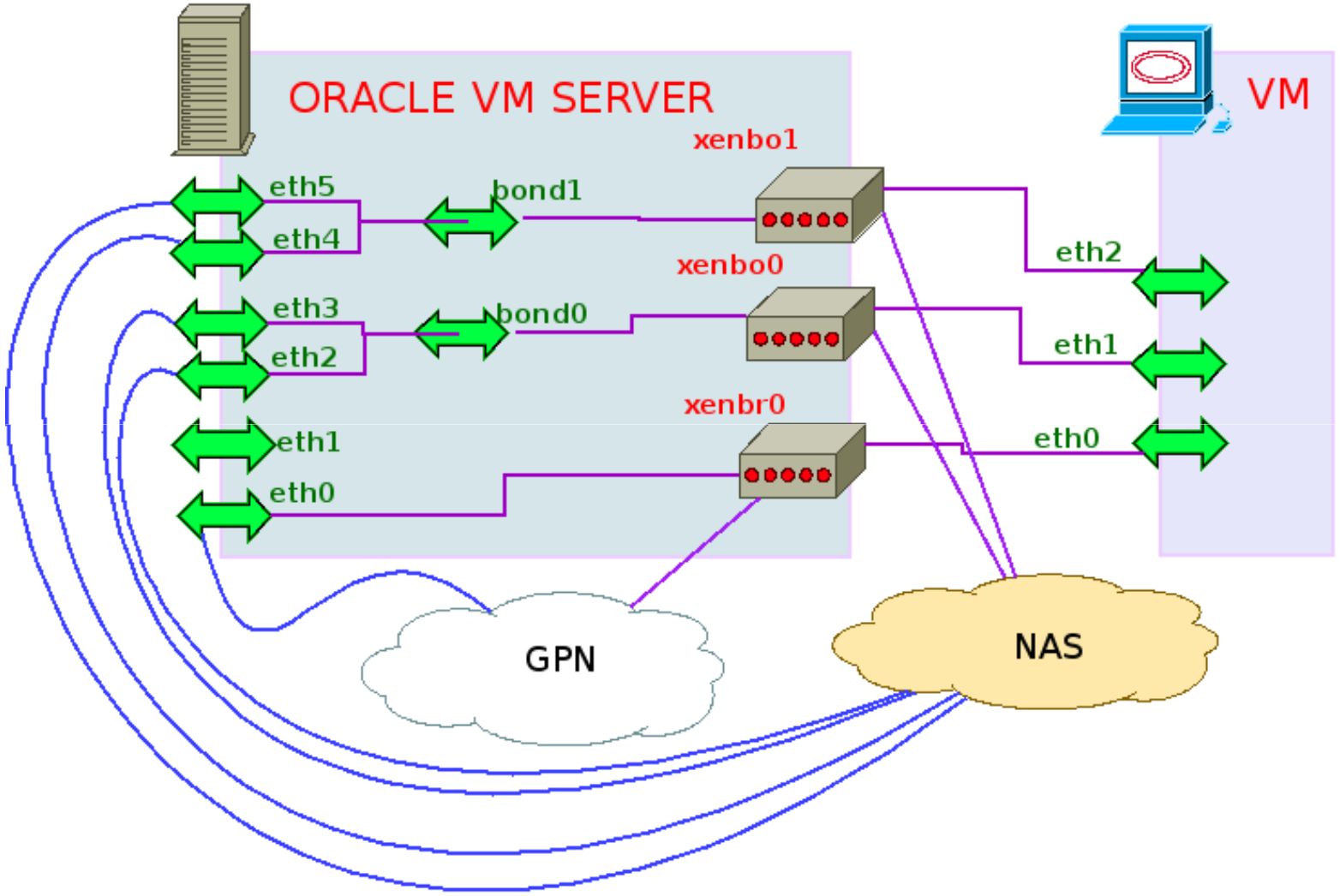

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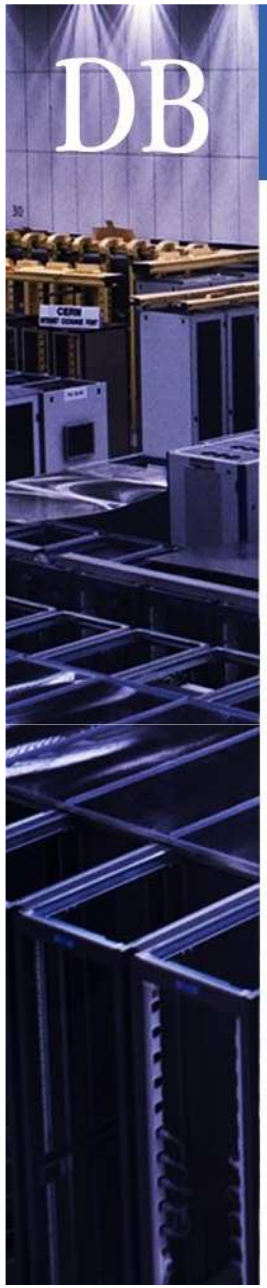
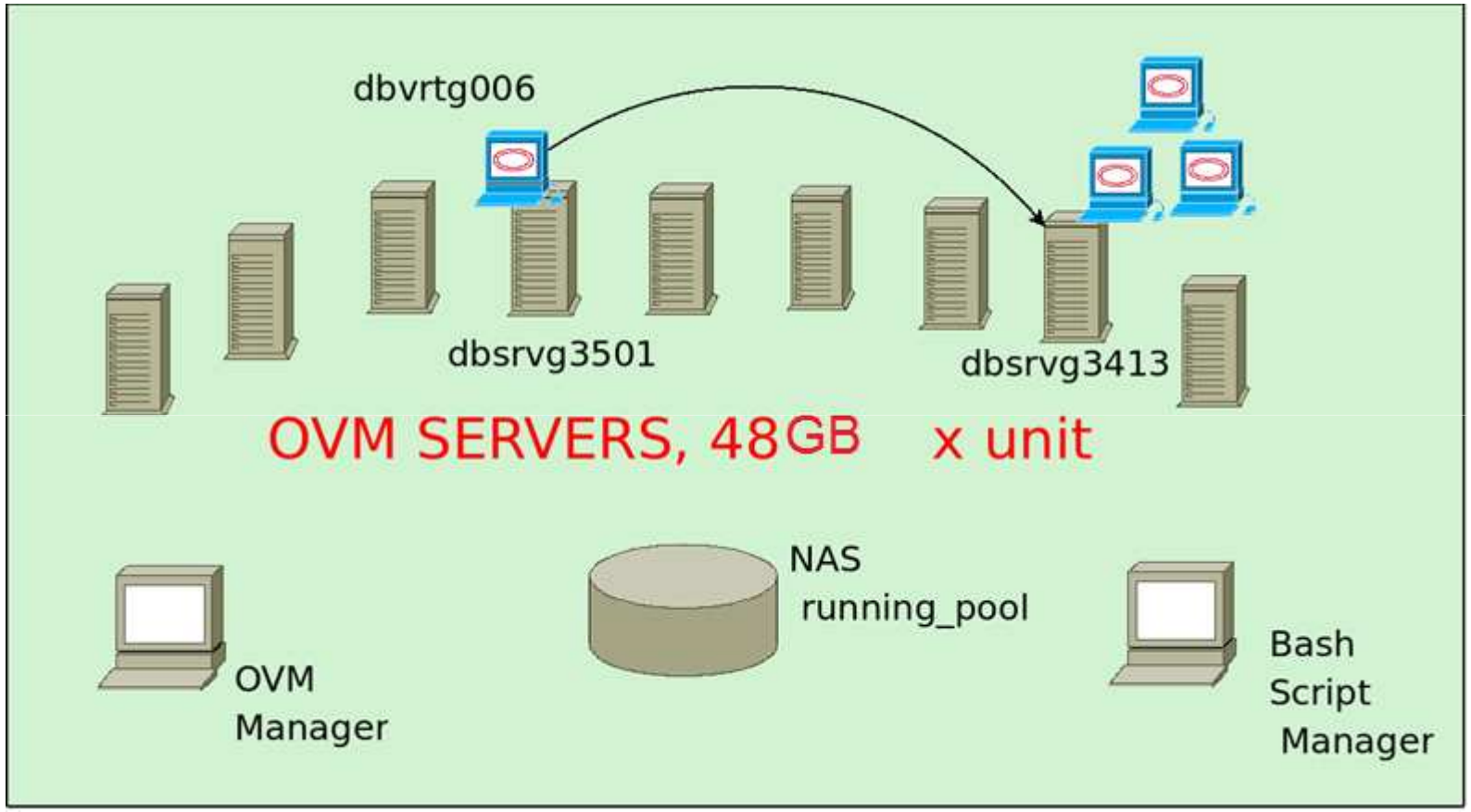


Transparent Live migration



