



Why LINUX on z?

Reducing your IT Footprint
=
Reducing Cost

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What the analysts are saying

■ Gartner

‘... System z makes Linux ... robust and “data center ready.” This is despite the fact that the majority of Linux deployments on x86 servers usually require IT organizations to create a “mainframe-like infrastructure” out of an x86 architecture (for example, Oracle RAC, Veritas and other management tools).’

“Open Source in the IBM Mainframe (System z), 2008” G001560000 27 March 2008.

■ IDC

“Customers are finding that new workloads, including Linux-based workloads, can leverage the mainframe’s built-in security and high levels of availability, by running them on mainframe specialty processors, such as the IFL, ... processors. In this way, customers are seeing a blended approach to deploying and maintaining workloads – carrying longtime workloads forward on System z, even as they bring new workloads onto the mainframe.”

Jean S. Bozman, research vice president IDC's Enterprise Platforms Group. Sept 2009

Design rationale for Deployment of LINUX on z

- Exploit the capabilities of System z to drive massive centralisation of business critical data.
- Real consolidation ratios can be achieved of several hundred database instances to one physical server.
- Based upon standard products in use by many other customers around the world.
- Solution architected to ensure very high resource utilisation whilst maximising availability and security.
- Efficiencies extend beyond the server into network, storage, backup and data centre operations.

A Solution Designed to Support Business Critical Data

Enterprise LINUX Server

z10 + z/VM + LINUX => Enterprise LINUX Server

System z

0BC single cabinet

10 IFLs @ 3.5GHz

256GB memory

128 IO channels

0EC dual cabinet

64 IFLs @ 4.4GHz

1.5TB memory

336 IO channels

Availability

>99.999%

Security

Secure co-hosting EAL-5

60 LPARs

VM support for virtualisation

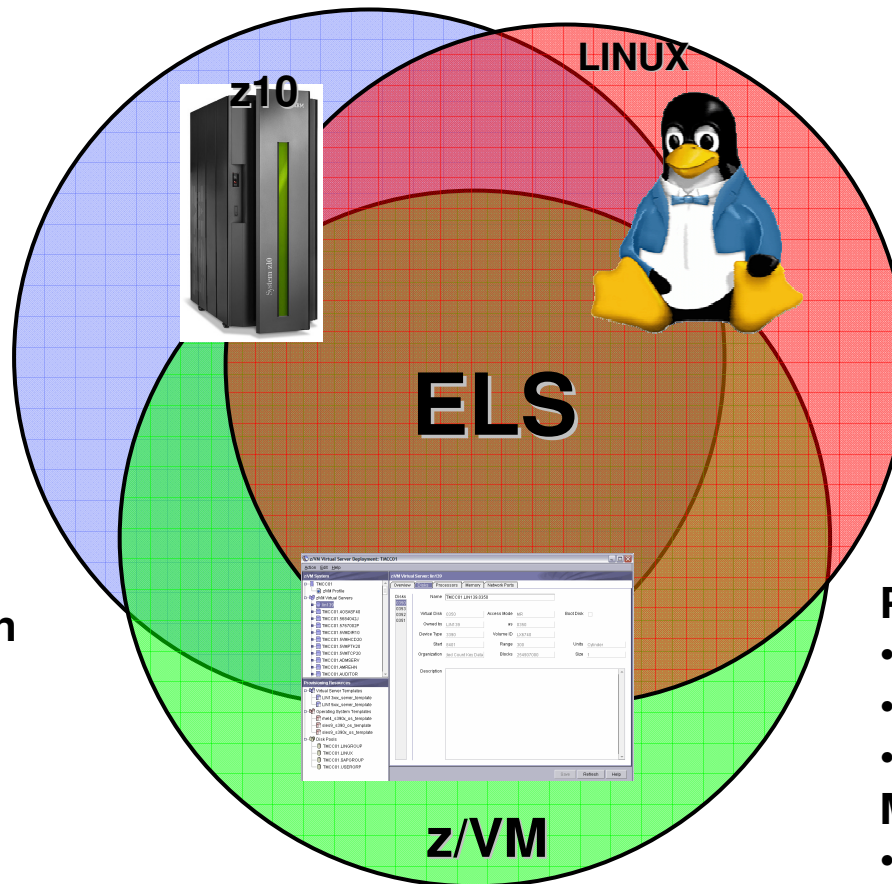
Efficient VM/IO handling

Large CPU cache

Flexibility

Non disruptive upgrades

Useful guides: www.redbooks.ibm.com



LINUX

Standard distributions

- Novell SuSe / Redhat

Tuned for z/VM

- Memory over commit
- Shared code between VMs
- Direct IO

Widely Used

- Many references
- Ideal for service providers

Application availability

- Oracle / Web hosting / etc.

