

Oracle for administrative, technical and Tier-0 mass storage services



CERN
openlab

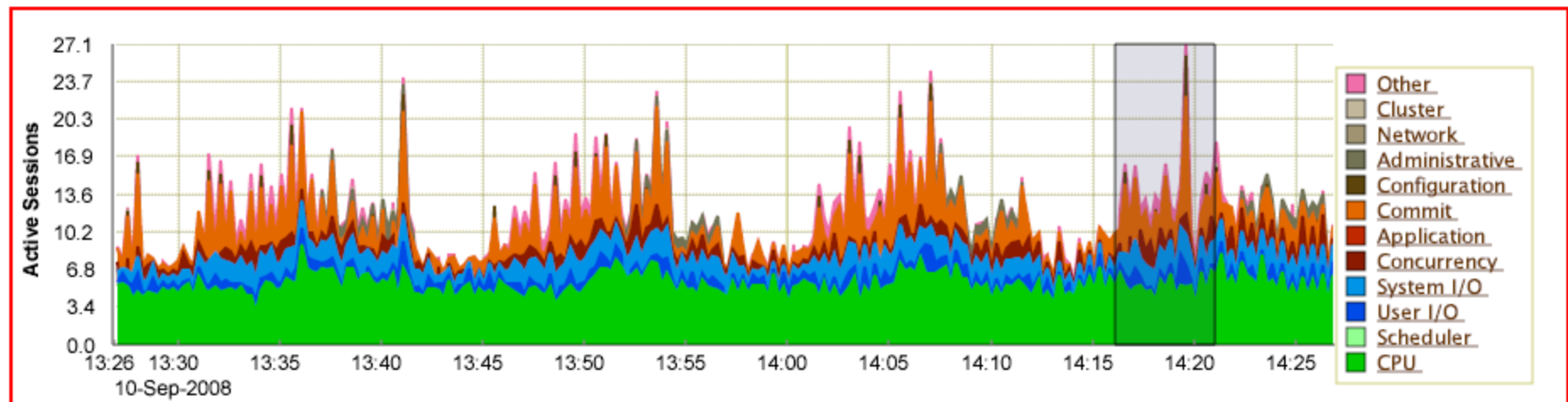
openlab Major Review Meeting 2008

