



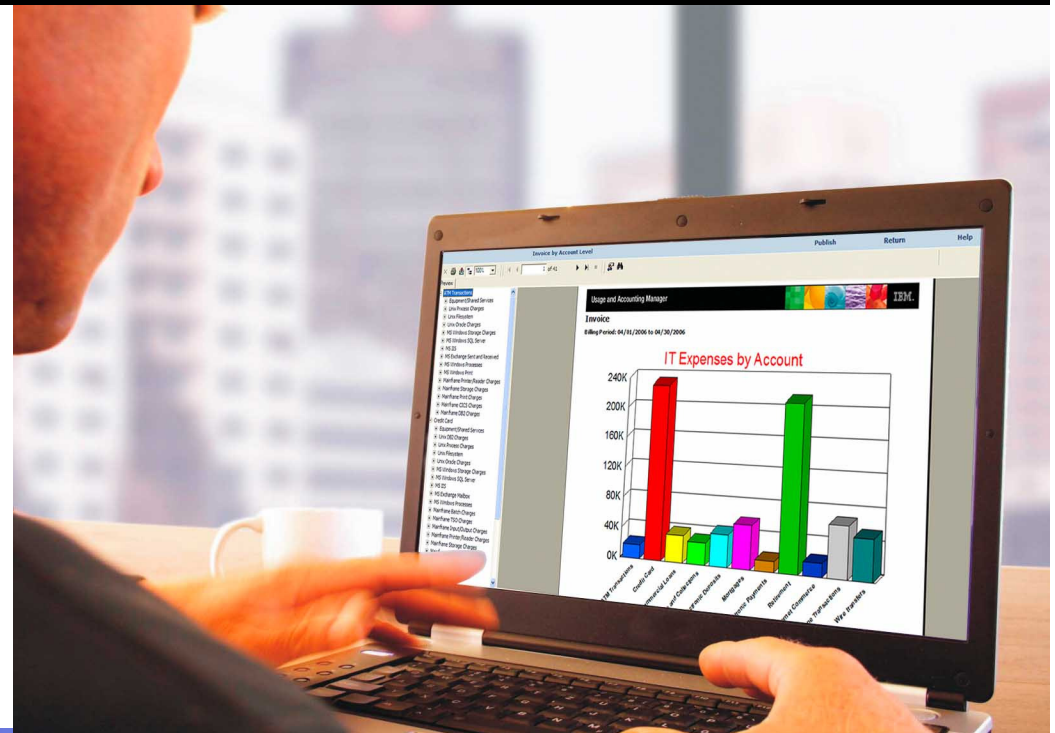
IBM Tivoli Usage and Accounting Manager

Know what IT costs!

Usage Based Accounting &
IT Financial Management

Aligning IT Costs
March 25, 2009

Mark Lynch
mark.lynch@us.ibm.com



an IBM Service Management Solution

IBM Software

© 2009 IBM Corporation

What is Usage & Accounting Manager?

- A cross-platform software system that determines the cost of providing information services.
- Helps manage IT costs by appropriating costs to an organization's products, services and business functions
- The ITUAM software system measures, analyzes, reports and bills the utilization and costs of different computing resources – including servers, storage, networks, databases, virtualized environments, messaging and many other shared services.

Enabling Innovation with IBM Service Management

Business Objectives

Growth & Competitive Edge

Compliance & Risk Management

Optimize Investments

IBM Service Management

Provides the integrated visibility, control & automation across the service lifecycle that are needed to innovate and achieve business objectives.

Visibility

Control

Automation

Streamline Processes

Improve Return on Expense

Increase Agility & Edge

Deliver Service Assurance

Improve Customer Value

Business Services & Assets

Minimize Business Risk

IBM Service Management & Tivoli Usage and Accounting Manager

■ **It's All About Visibility with TUAM!**

- ▶ TUAM tells you who's using the IT resources
- ▶ This is key in today's shared distributed and virtualized environments
- ▶ TUAM tells you the cost of providing the shared IT service
- ▶ How much does it cost to support:
 - Banks: Commercial Loans, Credit Card, ATM
 - Insurance: Claims, Policies, Statements
 - Government: Agencies, Departments, Projects

■ **What actions do we take?**

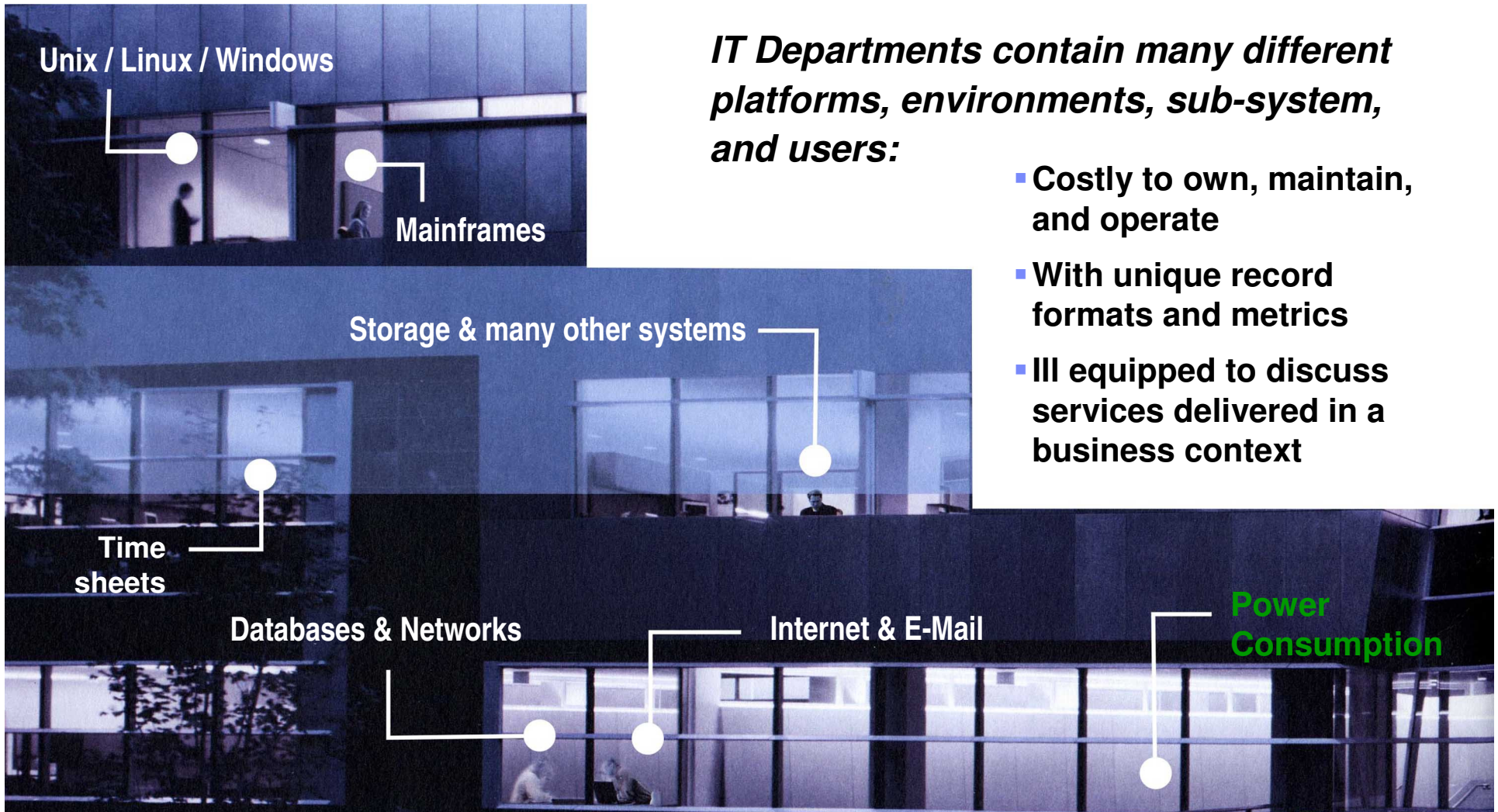
- ▶ TUAM's information above may lead to further investment in certain applications or a reduction based on the application's contribution to the business.

What problem does it help solve?

