

Exadata, the new Oracle database machine

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- Oracle Database Machine
- Exadata Storage Server Hardware
- Exadata Architecture and Features
- Beta Testing
- Test Results
- Conclusions

Oracle Database Machine

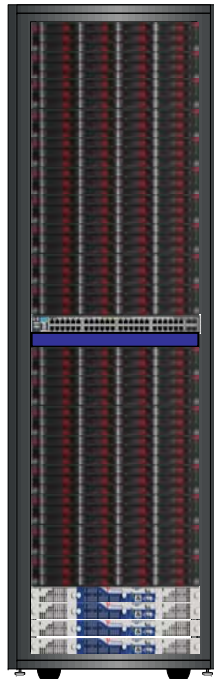


- 8 DL360 Oracle Database servers
 - 2 quad-core Intel Xeon, 32GB RAM
 - Oracle Enterprise Linux
 - Oracle RAC
- 14 Exadata Storage Cells (SAS or SATA)
 - Up to 14 TB uncompressed user data on SAS
 - Up to 46 TB uncompressed user data on SATA
- 4 InfiniBand switches
- 1 Gigabit Ethernet switch
- Keyboard, Video, Mouse (KVM) hardware
- Hardware Warranty
 - 3 YR Parts/3 YR Labor/3 YR On-site
 - 24X7, 4 Hour response time

