

11648 User Experiences Installing Oracle on Linux on System z

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Agenda

- Oracle on System z Linux
- Customer Implementation Examples
- Do's and Don'ts

The Value Statement

- The world's fastest and most scalable system **IBM zEnterprise™ 196 (z196)**
- Ideal for large scale data and transaction serving and mission critical applications
- Most efficient platform for Large-scale Linux® consolidation
- Capable of massive scale up, over 50 Billion Instructions per Second (BIPS) 5.2GHz processors

Large Virtualization

- Why virtualize?
 - Oracle supports zVM virtualization environment
 - Greater RAS on System z, i.e. MTF 40+ years
 - Increase productivity through virtualization
 - Higher utilization of resources, i.e. 90% CPU
 - Reduced power, cooling and floor space

Best Fit For Server Consolidations

- DB2 Connect – Ideal 1st Application
- Oracle – Generates excellent TCOs
- WebSphere, MQSeries & Portal
- WebSphere HATS & HOD
- Business Intelligent (ISAS)
- DataStage, MDM and Data Warehouse
- CICS Gateways, IMS Connect
- Tivoli TSM Server
- DB2 UDB
- Communication Controller for Linux (3745 replacement)
- Network Infrastructure; FTP, NFS, DNS, etc.
- ISV products; WebFocus, Attachmate

