OMEGAMON v5: Client-driven redesign of mainframe performance monitoring

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Pulse Comes to You

Optimizing the World's Infrastructure
[May, 15° Rome]

Changing How we Develop Software

- Client involvement from the beginning and throughout the development process
  - Over 40 clients throughout North America and Europe
  - Different size IT shops
  - Different customers for each monitor.

- Agile (transparent) development model validates use cases and functions as we go

- Over 100 pieces of feedback driven into the product by monthly reviews and demonstrations.

Request for enhancements
30 day reviews
90 day response

z/OS WW customer Advisory Council Quarterly calls

- Early Adopters Programs
- Monthly Calls and Demos
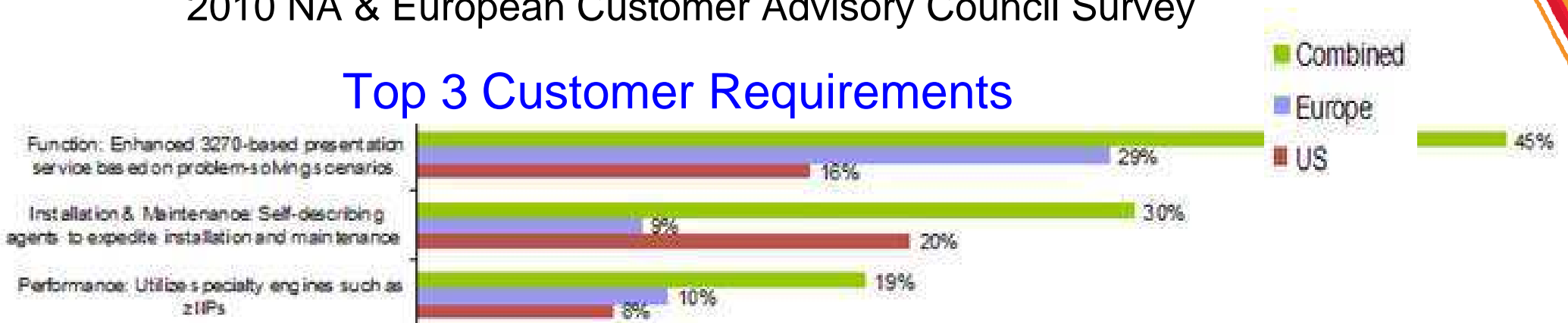
Development Roadmap

Beta Program

Release

IBM interviewed over 200 customers to understand future monitoring challenges needing to be addressed

2010 NA & European Customer Advisory Council Survey

Top 3 Customer Requirements

#1 Requirement - Enhance 3270 UI with Problem Solving scenarios

#2 Requirement - Improve Maintenance

#3 Requirement - Improve Performance utilizing zIIP

In addition to customer ranking, conducted:
- Advisory Councils
- "Outside-in design" prototyping
- Early Adopter and Beta programs

Increased Business Agility with improved IT visibility now available with redesigned OMEGAMON family

Modernized and strengthened OMEGAMON product line for reduced resource usage and faster problem resolution

Increased Availability and Integration

① **Enhanced 3270 User Interface** for Subject Matter Experts

- **Provide Information** not data by using Problem Solving Scenarios

Improved Productivity

- **Faster** Install and Configuration/Maintenance
- **zEnterprise monitoring** across z196/114 and zBX

Reduced Resources and Costs

- **Usage of zIIP** specialty servers
- **Simplified** OMEGAMON architecture

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High Priority OMEGAMON customer capabilities focused on helping decrease costs and reduce risks

Redesigned OMEGAMON Enhanced 3270 User Interface addresses customer requirement to make mainframes more efficient and effective

Customer-Driven Focus Areas for Improvement

- **Simplify** — Eliminate complexity and frustration
- **Standardize** — Align with existing IBM 3270 Applications
- **Integrate** — Move from silo monitoring towards composite views
- **Minimize** — Reduce footprint, install, configuration, and CPU
- **Modernize** — Make the 3270 Interface 'Best of breed' – SME focused Problem Solving Scenarios
- **Customize** — Personalize User Interface
- **Support** — Reduce customer calls/PMRs through simplification

Enhanced Configuration and Maintenance capability with Self-Describing Agents

- Eliminate monitoring outages caused by ITM Server recycles
  - Product upgrades/maintenance requires agent or RTEMS recycles only (No HTEMS or TEPS recycles)

- Eliminate maintenance upgrade errors:
  - Applies to new installs, staged upgrades, and maintenance
  - Crosschecks and validates version with installed data and framework
  - Avoids inconsistent application data in ITM framework layers
  - Pushes application data from the agent to upper layers at agent startup