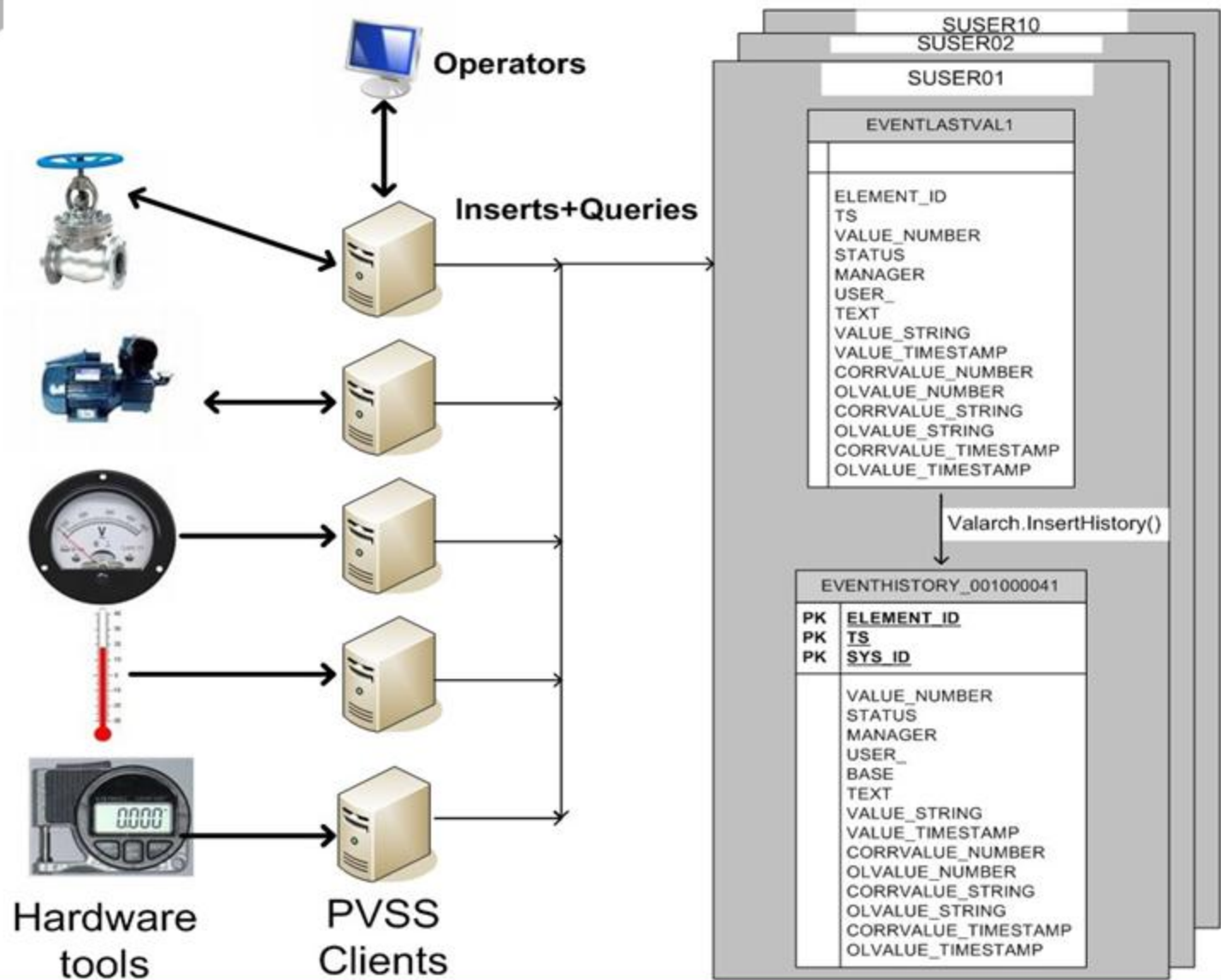
15 September 2008

Andrei Dumitru, Anton Topurov,
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Daniel Lenkes, Eric Grancher