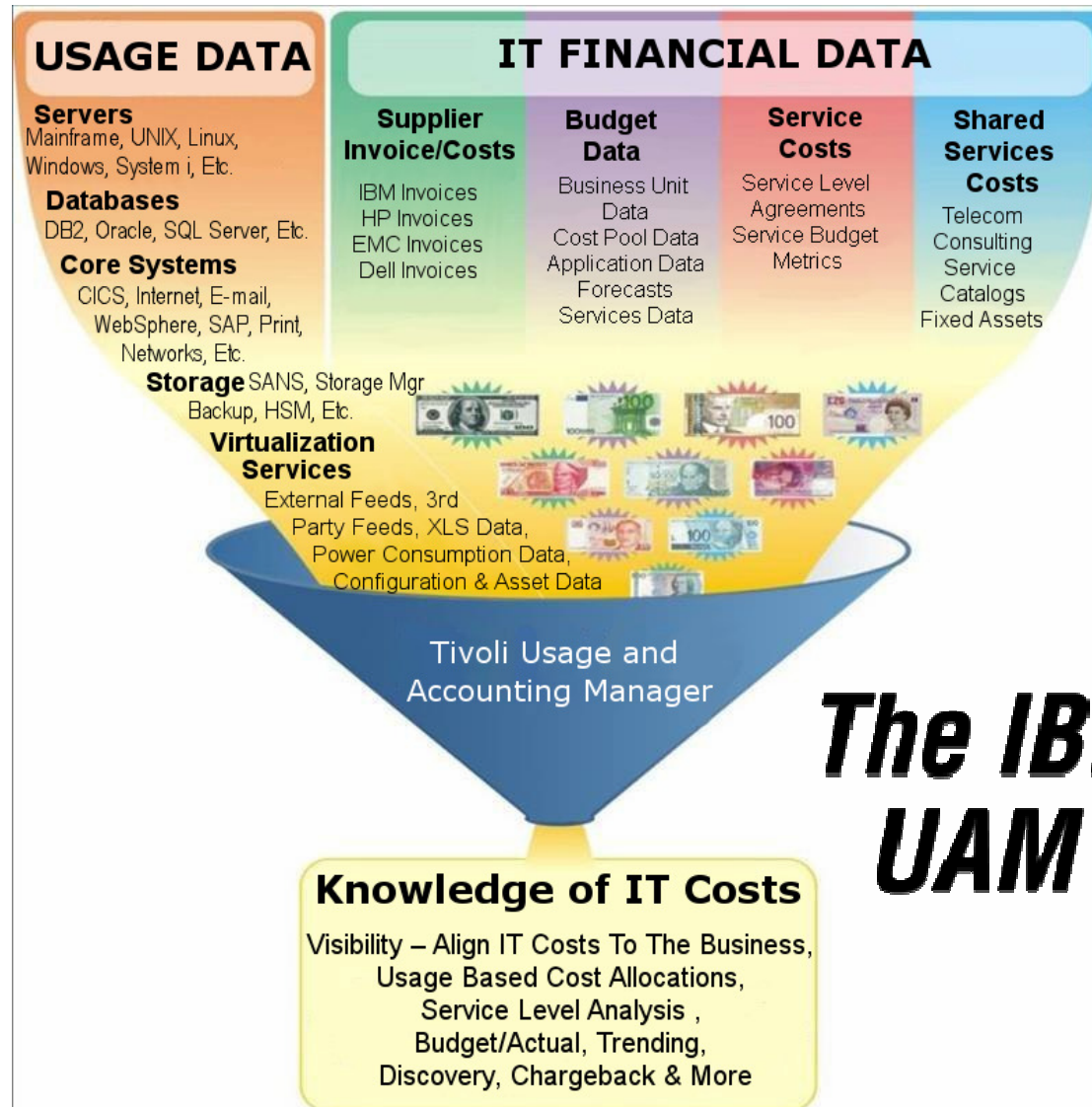
Inability to allocate IT costs, usage, and value

IT Departments contain many different platforms, environments, sub-system, and users:

- Costly to own, maintain, and operate
- With unique record formats and metrics
- Ill equipped to discuss services delivered in a business context



Know what IT costs!



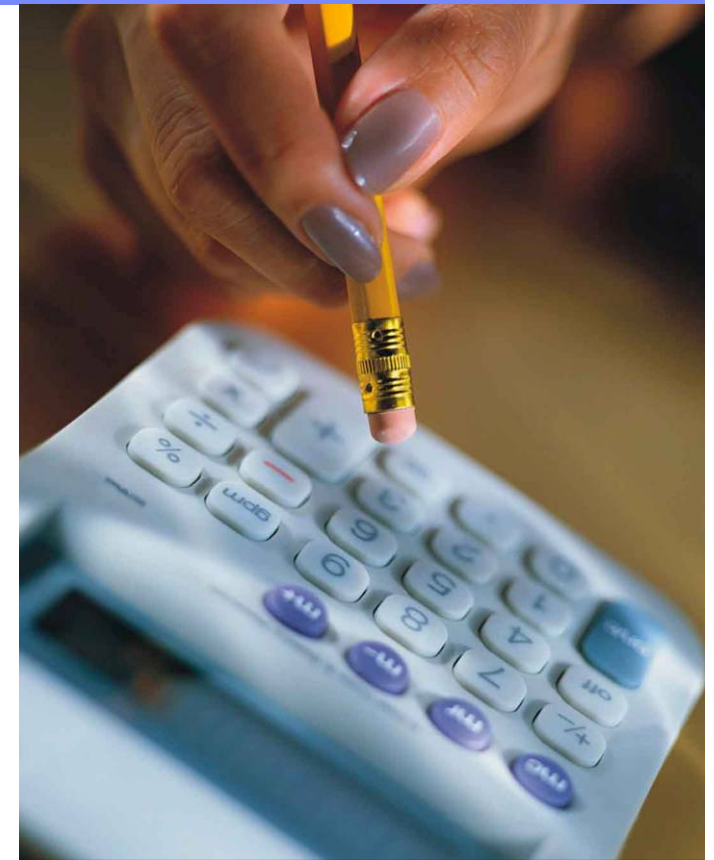
The IBM Tivoli UAM funnel

Usage and accounting capabilities can help realize immediate benefits

- **Increase Client (Business Units) Satisfaction**
 - ▶ Real Usage = Accurate Billing
 - ▶ Accountability = Improved services
 - ▶ Alignment between Business and IT costs

- **Lower Infrastructure Cost**
 - ▶ Reduced server sprawl
 - ▶ Higher utilization
 - ▶ Rationalization of resources

- **Continued Infrastructure Improvement**
 - ▶ Understanding costs can lead to managing costs
 - ▶ Usage comparisons can lead to more effective investments



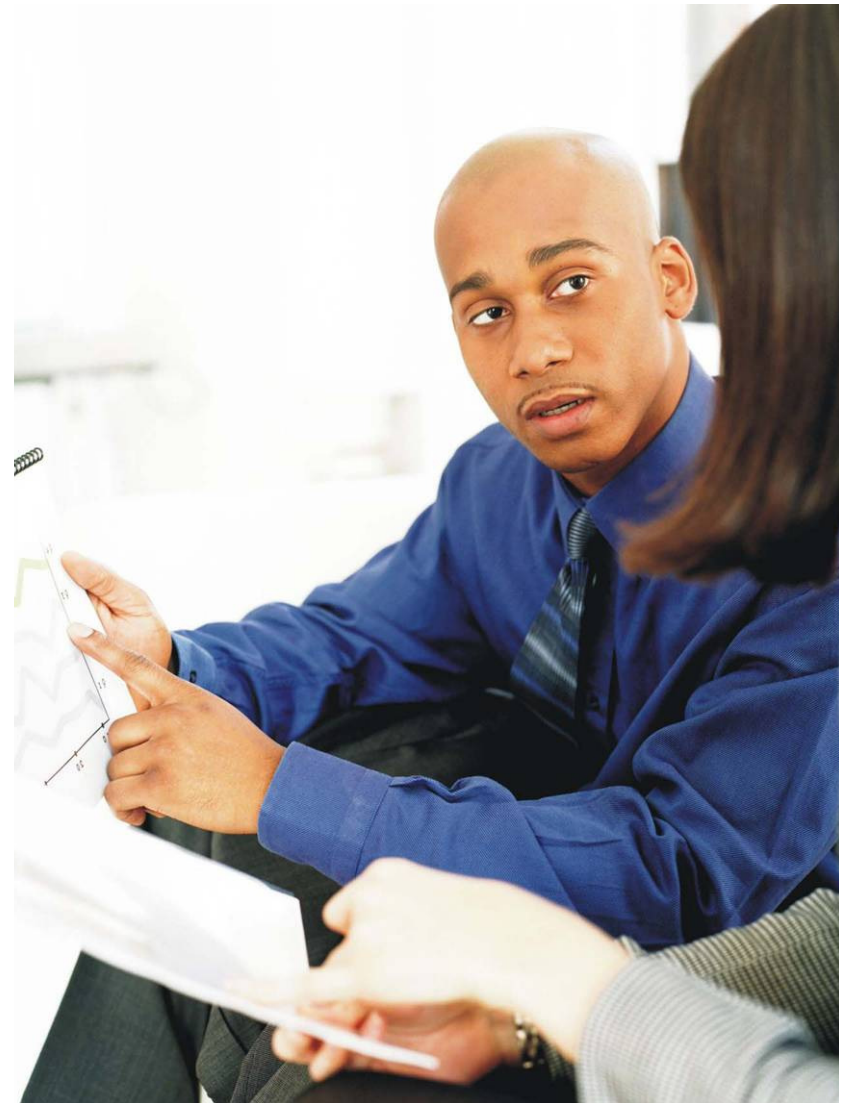
**When running a business,
nothing matters more
than knowing how much
something costs.**

***You can't manage what
you don't measure!***

Objectives of an IT usage and accounting management system . . .