- Self-describing framework extensible to new layers (ex: TIP, E3270)

- Eliminates application data DVDs and CDs:
  - No extra distributed installs or upgrades for mainframe-centric customers

- Moving from 40 hours a week to 4 hours a week maintenance
- 80% improvement in time for installation and maintenance
- 30% improvement in time to configure post installation

OMEGAMON for z/OS provides SMEs with faster problem determination and availability management

Modernize and strengthen OMEGAMON product line with reduced resource usage and increased information available for higher quality service management

- Enhanced 3270 User Interface for SMEs (Ability to view Enterprise Summary of multiple sysplexes, Navigate directly to other OMEGAMON v5.1 monitors, New CEC and CPU top consumers views, Incorporated Health Checks from Tivoli z Management Console).
- Usage of zIIP specialty servers
- Easy navigation from SysPlex to LPAR to address space
- Faster Configuration/Maintenance
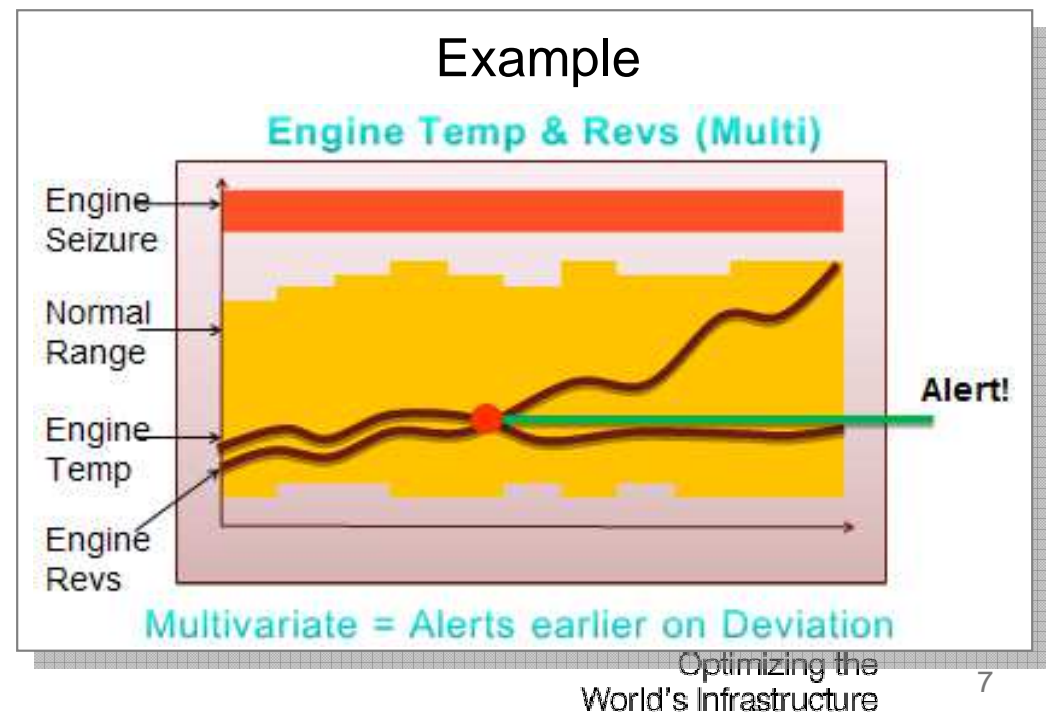- zEnterprise monitoring across z196/114 and zBX

Command and Control from Enhanced 3270 User Interface

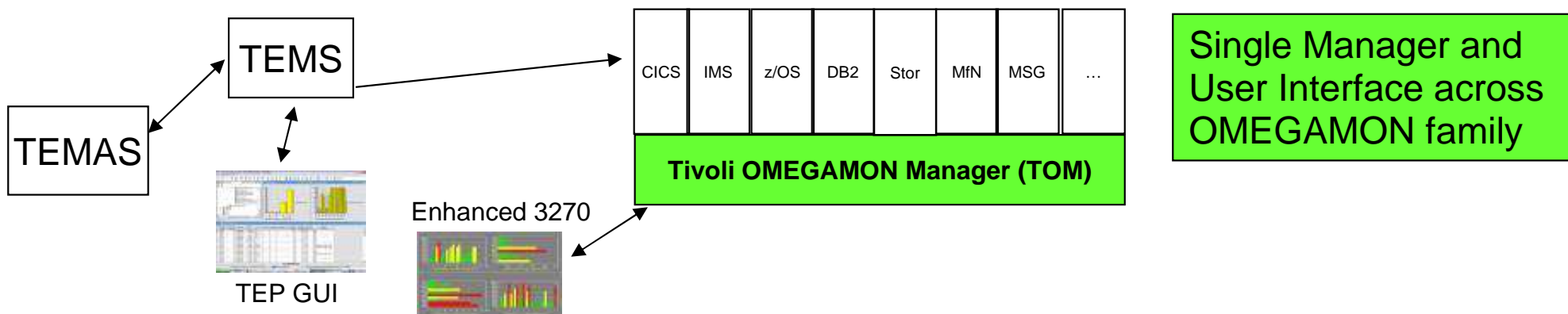# OMEGAMON Problem Solving Scenarios designed to help SMEs avoid service outages and track KPIs