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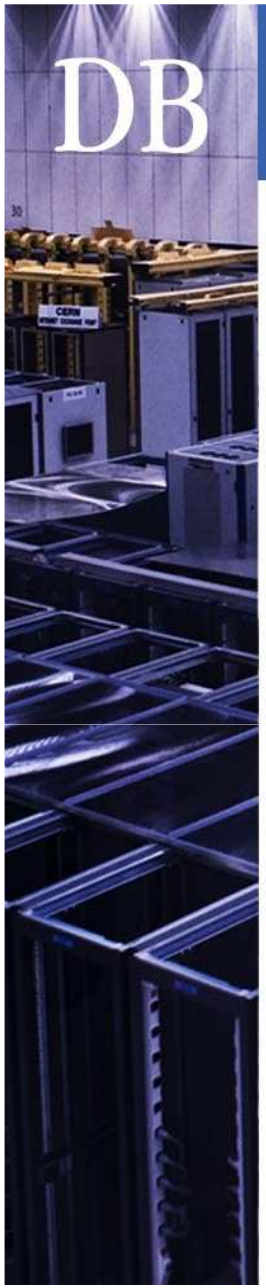

Tests: Live Migration of Databases

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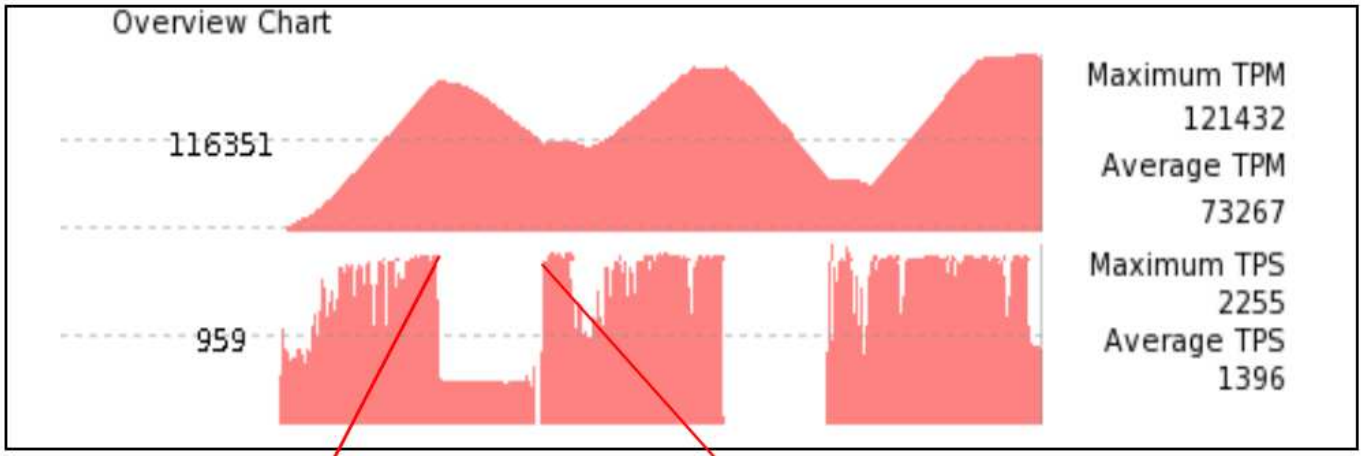