- **Allocate/Distribute or Charge IT Costs to the Users, Cost Centers, Applications and other organizations that consumed them in a . . .**
 - ▶ **Fair**
 - ▶ **Understandable**
 - ▶ **Auditable/Reproducible, and**
 - ▶ **Easy to administer manner**

- **Optimize IT costs through . . .**
 - ▶ **Costs trend identification**
 - ▶ **Real time analysis**



ViewReport - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://knowitcosts.dfw.ibm.com/CIMSRReporting/ViewReport.aspx?AccountCodeStructure=4%2c20%2c36%2c56&InvoiceLevel=1&AccountCodeStart=++++&AccountCodeEnd=zzzz&AccountStart=1&AccountLength=4&DateStart=

Invoice by Account Level - Graph Publish Return Help

1 of 12 100% Find | Next Select a format Export

Document Map x

- Invoice by Account Level
 - Invoice by Account Level
 - ATM - ATM Transactions
 - CCX - Credit Card
 - COM - Commercial Loans
 - DAC - Drafts and Collections
 - DEP - Electronic Deposits
 - MTG - Mortgages
 - ONE - Online Electronic Payments
 - RTM - Retirement
 - SSI - Secure Sales - Internet Commerce
 - TEL - Telephone Transactions
 - WTX - Wire transfers
 - All Unassigned Rate Codes
 - UNIX Process Charges
 - UNIX Filesystem
 - UNIX Oracle Charges
 - MS Windows Storage Charges
 - MS Windows SQL Server
 - MS IIS
 - MS Exchange Sent and Received
 - MS Windows Processes
 - Mainframe Batch Charges
 - Mainframe TSO Charges
 - Mainframe Input/Output Charges
 - Mainframe Printer/Reader Charges
 - Mainframe Storage Charges
 - Mainframe Print Charges
 - Mainframe DB2 Charges

Usage and Accounting Manager

Invoice
 Invoice No. 0
 Billing Period: 07/01/2007 to 07/31/2007

IT Expenses by Account

Accounts	Charges
ATM	4,071.10
CCX	19,417.76
COM	32,656.40
DAC	6,476.69
DEP	7,796.37
MTG	11,894.75
ONE	12,886.90
RTM	18,179.43
SSI	17,746.45
TEL	
WTX	

Internet

ViewReport - Microsoft Internet Explorer

Address: http://knowitcosts.dfw.ibm.com/CIMSReporting/ViewReport.aspx?AccountCodeStructure=4%2c20%2c36%2c56&InvoiceLevel=1&AccountCodeStart=++++&AccountCodeEnd=zzzz&AccountStart=1&AccountLength=4&DateStart=

Invoice by Account Level Publish Return Help

Document Map 1 of 11 100% Find | Next Select a format Export

Document Map

- [-] rinvc007
 - [-] Invoice by Account Level
 - [-] ATM - ATM Transactions
 - [-] All Unassigned Rate Codes
 - [-] Equipment/Shared Services
 - [-] UNIX Process Charges
 - [-] UNIX Filesystem
 - [-] UNIX Oracle Charges
 - [-] MS Windows Storage Charges
 - [-] MS Windows SQL Server
 - [-] MS IIS
 - [-] MS Exchange Sent and Received
 - [-] MS Windows Processes
 - [-] Mainframe Printer/Reader Charges
 - [-] Mainframe Storage Charges
 - [-] Mainframe Print Charges
 - [-] Mainframe CICS Charges
 - [-] Mainframe DB2 Charges
 - [-] VMware
 - [-] CCX - Credit Card
 - [-] COM - Commercial Loans
 - [-] DAC - Drafts and Collections
 - [-] DEP - Electronic Deposits
 - [-] MTG - Mortgages
 - [-] ONE - Online Electronic Payments
 - [-] RTM - Retirement
 - [-] SSI - Secure Sales - Internet Commerce
 - [-] TEL - Telephone Transactions
 - [-] WTX - Wire transfers

Usage and Accounting Manager

Invoice

Invoice No. 0
Billing Period: 07/01/2007 to 07/31/2007

Big Time Company
Any town, USA

ATM - ATM Transactions

	Units	Rate	Charge
Real Tape Stored - Actual	6,150.00	.0000	0.00
All Unassigned Rate Codes			0.00
Blackberries	2	85.0000	170.00
Desktops	8	49.0000	392.00
Laptops	6	45.0000	270.00
Pagers	1	28.0000	28.00
Equipment/Shared Services			860.00
UNIX Process Character I/O (100,000s)	112,774	.0020 /M	0.27
UNIX Process Image Time (Hours)	991.40	.0000	0.00
UNIX Process User CPU (Minutes)	116.37	.0100	1.18
UNIX Process System CPU (Minutes)	33.16	.0180	0.57
UNIX Process Total CPU (Minutes)	149.53	.0300	4.47
UNIX Process Memory (MB Days)	307,089.27	.0006 /M	0.25
UNIX Process Image Count	20,860	.0200 /M	0.38
UNIX Process SU Image Count	51	.0700 /M	0.00
UNIX Process Charges			7.12
UNIX Filesystem Size (512-Byte Blocks)	1,863,896,148.00	.0005 /M	931.92
UNIX Filesystem Blocks Used (512-Byte Blocks)	1,001,448,830.00	.0010 /M	1,001.70
UNIX Filesystem Number of Files	5,973,621	.0000	0.00
UNIX Filesystem Size (GB Days)	889	.0000	0.00
UNIX Filesystem Used (GB Days)	478	.0000	0.00
UNIX Filesystem			1,933.62
UNIX Oracle Blocks	343,892.00	.0000	0.00
UNIX Oracle Mbytes	2,686.67	.0001	0.27

Usage and Accounting Manager



ITUAM Reporting

Please select parameters for Reports.

Identifier :

Date Drilldown :

Usage and Accounting Manager 

Invoice Detail

UNIX Process for ATM by PROCESSNAME
Billing Period: 07/01/2007 to 07/31/2007

PROCESSNAME	132 - UNIX Process Character I/O (100,000s)	133 - UNIX Process Image Time (Hours)	134 - UNIX Process User CPU (Minutes)	135 - UNIX Process System CPU (Minutes)	136 - UNIX Process Total CPU (Minutes)	137 - UNIX Process Memory (MB Days)
bellmail		3				1.4
df						
httpd			130.36			1.9
id						.2
ksh		3	.13	.00	.00	.4
ls						
odmget		4		.01	.01	32.2
oracle	106,065	860.89	116.22	32.53	148.76	304,775.2
procstac	6,551		.14	.57	.71	2,083.0
pwd	139			.04	.04	53.2
sqlplus	8	.02	.00	.00	.01	2.6
tnslsnr						138.9
uname						.2
Total	112,774	991.40	116.37	33.16	149.53	307,089.2

/ITUAMREPORTS/STANDARD/iinxc001 Run On: 8/17/2007 12:56:33 PM

ViewReport - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://knowitcosts.dfw.ibm.com/CIMSReporting/ViewReport.aspx?AccountCodeStructure=4%2c20%2c36%2c56&InvoiceLevel=1&AccountCodeStart=++++&AccountCodeEnd=zzzz&AccountStart=1&AccountLength=4&DateStart=

Invoice by Account Level - Graph

Publish Return Help

12 of 12 100% Find | Next Select a format Export

Document Map

- [-] rinvg007
 - [-] Invoice by Account Level
 - [-] ATM - ATM Transactions
 - [-] CCX - Credit Card
 - [-] COM - Commercial Loans
 - [-] DAC - Drafts and Collections
 - [-] DEP - Electronic Deposits
 - [-] MTG - Mortgages
 - [-] ONE - Online Electronic Payments
 - [-] RTM - Retirement
 - [-] SSI - Secure Sales - Internet Commerce
 - [-] TEL - Telephone Transactions
 - [-] **WTX - Wire transfers**
 - [-] All Unassigned Rate Codes
 - [-] UNIX Process Charges
 - [-] UNIX Filesystem
 - [-] UNIX Oracle Charges
 - [-] MS Windows Storage Charges
 - [-] MS Windows SQL Server
 - [-] MS IIS
 - [-] MS Exchange Sent and Received
 - [-] MS Windows Processes
 - [-] Mainframe Batch Charges
 - [-] Mainframe TSO Charges
 - [-] Mainframe Input/Output Charges
 - [-] Mainframe Printer/Reader Charges
 - [-] Mainframe Storage Charges
 - [-] Mainframe Print Charges
 - [-] Mainframe DB2 Charges