z/VM

Premier Virtualisation Solution

- 40 year history
- Optimised with hardware support
- LINUX, OpenSolaris, z/OS, z/VM

Massive Scalability

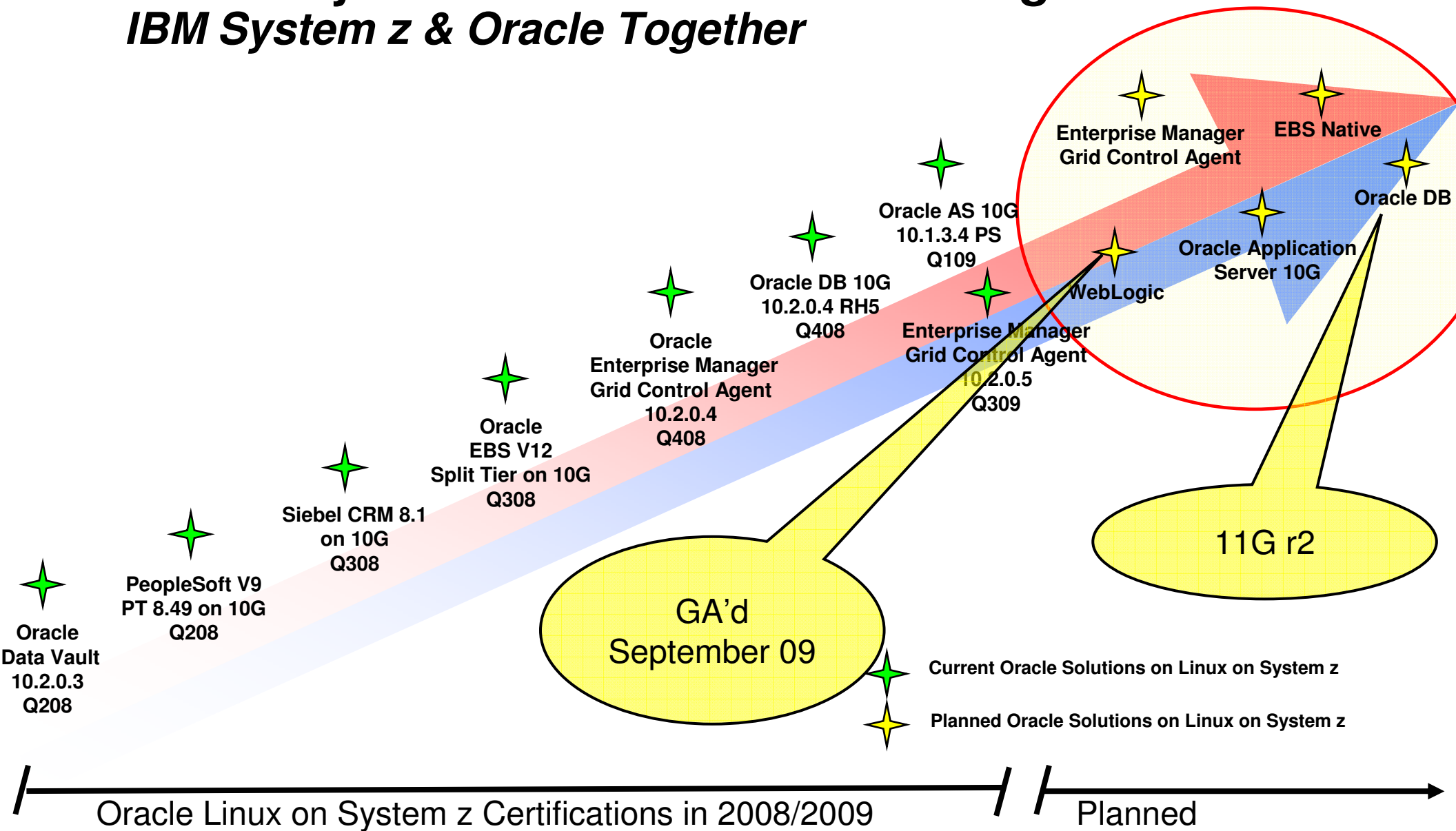
- Benchmarked at 97,943 LINUX VM
- Up to 32 CPU / 256GB per VM
- Very low overhead < 1%