Exadata Storage Server



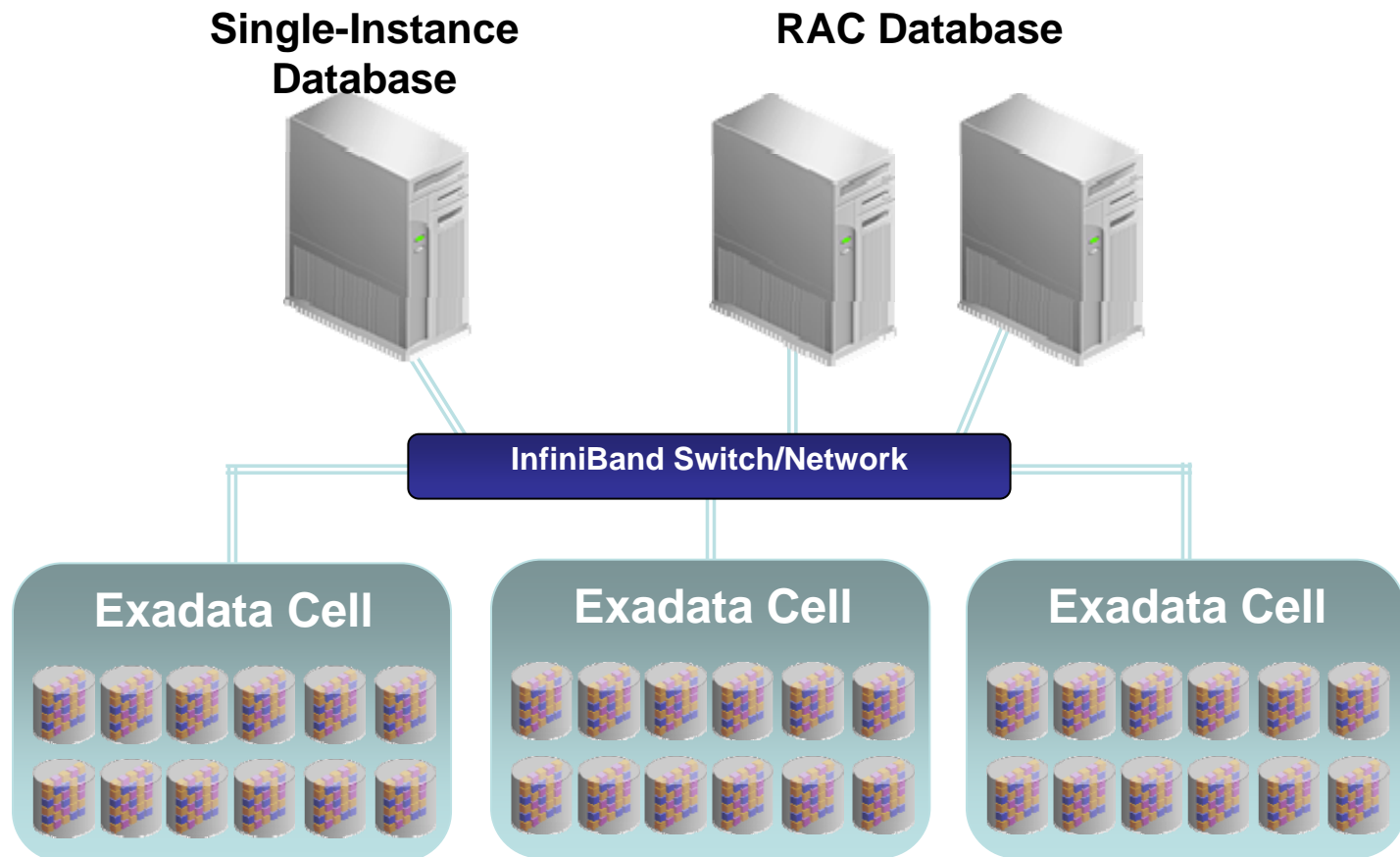
Racked Exadata Storage Servers

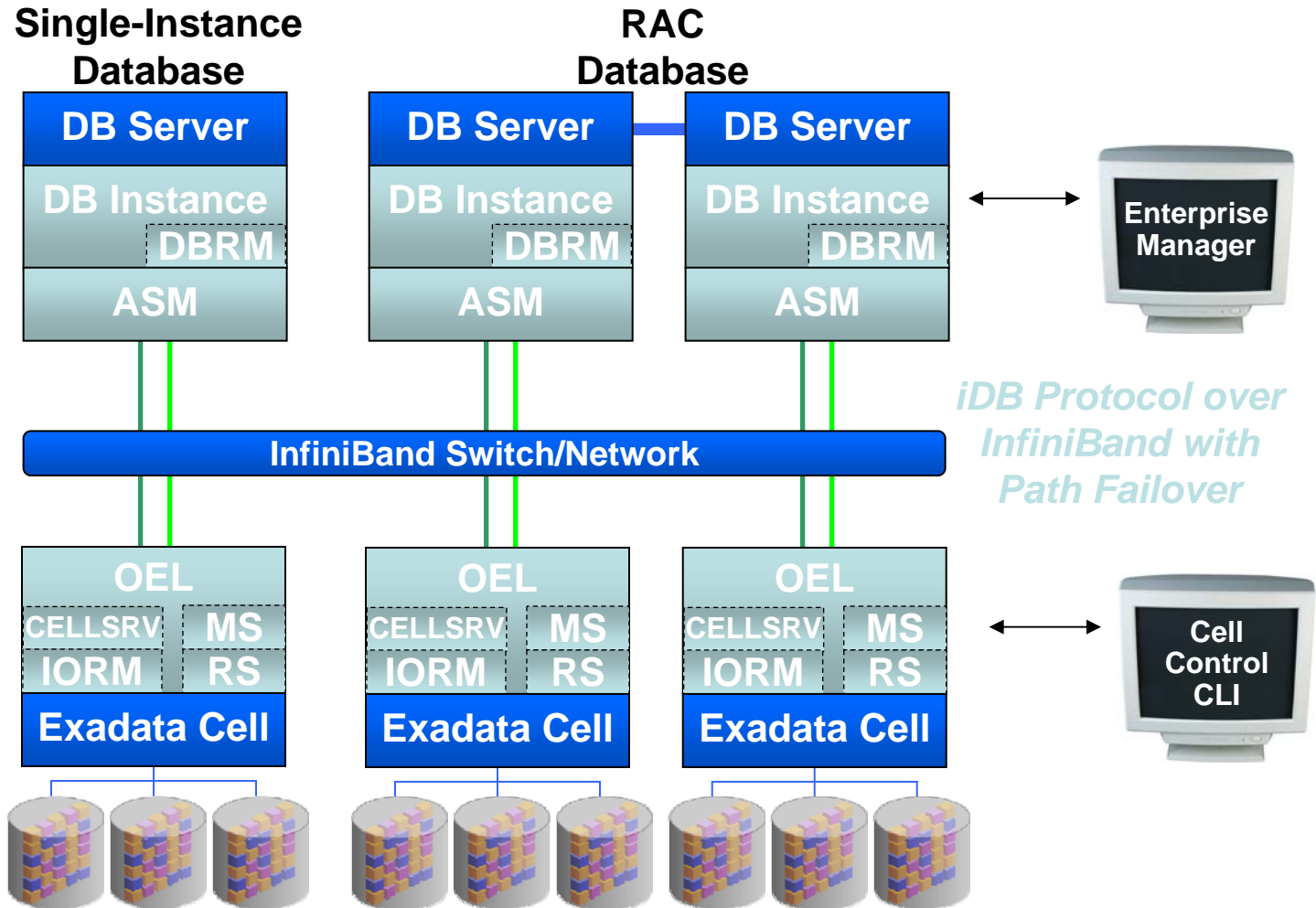


- **Building block of massively parallel Exadata Storage Grid**
 - Up to 1GB/sec data bandwidth per cell
- **HP DL180 G5**
 - 2 Intel quad-core processors
 - 8GB RAM
 - Dual-port 4X DDR InfiniBand card
 - 12 SAS or SATA disks
- **Software pre-installed**
 - Oracle Exadata Storage Server Software
 - Oracle Enterprise Linux
 - HP Management Software
- **Hardware Warranty**
 - 3 YR Parts/3 YR Labor/3 YR On-site
 - 24X7, 4 Hour response

Database aware storage – does:

- Predicate filtering
- Column projection filtering
- Join processing (star-joins for DWH)
- ***Tablespace creation***
 - eliminates the I/O associated with the creation and writing of tablespace blocks
- I/O resource management – inter and intra database