IIS Web Redirection Protocol Status 3xx	6,825	.0002	1.30
IIS Web Client Error Protocol Status 4xx	10,611	.00004000	0.43
IIS Web Server Error Protocol Status 5xx	20	.0005	0.00
IIS Web Bytes Sent	1,357,118,413	.0010 /M	1,357.16
IIS Web Time Taken (Milliseconds)	29,422,811	.0000	0.00
MS IIS			1,372.80
MS Exchange Bytes Received	30,921,800	.0015 /M	46.40
MS Exchange Bytes Sent	659,927	.0001 /M	0.07
MS Exchange Emails Received	535	.0003 /M	0.00
MS Exchange Emails Sent	36	.0010 /M	0.00
MS Exchange Sent and Received			46.47
MS Windows CPU Time in Seconds	5,649.12	.0750	423.67
MS Windows User CPU Time in Seconds	1,486.70	.2000	297.31
MS Windows Elapsed Time in Seconds	23,691,164.48	.0000	0.00
MS Windows KB Written	933,997.00	.00032000 /M	0.35
MS Windows KB Read	3,194,119.00	.00075000 /M	2.37
MS Windows Kernel CPU Time in Seconds	4,162.42	.1500	624.34
MS Windows Read Requests	4,578,278	.0030 /M	13.78
MS Windows Write Requests	503,340	.00075000 /M	0.31
MS Windows Page Fault Count	31,595,789.00	.0000	0.00
MS Windows Processes			1,362.13
Mainframe Jobs Started	773	2.0000	1,546.00
Mainframe Steps Started	3,329	.2000	665.80
Mainframe CPU Minutes	88.03	10.0000	880.33
Mainframe CPU Minutes (Initiator)	21.11	.0000	0.00
Mainframe CPU Minutes (All)	111.62	.0000	0.00
Mainframe Batch Charges			3,092.13
Mainframe TSO CPU Minutes	29.44	25.0000	736.07
Mainframe TSO Inputs	29,125	2.0000 /M	58.27
Mainframe TSO Outputs	32,650	1.0000 /M	32.67
Mainframe TSO CPU Minutes (Initiator)	4.94	.0000	0.00
Mainframe TSO CPU Minutes (All)	35.85	.0000	0.00
Mainframe TSO Connect Minutes	9,168.32	.0250	229.21
Mainframe TSO Charges			1,056.22

Done Internet

Usage and Accounting Manager



ITUAM Reporting

Please select parameters for Reports.

Identifier : System_ID

Date Drilldown :

- Stop Date
- JOB_CLASS
- JOB_PRIORITY
- System_ID
- Work ID
- Job Name**
- Shift
- Start Date
- Account Code

Cancel

- Document Map
- linxc001
 - CIMS02
 - CIMS02RW
 - CIMS03
 - CIMS03AH
 - CIMS03AL
 - CIMS03FT
 - CIMS03GL
 - CIMS03GN
 - CIMS03GR
 - CIMS03IM
 - CIMS03IP
 - CIMS03MQ
 - CIMS03PR
 - CIMS03XX
 - CIMS04
 - CIMS041N
 - CIMS06
 - CIMS0601
 - CIMS0602
 - CIMS0691
 - CIMS06A1
 - CIMS06AB
 - CIMS06AH
 - CIMS06AL
 - CIMS06AP
 - CIMS06B1
 - CIMS06C0
 - CIMS06CA
 - CIMS06CC
 - CIMS06CL
 - CIMS06CR
 - CIMS06DB
 - CIMS06DD
 - CIMS06DS
 - CIMS06DT

Usage and Accounting Manager



Invoice Detail
 Mainframe Batch for WTX by Job Name
 Billing Period: 07/01/2007 to 07/31/2007

Job Name	183 - Mainframe Jobs Started	184 - Mainframe Steps Started	185 - Mainframe CPU Minutes	186 - Mainframe CPU Minutes (Initiator)	187 - Mainframe CPU Minutes (All)
CIMS02	4	4			
CIMS02RW	18	18	.38	.08	.47
CIMS03	19	19			
CIMS03AH	4	4	.17	.02	.20
CIMS03AL	56	61	1.68	.36	2.08
CIMS03FT	2	2	.03	.01	.04
CIMS03GL	2	2	.06	.01	.08
CIMS03GN	1	2	.01	.01	.02
CIMS03GR	13	23	.45	.10	.57
CIMS03IM	7	16	.32	.08	.41
CIMS03IP	12	12	.09	.07	.16
CIMS03MQ	4	4	.02	.02	.04
CIMS03PR	3	3	.01	.01	.02
CIMS03XX	3	5	.05	.03	.08
CIMS04	18	18			
CIMS041N	2	2	.01	.03	.04
CIMS06	42	42			
CIMS0601	74	232	2.47	1.23	3.79
CIMS0602	7	14	.08	.12	.20
CIMS0691	22	44	2.28	.84	3.31
CIMS06A1	2	6	.00	.05	.05
CIMS06AB	1	17	.07	.05	.12

Document Map								
	CIMS06RN	1	1	.00	.00	.00		
	CIMS06RP	4	7	.41	.03	.45		
	CIMS06RU	3	3	.04	.02	.07		
	CIMS06TA	4	32	.29	.15	.45		
	CIMS06TM	4	15	.29	.09	.38		
	CIMS06UR	4	14	.11	.07	.19		
	CIMS06UT	8	16	.08	.09	.17		
	CIMS06UX	3	3	.03	.02	.06		
	CIMS06VL	5	5	.03	.03	.06		
	CIMS06Z	1	1	.00	.00	.00		
	CIMS06Z1	5	9	.58	.02	.63		
	CIMS08	3	3					
	CIMS0800	5	9	.15	.10	.25		
	CIMS10	43	43					
	CIMS10A0	1	1	.00	.00	.00		
	CIMS10A1	1	13	.17	.12	.30		
	CIMS10A2	1	3	.02	.02	.04		
	CIMS10A3	7	43	.41	.32	.74		
	CIMS10A4	7	14	.11	.11	.23		
	CIMS10A5	2	4	.05	.03	.09		
	CIMS10A6	1	2	.02	.02	.03		
	CIMS10AL	9	13	.26	.05	.32		
	CIMS10B1	1	3	.15	.02	.17		
	CIMS10C1	1	3	.24	.01	.25		
	CIMS10C2	1	15	.31	.15	.47		
	CIMS10C3	1	4	.04	.05	.09		
	CIMS10CP	3	5	.31	.03	.34		
	CIMS10UN	8	21	.14	.21	.36		
	CIMS10XX	112	236	2.18	1.62	3.89		
	CIMSSMFD	31	682	30.90	7.68	39.60		
	Total	773	3,329	88.03	21.11	111.62		

Usage and Accounting Manager

Application View

Application	Charges
ATM - ATM Transactions	18,851.48
CCX - Credit Card	230,738.81
COM - Commercial Loans	35,078.06
DAC - Drafts and Collections	29,164.41
DEP - Electronic Deposits	41,420.42
MTG - Mortgages	55,540.65
ONE - Online Electronic Payments	13,637.31
RTM - Retirement	212,260.46
SSI - Secure Sales - Internet Commerce	17,449.17
TEL - Telephone Transactions	64,925.96
WTX - Wire transfers	51,639.48
Total	770,706.13

Application View

Application	Resource Group	Charges
COM - Commercial Loans	COM Database	8,306.59
	COM Email	2,318.80
	COM Equipment	399.00
	COM Print	0.30
	COM Servers	1,534.31
	COM Storage	22,185.45
	COM Web	333.61
COM - Commercial Loans		35,078.06

Application View

Resource Group	Platform	Charges
COM Database	COM Database Mainframe	3,639.90
	COM Database Unix	1,395.66
	COM Database Windows	3,270.03
COM Database		8,306.59

ITUAM - Microsoft Internet Explorer

Address: http://www.cimserver.com/ActiveXViewer.asp?AccountLength1=4&AccountLength2=20&AccountLength3=36&AccountLength4=56&AccountLength5=0&AccountName1=Application&AccountName2=Resource+Group&AccountName3

Application Cost

Publish Return Help

1 of 1

Preview COM COM Database COM Database Unix

COM Database Unix

- COM Database Unix edc
- COM Database Unix edc
- COM Database Unix edc
- COM Database Unix gar
- COM Database Unix rox

Usage and Accounting Manager

Application View

Platform				Charges
Server				
COM Database	Unix			
COM Database	Unix	eddie		0.00
COM Database	Unix	eddie	EDDIE10	554.96
COM Database	Unix	eddie	EDDIE920	840.70
COM Database	Unix	garheld		0.00
COM Database	Unix	roxie		0.00
COM Database Unix				1,395.66

Unix Oracle Charges: 840.70

COM Database Unix eddie EDDIE920: 840.70

Usage and Accounting Manager

Application View

Rate Group	Units	Charges
Rate		
COM Database Unix eddie EDDIE920		
Unix Oracle Charges		
Unix Oracle Logins	23	0.04
Unix Oracle Session CPU (Minutes)	411.36	40.81
Unix Oracle Connect (Hours)	3,562.49	160.31
Unix Oracle UGA Memory (MB Days)	9,266.99	0.00
Unix Oracle PGA Memory (MB Days)	86,747.06	0.19
Unix Oracle Rec CPU (Minutes)	0.02	0.02
Unix Oracle User Commits	1	0.00
Unix Oracle Physical Reads	273,677	41.04
Unix Oracle Physical Writes	52,944	18.51
Unix Oracle DB Block Gets	8,321,411	416.05
Unix Oracle Messages Sent	327,441	147.36
Unix Oracle Messages Received	327,707	16.37
Unix Oracle Charges		840.70