Underpins IBM Big Green Consolidation: 3,900 distributed servers to < 30 System z

Oracle MAA on ELS

Linux on System with Dedicated Porting Teams

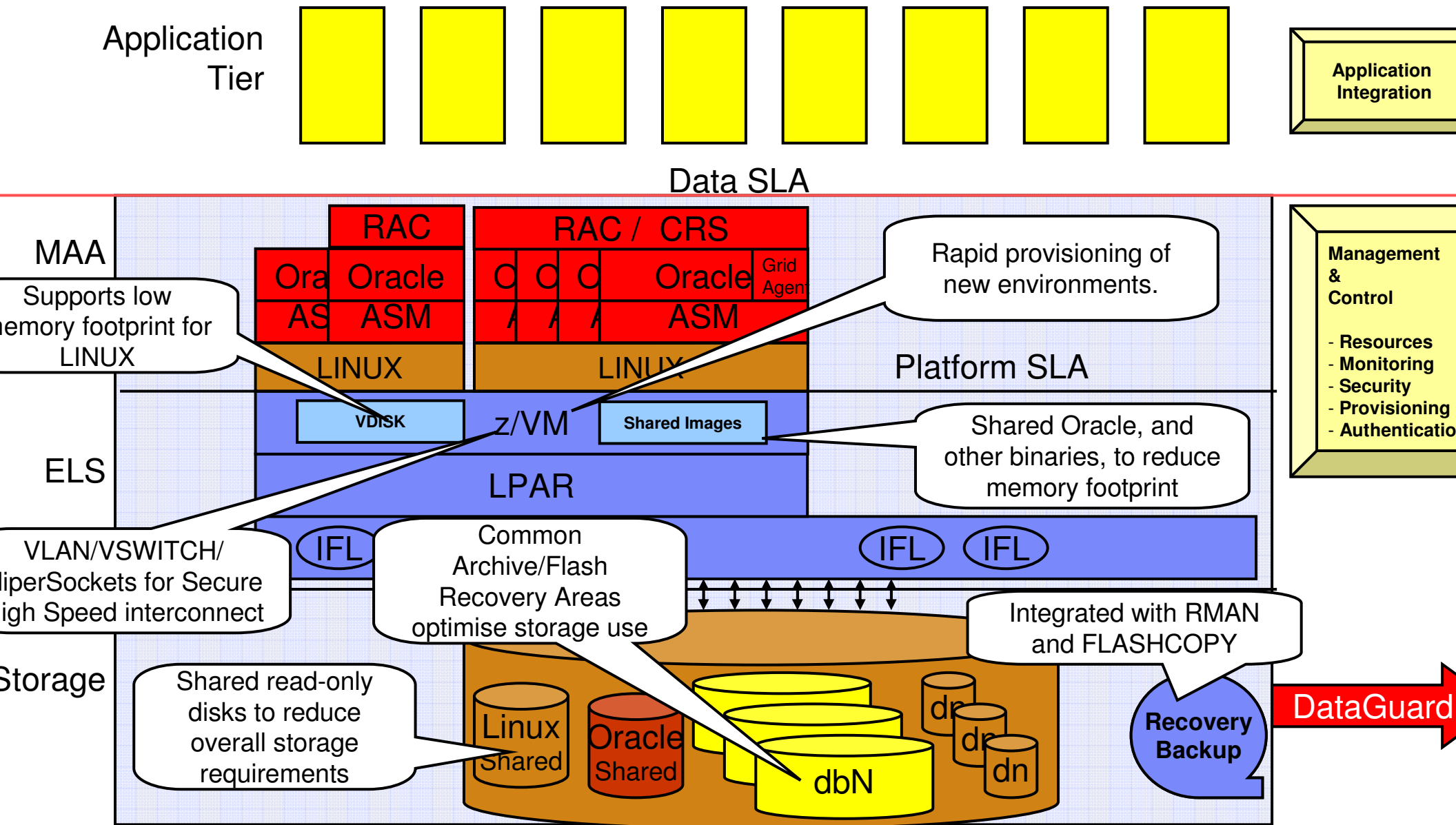
IBM System z & Oracle Together



Oracle MAA on ELS and why is it relevant?