Node 1

```
#xm list
Name                ID   Mem VCPUs      State   Time(s)
Domain-0             0   834     8      r-----   1773.7
virt04               8  4096     8      -b----    517.4
```

```
# xm migrate virt04 node2 --live
```

```
# xm list
Name                ID   Mem VCPUs      State   Time(s)
Domain-0             0   834     8      r-----   1785.7
migrating-virt04     8  4096     8      r-----    538.3
```

```
# xm list
Name                ID   Mem VCPUs      State   Time(s)
Domain-0             0   834     8      r-----   1851.5
```

Node 2

```
# xm list
Name                ID   Mem VCPUs      State   Time(s)
Domain-0             0   834     8      r-----   2410.8
```

```
# xm list
Name                ID   Mem VCPUs      State   Time(s)
Domain-0             0   834     8      r-----   2444.8
virt04              11  4096     0      -bp---      0.0
```

```
# xm list
Name                ID   Mem VCPUs      State   Time(s)
Domain-0             0   834     8      r-----   2481.1
virt04              11  4096     8      -b----      6.4
```

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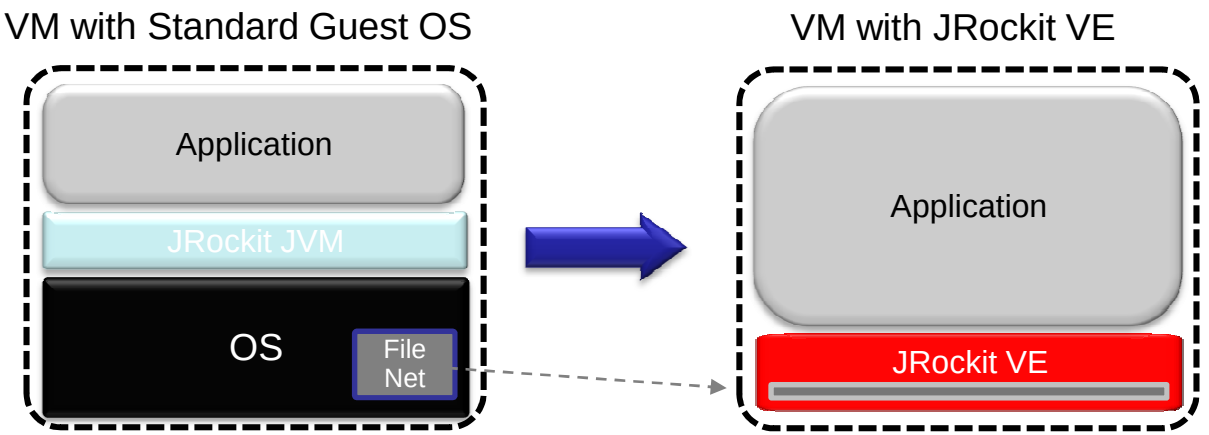
Application Servers on Oracle VM

JRockit VE: Removing the OS and Creating a More Efficient Software Stack



- ~1GB -> ~2 MB
- Improved performance
- Simplified configuration
- Increased security

- Customized to run single Java process
- No shell access allowed
- Headless

Slide from "Oracle JRockit – What's new and what's coming" @ OOW2009 © 2009 Oracle Corporation

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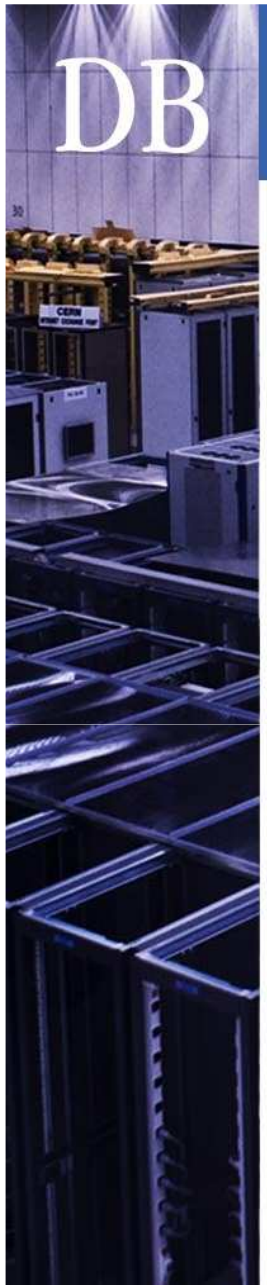