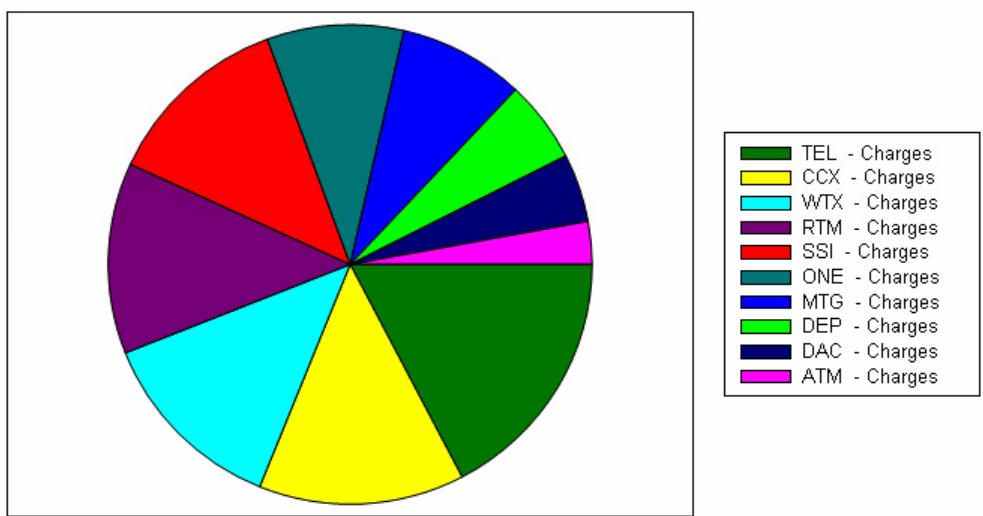


Top 10 Cost Report

Account Range: All Accounts

Date Range: 07/01/2007 to 07/31/2007

Account Charges



Account	Percent	Charges
TEL - Telephone Transactions	17.35 %	24,479.68 Invoice
CCX - Credit Card	13.76 %	19,417.76 Invoice
WTX - Wire transfers	12.88 %	18,182.51 Invoice
RTM - Retirement	12.88 %	18,179.43 Invoice
SSI - Secure Sales - Internet Commerce	12.57 %	17,746.45 Invoice
ONE - Online Electronic Payments	9.13 %	12,886.90 Invoice
MTG - Mortgages	8.43 %	11,894.75 Invoice
DEP - Electronic Deposits	5.52 %	7,796.37 Invoice
DAC - Drafts and Collections	4.59 %	6,476.69 Invoice
ATM - ATM Transactions	2.88 %	4,071.10 Invoice
Run Total		141,131.64

Run Total Rate Group Percent

Publish

Return

Help

- Document Map
- rvtc003
 - All Unassigned Rate Codes
 - Equipment/Shared Services
 - UNIX DB2 Charges
 - UNIX Process Charges
 - UNIX Filesystem
 - UNIX Oracle Charges
 - MS Windows Storage Charges
 - MS Windows SQL Server
 - MS IIS
 - MS Exchange Sent and Received
 - MS Exchange Mailbox
 - MS Windows Processes
 - Mainframe Batch Charges
 - Mainframe TSO Charges
 - Mainframe Input/Output Charges
 - Mainframe Printer/Reader Charges
 - Mainframe Storage Charges
 - Mainframe Print Charges
 - Mainframe CICS Charges
 - Mainframe DB2 Charges
 - VMware

Usage and Accounting Manager 

Run Total Rate Group Percent

Account Range: All Accounts

Billing Period: 07/01/2007 to 07/31/2007

Big Time Company

Any town, USA

	Charge
<input type="checkbox"/> All Unassigned Rate Codes	0.00
<input type="checkbox"/> Equipment/Shared Services	3,977.00
<input type="checkbox"/> UNIX DB2 Charges	2,896.80
<input type="checkbox"/> UNIX Process Charges	482.56
<input type="checkbox"/> UNIX Filesystem	8,561.47
<input type="checkbox"/> UNIX Oracle Charges	9,331.18
<input type="checkbox"/> MS Windows Storage Charges	1,247.76
<input type="checkbox"/> MS Windows SQL Server	1,261.94
<input type="checkbox"/> MS IIS	7,340.01
<input type="checkbox"/> MS Exchange Sent and Received	184.51
<input type="checkbox"/> MS Exchange Mailbox	25,980.01
<input type="checkbox"/> MS Windows Processes	35,967.94
<input type="checkbox"/> Mainframe Batch Charges	5,134.85
<input type="checkbox"/> Mainframe TSO Charges	1,450.79
<input type="checkbox"/> Mainframe Input/Output Charges	477.32
<input type="checkbox"/> Mainframe Printer/Reader Charges	95.07
<input type="checkbox"/> Mainframe Storage Charges	52,893.73
<input type="checkbox"/> Mainframe Print Charges	1.50
<input type="checkbox"/> Mainframe CICS Charges	1,690.80
<input type="checkbox"/> Mainframe DB2 Charges	14,812.80
<input type="checkbox"/> VMware	0.00
Report Total	173,788.04

ViewReport - Microsoft Internet Explorer

Address: http://knowitcosts.dfw.ibm.com/CIMSReporting/ViewReport.aspx?AccountCodeStructure=4%2c20%2c36%2c56&InvoiceLevel=1&AccountCodeStart=++++&AccountCodeEnd=zzzz&AccountStart=1&AccountLength=4&DateStart=

Run Total Ra

Document Map

- rvtc003
 - All Unassigned Rate Codes
 - Equipment/Shared Services
 - UNIX DB2 Charges
 - UNIX Process Charges
 - UNIX Filesystem
 - UNIX Oracle Charges
 - MS Windows Storage Charges
 - MS Windows SQL Server
 - MS IIS
 - MS Exchange Sent and Received
 - MS Exchange Mailbox
 - MS Windows Processes
 - Mainframe Batch Charges
 - Mainframe TSO Charges
 - Mainframe Input/Output Charges
 - Mainframe Printer/Reader Charges
 - Mainframe Storage Charges
 - Mainframe Print Charges
 - Mainframe CICS Charges
 - Mainframe DB2 Charges
 - VMware

MS Windows Processes

Category	Amount	Percentage
RTM - Retirement	14,266.18	39.66 %
CCX - Credit Card	13,310.14	37.01 %
TEL - Telephone Transactions	1,159.69	3.22 %
DEP - Electronic Deposits	837.28	2.33 %
MTG - Mortgages	1,893.92	5.27 %
WTX - Wire transfers	1,362.13	3.79 %
COM - Commercial Loans	982.69	2.73 %
DAC - Drafts and Collections	1,713.28	4.76 %
ATM - ATM Transactions	319.65	0.89 %
ONE - Online Electronic Payments	57.84	0.16 %
SSI - Secure Sales - Internet Commerce	65.14	0.18 %

35,967.94

Charge

Category	Amount
All Unassigned Rate Codes	0.00
Equipment/Shared Services	3,977.00
UNIX DB2 Charges	2,896.80
UNIX Process Charges	482.56
UNIX Filesystem	8,561.47
UNIX Oracle Charges	9,331.18
MS Windows Storage Charges	1,247.76
MS Windows SQL Server	1,261.94
MS IIS	7,340.01
MS Exchange Sent and Received	184.51
MS Exchange Mailbox	25,980.01
MS Windows Processes	35,967.94
Mainframe Batch Charges	5,134.85
Mainframe TSO Charges	1,450.79
Mainframe Input/Output Charges	477.32
Mainframe Printer/Reader Charges	95.07
Mainframe Storage Charges	52,893.73
Mainframe Print Charges	1.50
Mainframe CICS Charges	1,690.80
Mainframe DB2 Charges	14,812.80
VMware	0.00
Report Total	173,788.04

/ITUAMREPORTS/STANDARD\rvtc003 Run On: 8/17/2007 1:13:49 PM

ViewReport - Microsoft Internet Explorer

Address: http://knowitcosts.dfw.ibm.com/CIMSReporting/ViewReport.aspx?InvoiceLevel=1&AccountCodeStart=++++&AccountCodeEnd=zzzz&AccountStart=1&AccountLength=4&UserID=

Usage Trend Graph Publish Return Help

32 of 135 100% Find | Next Select a format Export

Usage and Accounting Manager

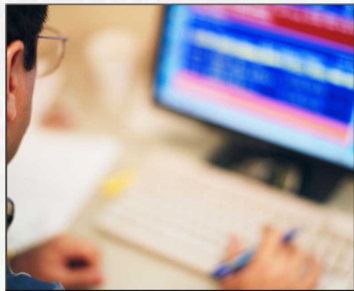
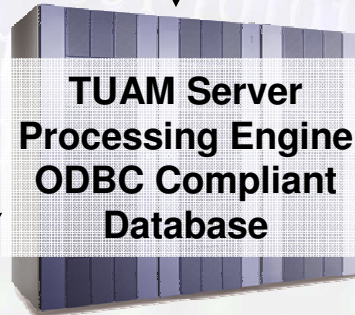
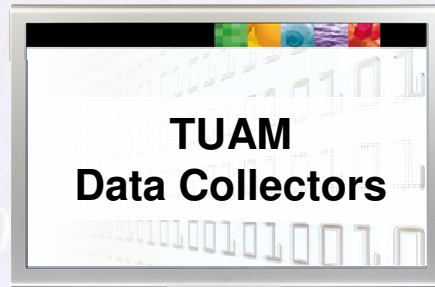
Resource Trend
 Account Range: All Accounts
 Year: 2007
 MS Windows SQL Server CPU (Seconds)