Single Oracle Application System z Linux vs. HP servers

Total installed MIPS on z10 BC 2 IFL	1346	1346	1346	1346	1346	Total	Total (3) HP DL360 quad Servers	2	2	2	2	2	Total
	Year 1	Year 2	Year 3	Year 4	Year 5			Year 1	Year 2	Year 3	Year 4	Year 5	
Capital Investment							Capital Investment						
z10 BC 2 IFLs added + 32 GB (migration upgrade not included)	17,984	-	-	-	-	17,984	(3) HP DL360 Quad core	15,000	0	0	0	0	15,000
z-Series VM Software License Cost 2 IFLs	17,241	-	-	-	-	17,241	Oracle Initial Licenses	155,250	0	0	0	0	155,250
placeholder for backup & recovery software	0	-	-	-	-	0	VMware OTC	4,043	-	-	-	-	4,043
SuSE Linux 24x7 Support Line Priority 2 IFLs License 3 year Solution Ex	33,800	-	-	-	-	33,800	Placeholder for Backup & Recovery SW	-	0	0	0	0	0
Oracle Initial License (55% Discount)	51,750	-	-	-	-	51,750	Capital Investment Total	\$174,293	\$0	\$0	\$0	\$0	\$170,250
Capital Investment Total	\$120,775	\$0	\$0	\$0	\$0	\$69,025	Hardware Maintenance						
Hardware Maintenance							HP Servers Hardware Maintenance (Warranty)	0	0	0	0	0	0
z10 BC 2 IFL Hardware 3-year Maintenance Pre-Pay	20,388	-	0	33,552	33,552	87,492	Hardware Maintenance Total	\$0	\$0	\$0	\$0	\$0	\$0
Hardware Maintenance Total	\$20,388	\$0	\$0	\$33,552	\$33,552	\$87,492	Software Maintenance						
Software Maintenance							VMware Software Maintenance	2,696	2,696	2,696	2,696	2,696	13,478
zVM S&S	4,319	4,319	4,319	13,840	13,840	40,637	Oracle S&S	34,155	34,155	34,155	34,155	34,155	170,775
Oracle S&S (55% Discount)	11,385	11,385	11,385	11,385	11,385	56,927	Placeholder for Backup & Recovery SW	4,475	4,475	4,475	4,475	4,475	22,374
placeholder for backup & recovery software maintenance	895	895	895	895	895	3,580	Software Maintenance Total	\$41,325	\$41,325	\$41,325	\$41,325	\$41,325	\$206,627
SuSE Linux annual	0	0	0	0	0	0	Facility						
Software Maintenance Total	\$16,599	\$16,599	\$16,599	\$26,120	\$26,120	\$102,037	Power Analysis	2,094	2,094	2,094	2,094	2,094	10,470
Facility							Floor Space Cost Estimate @ \$29/sq ft	261	261	261	261	261	1,305
Power Analysis	222	222	222	222	222	1,110	Facility Total	\$2,355	\$2,355	\$2,355	\$2,355	\$2,355	\$11,775
Floor Space Cost Estimate @ \$29/sq ft	0	0	0	0	0	0	Training						
Facility Total	\$222	\$222	\$222	\$222	\$222	\$1,110	zVM and Linux Engineering Cost	12,000	0	0	0	0	12,000
Training & Services							zLinux staff training	1,500	-	-	-	-	1,500
zVM and Linux Engineering Cost	12,000	0	0	0	0	12,000	Training & Services Total	\$13,500	\$0	\$0	\$0	\$0	\$13,500
zLinux staff training	1,500	-	-	-	-	1,500							
Training & Services Total	\$13,500	\$0	\$0	\$0	\$0	\$13,500	Annual Expenses	43,680	43,680	43,680	43,680	43,680	218,402
Annual Expenses	50,709	16,821	16,821	59,894	59,894	190,639	Capital Investment	174,293	0	0	0	0	174,293
Capital Investment	134,275	0	0	0	0	134,275	Capital and Expense Total	217,973	43,680	43,680	43,680	43,680	392,695
Capital and Expense Total	184,984	16,821	16,821	59,894	59,894	338,413		7,973	\$261,654	\$305,334	\$349,015	\$392,695	
Cumulative Total	\$184,984	\$201,805	\$218,626	\$278,519	\$338,413								
System Administration							System Administration						
Annual Sysadmin Cost Analysis	134,275	-	-	-	-	134,275	Annual Sysadmin Cost Analysis	0	0	0	0	0	0
System Administration Total	\$134,275	\$0	\$0	\$0	\$0	\$134,275	System Administration Totals	\$0	\$0	\$0	\$0	\$0	\$0
Annual Expenses	50,709	16,821	16,821	59,894	59,894	190,639	Annual Expenses	43,680	43,680	43,680	43,680	43,680	218,402
Capital Investment	134,275	0	0	0	0	134,275	Capital Investment	174,293	0	0	0	0	174,293
Capital and Expense Total	184,984	16,821	16,821	59,894	59,894	338,413	Capital and Expense Total	217,973	43,680	43,680	43,680	43,680	392,695
Cumulative Total	\$184,984	\$201,805	\$218,626	\$278,519	\$338,413		Cumulative Total	\$217,973	\$261,654	\$305,334	\$349,015	\$392,695	

NOTE: Promotional pricing used on IBM System z solution

z10 BC w 2 IFLs
\$218,626

(3) New HP DL360
\$305,334

3 yr System z Savings \$86,698



From Planning to Production

A Look into customer
implementations

Customer Implementations

- Oracle Data Base
- Oracle eBusiness Suite
 - PeopleSoft



Mitsubishi Motors North America, Inc.

- Background:
 - Multiple operating environments requiring dedicated and specialized resources
- Goal:
 - Migrate to an internal private cloud environment
- Solution:
 - Migrate from z9 to z10 with 1 IFL running z/VM V6.1 and SLES10 SP3
 - Migrate AIX systems to z/VM, Linux on System z



Mitsubishi Motors North America, Inc.

- Strategic Approach
 - Engaged IBM experts
 - Engaged Mainline experts
 - Performed a Proof of Technology
- Challenges introduced due to new platform:
 - New technology for Z/OS team in building z/VM cloud
 - Database Migration from AIX to System z Linux
 - Multiple Disk architecture solutions (CKD vs. FCP)
 - Performance of root cause analysis & forensics
 - Database performance tuning
 - New procedures for Disaster Recovery



Mitsubishi Motors North America, Inc.