WebLogic Server Virtual Edition Product Taxonomy

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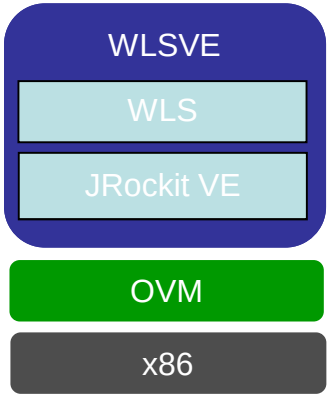
- WebLogic Server Virtual Edition
  - Virtual machine **containing WLS and JRockit VE**
  - Designed to run on Oracle VM, **without an operating system**
  - Users can create their own virtual machine images containing WLSVE and their domains and applications



- JRockit VE
  - **JRockit VE** is the JRockit JVM extended so it **can run directly on virtual hardware**, and optimized for running Java on OVM and x86 hardware

Slide from "Oracle JRockit – What's new and what's coming" @ OOW2009 © 2009 Oracle Corporation

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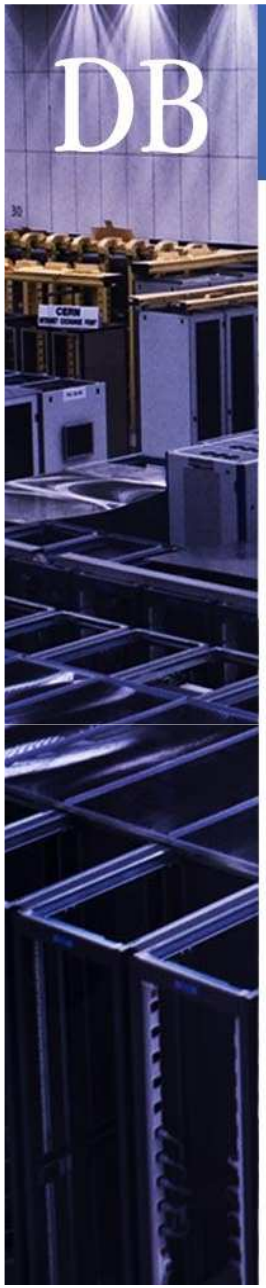
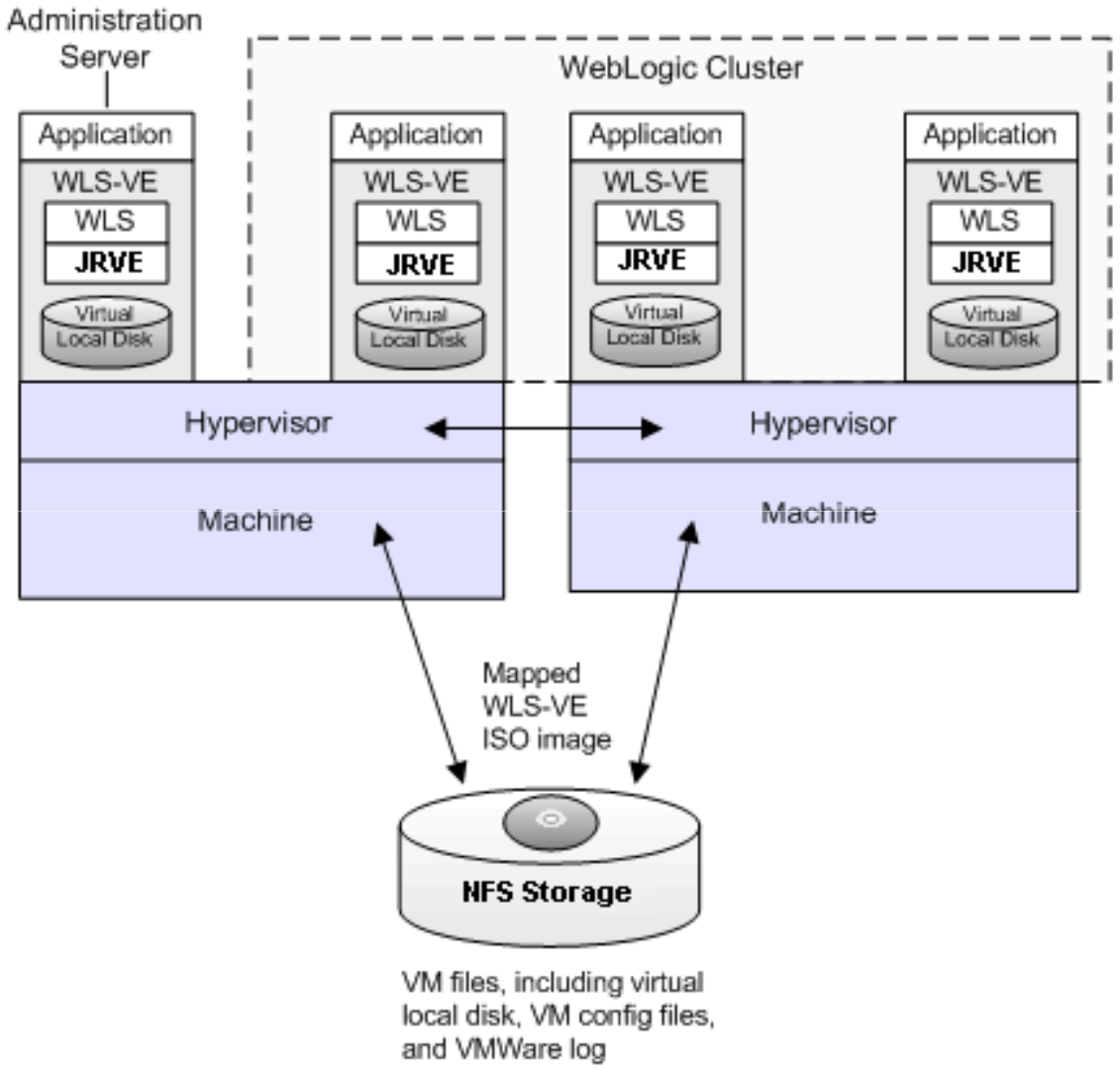