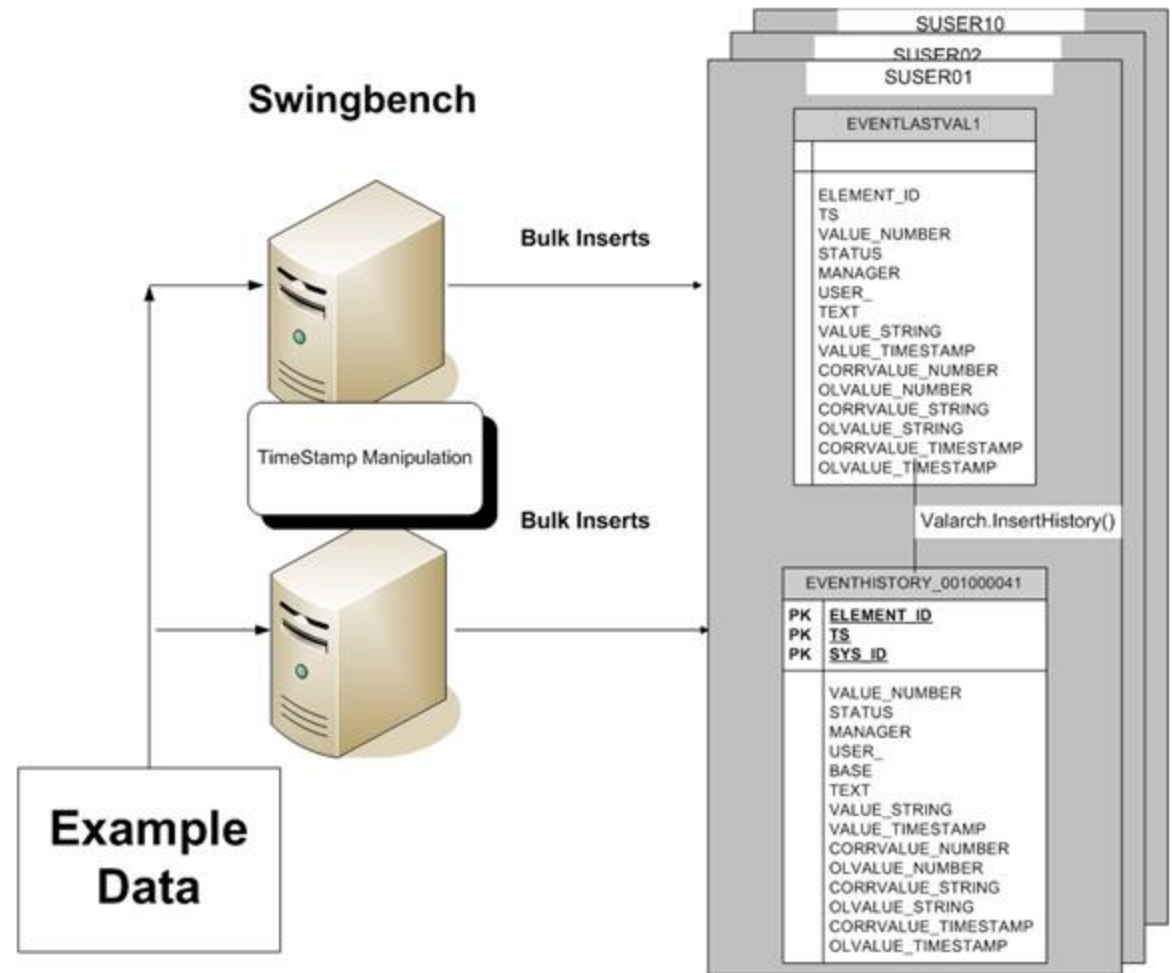
LHC startup and some databases

- IT manages databases for Accelerator control, 3 Real Application Cluster databases.
- Settings Database, settings to drive the accelerators
- Measurement database, relatively fast read-back data from accelerators, quite intensive, ~790GB redo on September 10th.
- Logging database, relatively slow read-back data from accelerators (decision support for post-mortem, off-line analysis), 5TB on September 17th 2008, +10TB per year





- Created within Swingbench Framework



- 1000 changes/s as a bulk insert by each session
- Single Swingbench instance runs 15 sessions towards a dedicated schema
- 10 swingbench instances in total needed to generate top load of 150 000 changes/s



Swingbench in action

Applications Places System oracle Thu Aug 28, 7:54 PM

SwingBench 2.3.0.381 (SWPVSS1)

Time Remaining : 0:00:00

Users: 15
Transactions per Minute: 486
Transactions per Second: 10
CPU: 0
Disk Activity: 0

Property	Value
Benchmark Name	"PVSS Benchmark"
Connect String	SWPVSS1
Coordinator	
Driver Type	Oracle10g Type II jdbc driver (oci)
Maximum Think Time	0
Minimum Think Time	0
Query Time Out	600
User Count	15
User Name	SUSER01

SwingBench 2.3.0.381 (SWPVSS2)

Time Remaining : 0:00:00

Users: 15
Transactions per Minute: 420
Transactions per Second: 6
CPU: 0
Disk Activity: 0

Property	Value
Benchmark Name	"PVSS Benchmark"
Connect String	SWPVSS2
Coordinator	
Driver Type	Oracle10g Type II jdbc driver (oci)
Maximum Think Time	0
Minimum Think Time	0
Query Time Out	600
User Count	15
User Name	SUSER03

SwingBench 2.3.0.381 (SWPVSS1)