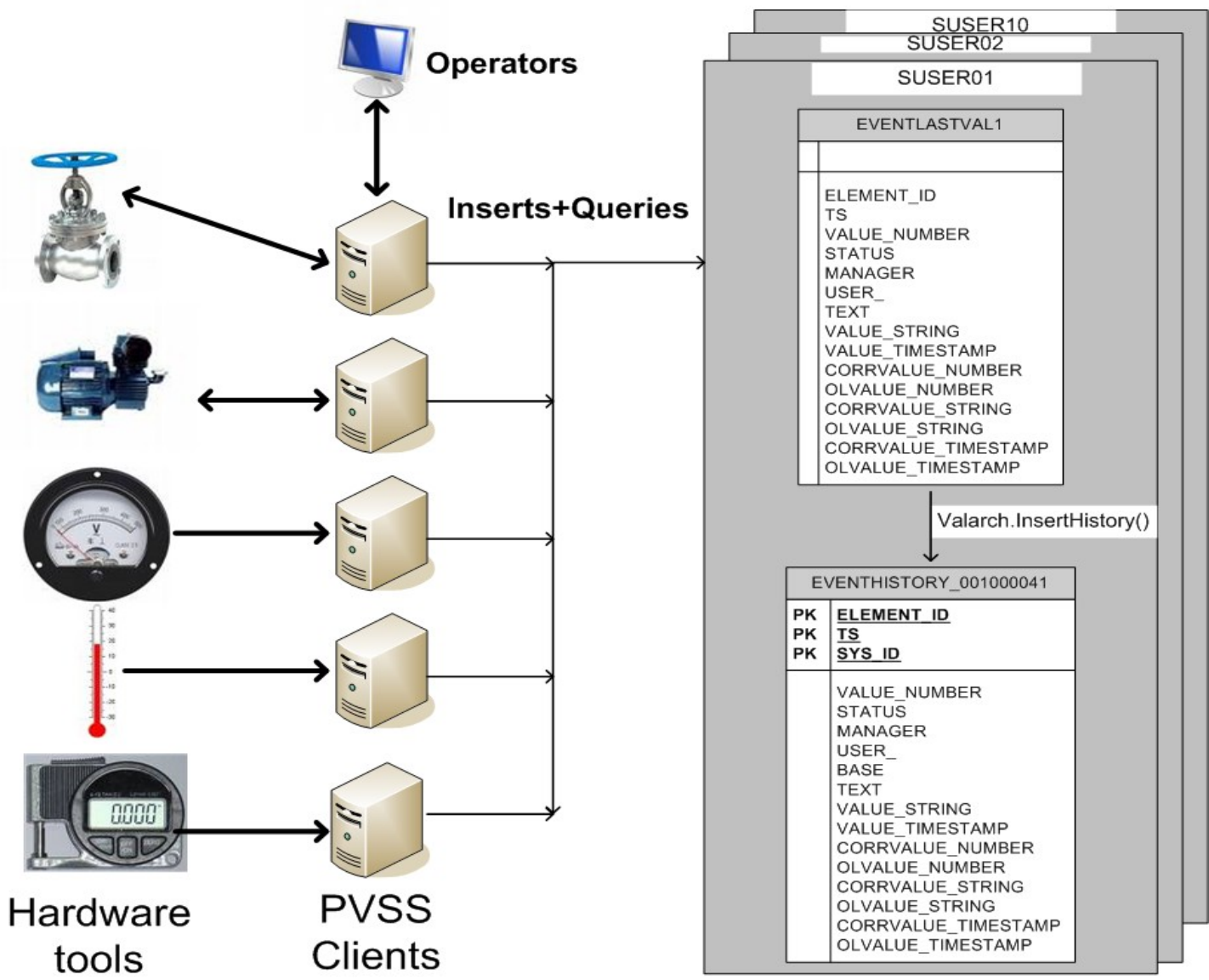
Testing Exadata Storage

- Beta testing since April
- 3 day learning event at Oracle UK site
- Developed PVSS swingbench benchmark
- Remote tests done in August
- More remote tests to be done this month
- Possibility to get the hardware onsite