- Success Factors
 - Excellent support from IBM, Mainline & Oracle
 - Leveraged TSM for backup & recovery
 - Successful DR exercise
 - Achieved Cost Savings
 - No impact to business operations
- Conclusion
 - Sales Order Management System is running successfully in the new operating environment.
 - This implementation established the framework for Mitsubishi to continue it's transformation to a private cloud.

Large Distribution Company

- Goal
 - Implement new Oracle eBusiness Suite application
 - Port Oracle DBs for new application roll out
- Background
 - New business solution
 - Purpose is to provide summary data for business analytics
- System z decision
 - Needed reliable platform
 - Project Costs favored System z
 - Oracle on distributed Linux so project started using experienced Oracle team
- 2009 Initial Solution
 - 8 IFLs split on two z9 ECs
 - Planned for Oracle RAC for Oracle eBusiness Suite

Large Distribution Company Con't

- Planning
 - No POC, bought and started implementing solution
 - First step, Form Project team (no new FTE)
- Getting Started
 - Environment set up
 - Performance tuning tools
- Project Roll Out
 - 8 month from start to production implementation
 - IT project team separate status meeting from Application team
- Challenges
 - Two Oracle application implemented concurrently
 - Business changed scope to include Detail information
 - Resizing? On the fly

Large Distribution Company Con't

- Technical
 - With detail data, loads took too long
 - Slow Storage due to old technology – New Disk Storage Architecture
 - Upgrade the switch architecture for NPIV and increased performance
 - Performance tuning challenging with end to end analysis
 - Multiple guests required cloning process and shared file systems for OS and applications
 - Memory management
 - Vigorous test plan

- Solutions
 - IBM Oracle ATS team, Mainline expertise & Poughkeepsie experts
 - Added 4 IFLs to satisfy business change in scope from summary to details information
 - Re-architect Storage subsystem
 - Met Business deadlines!

Large Distribution Company Con't

Today:

- 2 z196 with 12 IFLs
 - 8 w/20 guests - 137 GB virtual – 144GB Real allocated 90 central/6 expanded
 - 4 w/29 guests - 193 GB virtual – 144GB Real allocated 90 central/6 expanded
- Production and test split across each machine – workload balancing
- Mainline runs IBM CP3000 twice a year with expanded analysis for zVM & Linux
- Mainline/IBM/Customer technical team Monthly Touch Base meetings

Recent Activities:

- DR tests ran well.
- Moved PeopleSoft Oracle Databases using existing capacity with no outside consultant assistance
- Implemented B2B Integrator, an IBM EDI offering
- Run 4 major applications; eBusiness Financials; PeopleSoft HR, B2B Integrator & one home grown application's Oracle database

Next Step:

- Adding additional eBusiness suite modules
- Looking @ 4 add'l IFLs

Parkview Health Care

- Goal:
 - Upgrade PeopleSoft application and platform
- Background
 - Unsupported Release PeopleSoft System
 - Old hardware
- System z decision
 - Wanted reliable platform
 - Project Costs favored System z
- 2009 Initial Solution
 - 2 IFLs on z10 BC- Upgraded z9 BC to z10 BC

Parkview Health Care

- Planning
 - Sizing for new z10 BC against new HP DL360s
 - Sizing using 9.2.0.6 31-bit PeopleSoft system utilization – will new system use the same resources?
- Getting Started
 - Kickoff meeting identified all participants – included Application team's PM, DBAs and later in project PeopleSoft consultants
 - During Kick-off meeting learned about 2nd new application – not sized
- Project Roll Out
 - Weekly status meeting
- Challenges
 - Learning curve for Oracle, zVM & Linux on System z
 - Oracle PeopleSoft Version upgrade concurrent with replatforming to zVM & Linux
 - 2nd Production Application implementation at the same time