Time Remaining : 0:00:00

Users: 15
Transactions per Minute: 488
Transactions per Second: 13
CPU: 0
Disk Activity: 0

Property	Value
Benchmark Name	"PVSS Benchmark"
Connect String	SWPVSS1
Coordinator	
Driver Type	Oracle10g Type II jdbc driver (oci)
Maximum Think Time	0
Minimum Think Time	0
Query Time Out	600
User Count	15
User Name	SUSER02

SwingBench 2.3.0.381 (SWPVSS2)

Time Remaining : 0:00:00

Users: 15
Transactions per Minute: 432
Transactions per Second: 9
CPU: 0
Disk Activity: 0

Property	Value
Benchmark Name	"PVSS Benchmark"
Connect String	SWPVSS2
Coordinator	
Driver Type	Oracle10g Type II jdbc driver (oci)
Maximum Think Time	0
Minimum Think Time	0
Query Time Out	600
User Count	15
User Name	SUSER04

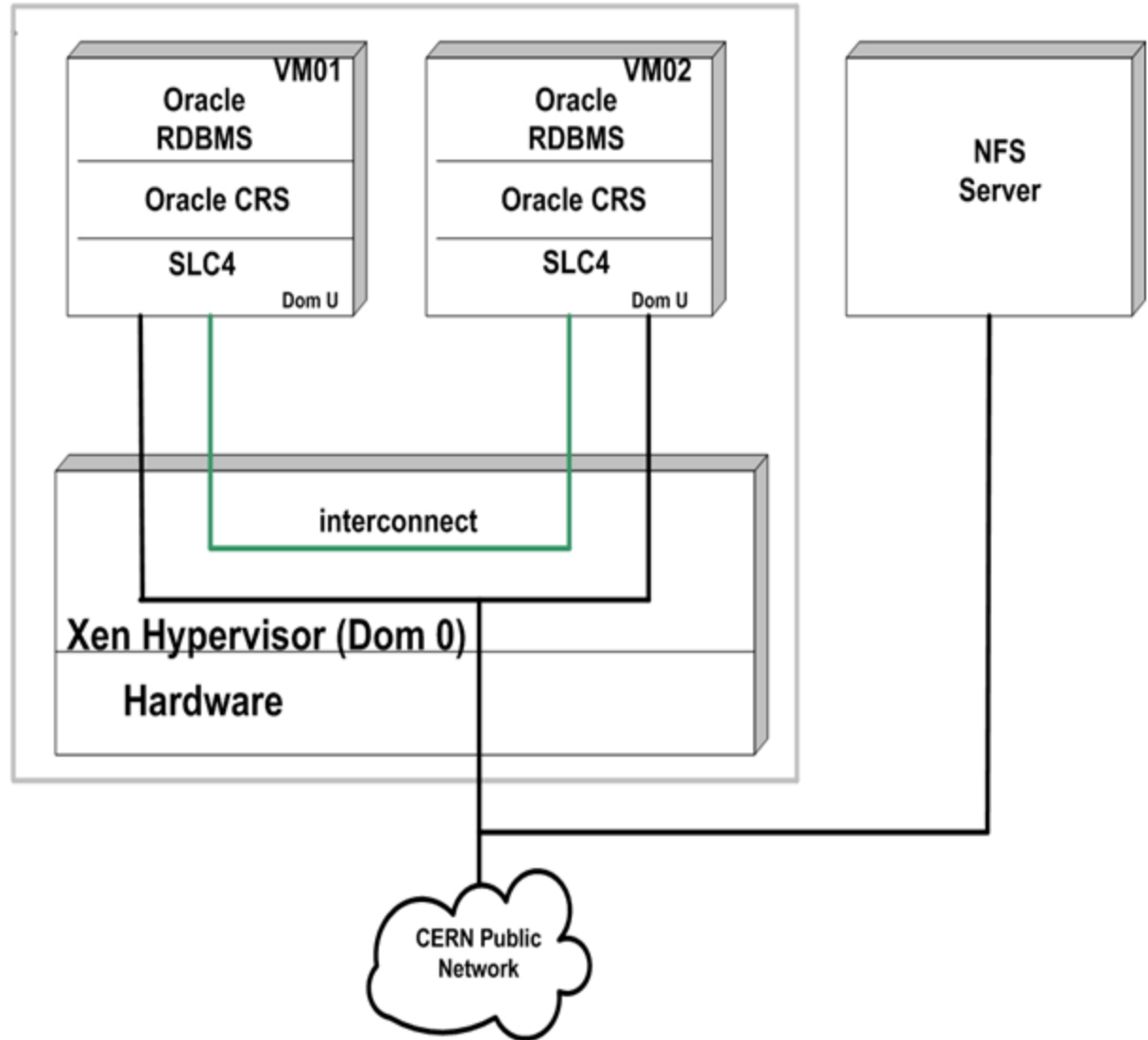
[oracle@sof:~/sw...] SwingBench 2.3.0... SwingBench 2.3.0... SwingBench 2.3.0... [root@sof:~] SwingBench 2.3.0...