- Identify anomalous KPI behaviour independent of thresholds.

- Exploit multi-domain analysis to identify complex interactions and enable composite KPIs

- View near real time streaming analytics to identify complex interactions and subtle emerging problems across domains

- Warn users in advance of service impact, deterioration or outage.

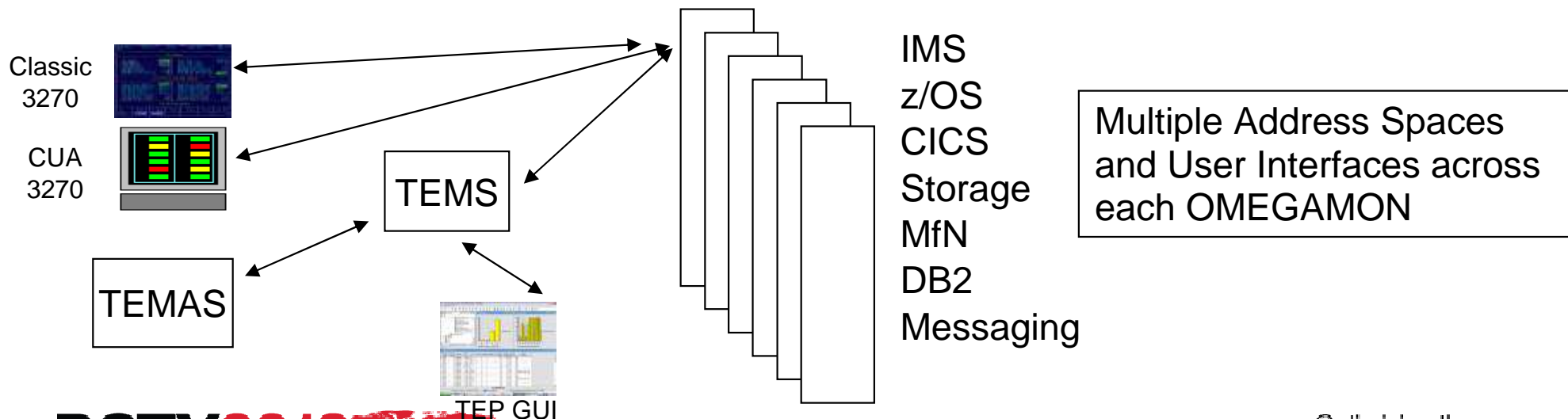- Focus on usefulness of results, not on individual algorithms.

Example

Engine Temp & Revs (Multi)

Engine Seizure

Normal Range

Engine Temp

Engine Revs

Alert!

Multivariate = Alerts earlier on Deviation

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Moving to <u>simplified architecture</u> driving decreased resource utilization without lose of current function

V 5.1 Enhanced OMEGAMON Architecture

TEMAS

TEMS

TEP GUI

Enhanced 3270

| CICS | IMS | z/OS | DB2 | Stor | MfN | MSG | ... |

Tivoli OMEGAMON Manager (TOM)

Single Manager and User Interface across OMEGAMON family

V 4.2 OMEGAMON Architecture

Classic 3270

CUA 3270

TEMS

TEMAS

TEP GUI

IMS
z/OS
CICS
Storage
MfN
DB2
Messaging

Multiple Address Spaces and User Interfaces across each OMEGAMON

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Enhanced 3270 User Interface creates Enterprise wide view of information across multiple sysplex's

- Understand transactions across entire Enterprise
- Color coding to provide ability to find and resolve problems quickly

z/OS-wide sysplex view

CICSplex details views

Customer prioritized Problem Solving scenarios built into Enhanced 3270 User Interface

- Easy to see and find critical system and sub-system information
- Single screen focused on customer defined problems
- Screen content based on high priority problems