Example of WLS-VE topology



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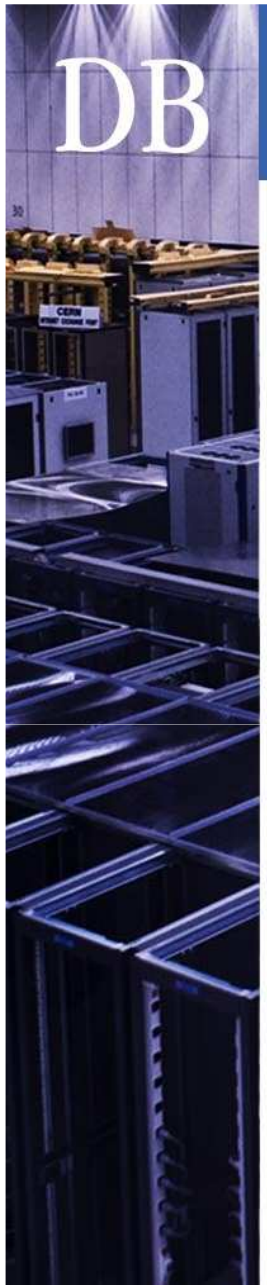

Tests: Performance of Databases

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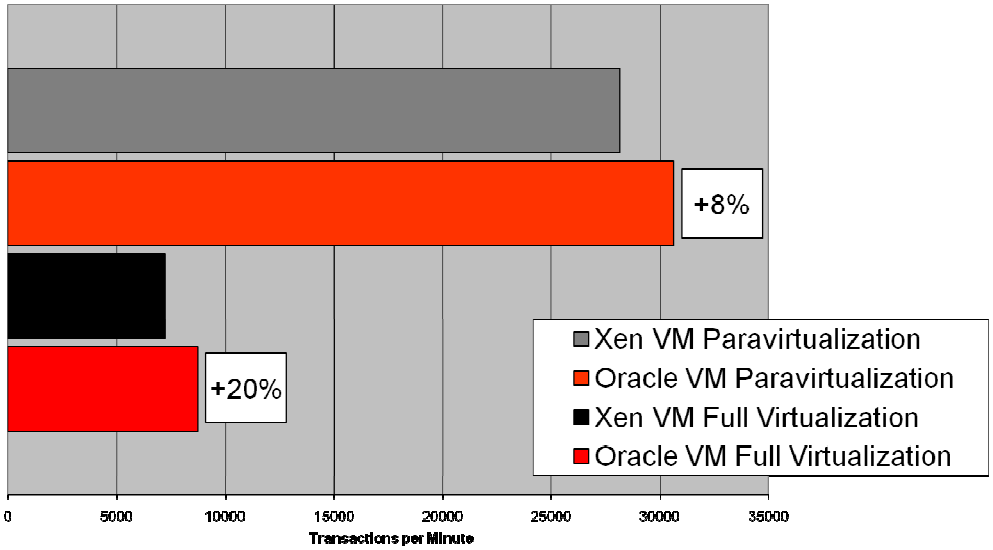
- Performance comparisons of databases
  - Using Oracle VM
  - Using virtual machines on top of pure Xen
- Gained between 10% and 20% of performance in Oracle VM vs. pure Xen



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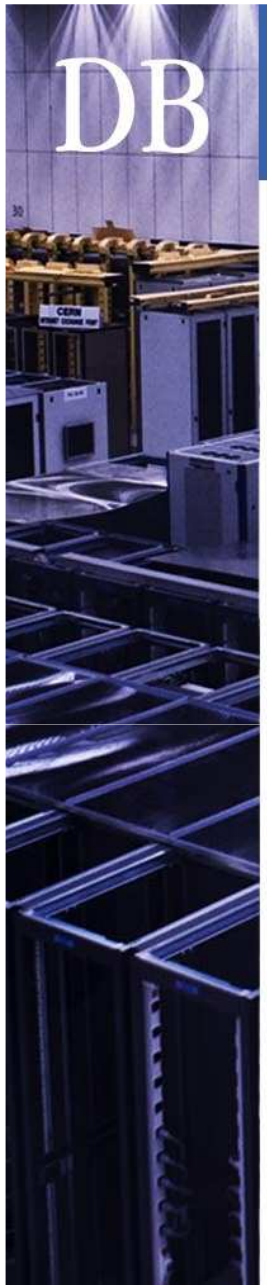