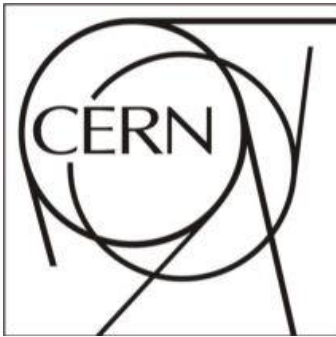
- Continuation of last year summer student project
- Main focus:
 - Test of Oracle RAC on Oracle VM and OEL5
 - Test of Oracle RAC on OEL5 and pure XEN
 - Test of Hardware Virtualization and Paravirtualization
- Work being done by Andrei Dumitru (openlab Summer Student)
- First results show better performance and ease of use for Oracle VM solution

[RAC] Oracle RAC virtualization

Setup 2:

- Same as setup 1
- NFS export from real machine





Using EM10g to improve Compliance for Oracle Security

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❖❖ Changing IT Infrastructure



Legacy Environment

Few multiprocessor hosts

Single vendor hardware

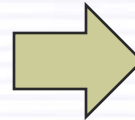
Solaris

Single instance databases

Directly attached storage

Unique configurations

Individually managed



New Environment

Many hosts

Commodity hardware

RedHat Linux

Oracle RAC

NetApp NAS storage

Standard configurations

Manage by exception





Our Grid Control Environment

Agent versions:

10.1.0.4, 10.2.0.2

10.2.0.3, 10.2.0.4

Solaris and Linux (32&64 bit)

Secure agent upload

Hardware load balancer



Agent



Users (https)

Hardware Load Balancing

OMS version 10.2.0.4

Linux RHEL 3

2 CPU (3.2GHz) - 4Gb RAM



Management Server



Management Server

2-Node RAC (load balanced)

RDBMS 10.2.0.3

RedHat Linux 4 (64-bit)

NetApp NAS storage

EMREP service



RAC node



Repository Database



RAC node

Total monitored targets: ~ 1500
192 instances (53 RAC dbs)
223 hosts



❖❖ *Grid Control Objectives*



Minimize cost of monitoring growing architecture

Timely, standardized access to meaningful information

Enable pro-active management & problem avoidance

Identify and remove configuration exceptions



A large, white, ribbed dome structure, likely the Large Hadron Collider tunnel entrance, serving as the background for the slide.

4 Fundamental Questions

Are we monitoring everything we should?