Top consumers view of details

Gain graphical view of details

Example of quickly finding and fixing z/OS Problem

Screen 1

Possible Looping Job

Screen 2

Checking Resource Usage – Enter 'c' to cancel job

Screen 3

Job Cancelled

New E3270UI highlights problems and simplifies resolving them quickly

Unix workloads growing on z/OS as applications are ported to mainframe

- USS comes included in OMEGAMON XE on z/OS
- Complete view of Unix overhead and activities available and customizable with enhanced 3270 user interface

CEC overview

Example of quickly finding and fixing z/OS Problem

New E3270UI highlights problems and simplifies resolving them quickly

Screen 1 — Exceptions

◊Sysplex Name	◊LPAR Name	▯ΔException ▯∇	Value	Waiting Tasks
_ LPAR400J	CANSYSG	Performance_Index	7.50	–
_ LPAR400J	CANSYSG	Enqueue	SYSDSN	1
_ LPAR400J	CANSYSG	GTF_Active	TRUE	–
_ LPAR400J	CANSYSG	CPU_Loop_Index	100.0	
_ LPAR400J	CANSP22	Performance_Index	1.76	–
_ LPAR400J	CANSYSL	Performance_Index	4.28	–
_ LPAR400J	CANSP12	Performance_Index	1.42	
_ LPAR400J				

Columns _3_ to _5_ of _6_   Rows _1_ to _8_ of _8_

Possible Looping Job

Screen 2 — Exceptions

◊Sysplex Name	◊LPAR Name	▯ΔException ▯∇	Value	Waiting Tasks
_ LPAR4...			6.66	–
_ LPAR400J		Active_Storage_Alert	WARNING	–
_ LPAR400J	...SL	Performance_Index	2.50	–
_ LPAR400J	CANSP11	Performance_Index	1.42	–
_ LPAR400J	CANSP22	Performance_Index	1.30	–
c LPAR400J	CANSP22	CPU_Loop_Index	99.6	–
_ LPAR400J	CANSYSG	Performance_Index	4.28	–

Columns _3_ to _5_ of _6_   Rows _1_ to _7_ of _7_

Enter 'c' to cancel job
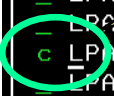
Screen 3

Command ==>
KM5PLX0   KM5ACTC2   Cancel Address Space

Press ENTER to continue

Address Space Name . :   MGRABZ
ASID . . . . :   0044
Address Space Type . :   BATCH
SMF ID . . . . :   SP22

Job Cancelled

Exceptions

Columns 3 to 5 of 6   Rows   1 to   4 of   4

◊Sysplex Name	◊LPAR Name	▯ΔException ▯∇	Value	Waiting Tasks
_ LPAR400J	CANSP13	Performance_Index	2.85	–
_ LPAR400J	CANSP13	Active_Storage_Alert	WARNING	–
_ LPAR400J	CANSP22	CPU_Loop_Index	99.6	–
_ LPAR400J	CANSYSG	Performance_Index	4.10	–

In prior releases this would have taken from 5 to 15 screen interactions

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OMEGAMON for CICS provides improved visibility and opportunity to reduce resource usage

In addition to the OMEGAMON family capability:

- Manage using service level analysis of transactions based on response times with new enhanced 3270 UI

- Take advantage of zIIP specialty processor to decrease resource usage
  - Up to 73% of CICS SLA processing off-loaded

- New 'Find' command to easily locate hung users and programs connections over entire CICSplex
  - Can reduce fix times from 90 minutes to 2 minutes

- Easy navigation from CICSplex to region to resource for faster problem identification and resolution

Simplify SLA management with decreased resources

Gain insight into all CICSplex actions and activities easily by navigating with enhance 3270 user interface

Large number of reports now available showing data aggregated at CICSplex level:

- DB2 Connection Summary

- Enqueue Summary

- DBCTL Connection Summary

- Storage Overview

- Messaging Overview

- Service Level Analysis

- Region Summary
  - Drill-down into CICS region level reports

- Dispatcher Summary

```
                File   Edit   View   Tools   Options   Help      02/22/2012 17:10:06
                                                                  Auto Update   : Off
 =>

                          Options Menu                                        _|▢|x

            Select an option and then press ENTER                              2

            _   1. D CICSplex DB2 Connections Summary
                2. E CICSplex Enqueue Summary
      x         3. I CICSplex DBCTL Connections Summary
                4. M CICSplex Storage Overview
                5. Q CICSplex Messaging Overview
 EX             6. R CICSplex Service Level Analysis
  x             7. S CICSplex Regions Summary
                8. T CICSplex Dispatcher Summary


