Managing Total Cost of Ownership (TCO) With HP Midrange Servers

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Business Critical Systems,
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Agenda

1. Definition of TCO
2. Review of TCO cost components
3. Analysis of HW/SW cost components
4. General strategies for reducing TCO
5. HP strategies for improving TCO with midrange servers
6. How to start a TCO management program
7. Conclusions
What Is TCO?

• Sum of all direct expenses, indirect expenses & opportunity costs associated with the complete lifecycle of an IT infrastructure

• Includes costs associated with HW, SW, people & facilities
More Efficient Use of Assets

Results in Lower TCO:

• Staff--manage fewer, standardized resources
• Computing resources--can be dynamically reallocated to meet peak loads
• Software licenses--fewer servers means fewer licenses
• Real estate--reduced server and storage sprawl cuts down the number of square feet required

All of which leads to a better bottom line!
Cost Relationships-Typical and Best Practices

Typical Practices

- 18% Endusers
- 7% Downtime
- 4% Administration
- 25% Operations
- 46% Hardware/Software

Best Practices

- 10% Endusers
- 10% Downtime
- 1% Administration
- 1% Operations
- 43% Hardware/Software
- 36% Operations

Source: Compaq TCO Model
Components of TCO

- End User
- Administrative
- Downtime
- Operational

HW/SW
Types of HW/SW Costs

- Expensed, depreciated or leased HW
- Upgrades
- Spares & supplies
- Business and engineering software
- Database, management and development tools
- Messaging and groupware
- Network, systems, storage and asset management software
- Service desk management software
 Reasons for Inefficiencies

- Inadequate platform design
- Inadequate procurement process
- No hardware and/or software standards
- Clients or servers not configured for business requirements
- No asset management
- Heterogeneous environment (Unix - NT - OVMS - MVS...)
- Multi-tier client/server environment increasing complexity and diversity
Ways to Reduce TCO Via HW/SW Improvements

- Consolidation of servers, storage, operating environments, and middleware onto fewer and easier to manage platforms
- Re-hosting of applications from aging infrastructures to updated, cost effective environments
Ways to Reduce TCO Cont...

• Utilization of proven architectures that can be rapidly deployed with minimal effort
• Ensuring infrastructure availability throughout the application lifecycle to prevent opportunity loss
Strategies for Reducing TCO with HP Midrange Servers

- Investment Protection
- Technology Improvement
- Manageability Improvement
Strategies for Reducing TCO with HP Midrange Servers

Investment Protection

- Technology Improvement
- Manageability Improvement
Investment Protection Lowers Costs And Adds Value By...

- Extending the lifetime value of infrastructure components
- Matching IT purchases to balance sheet needs
- Ensuring that your IT infrastructure can grow with your business

Best practice savings 0-11%

Source: Compaq TCO Model
Investment Protection in the Midrange

- **In-box upgrades**
- **Trade in/trade up programs**
- **Financial matching**
Investment Protection

*In-box Upgrades*

- Capacity on demand (iCOD)
- Processor upgrades
- Shared components
### In-Box Scalability

<table>
<thead>
<tr>
<th>CPUs</th>
<th>OS</th>
<th>Memory</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA-8700</td>
<td>hp-ux 11i</td>
<td>32/64 GB</td>
<td>virtual partitions</td>
</tr>
<tr>
<td>PA-8700+</td>
<td></td>
<td>64/128 GB</td>
<td></td>
</tr>
<tr>
<td>PA-8800 (dual core) IPF</td>
<td>hp-ux 11i, Windows, Linux</td>
<td></td>
<td>PCI-X</td>
</tr>
<tr>
<td>PA-8900 (dual core) IPF</td>
<td></td>
<td></td>
<td>rp8400 I/O expander</td>
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<table>
<thead>
<tr>
<th>Year</th>
<th>Relative QLTP</th>
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<tbody>
<tr>
<td>1.0</td>
<td>current</td>
</tr>
<tr>
<td>2.0</td>
<td>2H 2002</td>
</tr>
<tr>
<td>3.0</td>
<td>2003</td>
</tr>
<tr>
<td>4.0</td>
<td>2004</td>
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</table>