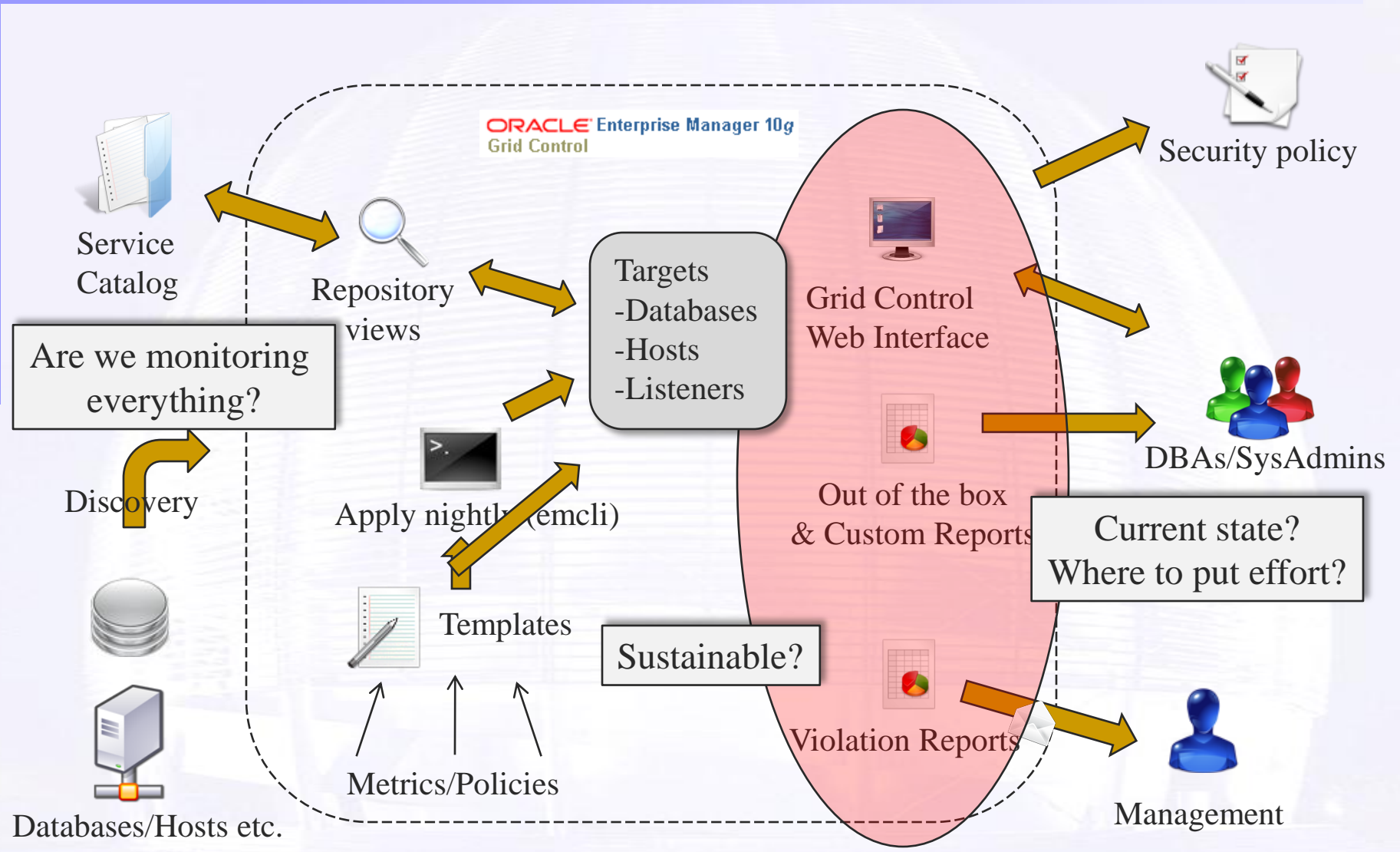
What is our current status?

Where should we focus our efforts?

