

# Building a Better Infrastructure With IBM Middleware on System p

IT Accounting in a Virtualized  
Environment

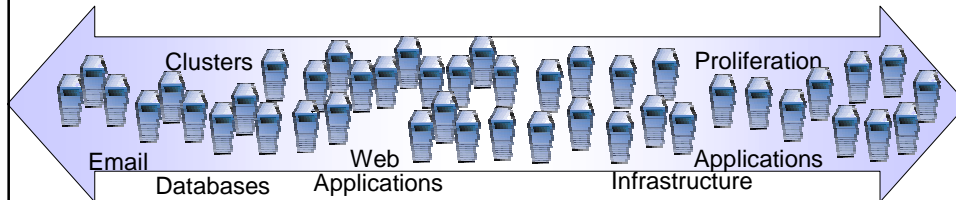
## IT Accounting in a Virtualized Environment

Now that we have consolidated,  
how do I account for multiple  
clients sharing the same system?



**Service Oriented Finance**  
**CIO**

## Accounting for Sprawling Dedicated Servers



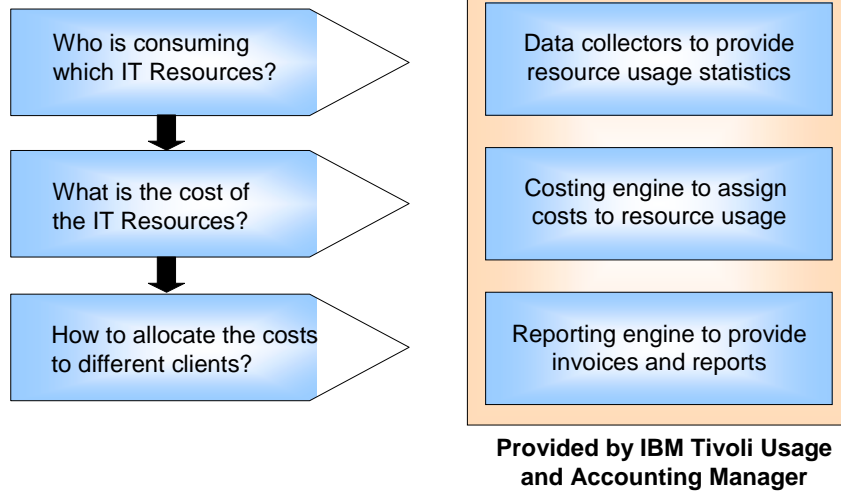
- Accounting is simplistic
  - ▶ One application = one server = one client that pays
- Systems are underutilized
  - ▶ Additional costs for hardware and software
  - ▶ More systems to administer and maintain
  - ▶ Increased costs for real estate, power and cooling

## Accounting in a Virtualized Environment



- Higher utilization of systems, storage and network but the challenges are:
  - ▶ How to allocate costs fairly?
  - ▶ How to prove that the resources were used?
- **Need actual usage data for accurate accounting!**

## The Client Who Uses the Resources Should Pay the Allocated Costs



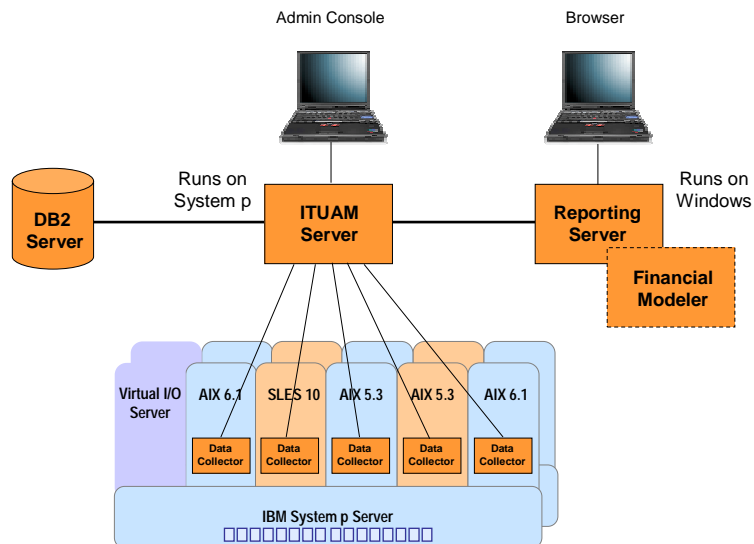
## IBM Tivoli Usage and Accounting Manager

