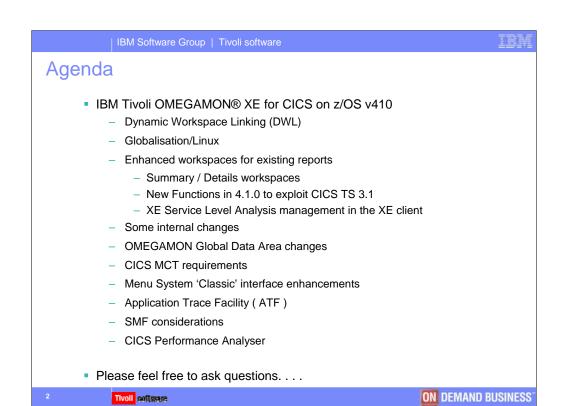IBM

IBM Tivoli OMEGAMON® XE for CICS on z/OS v4.1.0

Customer Presentation, December 13th

Richard Burford, OMEGAMON XE for CICS on z/OS Development
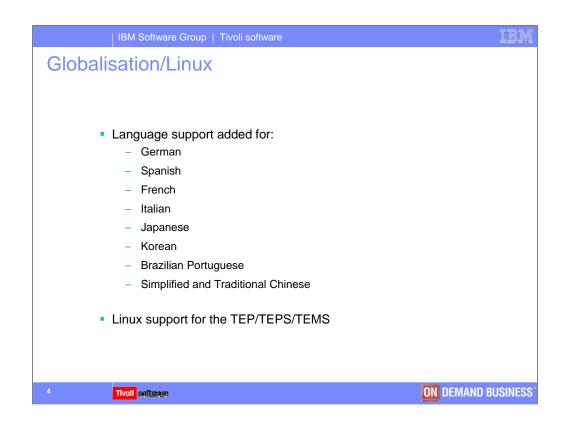
Tivoli software

ON DEMAND BUSINESS™

Agenda

- **IBM Tivoli OMEGAMON® XE for CICS on z/OS v410**
  - Dynamic Workspace Linking (DWL)
  - Globalisation/Linux
  - Enhanced workspaces for existing reports
    - Summary / Details workspaces
    - New Functions in 4.1.0 to exploit CICS TS 3.1
    - XE Service Level Analysis management in the XE client
  - Some internal changes
  - OMEGAMON Global Data Area changes
  - CICS MCT requirements
  - Menu System 'Classic' interface enhancements
  - Application Trace Facility (ATF)
  - SMF considerations
  - CICS Performance Analyser

- **Please feel free to ask questions. . . .**

2   **Tivoli** software   **ON** DEMAND BUSINESS

Dynamic Workspace Linking (DWL)

- Links from OMEGAMON XE for CICS will include:
  - DB2 Summary -> (DB2) DB2 CICS Connections
  - DBCTL Summary -> (IMS) IMS Address spaces
  - Logstream Analysis -> (z/OS) Coupling Facility Structures Data for Sysplex
  - Temporary Storage Queues -> (z/OS) Coupling Facility Structures Data for Sysplex
  - TCPIP Statistics -> (MFN) Application TCP Listeners
  - Message Queuing Analysis -> (MQ Series) Tran/PGM Statistics by Applid
  - Transaction Analysis -> (DB2) Detailed thread activity (Active)
  - Transaction Analysis -> (IMS) DBCTL Summary Detailed thread detail for CICS (Active)
- Plus links to other OMEGAMON XE for CICS on z/OS reports

Tivoli software

ON **DEMAND BUSINESS**

Globalisation/Linux

- Language support added for:
  - German
  - Spanish
  - French
  - Italian
  - Japanese
  - Korean
  - Brazilian Portuguese
  - Simplified and Traditional Chinese

- Linux support for the TEP/TEPS/TEMS

ON DEMAND BUSINESS

Enhancements to existing reports

- New situations
  - Situations added for the new reports added in OMEGAMON XE for CICS on z/OS v4.1.0
- New/Merged workspaces
  - Improve usability
  - Merges individual workspaces that had been created in the 3.1.0 release into more useful views.
  - Reduce the size of the list of reports in the navigation tree
  - Present related data where appropriate in a single workspace to speed problem determination and resolution.

