Building a Better Infrastructure With IBM Middleware on IBM Power Systems

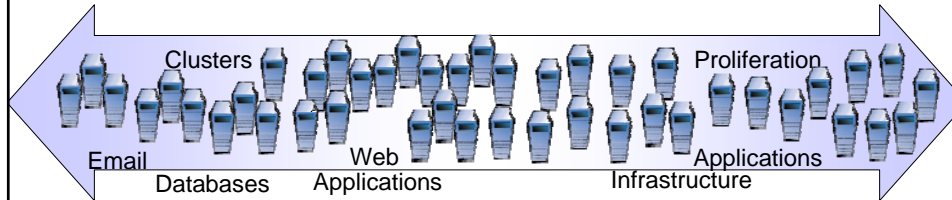## IT Accounting in a Virtualized Environment

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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

Clusters   Proliferation

Email   Web   Applications
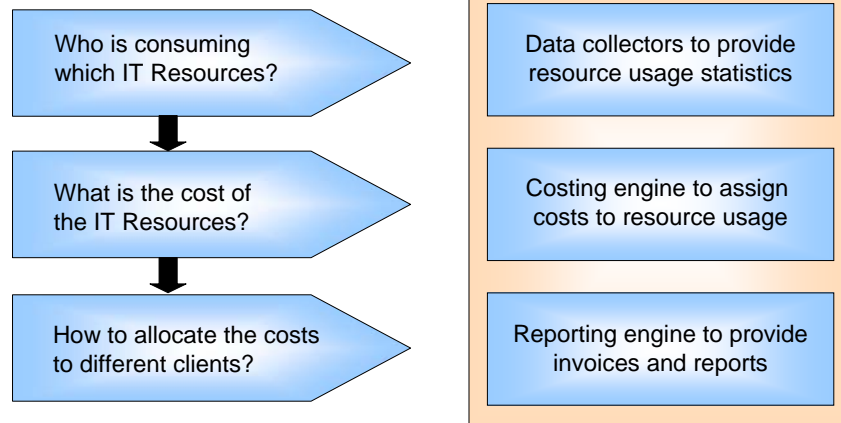   Databases   Applications   Infrastructure

- 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

Who is consuming
which IT Resources?

What is the cost of
the IT Resources?

How to allocate the costs
to different clients?

Data collectors to provide
resource usage statistics

Costing engine to assign
costs to resource usage

Reporting engine to provide
invoices and reports

**Provided by IBM Tivoli Usage
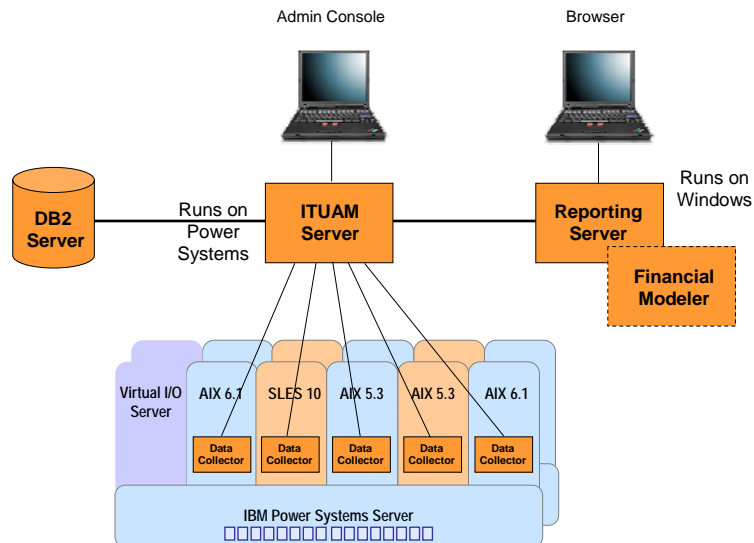and Accounting Manager**

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	• Windows Server • Linux • AIX • Solaris • HP-UX	• RedHat • SuSE • IBM i • z/VM	• VMware • Citrix • Storage • AIX Advanced Accounting • Virtual I/O Server
TDS for z/OS Base	• Mainframe • Storage	• CICS • Print	• DB2
ITUAM Enterprise Collector Pack	• SAP • WebSphere • DB2 • Lotus Notes • Cisco Netflow • Proxy Servers	• Tivoli Storage Manager • Apache • Oracle • Microsoft Exchange • Print • Veritas Netbackup	• TPC for Data • IIS • SQL Server • Sendmail • File Transfer • Sybase (Windows)
ITUAM Service Offering Extensions	• ERP Systems • Network • External Services • Internet/Telecom	• other Databases • Human Resources • Operating Systems	• 3rd Party Systems • Output Devices • Storage Sub-systems

IBM Tivoli Usage and Accounting Manager

Admin Console   Browser

Runs on Windows

DB2 Server

Runs on Power Systems

ITUAM Server

Reporting Server

Financial Modeler

Virtual I/O Server   AIX 6.1   SLES 10   AIX 5.3   AIX 5.3   AIX 6.1

Data Collector   Data Collector   Data Collector   Data Collector   Data Collector

IBM Power Systems Server

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

Power Systems One Time Charge

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

Power Systems 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**	$ 82,899
Total Annual Costs	$ 142,596	$ 158,436

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

Purchase Costs Recovered over 5 Years

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

(1)	(2)	(3)
Identify monthly costs for system	Allocation of costs by key metrics	Calculate rates using monthly usage data

Monthly Costs

Financial Model

Usage Data

→ **Rates**
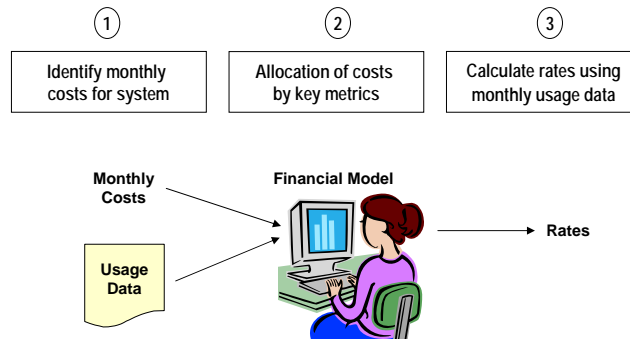
ITUAM Reporting Server

- 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

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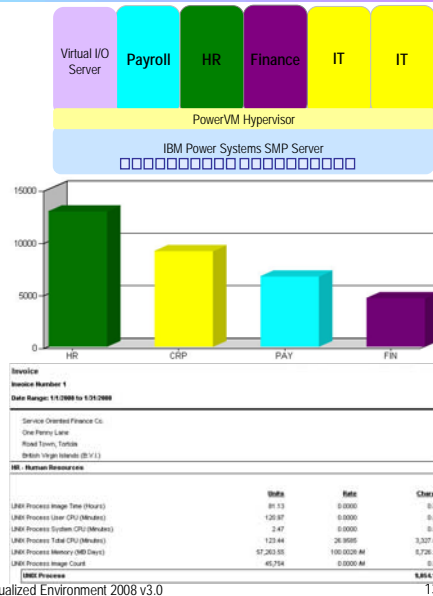
IT Resource and Usage Accounting Benefits

- 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

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 auditabilty. 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