- Resource usage data collectors
  - ▶ Collectors are available for operating systems, middleware and applications
  - ▶ Uses native utilities to collect and forward usage information
- Costing engine
  - ▶ Assigns cost equal to usage X calculated rate
- Reporting engine
  - ▶ Creates invoices and reports

# IBM Has a Comprehensive Set of Collectors

Collectors for ITUAM			
ITUAM Base Collector Pack	<ul style="list-style-type: none"> <li>Windows Server</li> <li>Linux</li> <li>AIX</li> <li>Solaris</li> <li>HP-UX</li> </ul>	<ul style="list-style-type: none"> <li>RedHat</li> <li>SuSE</li> <li>i5/OS</li> <li>z/VM</li> </ul>	<ul style="list-style-type: none"> <li>VMware</li> <li>Citrix</li> <li>Storage</li> <li>AIX Advanced Accounting</li> <li>Virtual I/O Server</li> </ul>
TDS for z/OS Base	<ul style="list-style-type: none"> <li>Mainframe</li> <li>Storage</li> </ul>	<ul style="list-style-type: none"> <li>CICS</li> <li>Print</li> </ul>	<ul style="list-style-type: none"> <li>DB2</li> </ul>
ITUAM Enterprise Collector Pack	<ul style="list-style-type: none"> <li>SAP</li> <li>WebSphere</li> <li>DB2</li> <li>Lotus Notes</li> <li>Cisco Netflow</li> <li>Proxy Servers</li> </ul>	<ul style="list-style-type: none"> <li>Tivoli Storage Manager</li> <li>Apache</li> <li>Oracle</li> <li>Microsoft Exchange</li> <li>Print</li> <li>Veritas Netbackup</li> </ul>	<ul style="list-style-type: none"> <li>TPC for Data</li> <li>IIS</li> <li>SQL Server</li> <li>Sendmail</li> <li>File Transfer</li> <li>Sybase (Windows)</li> </ul>
ITUAM Service Offering Extensions	<ul style="list-style-type: none"> <li>ERP Systems</li> <li>Network</li> <li>External Services</li> <li>Internet/Telecom</li> </ul>	<ul style="list-style-type: none"> <li>other Databases</li> <li>Human Resources</li> <li>Operating Systems</li> </ul>	<ul style="list-style-type: none"> <li>3<sup>rd</sup> Party Systems</li> <li>Output Devices</li> <li>Storage Sub-systems</li> </ul>

# IBM Tivoli Usage and Accounting Manager



## Model for Cost Accounting in a Virtualized Environment

- Identify data center monthly costs (fixed and variable) in budget categories
- For each budget category:
  1. Measure usage of resources by each client
  2. Calculate a rate such that  
**rate = monthly cost / total usage**
  3. Assign cost to each client  
**assigned cost = client usage X rate**
- Create an invoice by totaling assigned costs for each budget category

## Categorize Costs using the WebSphere Consolidation Scenario

### System p One Time Charge

Server Acquisition	\$ 725,582
Connectivity Acquisition	\$ 38,322
Disk Acquisition	\$ 98,719
Software Licenses	\$ 80,699
Migration Cost	\$ 336,993
<b>Total OTC (Cost of migration)</b>	<b>\$ 1,280,314</b>

### System p Annual Cost

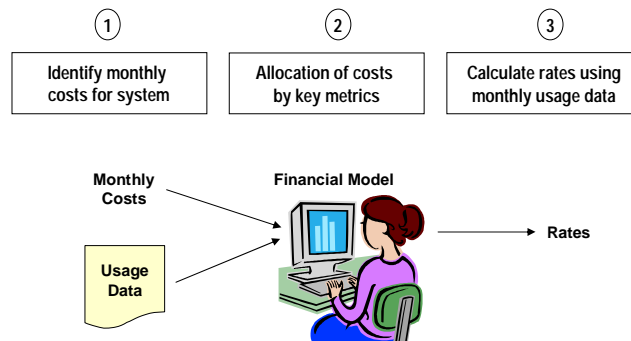
	Year 1	Year 2+
Power and Cooling	\$ 4,214	\$ 4,214
Space	\$ 1,125	\$ 1,125
Annual Server Maintenance	\$ 33,564	\$ 33,564
Annual Connectivity Maintenance	\$ 1,533	\$ 1,533
Annual Disk Storage Maintenance	\$ 3,949	\$ 3,949
Annual Software Support	\$ 1,499	\$ 17,339
Annual Enterprise Network	\$ 13,824	\$ 13,824
Annual System Administration	\$ 82,889	\$ 82,889
<b>Total Annual Costs</b>	<b>\$ 142,596</b>	<b>\$ 158,436</b>