Tivoli software

ON DEMAND BUSINESS

Enhanced workspaces

- Dispatcher
  - Merged Dispatcher Summary, Dispatcher TCB Pools and Dispatcher Modes into a single workspace.
- Dump Analysis
  - Merged Dump Analysis and Dump Details into a single workspace.
- JVM
  - JVM Analysis, JVM Classcache Details, JVMPool Statistics and JVM Profile Analysis merged into a single workspace
  - New link added from JVM Analysis to the new Single Transaction Workspace
- MVS TCBs
  - MVS TCB Summary and MVS TCB details merged into a single workspace.
- Storage
  - Pagepool summary and Pagepool details merged into a single workspace
- TCP/IP
  - TCPIP Statistics and TCPIP Service Statistics merged into a single workspace.
- Transient Data
  - Added new attributes

Tivoli software

ON DEMAND BUSINESS

6

Summary / Details Reports

- Summary / Details layout
  - Summary report shows data for all resources of that type
  - Summary reports showing the same data, without the longer fields
  - Summaries appear in the visible workspaces
  - Details can be reached as link targets from the summary
  - Summaries can be used to link from one detailed view to another
  - Link to the detail report uses a filter to typically only return data for a single resource

- This is in keeping with the presentation model used in other OMEGAMON products

Tivoli software

ON DEMAND BUSINESS

Workspace Linking

- Workspace linking:
  - Summaries visible on linked-to workspaces
  - Links only visible when relevant
  - Linked-to workspace may depend on nature of link

Tivoli software

ON DEMAND BUSINESS

Summary / Details Example: Web Service Analysis

- Web Service Analysis Summary / Details workspaces:
  - Initial workspace is a collection of Summary views
  - Links to Detail views
  - Linking within Detail views
  - Links only visible when relevant
  - Source Type / Source Name field on Document Template Details

ON DEMAND BUSINESS

Web Services Analysis workspace

Web Services Analysis - TAMORAN - SYSADMIN

File Edit View Help

View: Physical

Web Services: Summary

System ID	CICS Region Name	Web Service Name	Status	Use Count	Pipeline Name	Program Name	URIMAP Name	Container Name	Program Interface
MV2C	CICSOBA1	dispatchOrder	Inservice	0	EXPIPE02				n/a
MV2C	CICSOBA1	dispatchOrderEndpoint	Inservice	0	EXPIPE01	DFH0XODE	$320460		Commarea
MV2C	CICSOBA1	inquireCatalog	Inservice	0	EXPIPE01	DFH0XCMN	$320461		Commarea
MV2C	CICSOBA1	inquireCatalogClient	Inservice	0	EXPIPE02				n/a
MV2C	CICSOBA1	inquireCatalogWrapper	Inservice	0	EXPIPE01	DFH0XICW	$320462	DFHWS-DATA	Channel
MV2C	CICSOBA1	inquireSingle	Inservice	0	EXPIPE01	DFH0XCMN	$320463		Commarea
MV2C	CICSOBA1	inquireSingleClient	Inservice	0	EXPIPE02				n/a

Web Services: Virtual Host Details

System ID	CICS Region Name	Status	TCPIP Service	Host name
MV2C	CICSOBA1	Enabled		*

Web Services: Pipeline Summary

System ID	CICS Region Name	Pipeline name	Pipeline status	Use Count
MV2C	CICSOBA1	EXPIPE01	Enabled	0
MV2C	CICSOBA1	EXPIPE02	Enabled	0

Web Services: Document Template Details

System ID	CICS Region Name	Document Template	Extended Name	CR/LF Append	Format	Source Type	Source Name
MV2C	CICSOBA1	DFHWBPW1		Yes	EBCDIC	PROGRAM	DFHWBPW1
MV2C	CICSOBA1	DFHWBPW2		Yes	EBCDIC	PROGRAM	DFHWBPW2
MV2C	CICSOBA1	DFHWBPW3		Yes	EBCDIC	PROGRAM	DFHWBPW3
MV2C	CICSOBA1	DFHWBPW4		Yes	EBCDIC	PROGRAM	DFHWBPW4

Hub Time: Mon, 01/23/2006 03:42 PM   Server Available   Web Services Analysis - TAMORAN - SYSADMIN

10   Tivoli software   ON DEMAND BUSINESS

The color table:

> •Oval color is this week's status. Background last weeks.
>
> •Blank out those categories not applicable or not providing status. Do not delete them from slide. Stop light is overall project status color.