- **Oracle's Maximum Availability Architecture**
 - ▶ Reference Architecture designed to maximise benefits of Oracle stack
 - ▶ Provide optimised environment for application support and database operations
- **Benefits**
 - ▶ The deployment of MAA on ELS provides a highly reliable solution for the massive centralisation of Oracle data and operations.
 - ▶ By design, the lowest TCO, lowest risk, most secure and most flexible deployment of MAA.
 - ▶ Tools to allow repeatable deployment of new Oracle databases ready for production use in less than 15 minutes to support agile deployment
- **Transformation**
 - ▶ Transition from legacy mid range sprawl to massive centralisation is achieved using a formal, standardised and well understood process to allow for rapid return on investment.

High Level ELS MAA Technical Solution



Eating the Legacy...

“Centralise the data, Virtualise the applications”

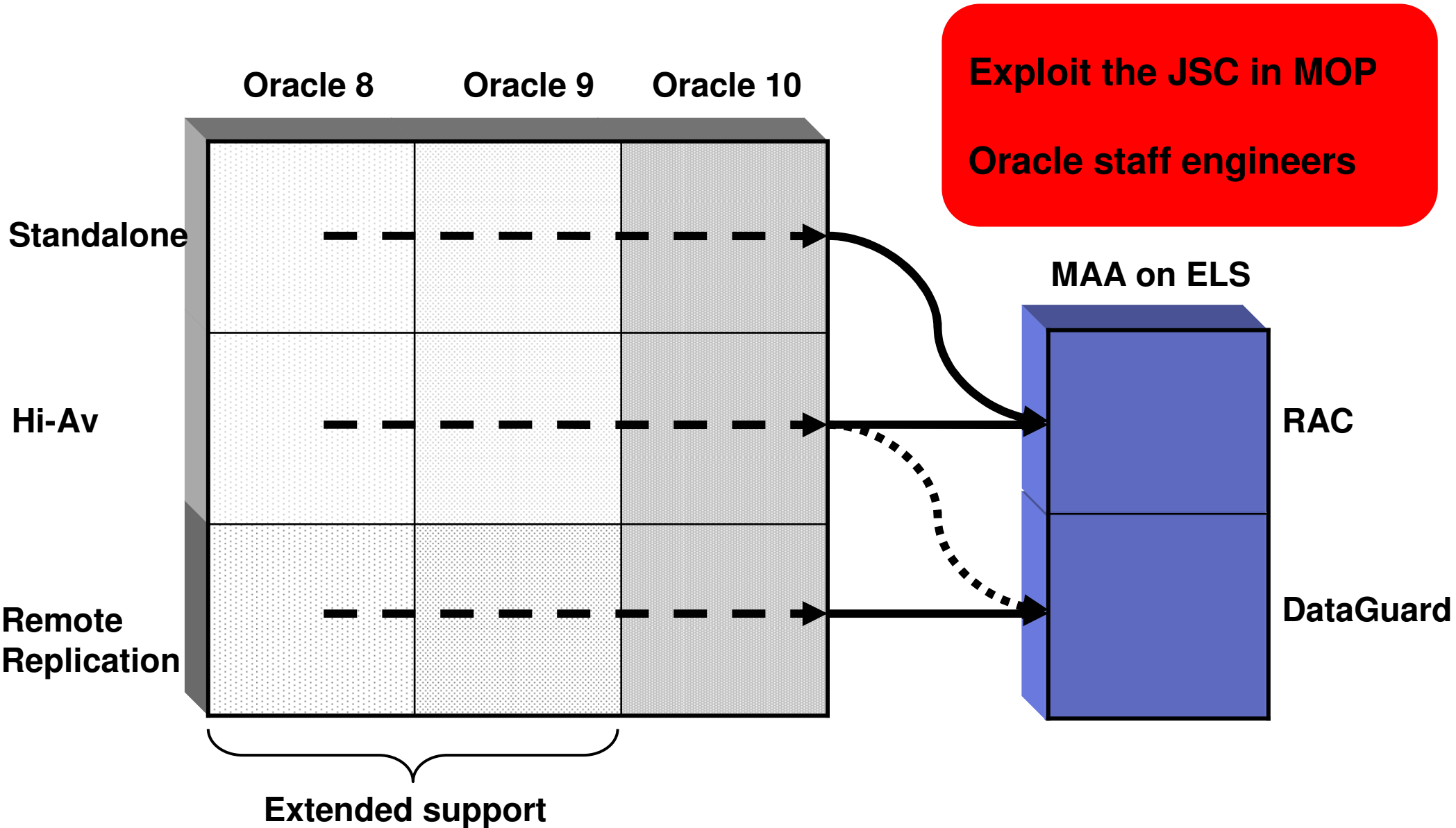
■ Data

- ▶ Centralised data can be easier to manage
 - Backup/recovery, new deployment, fewer operational mistakes
- ▶ Shared capacity can smooth out peaks
 - Real reduction in IT footprint
 - MEASURABLE reduction in Servers, storage, backup, network, licences
- ▶ Optimum platform can be chosen for data serving
 - High IO rates, high availability, high security, standardised procedures