Acquisition Charges	Annual Costs
Server	\$ 145,116
Network	\$ 7,664
Storage	\$ 19,744
Software	\$ 16,140
Services	\$ 67,399
<b>Environmentals</b>	
Power	\$ 4,214
Space	\$ 1,125
<b>Maintenance</b>	
Server	\$ 33,564
Network <sup>1</sup>	\$ 15,357
Storage	\$ 3,949
Software	\$ 1,499
<b>Staff</b>	
Administrators	\$ 82,889

1. Combined Annual Connectivity Maintenance and Annual Ethernet Network Charges

## DEMO: ITUAM Financial Modeler Example

Use the "Financial Modeler" tool to calculate the rates required to recover the monthly costs

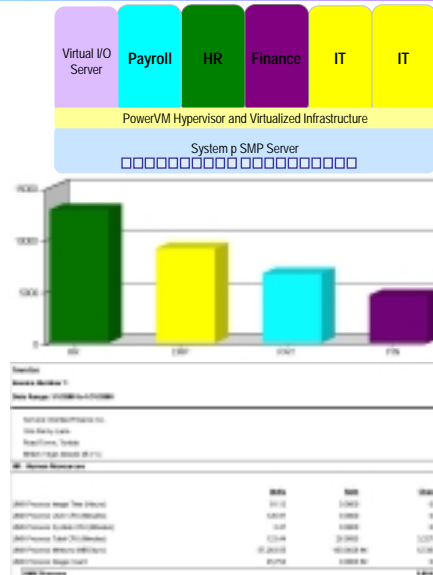


## ITUAM Reporting Server

- View invoices online
  - ▶ Drill down for additional detail without assistance
- A wide range of reports are provided standard with the product
  - ▶ Custom reports can easily be created for specific needs
- Export reports to a file
  - ▶ Spreadsheets, pdf files, email
- Publish reports to the web
  - ▶ Report format, spreadsheet, pdf files

## DEMO: ITUAM Reporting Server Example

- The demonstration system is shared by multiple clients
- The usage report shows how the costs are distributed for the month
- Each invoice shows a breakdown of charges for the month
- The drill-down capability shows specific resource consumption for the month



08 - IT Accounting in a Virtualized Environment 2008 v1.7

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## IT Resource and Usage Accounting Benefits

- Supports Virtualized Environments
  - ▶ Identify costs and usage trends in large shared environments
- Increased Client (Business Unit) Satisfaction
  - ▶ Real usage = accurate billing
  - ▶ Accountability = improved services
  - ▶ Alignment between business and IT costs
- Continued Infrastructure Improvement
  - ▶ Understanding costs can lead to managing costs
  - ▶ Usage comparisons can lead to more effective investments

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## ITUAM Customer Examples

- Healthcare Insurer
  - ▶ System z – CICS, DB2, Batch and TSO. Normalization between 2 systems. Rolling out UNIX and Windows. 168 UNIX and 300 Windows servers.
  - ▶ Replaced 2 homegrown systems after merger. Corporate finance is the user and owner of the system. Wanted federated auditability. ITUAM only product to meet all RFP requirements
- Insurance and Financial Products Broker
  - ▶ System z, Unix, Novell and Windows. Primavera importing for labor accounting. Including inventory information, Storage Area Network (SAN) and telecom costs.
  - ▶ Memo billing now and will move to chargeback in the future
- Aerospace Manufacturer
  - ▶ Both System z and distributed systems. Billing \$18-20M per month across 5,000 cost centers. 40K pieces of hardware. Including labor, telecom and project costs. Feeding SAP GL and using web reporting.
  - ▶ Replaced RYO system
- State Government
  - ▶ System z, telecom, UNIX, Windows, labor. Oracle, SQL Server, & Exchange
  - ▶ Wanted to replace multiple billing systems with a single integrated system and meet government audit requirements

## Summary

**Track resource usage and the associated costs in a Virtualized Environment with the IBM Tivoli Usage and Accounting Manager.**



**IBM**