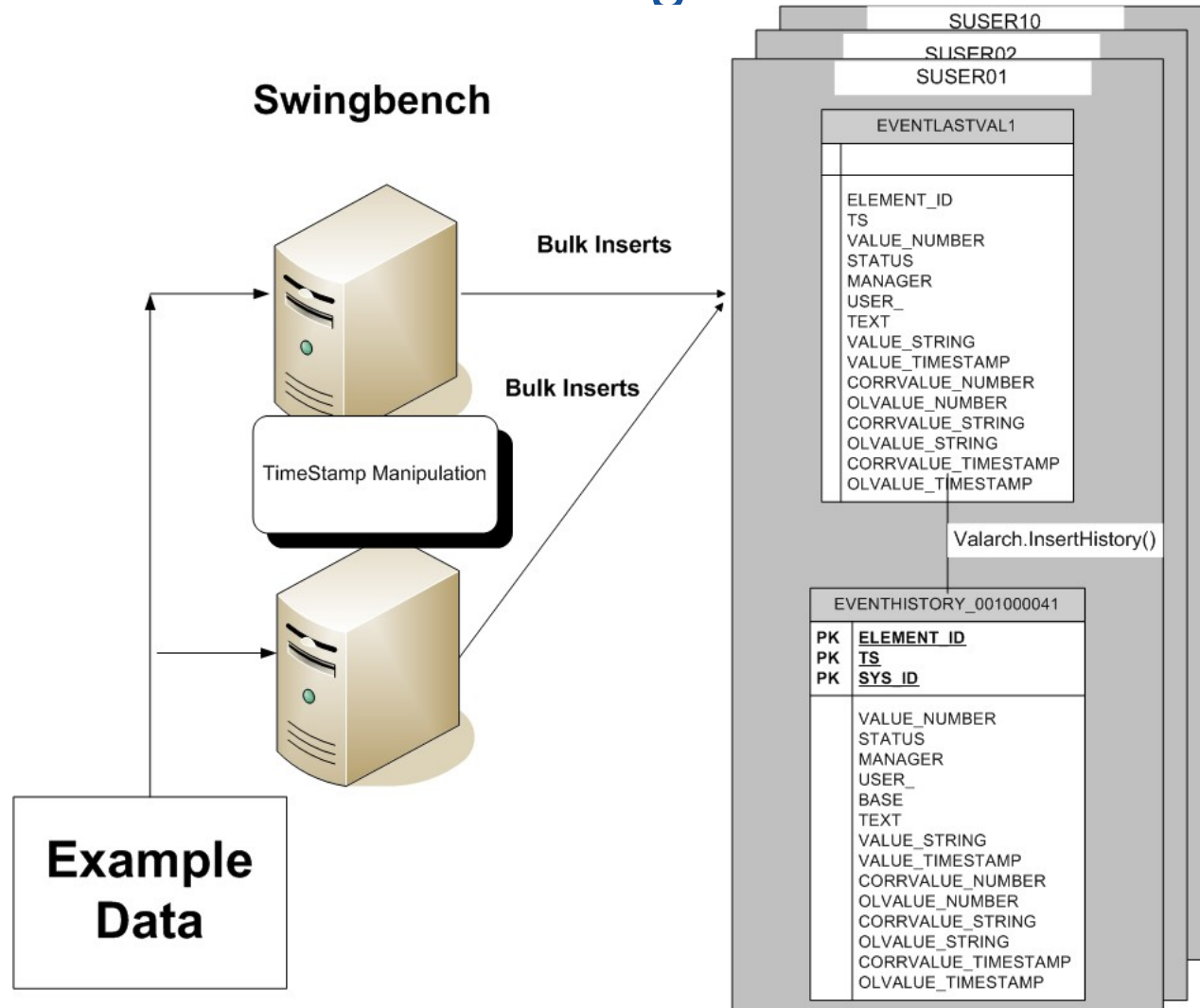


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PVSS Real Workload



- Created within Swingbench Framework





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

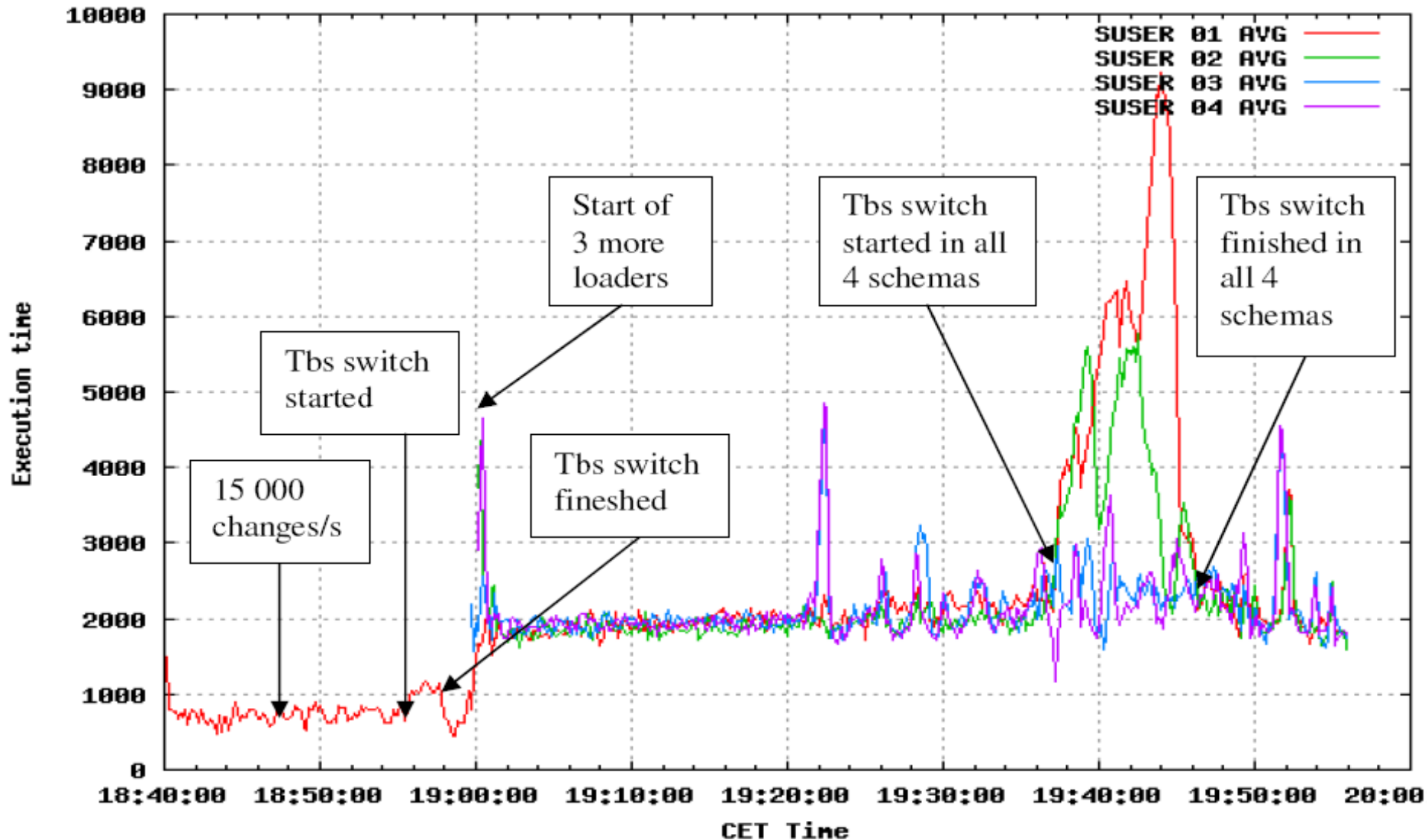
Property	Value
Benchmark Name	"PVSS Benchmark"
Connect String	SWPVSS2
Coordinator	
Driver Type	Oracle10g Type II jdbc driver (oci)
Maximum Think Time	0
Minimum Think Time	0
Query Time Out	600
User Count	15
User Name	SUSER04