Parkview Health Care

- Technical Challenges
 - Application/Oracle Conversion as well as platform migration – what really is the cause of the problem
 - Concurrent applications production implementation
 - Tight on memory vs. CPU – Poor performing SQL!
 - Many changes to Oracle
- Solutions
 - IBM Oracle ATS team, Mainline expertise & PeopleSoft Consultants on weekly meetings during UAT and Production
 - On site tuning assistance 2 weeks before Financial production implementation
 - Staged production implementation: HR 3 months after Finance
 - Added 1 IFL and 16GB memory for month end processing

Parkview Health Care

- Today: 3 IFLs z10 BC and 40GB memory
 - 3 IFLs w/6 guests - 75 GB virtual – 32GB Real allocated
 - Bi-weekly Mainline/IBM/Customer Technical Team meeting
- Recent Activities:
 - Need for End to End performance tools

Do's and Don'ts

Do's

Plan:

- Executive sponsorship is key
- Plan, Plan, Plan and work your plan

Sizing and Business Case:

- High level vs. Detail Business Cases – there is a difference!
- Size with actual utilization – plan “fudge factor” as appropriate
 - Estimates for Peak vs. average utilization
- Even at an Enterprise sizing - Pick your workloads
- New applications continue to be a sizing challenge – It's a best guess

Do's and Don'ts

Do's

Proof Of Technology:

- [Agreed upon defined success criteria](#)
- Team members with 'skin in the game' and include the applications team
- Representation of all groups involved (network, systems, distributed, DBAs, applications)
- Define a manageable project and manageable workload in a manageable period of time
- Test real workloads in your environment to allow tuning before going into production
- [You must have the right tools to monitor your system](#) – Software trials available here too
- Don't complicate POT with additional Linux tools outside the scope of the POC
- [Engage the 'experts' within Business Partners and IBM](#)
- Project team needs to be fully engaged in the POT as opposed to being an observer

Do's and Don'ts

Do's

New Production Implementations

- Review whole architecture – disk, network too
- Know the whole team – know the application teams consultants
- Plan on going to education – both on site, webcasts plus IBM Wildfire workshops
- Get performance tools early in project
- Include time and resources for performance tuning and problem determination during cut over and beyond