Usage Per Month

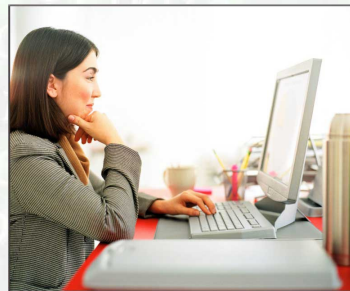
Month	Usage
2007/01 January	19,550.15
2007/02 February	12,272.03
2007/03 March	16,959.50
2007/04 April	20,207.87
2007/05 May	17,487.22
2007/06 June	16,124.19
2007/07 July	12,437.06
2007/08 August	9,497.82
Total	124,535.83

/ITUAMREPORTS/STANDARD/gtrdr001 Run On: 8/17/2007 1:08:08 PM

Done Internet



TUAM Web Console



Report Designer

**Web-based Reporting
End Users**



z/OS via Tivoli Decision Support

Partial List

Goal:

**ANY
usage
file
from
ANY
system!**

Mainframe

- Jobs Processed
- Steps Processed
- CPU Time
- Equation Time
- Service Units
- TSO CPU Time
- TSO I/O
- TSO Time
- Cards Read
- Cards Punched

CICS

- Elapsed Time
- CPU Time
- Transactions
- Input Messages
- Output Messages
- Total Messages
- File Access Count

Storage

- Space Allocated
- Space Used
- Space Wasted
- Migrated Datasets
- Backup Datasets
- Disk I/O
- Disk Datasets
- Tape I/O
- Tape Mounts
- Tape Storage

Print

- Lines Printed
- Pages Printed
- Paper & Forms
- Laser Printers
- Color/B&W
- Simplex/Duplex
- RDMS Systems

DB2

- CPU Time
- Elapsed Time
- # of DB2 Records
- # of Get Pages
- # of Entry/Exit Events
- Accumulated CPU Time
- Accumulated Elapsed Time

IBM Tivoli Usage and Accounting Data Collection

Partial List

Goal:

**ANY
usage
file
from
ANY
system!**

Unix/Linux

- CPU – ucpu, scpu
- Connect Time
- Seat Time
- Window Time
- Disk & Character I/O
- Images Activated
- Software Packages
- Disk Storage Space
- Oracle Resource Usage
- AIX, HP/UX, and Solaris
- Linux: RedHat and Novell SUSE – all IBM Systems
- AIX Advanced Accounting & AIX Server VIO

Windows Server

- Elapsed Time
- CPU Time
- Kernal CPU Time
- User CPU Time
- Disk Space by Folder Name, File Name, etc.
- # of Read Requests
- KB's Read
- # of Write Requests
- KB's Written
- Etc.

Other OSS

- VMware
- z/VM
- i5OS
- Citrix
- Windows System Resource Manager

Tivoli Data Warehouse

- Tivoli Composite Application Manager (TCAM) for SOA
- IBM Systems Director Active Energy Manager (AEM)
- Other TDW Data

IBM Tivoli Usage and Accounting Enterprise Collector Pack

Partial List

Goal:

**ANY
usage
file
from
ANY
system!**

E-Mail Systems	<ul style="list-style-type: none"> ▪ Microsoft Exchange ▪ Lotus Notes ▪ Sendmail 	Network and Printing	<ul style="list-style-type: none"> ▪ Windows Print ▪ Cisco Netflow ▪ Unix/Linux ftp transfer usage 	Internet	<ul style="list-style-type: none"> ▪ WebSphere HTTP & XD ▪ Apache ▪ Microsoft IIS ▪ Microsoft Proxy Server ▪ Netscape Proxy Server ▪ Microsoft ISA Server
Databases	<ul style="list-style-type: none"> ▪ DB2 ▪ Oracle ▪ SQL Server ▪ Sybase (Windows) 	Other	<ul style="list-style-type: none"> ▪ Tivoli Storage Manager ▪ TotalStorage Productivity Center for Data ▪ Veritas Netbackup ▪ SAP 		

What people have done with the Data Collector Toolkit

Partial List

Goal:

**ANY
usage
file
from
ANY
system!**

Network

- Netscout
- RMON2
- SNA Server/Host Integration Server
- Network Decisions
- Radius
- NetworkVantage
- Novell Web, Etc.

External

- Personnel Time
- Help Desk Time
- Equipment Rental
- Software
- Communications
- Networks
- Telecom Charges
- Suppliers/Vendors
- Recurring & Misc. Charges

ERP Systems

- PeopleSoft
- Oracle Financials
- Hyperion
- JD Edwards
- Lawson
- BAAN
- Walker
- Etc.

Internet / Telecom

- IBM WebSphere
- BEA WebLogic
- 3COM Routers
- Firewalls
- Switches/Lines
- PBX Systems
- RMON2
- WebTrends
- Etc.

What people have done with the Data Collector Toolkit

Partial List

Goal:

**ANY
usage
file
from
ANY
system!**

Databases

- IMS
- IDMS
- ADABAS
- MS Access
- Focus
- Datacom
- Supra, M204
- Universal
- Etc.

Operating Systems

- z/VSE
- Unisys
- Netware
- MS Virtual PC
- MS Virtual Server
- Etc.

Output

- Actuate
- Business Objects
- MS Reporting Svcs.
- Oracle Reports
- Mainframe RDMS
 - CA/Dispatch
 - SAR/Express
 - Etc.
- Print Servers
- Etc.

Human Resources

- WSG Empire Time
- ChangePoint
- Kronos
- TimeSlips
- MS Project
- Help Desks
- Consultants
- Etc.

3rd Party Systems

- Tivoli Systems Management
- BMC Patrol Suite
- HP Openview
- ASG TMON
- CA Unicenter
- Net IQ
- CRM Products
- Etc.

Storage

- SANS
- Backup Systems
- Monitors/Managers
- Tape Systems
- Veritas
- Etc.

Allocation Methods

- Four Methodologies
 1. **Rate Based, Usage Based, Repeatable Chargeback**
 2. **Recurring Charges (Monthly Line Items)**
 - **Rate Based (999 Servers @ \$1,500/month)**
 - **Flat Fee (\$2,500 for Leased Lines)**
 3. **Usage Based Allocation**
 4. **All of the above**
- Shared or Dedicated
- Data Collectors for System Usage
 - ▶ **Virtualization, Processor, Storage, Database, Application, Etc.**
 - ▶ **Proration**

Financial Modeler

Budget Values | Percent Allocation | Cost Calculations | Rate Calculations

View cost calculations for each pool.

	Server Costs			Storage Costs			Software Costs			Other Hard	
	Mainframe	Unix	Wintel	Tape	DASD	San	Mainframe	Unix	Windows	Network	Host P
Total Budget 12 Months	5,000,000	1,000,000	500,000	500,000	2,500,000	350,000	1,500,000	500,000	500,000	250,000	
Budget Per Month	416,667	83,333	41,667	41,667	208,333	29,167	125,000	41,667	41,667	20,833	
Z017 - Pages Printed - Local	0	0	0	0	0	0	0	0	0	0	
Z016 - Lines Printed - Local	0	0	0	0	0	0	0	0	0	0	
WPRTSBPC - MS Windows Print Submi...	0	0	0	0	0	0	0	0	0	0	
LLH101 - Unix Pages Printed	0	0	0	0	0	0	0	0	0	0	
LLA107 - Unix Interactive Total CPU (...)	0	16,667	0	0	0	0	0	29,167	0	0	
WSCBytes - IIS Web Bytes Sent	0	0	0	0	0	0	0	0	8,333	0	
WTimeTkn - IIS Web Time Taken (Milli...	0	0	14,583	0	0	0	0	0	8,333	0	
SQLWRITE - MS Windows SQL Server...	0	0	0	0	0	0	0	0	4,167	0	
SQLREADS - MS Windows SQL Server...	0	0	0	0	0	0	0	0	4,167	0	
SQLCPU - MS Windows SQL Server C...	0	0	14,583	0	0	0	0	0	8,333	0	
LLR105 - Unix Filesystem Used (GB D...	0	16,667	0	0	83,333	17,500	0	0	0	0	
LLA104 - Unix Interactive Connect Ti...	0	8,333	0	0	0	0	0	2,083	0	0	
LLE102 - Unix Oracle Session CPU (Mi...	0	25,000	0	0	0	0	0	10,417	0	0	
LLE107 - Unix Oracle User Commits	0	8,333	0	0	0	0	0	0	0	0	
LLE103 - Unix Oracle Connect (Hours)	0	8,333	0	0	0	0	0	0	0	0	
DISKSIZE - MS Windows Folder Disk U...	0	0	12,500	0	0	11,667	0	0	0	0	
EXMBXMSG - MS Exchange Mailbox (...)	0	0	0	0	0	0	0	0	0	4,167	
EXMBXSIZ - MS Exchange Mailbox Siz...	0	0	0	0	0	0	0	0	8,333	1,042	
ZDSK@@06 - Migrated to Tape DSNs	0	0	0	0	104,167	0	0	0	0	0	
ZZ32 - DB2 Transaction CPU Minutes	104,167	0	0	0	0	0	25,000	0	0	0	
ZZ05 - Tape Mounts	0	0	0	39,583	0	0	0	0	0	0	
Z036 - TSO CPU Minutes (All)	104,167	0	0	0	0	0	0	0	0	0	
Z003 - Mainframe CPU Minutes	208,333	0	0	2,083	20,833	0	100,000	0	0	15,625	
Total	416,667	83,333	41,667	41,667	208,333	29,167	125,000	41,667	41,667	20,833	