```

Better manage CICS resources and see potential conflicts before they become issues

"Show me the other regions that use this resource"

Visibility across entire CICS environment with new OMEGAMON for CICS Enhanced 3270 User I/F

Ability to monitor and understand current activity based on SLAs and KPIs

CICSplex service level analysis

Prioritized by Response time to find potential problems quickly

New OMEGAMON for CICS Bottleneck Analysis can improve overall system performance and availability

CICS Bottleneck Analysis
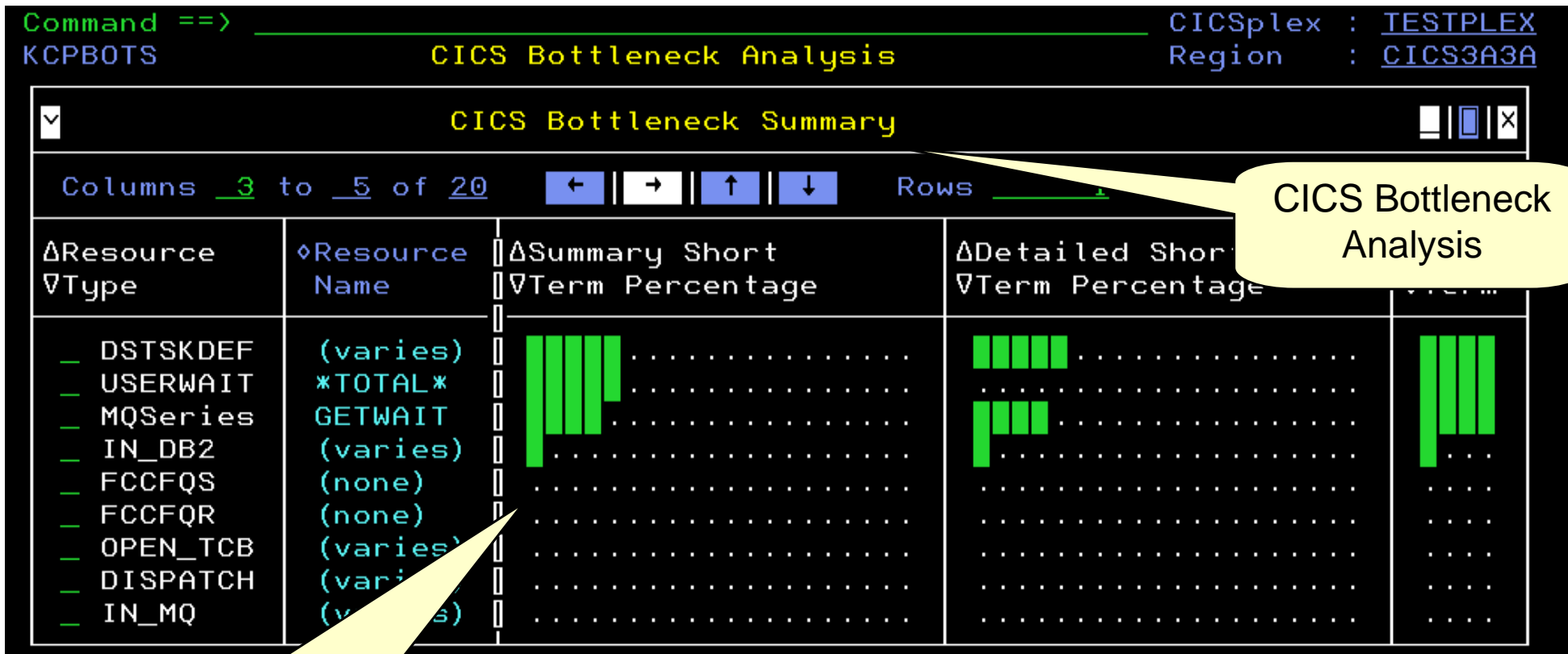
Graphical view of CICS resource usage

- *Assess Resource Usage by resource types*
- *Find, analysis and fix problems quickly*