Production On Going

- Stay in touch – try monthly meetings

Do's and Don'ts

Don'ts

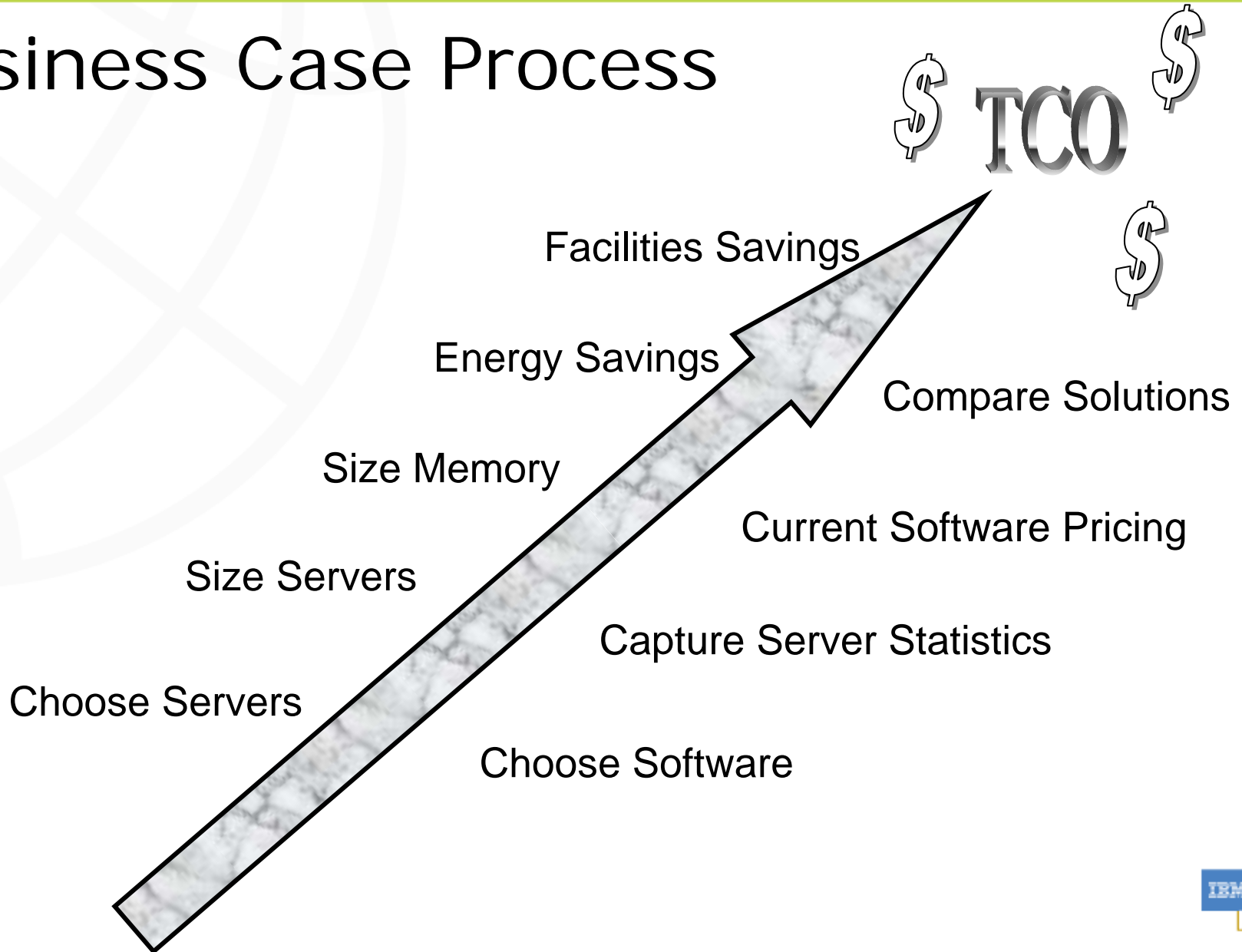
Proof Of Technology:

- Don't allow 'project sprawl'
- Don't allow a POT to last 'forever'
- Don't allow a POT to become a benchmark test on CPU intensive workload
- Don't upgrade application between the time of the POT and production cutover, stay with what is tested
- * Don't make multiple changes at the same time when doing performance tuning
- Don't set up each Linux guest identical to the last – size it accordingly
- Don't do too much all at once - Evaluate products and solutions carefully
- Don't forget to administer your new environment
- Don't forget about disaster recovery

Questions???????

Additional Slides

Business Case Process



TCO: A Range of IT Cost Factors – Often Not Considered

- *Availability*
 - High availability
 - Hours of operation
- *Backup / Restore / Site Recovery*
 - Backup
 - Disaster Scenario
 - Restore
 - Effort for Complete Site Recovery
 - SAN effort
- *Infrastructure Cost*
 - Space
 - Power
 - Network Infrastructure
 - Storage Infrastructure
 - Initial Hardware Costs
 - Software Costs
 - Maintenance Costs
- *Additional development/implementation*
 - Investment for one platform – reproduction for others
- *Controlling and Accounting*
 - Analyzing the systems
 - Cost
- *Operations Effort*
 - Monitoring, Operating
 - Problem Determination
 - Server Management Tools
 - Integrated Server Management – Enterprise Wide
- *Security*
 - Authentication / Authorization
 - User Administration
 - Data Security
 - Server and OS Security
 - RACF vs. other solutions
- *Deployment and Support*
 - System Programming
 - Keeping consistent O/S
 - Database Effort
 - JCL
 - System A/enar
 - S/S distribution (across firewall)
 - Application
 - Technology Upgrade
 - System Release change without interrupts
- *Operating Concept*
 - Development of an operating procedure
 - Feasibility of the developed procedure
 - Automation
- *Resource Utilization and Performance*
 - Mixed Workload / Batch
 - Resource Sharing
 - shared nothing vs. shared everything
 - Parallel Sysplex vs. Other Concepts
 - Response Time
 - Performance Management
 - Peak handling / scalability
- *Integration*
 - Integrated Functionality vs. Functionality to be implemented (possibly with 3rd party tools)
 - Balanced System
 - Integration of / into Standards
- *Further Availability Aspects*
 - Planned outages
 - Unplanned outages
 - Automated Take Over
 - Uninterrupted Take Over (especially for DB)
 - Workload Management across physical borders
 - Business continuity
 - Availability effects for other applications / projects
 - End User Service
 - End User Productivity
 - Virtualization
- *Skills and Resources*
 - Personnel Education
 - Availability of Resources