- **hp server rp7410**
- **hp server rp8400**

Interchangeable parts
Investment Protection

**Trade In/Trade Up**

- Tradeup 2002--industry leading programs
- Installed base programs
  - to PA-RISC
  - to IPF
Unsurpassed Multi-dimensional Investment Protection

- Midrange upgrade to 16-way rp8400 program
- Share the same cell boards, peripherals and I/O cards

To PA-RISC: trade-up prog.
- Cost effective path to rp7410 from hp and competitive servers

To IPF: IPF prog.
- Upgrade from rp7400 to IPF based rp7410 @ in-box upgrade cost
Investment Protection

Financial Matching

- Competitive pricing schedule
- Flexible lease options
- Promotional financing
- Utility pricing
  - Pay per use
  - Pay per forecast
Programs to Address Today’s Economic Environment

• 0% apr financing plan
• hp services promotion!
  – three months free when you purchase a three-year support plan

unmatched cost savings throughout the value chain!

• utility pricing
  - pay-per-use
  - midrange promotion! buy with pay-per-use, and pay no usage fees for the first 6 months
  - iCOD
  - new! temporary capacity on demand
  - pay-per-forecast

also includes software, storage and services
Strategies for Reducing TCO with HP Midrange Servers

- Investment Protection
- Technology Improvement
- Manageability Improvement
Technology Improvements
Lower Costs And Add Value
By...

- Decreasing IT downtime
- Reducing operational complexities
- Minimizing environmental costs
- Matching performance needs to business cycles

**Best practice savings 0-20%**

Source: Compaq TCO Model
Technology Improvements in the Midrange

- Scalability
- Availability
- Design
Technology Improvement

**Scalability**

- Partitions to support multiple functionality
- Clustering to aggregate server resources
- Consolidation to improve manageability
Broadest Partitioning Capabilities

- **hard partitions** with multiple nodes
- **hard partitions** within a node
- **virtual partitions** within a hard partition
- **PRM with psets** resource partitions in a single OS image

- hp hyperplex w/ TruCluster
- nPartitions
- Virtual partitions
- PRM (Process Resource Manager)

**hp-ux WLM** (workload manager)
- automatic goal-based resource allocation via set SLOs (iCOD)

isolation

for maximum flexibility and consolidation
Technology Improvement

**Availability**

- Built-in HA features
  - Redundant data paths
  - Multibit error correction
  - Full error correction code (ECC)
- Hot-swappable components/peripherals
# Leading High Availability You Can Trust

<table>
<thead>
<tr>
<th>chip/system technologies</th>
<th>server availability/management</th>
<th>application high-availability</th>
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<tbody>
<tr>
<td>hp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rp7410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rp8400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• chip-spare (chip-kill)</td>
<td>• instant turn-on of iCOD processors</td>
<td>• mc/serviceguard (multi-OS)</td>
</tr>
<tr>
<td>• full ecc</td>
<td>• automatic iCOD “hot” spare</td>
<td>• campus &amp; metro cluster</td>
</tr>
<tr>
<td>• address parity detection</td>
<td>• integration with workload management</td>
<td>• continental cluster</td>
</tr>
<tr>
<td></td>
<td>• hard partitions with full electrical isolation</td>
<td>• SAP somersault solution</td>
</tr>
<tr>
<td></td>
<td>• dynamic virtual partitions available 2h02</td>
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</table>
Technology Improvement

Design

- Minimization of floor space
- Easy, tool free access
- Low operating costs
# Midrange Environmental Cost Savings