View cost calculations for each pool.

	e Costs		Other Hardware Costs			Personnel Costs			Miscellaneous Cost		Total
	ix	Windows	Network	Host Printers	Misc.	Support Staff	DBA Group	Help Desk	Floor Space	Etc.	
Total Budget 12 Months	500,000	500,000	250,000	450,000	300,000	3,500,000	1,250,000	500,000	200,000	0	18,800,000
Budget Per Month	41,667	41,667	20,833	37,500	25,000	291,667	104,167	41,667	16,667	0	1,566,667
Z017 - Pages Printed - Local	0	0	0	15,000	0	0	0	0	0	0	15,000
Z016 - Lines Printed - Local	0	0	0	7,500	0	0	0	0	0	0	7,500
WPRTSBPC - MS Windows Print Submi...	0	0	0	3,750	0	0	0	0	0	0	3,750
LLH101 - Unix Pages Printed	0	0	0	11,250	0	0	0	0	0	0	11,250
LLA107 - Unix Interactive Total CPU (...)	29,167	0	0	0	0	43,750	0	0	0	0	89,583
W5CBytes - IIS Web Bytes Sent	0	8,333	0	0	0	29,167	0	0	0	0	37,500
WTimeTkn - IIS Web Time Taken (Milli...	0	8,333	0	0	0	29,167	0	8,333	1,667	0	62,083
SQLWRITE - MS Windows SQL Server...	0	4,167	0	0	0	0	0	0	833	0	5,000
SQLREADS - MS Windows SQL Server...	0	4,167	0	0	0	0	0	0	833	0	5,000
SQLCPU - MS Windows SQL Server C...	0	8,333	0	0	0	0	31,250	0	0	0	54,167
LLR105 - Unix Filesystem Used (GB D...	0	0	0	0	0	14,583	0	0	1,667	0	133,750
LLA104 - Unix Interactive Connect Ti...	2,083	0	0	0	0	0	0	0	0	0	10,417
LLE102 - Unix Oracle Session CPU (Mi...	10,417	0	0	0	0	0	36,458	0	0	0	71,875
LLE107 - Unix Oracle User Commits	0	0	0	0	0	0	0	0	0	0	8,333
LLE103 - Unix Oracle Connect (Hours)	0	0	0	0	0	0	0	0	0	0	8,333
DISKSIZE - MS Windows Folder Disk U...	0	0	0	0	0	0	0	4,167	3,333	0	31,667
EXMBXMSG - MS Exchange Mailbox (...)	0	0	4,167	0	0	0	0	0	0	0	4,167
EXMBXSIZ - MS Exchange Mailbox Siz...	0	8,333	1,042	0	0	0	0	6,250	0	0	15,625
ZDSK@@06 - Migrated to Tape DSNs	0	0	0	0	0	0	0	4,167	0	0	108,333
ZZ32 - DB2 Transaction CPU Minutes	0	0	0	0	0	0	26,042	0	0	0	155,208
ZZ05 - Tape Mounts	0	0	0	0	0	29,167	0	0	0	0	68,750
Z036 - TSO CPU Minutes (All)	0	0	0	0	0	0	0	8,333	0	0	112,500
Z003 - Mainframe CPU Minutes	0	0	15,625	0	25,000	145,833	10,417	10,417	8,333	0	546,875
Total	41,667	41,667	20,833	37,500	25,000	291,667	104,167	41,667	16,667	0	1,566,667

Exclude Accounts + - Start Date: 12/01/2005 End Date: 12/31/2005 Calculate Rates Update Rates Run Report

Resource Name	Budget Per Month	Total Units	Units Per Month	Current Rate	Per 1000	Zero Cost Rate	Factor	New Rate
Z017 - Pages Printed - Local	15,000	73776.00000	73776.00000	0.00000		0.20332	1	0.20332
Z016 - Lines Printed - Local	7,500	3136176.00000	3136176.00000	0.00100	M	2.39145	1	2.39145
WPRTSBPC - MS Windows Print Submi...	3,750	0.00000	0.00000	0.02300		0.00000	1	0.00000
LLH101 - Unix Pages Printed	11,250	0.00000	0.00000	0.15000		0.00000	1	0.00000
LLA107 - Unix Interactive Total CPU (...)	89,583	0.00000	0.00000	0.03000		0.00000	1	0.00000
W5CBytes - IIS Web Bytes Sent	37,500	3664630808.00000	3664630808.00000	0.00100	M	0.01023	1	0.01023
WTimeTkn - IIS Web Time Taken (Milli...	62,083	128058036.00000	128058036.00000	0.00000		0.00048	1	0.00048
SQLWRITE - MS Windows SQL Server ...	5,000	13989814.00000	13989814.00000	0.08000	M	0.35740	1	0.35740
SQLREADS - MS Windows SQL Server ...	5,000	300109049.00000	300109049.00000	0.00120	M	0.01666	1	0.01666
SQLCPU - MS Windows SQL Server C...	54,167	14108.40000	14108.40000	0.01500	M	3839.27306	1	3839.27306
LLR105 - Unix Filesystem Used (GB D...	133,750	1684.64200	1684.64200	0.00000		79.39372	1	79.39372
LLA104 - Unix Interactive Connect Ti...	10,417	0.00000	0.00000	0.09500		0.00000	1	0.00000
LLE102 - Unix Oracle Session CPU (Mi...	71,875	2209.13000	2209.13000	0.23000		32.53543	1	32.53543
LLE107 - Unix Oracle User Commits	8,333	92116.30000	92116.30000	0.00250		0.09046	1	0.09046
LLE103 - Unix Oracle Connect (Hours)	8,333	47084.33000	47084.33000	0.04500		0.17698	1	0.17698
DISKSIZE - MS Windows Folder Disk U...	31,667	2054.05775	2054.05775	0.00001	M	15416.31437	1	15416.31437
EXMBXMSG - MS Exchange Mailbox (...)	4,167	4072213.00000	4072213.00000	0.00100		0.00102	1	0.00102
EXMBXSIZ - MS Exchange Mailbox Siz...	15,625	204157478.66300	204157478.66300	0.15000	M	0.07653	1	0.07653
ZDSK@@06 - Migrated to Tape D5Ns	108,333	0.00000	0.00000	0.07000		0.00000	1	0.00000
ZZ32 - DB2 Transaction CPU Minutes	155,208	1050.10392	1050.10392	5.00000		147.80251	1	147.80251
ZZ05 - Tape Mounts	68,750	7.00000	7.00000	0.00000		9821.42857	1	9821.42857
Z036 - TSO CPU Minutes (All)	112,500	52.11234	52.11234	0.00000		2158.79771	1	2158.79771
Z003 - Mainframe CPU Minutes	546,875	351.41064	351.41064	10.00000		1556.22778	1	1556.22778

IBM Tivoli Usage and Accounting Manager is . . .

An integral part of an organization's financial reporting systems

(Shared Services, Invoicing, Product Profitability, ERP Integration, Cost Allocations, Activity Based Costing, Resource & Cost Trending, etc.)

Used across multiple platforms

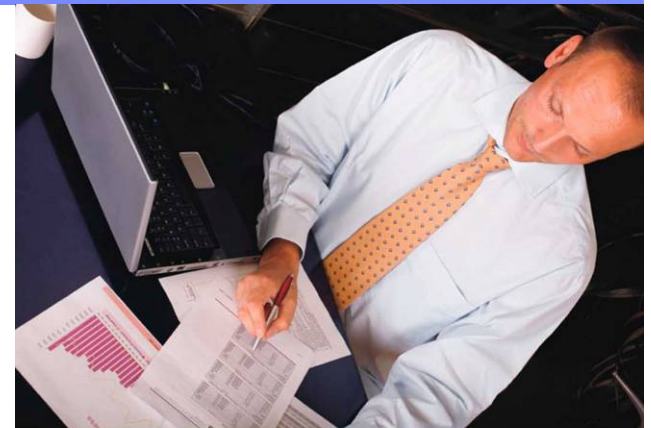
(Including Mainframe, Unix, Linux, Windows, etc.)

Supporting multiple sub-systems

(DB2, Oracle, SQL Server, CICS, Virtualization, Web, E-Mail, Networks, Storage, Print Servers, etc.)