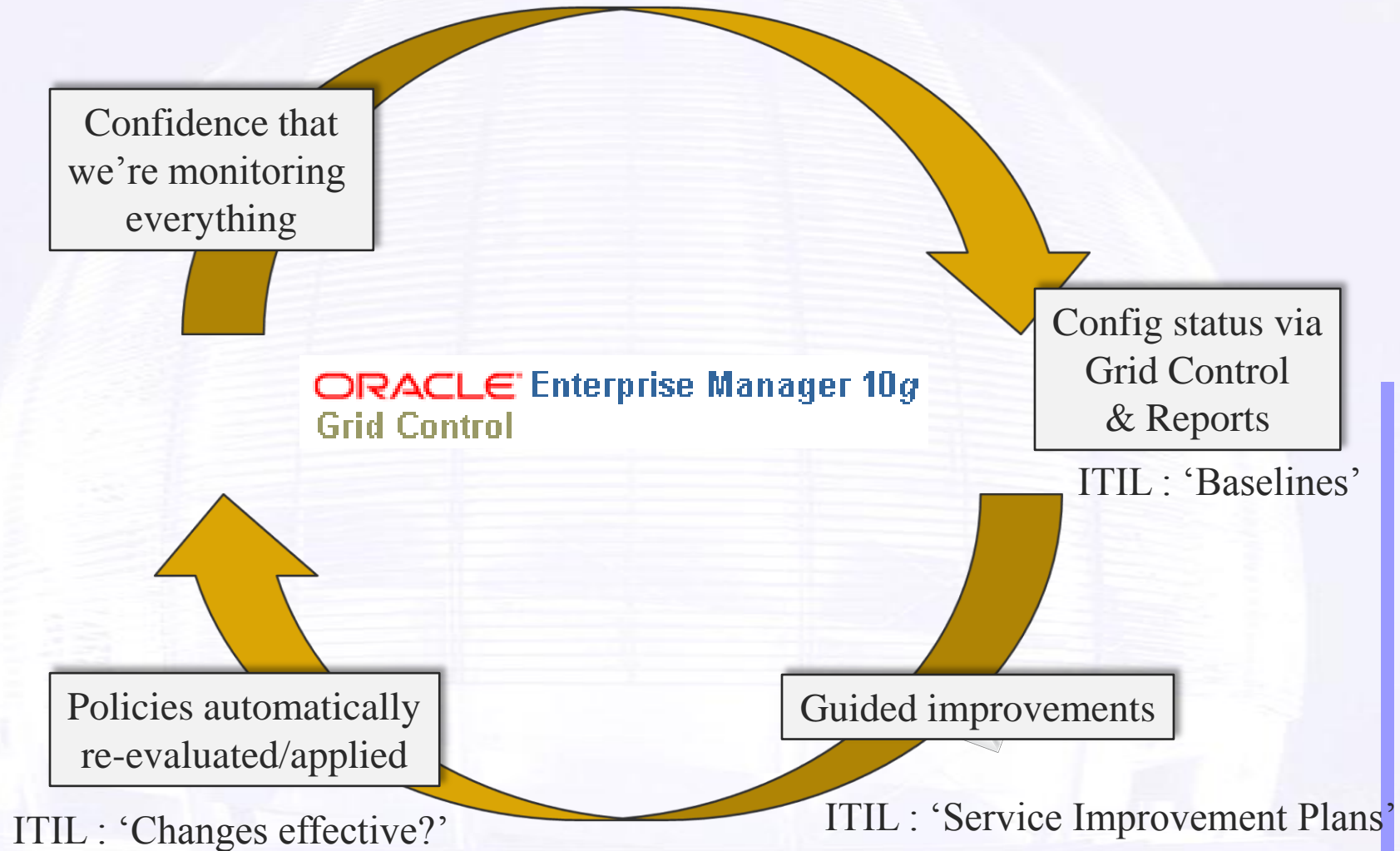
How can we make this sustainable?



Grid Control Solution



Continual Service Improvement





❖❖ Conclusion

Out-of-the-box + extensible policies
Phasing out home grown solutions

Enables a standard management approach
20+ administrators using the same tool

Scales with our environment
800 -> 1500 targets with little additional effort

Essential tool for enabling compliance and security

Enabling us in our 'best practice' efforts