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



CERN setup test results

PVSS benchmark execution times on DBSRVD121/122 RAC

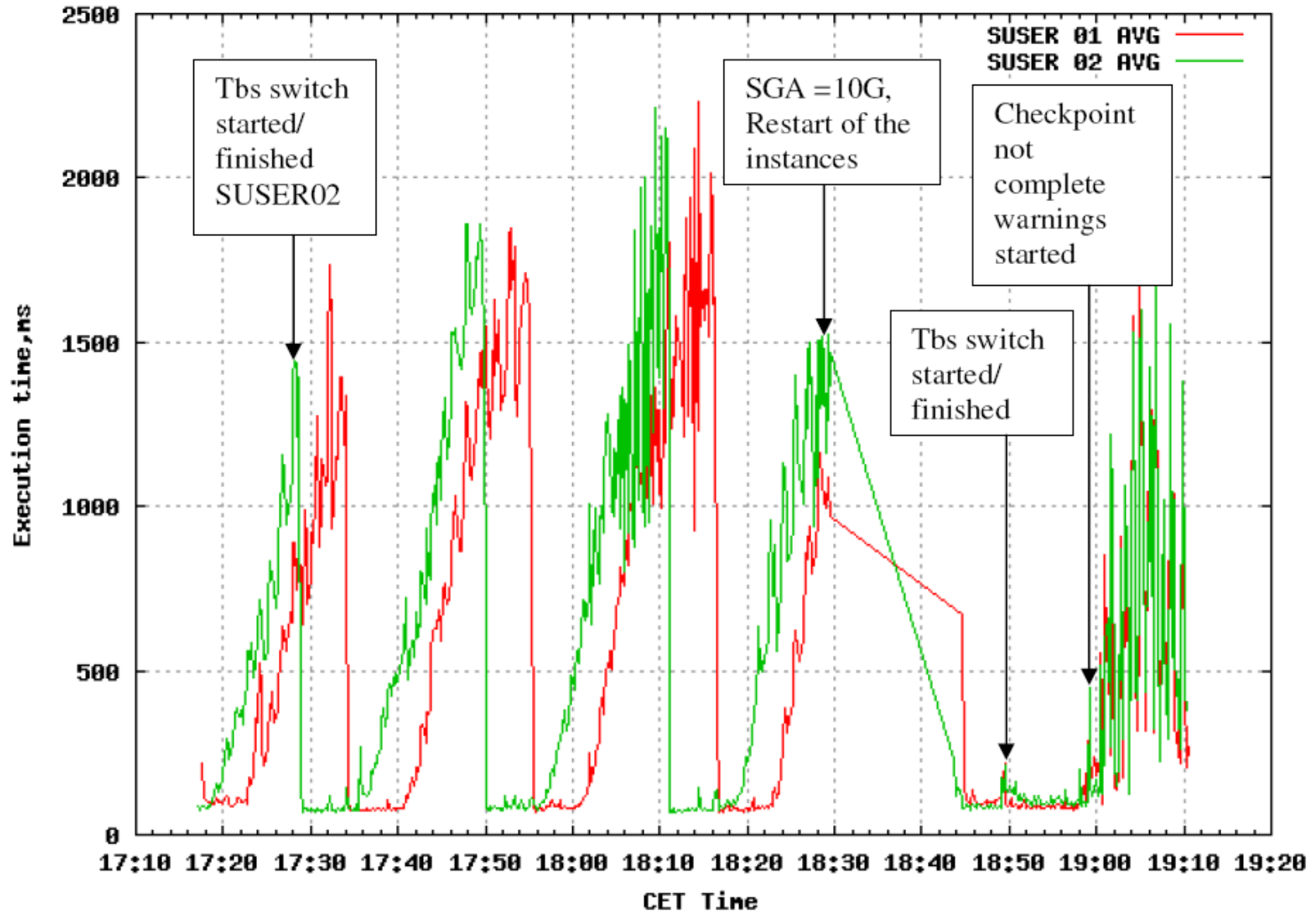




Exadata test results

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PVSS benchmark execution times on SAGE RAC



- **CERN setup**
 - 2 node RAC can sustain 30-40 000 changes/s
 - Degradation of performance due to tablespace creation

- **Exadata setup**
 - We have only intermediate results, more testing is needed
 - 4 node RAC, could cope with 150 000 changes/s
 - Performance degradation due to small SGA (1G)
 - With sga_target=10G, much better performance
 - Redo logs were the bottleneck
 - More tests scheduled to identify the full performance of Exadata

Q & A