Internet enabled

(Web-Based Reporting & Drill-Down and multiple outputs)



Report chart

(Partial list of categories)

- Budget Analysis Reports
- Database Reports
- E-Mail Reports
- Hog Reports
- Internet Reports
- Invoices
- Network Reports

- Operating System Reports
- Print Reports
- Resource Usage Reports
- Storage Reports
- YTD Reports
- **Power Consumption**

Energy Consumption Chargeback

With Active Energy Manager information . . . power consumption can also be tracked, analyzed and billed . . .

The screenshot shows a web browser window displaying an 'Invoice by Account Level - Graph' report. The report is titled 'Usage and Accounting Manager' and 'Invoice by Account Level - Graph'. It includes the following information:

- Invoice Number:** 0
- Date Range:** 3/1/2008 to 3/31/2008
- Customer:** Le Cycling Company, 1 Tour de France Boulevard, Paris, France
- Account:** MKTG - Marketing

	Units	Rate	Charge
UNIX DB2 Commit SQL Stmt	40,371	0.0000	0.00
UNIX DB2 System CPU (Minutes)	0.17	0.5000	0.09
UNIX DB2 User CPU (Minutes)	0.62	0.5000	0.32
UNIX DB2			0.41
UNIX DB2 Total Storage (4k Pages)	67,596.00	0.0000	0.00
UNIX DB2 Usable Storage (4k Pages)	67,428.00	0.0250	1,685.70
UNIX DB2 Used Storage (4k Pages)	30,444.00	0.0000	0.00
UNIX DB2 Free Storage (4k Pages)	36,984.00	0.0000	0.00
UNIX DB2 High Water Mark	30,432.00	0.0000	0.00
UNIX DB2 Extent Size (4k Pages)	372.00	0.0000	0.00
UNIX DB2 Prefetch Size (4k Pages)	372.00	0.0000	0.00
UNIX DB2 Containers	24.00	0.0000	0.00
UNIX DB2 Storage			1,685.70
DC Power Energy Consumed by a Server	7.91	1.00000000	7.90
AC Power Energy Consumed by a Server	10.16	1.00000000	10.16
Ambient Temperature of a Server	150.00	0.00000000	0.00
Exhaust Temperature of a Server	180.00	0.00000000	0.00
Energy Management Charges			18.06
Total for: MKTG - Marketing			1,704.17

Expected Availability June/July 2008

Power Consumption Metrics

DC Power Energy Consumed by a Server	7.91	1.00000000	7.90
AC Power Energy Consumed by a Server	10.16	1.00000000	10.16
Ambient Temperature of a Server	150.00	0.00000000	0.00
Exhaust Temperature of a Server	180.00	0.00000000	0.00
Energy Management Charges			18.06

Reports

Invoices

- Invoice by Account Level
- Invoice by Account Level - Graph
- Account Total Invoice
- Alternate Invoice
- Invoice with Shifts
- Invoice with Shifts - Graph
- Run Total Invoice with Shifts
- Run Total Invoice
- Run Total Percent
- Run Total Rate Group Percent

Account Reports

- Account Summary YTD
- Account Summary Daily
- Account Summary Daily 2
- Summary Crosstab - Charges
- Summary Crosstab 2 - Charges
- Summary Crosstab - Usage
- Summary Crosstab 2 - Usage
- Daily Crosstab - Charges
- Daily Crosstab - Usage
- Weekly Crosstab - Charges
- Weekly Crosstab - Usage
- Monthly Crosstab - Charges
- Monthly Crosstab - Usage

Top Usage Reports

- Top 10 Cost
- Top 10 Bar Graph
- Top 10 Pie Chart
- Top 10 By Rate Code

Variance Reports

- Cost Variance
- Cost Variance Drilldown
- Resource Variance

Trend

- Cost Trend
- Resource Usage Trend
- Cost Trend Graph
- Cost Trend Graph 2
- Usage Trend Graph
- Cost Trend by Rate

Resource Detail

- Detail By Multiple Identifiers
- Detail By Multiple Identifiers with Acct
- Detail by Rate Group
- Detail by Rate Group/Identifier
- Detail by Identifier
- Detail by Identifier by Date
- Batch Report
- CICS Transaction ID Report
- DB2 Summary
- Exchange 2000
- SQL Server 2000
- Windows Disk

Other

- Percentage
- Client
- Rate
- Configuration
- Line Item Budget

Custom

Expand All

Collapse All

Implementation & Services

■ Client Implementation

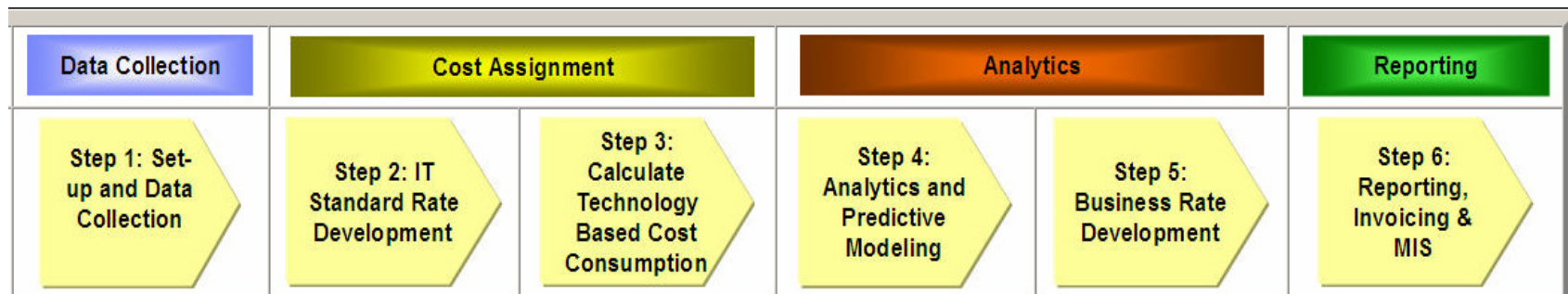
- TUAM is ready to use software that is user installable and can quickly report on usage of a variety of shared and virtualized systems.

■ Tivoli Services

- TUAM QuickStart
- Extended Engagements

■ IBM Global Technology Services

- Complete System Design & Implementation.



IBM UAM features

(Partial list)



- Account Code Editing
- Account Code Validation
- Automatic E-Mail Reporting
- Automatic Web Reporting
- Billing Equation
- Budget / Actual Reporting
- Business Rules Engine
- Contract Pricing
- Conversion Engine
- Cost & Resource Analysis Reports
- Creates GL Transactions
- Disk Space Accounting
- Discounts
- Efficient Daily Processing
- Efficient EOM Processing
- External Billing
- Flexible Account Code Generation
- Flexible Account Code Reporting
- Full Time Administrator Not Required
- Integrated Rate Table/Service Catalogue

- Miscellaneous and Recurring Transactions
- Multiple CPU's of Differing Speeds Supported (Normalization)
- Multiple Rate Tables by Acct.
- Multiple Reporting Levels with drilldown
- Paper & Form Chargeback
- Proration
- Rate Modeling
- Sales Tax
- Security Authentication/LDAP
- Server Based Reporting System
- Server Based Stand-Alone System
- Shift, Class, Priority Surcharge
- Tiered Pricing
- Usage Discovery
- Web Enabled & Automatic HTML Creation
- Web Based Administration
- Year To Date Reporting
- Zero Based Budget Support

Take a hard-nosed look at IBM UAM!

A Proven Product!

- Windows, Unix/Linux, Mainframe, Internet
- Powerful Server-Based System
- Competitive Prices
- Replaces In-House and Competing Products
- Hundreds of Users
- Excellent Technical Support

Customers



- Cross Industry
- Cross Platform

Know What IT Costs!

Trademarks

The following are trademarks of the International Business Machines Corporation in the United States and/or other countries.

AIX*	HiperSockets	S/390	
AIX 5L*	IBM*	ServerProven*	
BladeCenter	IBM eServer	Tivoli*	
Chipkill	IBM logo*	TotalStorage*	
DB2	iSeries	TotalStorage Proven	
DB2 Universal Database	Lotus*	Virtualization Engine	* Registered trademarks of IBM Corporation
Domino	OnForever*	X-Architecture	
Enterprise Storage Server*	Parallel Sysplex*	xSeries*	
e-business logo*	POWER	z/OS*	
GDPS*	POWER5	z/VM*	
Geographically Dispersed Parallel Sysplex	Predictive Failure Analysis*	zSeries*	
	pSeries*	System z9*	

The following are trademarks or registered trademarks of other companies.

Intel is a trademark of Intel Corporation in the United States, other countries or both.
 Java and all Java-based trademarks and logos are trademarks of Sun Microsystems, Inc., in the United States and other countries
 Linux is a registered trademark of Linux Torvalds in the United States other countries, or both.
 Unix is a registered trademark of The Open Group in the United States and other countries.
 Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation in the United States, other countries, or both.

* All other products may be trademarks or registered trademarks of their respective companies.

Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.

This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM business contact for information on the product or services available in your area.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.