Application Servers Performance

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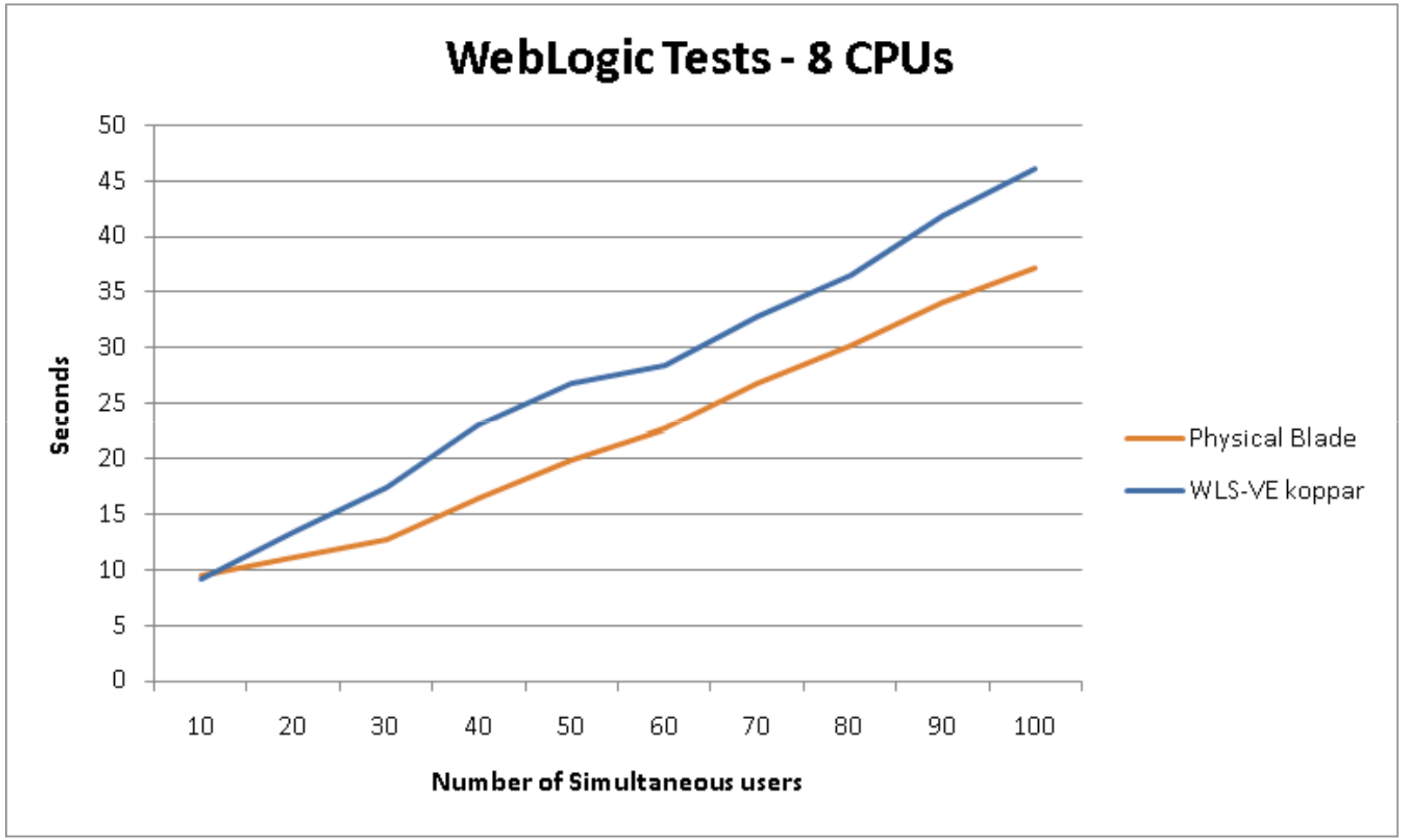

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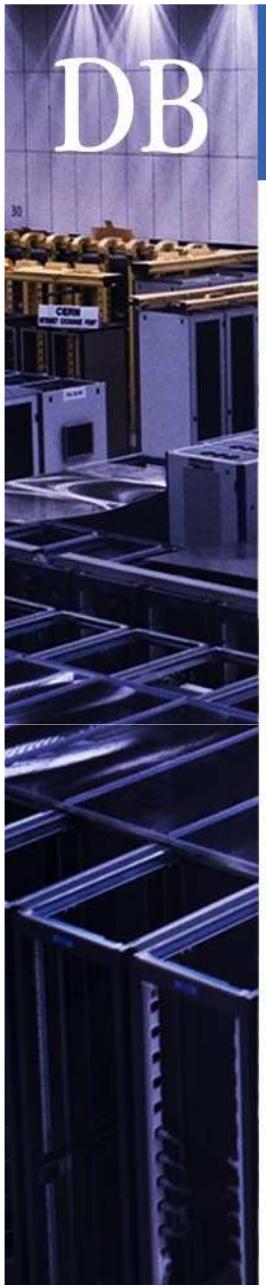
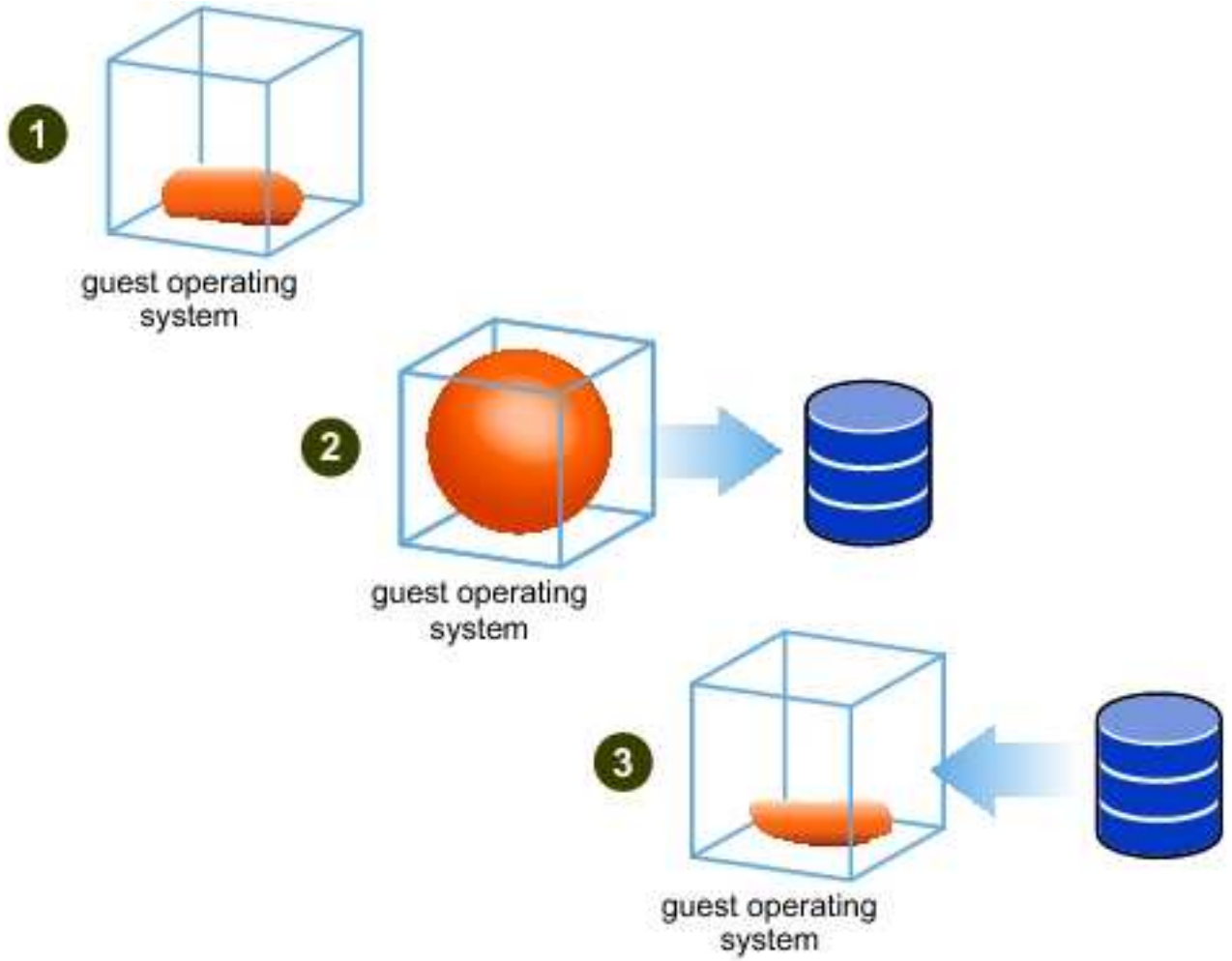