<table>
<thead>
<tr>
<th></th>
<th>4 servers</th>
<th>8-way IBM</th>
<th>SUN 4800</th>
<th>2 servers</th>
<th>16-way IBM</th>
<th>SUN 6800</th>
</tr>
</thead>
<tbody>
<tr>
<td># servers (total CPUs)</td>
<td>4 (32)</td>
<td>4 (32)</td>
<td>4 (48)</td>
<td>2 (32)</td>
<td>2 (32)</td>
<td>2 (48)</td>
</tr>
<tr>
<td>acquisition costs</td>
<td>$1,061,000</td>
<td>$1,085,000</td>
<td>$1,560,000</td>
<td>$1,055,000</td>
<td>$1,011,000</td>
<td>$1,688,000</td>
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<tr>
<td>3 year floor space</td>
<td>$39,600</td>
<td>$79,200</td>
<td>$158,400</td>
<td>$39,600</td>
<td>$79,200</td>
<td>$79,200</td>
</tr>
<tr>
<td>electrical power</td>
<td>20 amp</td>
<td>20 amp</td>
<td>20 amp</td>
<td>20 amp</td>
<td>30 amp</td>
<td>30 amp</td>
</tr>
<tr>
<td>3 year power</td>
<td>$73,296</td>
<td>$73,296</td>
<td>$73,296</td>
<td>$36,432</td>
<td>$54,648</td>
<td>$54,648</td>
</tr>
<tr>
<td>3 year 24x7 support</td>
<td>$191,032</td>
<td>$228,148</td>
<td>$356,792</td>
<td>$239,024</td>
<td>$270,940</td>
<td>$356,860</td>
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<tr>
<td>total cost</td>
<td>$1,364,928</td>
<td>$1,465,644</td>
<td>$2,148,488</td>
<td>$1,370,056</td>
<td>$1,415,788</td>
<td>$2,178,708</td>
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</tbody>
</table>

- 7% more
- 57% more
- 3% more
- 59% more
Strategies for Reducing TCO with HP Midrange Servers

- Investment Protection
- Technology Improvement
- Manageability Improvement
Manageability Improvements
Lower Costs And Add Value
By...

• Simplifying administration complexity
• Increasing system uptime
• Extending future functionality
• Reducing deployment and maintenance time

Best practice savings 0-18%

Source: Compaq TCO Model
Manageability Improvements in the Midrange

- HP-UX11i
- Systems management software
- Clustering software
Manageability Improvement

**HP-UX11i**

- Incorporates high levels of support for Internet enterprise, mission-critical, and technical computing.
- When layered with middleware gives customers the ability to update server functionality over time.
- Binary compatibility to ensure application longevity.
“Clearly reflecting hp’s increased investment in its Unix product line, hp-ux moves to the head of the class for UNIX operating systems functions. hp-ux occupies the top spot in every studied category, with a particularly strong lead in internet and web application services, and an impressive surge forward in the intensely competitive RAS category.”
Manageability Improvement

Systems Management Software

- Workload Manager (WLM)--reassigns workloads between partitions
- Process Resource Manager (PRM)--allocates resources to different tasks
Manageability Improvement

**Clustering Software**

- MC/Serviceguard
  - high availability clustering software
  - Preconfigured for minimal setup and installation time
HP Manageability Solutions

Integrated Service Management

- Provision
- Monitor
- Deploy

hp OpenView
network, systems, application and storage management

Utility Controller Software

- ProLiant Essentials workload mgmt pack
- Process Resource Manager
- Insight Manager 7/6 lights-out transition
- hp toptools transition
- ProLiant Essentials rapid deployment pack
- hp-ux workload manager & process resource manager
- hp service control manager
- hp ignite-ux and software distributor-ux
- hp-ux 11i

Integration
How to Start a TCO Management Program

Gartner Group TCO Lifecycle

TCO Management
- Implement on a continuous basis
- Repeat every 6-9 months
- Measure trends and validate processes

TCO Analysis
- Asset survey
- Industry average cost analysis
- Cost & qualitative surveys
- Actual cost analysis and comparison

TCO Improvement
- Select technology and practices improvements
- Model ROI and value
- Select best alternative
Conclusions

• Managing TCO requires understanding the costs associated with an IT infrastructure
• Improvements in hardware and software components can lead to substantial reductions in TCO
• Because of their versatility, midrange solutions offer compelling ways to reduce all components of TCO
• Controlling TCO is a continual process
Questions?