SLA one service class – Details / bottlenecks by regions

Task Details AOR - view navigate regions w/ same UOW


```
KCPTASD                    Task Details                    Region    : CICSBVT1

    Transaction Details for Task 04059                         ■ ▮ ▨

Transaction ID............... BVT2      Time in Suspend............. 52.3200s
CPU time.................... 0.00000s   Elapsed Time................ 52.3200s
Storage Used Above 16M.....      0K     Storage Used Below 16M....       1K
Attach time................ 10:18:24    Time of Suspend............ 10:18:24
Suspend Timeout Due........     None     Facility Type..............    Term
Facility ID................     0427     Task State.................  Suspend
Dispatcher Queue........... Executbl     First Program ID........... CSBVT200
Current Program ID......... CSBVT200     Resource Type..............   IRLINK
Resource Name.............. BVT2S21      User ID.................... CICSBVT1
EXEC CICS Command..........     LINK     Purgeable Suspend..........      No
Purge Status............... No_purge     Suspend Type...............     MVS
UOW State.................. Inflight     Umbrella Transaction ID...     None
Originating Transaction ID   BVT2

    Other tasks in CICSplex with same Unit of Work            ■ ▮ ▨
```

| Columns 3 to 7 of 10 | ← | → | ↑ | ↓ | Rows 1 to 1 of 1 |

ΔCICS Region ▽Name	ΔTransaction ▽ID	▯Δtask ▯▽Number	Wait Type	Resource Type	Resource Name	+Elaps Time
_ CICSBVT2	CSMI	▯ 11576	Interval	ICWAIT	R11	52.8

Unit of Work – Details for CICSplex

Actions   Goto   View   Index   Options   Help 03/11/2011   9:40:18
```
                                                              Auto Update   : Off
Command ==> _____            CICSplex : DEEPLEX
KCPTASD                                                          Region   : CICSDE03
```

Task Details for Task 00178 on CICSDE03

```
Transaction ID..........................: FUP2        Time in Suspend.......................: 00:00:07
CPU time................................: 0.00000s    Elapsed Time..........................: 16m 08s
Storage Used Above 16M..................: 0KB         Storage Used Below 16M................: 1KB
Attach time.............................: 09:21:23    Time of Suspend.......................: 09:40:09
Suspend Timeout Due.....................: None        Facility Type.........................: Term
Facility ID.............................: 0491        Task State............................: Suspend
Dispatcher Queue........................: Executbl    First Program ID......................: N/a
Current Program ID......................:             Resource Type.........................: IRLINK
Resource Name...........................: DE02>AAA    User ID...............................: TDUSER
EXEC CICS Command.......................: n/a         Purgeable Suspend.....................: No
Purge Status............................: No_purge    Suspend Type..........................: MVS
UOW State...............................: Inflight    Umbrella Transaction ID...............: None
Originating Transaction ID..............: FUP2
```

EIB Details for Task 00178 on CICSDE03

```
EXEC CICS Command.......................: n/a         F
EIBRESP Description.....................: NORMAL      E
EIBRESP2 Value..........................: 0           R
EIB Date and Time.......................: 3mo 10d     P
Program Offset..........................: n/a         T
```

- Unit of Work (UoW) summary shows TOR, AOR, FOR
- Currently in CICSDE03
- See / navigate to DE01 or DE02

Other tasks in CICSplex with sam...

Columns 3 to 9 of 9

◇CICS Region Name	◇Transaction ID	Wait Type	Resource Type	Resource Name	Elapsed Time	CPU Time	Exceeds MAXR Threshold	Task State
_ CICSDE01	CSMI	File	FCIOWAIT	TESTF1	18m 50s	5.93600s	No	Suspend
_ CICSDE02	FUP2	MRO	IRLINK	DE01>AAA	18m 53s	1.64300s	No	Suspend

Storage Usage

```
Storage Elements Below 16Meg............:         1   Storage Elements Above 16Meg..........:         1
                                                                                              MORE+
          Minimize Bar and PF Key Display Area
```

Region Overview - visual at a glance

A summary or overview of the CICSplex regions

```
KCPRGNS                    CICSplex Regions Summary              Region    : _____

┌─────────────────────────────────────────────────────────────────────────────────┐
│ ▼                       Regions  Summary  for  TESTPLEX                   ■ ▣ ▧   │
├─────────────────────────────────────────────────────────────────────────────────┤
│  Columns  _2  to  _6  of  31    [←] [→] [↑] [↓]     Rows  ____1 to ____8 of ____8 │
├──────────────┬────────────┬──────────────┬──────────────────┬──────┬─────────────┤
│ ΔCICS Region │ ΔCPU       │ ▼Transaction │ ΔMaximum Tasks   │ SOS  │ ΔStg. Violat│
│ ▼Name        │ ▼Utilization│ _Rate       │ ▼Percent         │      │ ▼           │
├──────────────┼────────────┼──────────────┼──────────────────┼──────┼─────────────┤
│  _  CICS2T2A │      5.5%   │     4843/m   │            4%    │ No   │          0  │
│  _  CICS2A2A │      2.9%   │     1500/m   │            8%    │ No   │          0  │
│  _  CICS5A2A │      1.9%   │      444/m   │            5%    │ No   │          0  │
│  _  CICS5T2A │      0.8%   │      451/m   │            4%    │ No   │          0  │
│  _  CICS3A2A │      0.0%   │        3/m   │            9%    │ No   │          0  │
│  _  CICS3T2A │      0.0%   │        0/m   │            4%    │ No   │          0  │
│  _  CICSCT2A │      0.0%   │        0/m   │            4%    │ No   │          0  │
│  _  CICS1T2A │      0.0%   │        0/m   │            4%    │ No   │          0  │
└──────────────┴────────────┴──────────────┴──────────────────┴──────┴─────────────┘
```