Beyond the memory limit!



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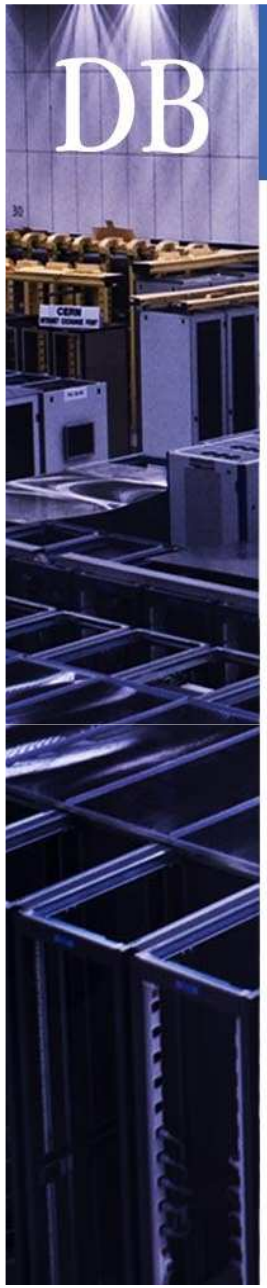

Beyond the memory limit!

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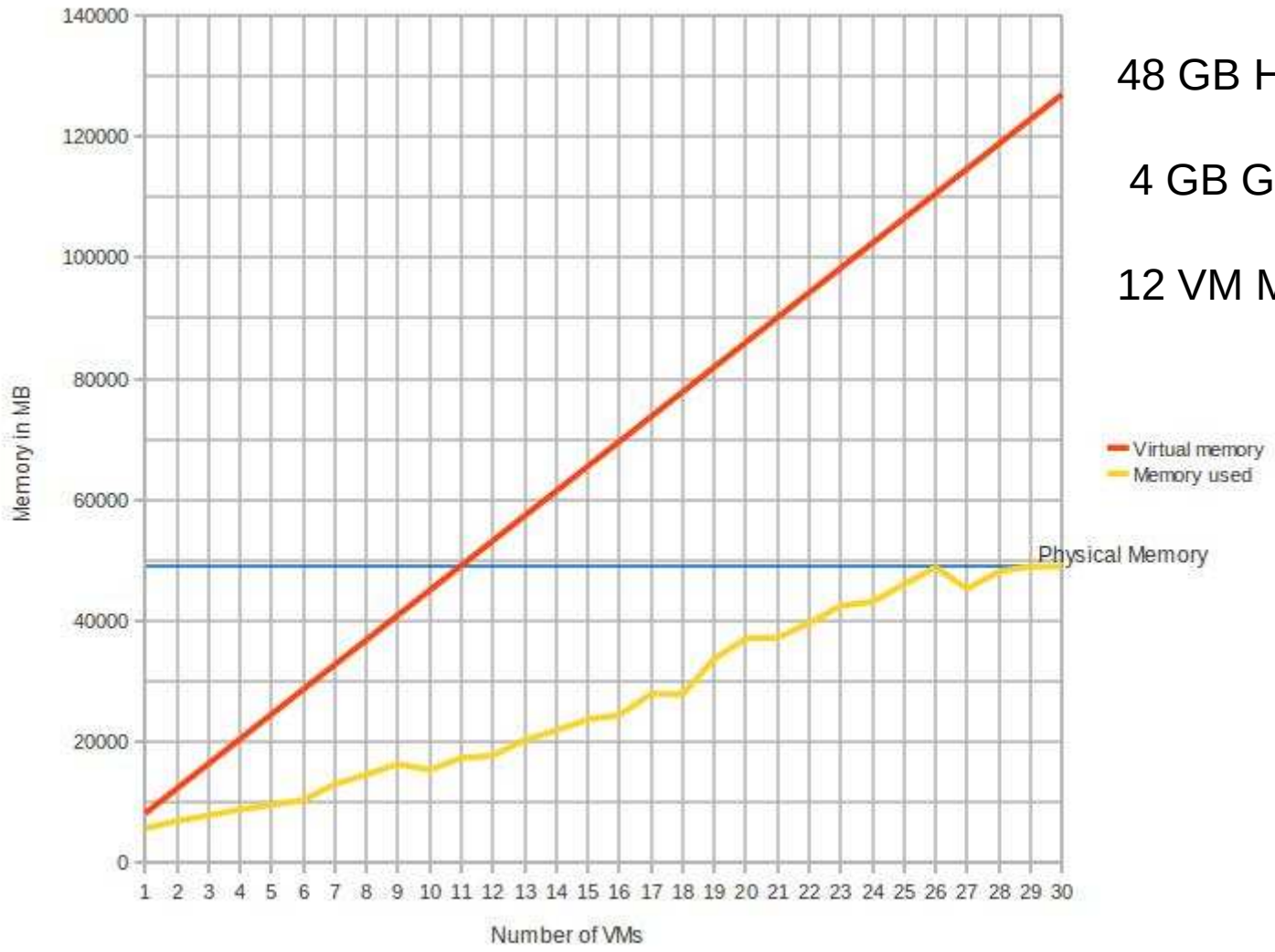