■ Applications

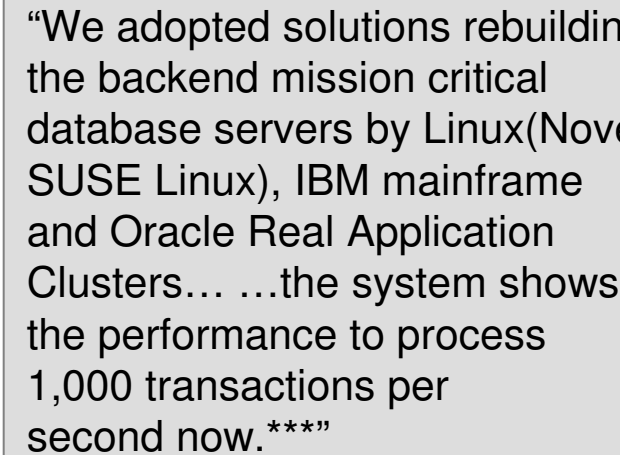
- ▶ Platform can be chosen to suit ISV(s)
- ▶ Smaller footprint (CPU and memory) as data removed more suitable for virtualisation
- ▶ Simpler upgrades as data removed
- ▶ Focus is on application functionality not data deployment

Legacy Transformation - Making the journey



References and Sizing

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*** This same system was handling 5,000 tps sustained in 4Q2008

Bank of New Zealand

<http://customers.redhat.com/2009/02/03/bank-of-new-zealand-reduces-carbon-footprint-with-red-hat-on-the-mainframe/>



BANK OF NEW ZEALAND REDUCES CARBON FOOTPRINT WITH RED HAT ON THE MAINFRAME

FAST FACTS

Industry	Financial Services
Geography	New Zealand
Business Challenge	Address environmental and space issues in the datacentre and achieve the corporate goal of becoming carbon neutral by 2010
Migration Path	From distributed Intel and SUN SPARC servers to Red Hat Enterprise Linux 5 running under z/VM on IBM z9 and z10 mainframes
Solution	Software: Red Hat Enterprise Linux 5, Red Hat Network (RHN) Satellite, Oracle database, WebSphere Application Server, ESB, Process Server, TX and MQ Hardware: 1x IBM z9 and 1x IBM z10 mainframe (with 3 x IFL engines in each)
Benefits	<ul style="list-style-type: none">• Recovered 30 percent of datacenter floor space• Reduced power consumption by 38 percent• 20 percent return on investment (ROI) over the life of the platform• Simplified, more efficient deployment



BACKGROUND:

For the last 150 years, BNZ (Bank of New Zealand), a subsidiary of the National Australia Bank Group, has helped individuals, farmers and businesses with their financial pursuits. Throughout this time, BNZ has evolved to meet changing customer needs and expectations, while continuing to deliver innovative new products and services.

BNZ is focused on empowering its customers and prides itself on its flexibility, innovation, and corporate responsibility. It is also leading the New Zealand banking and finance industry in developing, and benefiting from, a more energy efficient, 'green' IT operation.

CHALLENGE:

Like a large number of businesses in New Zealand and around the world, BNZ was close to reaching capacity in its datacenter and needed to determine how to maximise space while keeping costs down.

The bank's corporate values also have a carbon neutral focus, which it was keen to put into practice across all aspects of its business operations.

"The issues we were dealing with were not necessarily unique, but a reflection of the current business climate," said Lyle Johnston, Infrastructure Architect for BNZ.

"BNZ had defined two important goals for the future, both of which relied heavily on IT. The first was for the organisation to become carbon neutral by 2010 and the second was to explore open source opportunities through the adoption of Linux."

Another challenge BNZ faced was to create a disaster recovery solution. Its datacentres - one in Auckland, New Zealand and the other in East Melbourne, Australia are separated by the Tasman Sea.

www.redhat.com

Remember

LINUX on the mainframe is just LINUX!

Oracle on the mainframe is just Oracle!

BUT z/VM is not VMware, it is much better!

The Mainframe is 40 years young and still innovating!