Sort on CPU utilization - transactions rates – Max Task %

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Customer Driven improvements with Installation and Configuration enhancements for Parmgen

- Removal of ICAT as the primary way to Install and Configure

- Install without the need of a distributed server

- Walks you through steps to complete configuration and customize a profile

- Automatically updates hundreds of configuration artifacts according to the profile, including Autodiscovery of System values

single reference book to follow to upgrade

IBM Tivoli Management Services on z/OS
Version 6.2.3

PARMGEN Reference

IBM

IBM Confidential

"I like using the Parmgen approach better than CICAT/ICAT. I find it much easier to make things repeatable...
*I like the fact that Parmgen does not overwrite my running members"*
Typical quotes from early adopters program

Modernized OMEGAMON to fit today's SMEs requirements using customer directed development.

Simplification of OMEGAMON family:

- Reduce complexity (TCO) by reducing address spaces
- Reduction of CPU utilization via exploitation of zIIP and optimized data collection (TCO)
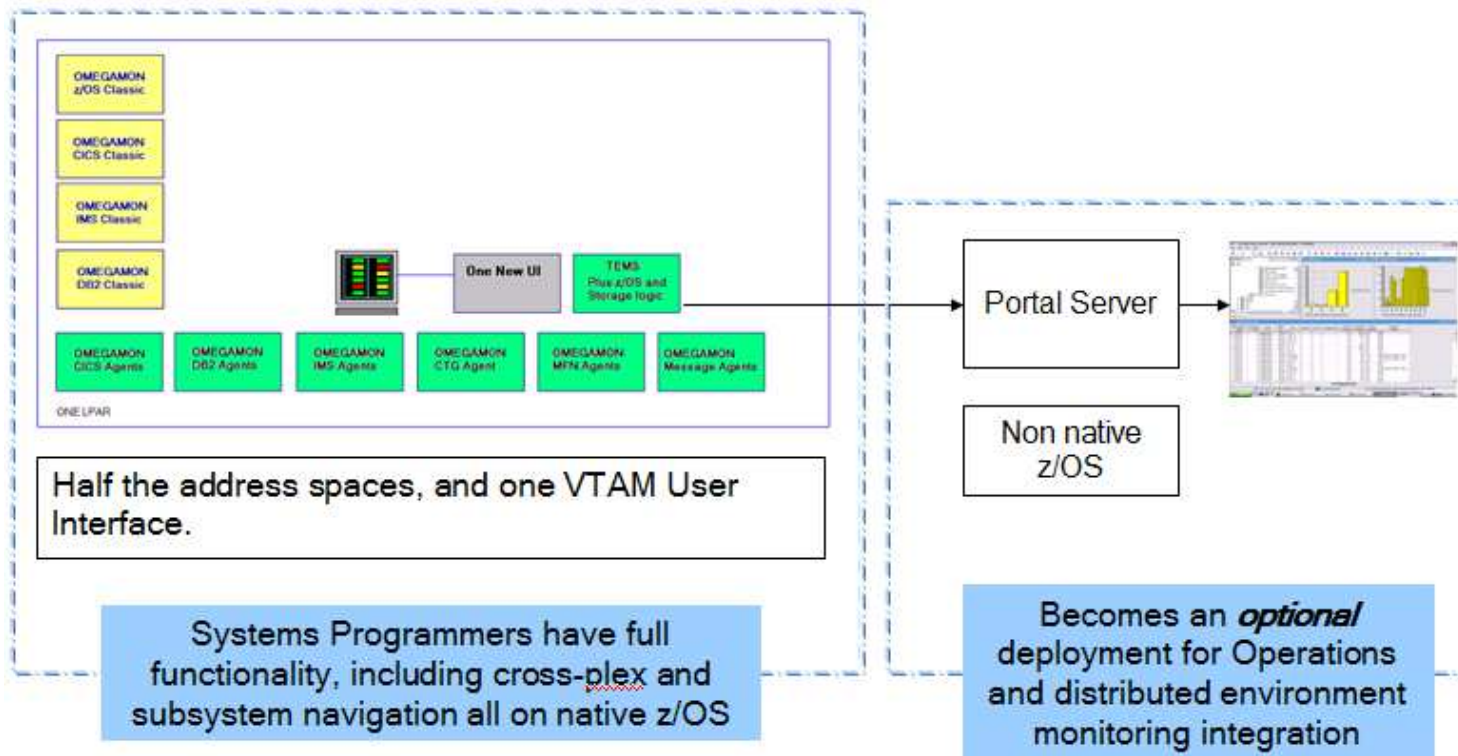
Analysts already agree that OMEGAMON V5 provides value to customers