IBM zRace



Routinely Assessed
Cost Factors



Planning

Project Initiation

Value Proposition

- Learning the value of System z Linux
- Server Consolidation Sizings
- Business Case Development

POC Initiative

- Scoping POC
- POC IFL Sizings
- Real memory sizing
- Scope Document

Proving – Managing the Linux POC

Project Definition

Infrastructure Planning

- Hardware
- Software
- Network
- Security
- Disk
- Backup & Recovery

Project Planning

- Scope Document
- Project Plan
- Team Roster
- Systems Assurance
- SOW Consulting Svc
- Status Report
- Phone Support

IBM Loaner Program

- POR date
- Success Criteria
- Configs
- Sizings
- IBM Contracts
- Linux Trial
- Software Trial

Installation & Set Up

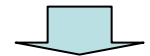
- IBM loaner Eq.
- zVM & Linux install
- Other SW install
- Network
- Security
- Disk
- DB loads
- Application set up
- Other Distributed Servers
- Weekly Status Meeting
- Status Report

Testing

- Test Plan
 - Unit
 - Volume/Performance
- Weekly Status Mtg
- Status Report
- Issues Management
- Escalation Process
- Resource Management
 - In house
 - Mainline
 - IBM
 - Linux vendor

Closing

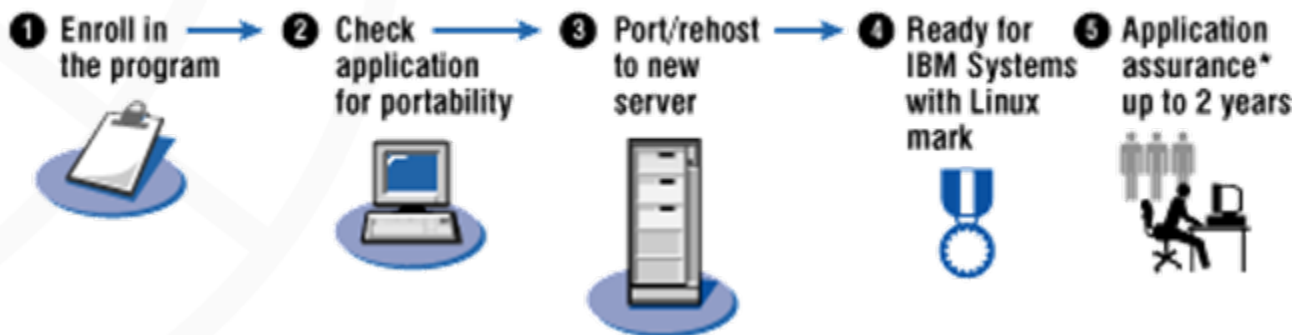
- POC Final Report
- Success Criteria Acceptance
- IFL Purchased or removed



- Production Implementation Planning
- Purchasing
- Technical Services
- Vendor 24x7 Support

IBM Systems Application Advantage™ for Linux

Chiphopper process



Expand market reach of your commercial Linux applications

The Chiphopper offering is designed to help ISVz in porting, testing, and supporting their existing Linux® x86 applications on other IBM Systems and middleware platforms. It can help you maximize their Linux market opportunity while minimizing their expense.