48 GB Host

4 GB Guest

12 VM MAX?

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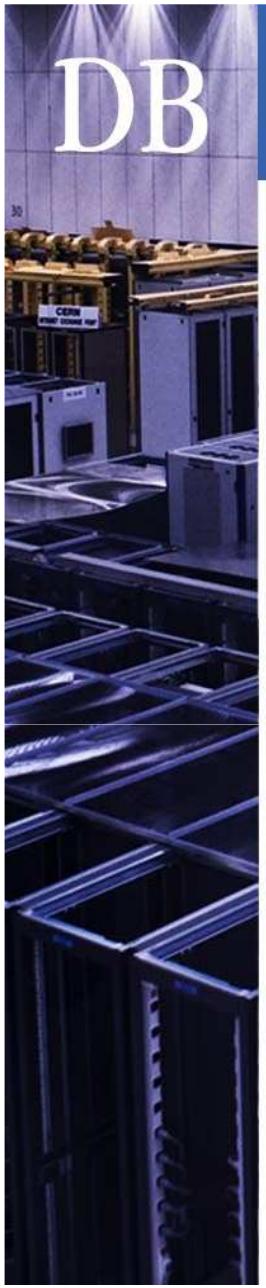

VM Monitoring

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Service Level Status overview

Home | Search | KPIs | Tags | Admin | Documentation | Help

DB Virtualization 30 Aug 2010 Mon 15:11:44

Service information

full name: **DB Virtualization**
group: IT-DB
site: CERN

service managers: **Giacomo Tenaglia**
Artur Wiecek
Carlos Garcia Fernandez
Luigi Gallerani

Service availability (more)

availability:
percentage: 97%
status: available

last update: 15:10:01, 30 Aug 2010 (103 seconds ago)
expires after: 60 minutes

rss feed with status changes

how is availability measured or estimated:
TODO: describe this

availability in the last 24 hours (more):

Admin
admin tools

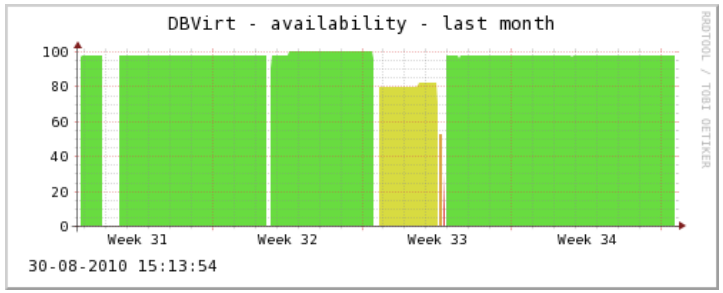
Part of (subservice of):
Databases

Subservices
DB Virtualization / Physical Machines
DB Virtualization / Virtual Machines

Clusters, subclusters and nodes
none / not declared

Depends on
none / not declared

Depended on by
none / not declared



SLS by CERN IT/CF SLS.Support@cern.ch

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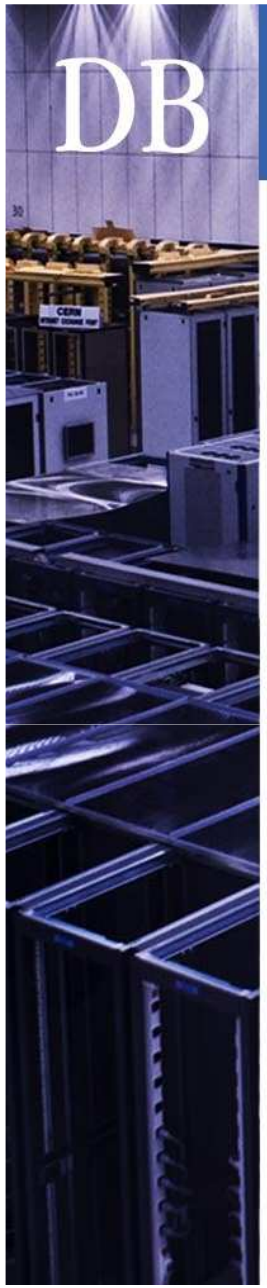

Questions

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