Ptak / Noel

On OMEGAMON moving to simplified architecture and a common view across multiple domains, Rich Ptak of **PNA** commented, *"This is an important and much needed enhancement. We've heard consistently – there is a need for this kind of integration. Consistent interface – a couple of years ago, some people liked to be in a silo and just toss things over to someone else. But, they can't live that way anymore."* PNA also gave IBM high marks for doing so without losing functionality.

Clabby Analytics

On OMEGAMON Enhanced 3270 User Interface, Joe Clabby with **Clabby Analytics** commented: *What you've done to your 3270 interface is kind of a "wow"! I'm not a 3270 fan and I love what you've done with it"*

ftp://public.dhe.ibm.com/software/data/ECM/industry/TWDIBMTivoli_OMEGAMON.pdf

OMEGAMON Family announcement includes significant new capability across number of products

- **General Availability on 3/9/12**
  - OMEGAMON XE on z/OS V5.1
  - OMEGAMON XE for CICS on z/OS V5.1
  - OMEGAMON Dashboard Edition V5.1
  - OMEGAMON for z/OS Management Suite V4.2.1

- **Statement of Direction**
  - Enhanced 3270 User Interface will additionally be included in:
    - OMEGAMON XE for DB2 (2012 June)
    - OMEGAMON XE for IMS
    - OMEGAMON XE for Messaging
    - OMEGAMON XE for Storage
    - OMEGAMON XE for Mainframe Networks
  - Additional zIIP enablement

zEnterprise visibility support to allow for discovery and monitoring across all components

Workload Resource Groups can include information across z196/z114 and zBX

Discovery

Monitoring

Events

Business Service Management and SOA

Workload Dashboard

Add existing operating system, middleware, and application insights

Virtual Servers

Policy

Workload Resource Groups

Storage

Network

Unified Resource Manager APIs support

zEnterprise System

Z196/z114

z/OS

Linux

Linux

z/VM

System z PR/SM

HW Resources

zBX

System p

x86

AIX

AIX

Linux

Linux

Smart Analytics Optimizer

Data Power X150z

PowerVM

INxHY

Blade HW Resources

# IBM System z Service Management continues providing customers improved business flexibility

Key Takeaways

1. IBM recognized leader in Application Performance Management with Visibility, Control and Automation for Service Management

2. Redesigned OMEGAMON family reduces resource usage while providing better visibility and management of problems

3. Enhanced 3270 User Interface provides faster and more effective monitoring and problem management capability across multiple sysplexs

Smarter Physical Infrastructure & zPlatform
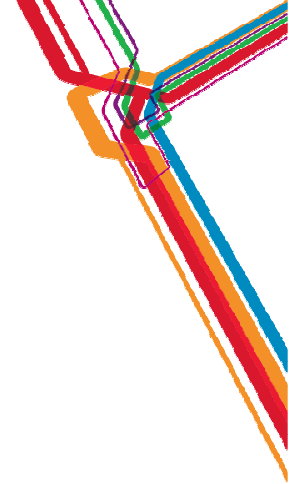
17.15 – 17.35
IBM TRIRIGA: an integrated and strategic workplace management Solution
Paolo Bizzozero – Tivoli Client Technical Professional

17.40 – 18.00
IBM Maximo Asset Management: identify, analyze, manage assets to improve efficiency and effectiveness
Barbara Guella – Tivoli Client Technical Professional

18.00 – 18.15
OMEGAMON v5: Client-driven redesign of mainframe performance Monitoring
Franco Lalli – Consulting IT Specialist zTivoli

18.15 – 18.30
Batch workload evolution 2012_PCTY_TWS86 Highlights.ppt
Domenico Chillemi – Executive IT Specialist, zStack Advocate

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