Project Milestone Summary:

> •Original dates are first plan of record.
>
> •External GA date is the date we commit in the Plan DCP and in Clearinghouse.
>
> •Actual dates are actual outlooks for completion. These will hopefully be somewhere equal to or contained between the internal and external dates. These dates are also shown in Clearinghouse.
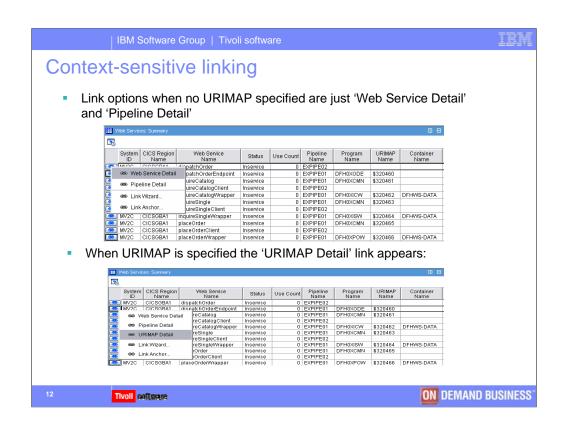
Dates in black are dates which have been reviewed in the OPS meeting. External and Actual dates should match between your project and Clearinghouse.

Dates in blue are dates which need to change in Clearinghouse. Once they have been reviewed in the OPS review they can then be updated in Clearinghouse.

Row entries: These are the key dates for the "Define the Product", "Plan the Stages" and "Design the UI & System" steps. The also include tractable activities that begin in these phases and complete later in the project. The key point of conclusion here is the Plan DCP, which is triggered by a completed RCS, and a Stage Delivery Project Plan.

•Design end = SDD1(s) for the stage are Approved

•CUT end = Code is inspected, unit tested, and delivered in a build

•Test Phase start = entry criteria as defined by the relevant Test plan are met and recorded, with any exceptions approved. This does NOT refer to the prep phase – this is the execution phase.

•Test Phase end = Exit criteria as defined by the relevant Test Plan are met and recorded, with any exceptions approved.

•PII – this is a milestone (start and end date are the same) representing when the files are turned over to the GPM

•Beta – start date represents when beta code is shipped to customers. End date is GA+30 days

•Availability DCP is aligned with the IPMT calendar and must precede the Release to Marketing in the RFA cycle

•RFA – must occur on a Tuesday and must precede GA or eGA

Web services analysis – Web service details

11

Context-sensitive linking

- Link options when no URIMAP specified are just 'Web Service Detail' and 'Pipeline Detail'

	System ID	CICS Region Name	Web Service Name	Status	Use Count	Pipeline Name	Program Name	URIMAP Name	Container Name
	MV2C	CICSGBA1	dispatchOrder	Inservice	0	EXPIPE02			
Web Service Detail			patchOrderEndpoint	Inservice	0	EXPIPE01	DFH0XODE	$320460	
Pipeline Detail			uireCatalog	Inservice	0	EXPIPE01	DFH0XCMN	$320461	
			uireCatalogClient	Inservice	0	EXPIPE02			
Link Wizard...			uireCatalogWrapper	Inservice	0	EXPIPE01	DFH0XICW	$320462	DFHWS-DATA
			uireSingle	Inservice	0	EXPIPE01	DFH0XCMN	$320463	
Link Anchor...			uireSingleClient	Inservice	0	EXPIPE02			
	MV2C	CICSGBA1	inquireSingleWrapper	Inservice	0	EXPIPE01	DFH0XISW	$320464	DFHWS-DATA
	MV2C	CICSGBA1	placeOrder	Inservice	0	EXPIPE01	DFH0XCMN	$320465	
	MV2C	CICSGBA1	placeOrderClient	Inservice	0	EXPIPE02			
	MV2C	CICSGBA1	placeOrderWrapper	Inservice	0	EXPIPE01	DFH0XPOW	$320466	DFHWS-DATA

- When URIMAP is specified the 'URIMAP Detail' link appears:

	System ID	CICS Region Name	Web Service Name	Status	Use Count	Pipeline Name	Program Name	URIMAP Name	Container Name
	MV2C	CICSGBA1	dispatchOrder	Inservice	0	EXPIPE02			
	MV2C	CICSGBA1	dispatchOrderEndpoint	Inservice	0	EXPIPE01	DFH0XODE	$320460	
Web Service Detail			reCatalog	Inservice	0	EXPIPE01	DFH0XCMN	$320461	
Pipeline Detail			reCatalogClient	Inservice	0	EXPIPE02			
			reCatalogWrapper	Inservice	0	EXPIPE01	DFH0XICW	$320462	DFHWS-DATA
URIMAP Detail			reSingle	Inservice	0	EXPIPE01	DFH0XCMN	$320463	
			reSingleClient	Inservice	0	EXPIPE02			
Link Wizard...			reSingleWrapper	Inservice	0	EXPIPE01	DFH0XISW	$320464	DFHWS-DATA
			eOrder	Inservice	0	EXPIPE01	DFH0XCMN	$320465	
Link Anchor...			eOrderClient	Inservice	0	EXPIPE02			
	MV2C	CICSGBA1	placeOrderWrapper	Inservice	0	EXPIPE01	DFH0XPOW	$320466	DFHWS-DATA

Tivoli software

ON DEMAND BUSINESS

12

New Workspaces in 4.1.0

- Grouped into new Workspaces showing related reports:
  - shorter navigation tree
  - intuitive workspaces showing related reports
- Summary/Detail pattern used extensively
  - Many of the new reports contain long character strings (URLs, file paths etc).

CICS TS 3.1 Exploitation Reports

- Over 20 new reports added to exploit CICS TS 3.1 functionality

- Related reports grouped into Workspaces:
  - Business Transaction Services (BTS) Analysis (4)
  - Enqueue Analysis (1)
  - Enterprise Java Analysis (4)
  - Exit Program Analysis (1)
  - Recovery Manager Analysis (3)
  - URIMAP Analysis (3 Reports)
  - Web Services Analysis (4)
  - Work Request Analysis (1)

Tivoli software

ON DEMAND BUSINESS

New reports to exploit CICS TS 3.1 functionality (1)

- Business Transaction Services (BTS) Analysis
  – Process Type Detail
  – Process Name Detail
  – Container Detail
  – Activity Detail
- Enqueue Analysis
  – Enqueue Pool Details
- Enterprise Java Analysis
  – CORBASERVER Details
  – DJAR Details
  – Enterprise Java Bean Details
  – Request Model Details
- Exit Program Analysis
  – Exit Program Detail

Tivoli software

ON DEMAND BUSINESS

15

New reports to exploit CICS TS 3.1 functionality (2)

- Recovery Manager Analysis
  - Recovery Manager Summary
  - Unit-of-work Link Detail
  - Unit-of-work DSN Failure
- URIMAP Analysis
  - URIMAP Summary
  - URIMAP Global Counts
  - URIMAP Details
- Web Services Analysis
  - Web Service Detail
  - Virtual Host Detail
  - Pipeline Detail
  - Document Template Detail
- Work Request Analysis
  - Work Request Details

ON DEMAND BUSINESS

Business Transaction Services (BTS) Analysis

Enqueue Analysis

Enterprise Java Analysis

Tivoli software

ON DEMAND BUSINESS

19

Exit Program Analysis

Recovery Manager Analysis

URIMAP Analysis

Web Services Analysis

Workrequest Analysis

ON DEMAND BUSINESS™

24

CICS Service Level Analysis (SLA) support in XE

Take action enhancements

- The TEP take action feature provides an interface which allows the customer to issue commands, either directly or in response to a situation being evaluated as TRUE.

- New commands:

  - Transient Data delete
  - Temporary Storage delete by queue ID or hex queue ID
  - WTO

Tivoli software

ON DEMAND BUSINESS

Sample take action commands

Take action TS Delete

OMEGAMON Global Data Area changes

- USER_EXIT_TRACE parameter is removed
- EXIT_SUPPRESSION parameter is removed
- CICSESA_SMF_RECORDS parameter is renamed as CICS_CMF_WRITE=NO|YES
- MCT_VALIDATION_MESSAGES=NO|YES
- COMPRESS_SMF112_RECORDS=NO|YES
    - SMFID cannot be changed, and will default to 112
    - TRACE(ATF) data cannot be written to SMF

- Run a verify job (supplied in hilev.TKANSAM(KC2VERFY)) to convert pre-560 global data area(s) to the new format.
    - You might consider copying your existing global data area(s) to a new library, which you can then convert. This will allow you to 'fall back' to an earlier release if that is in your plans. . . .

Tivoli software

ON DEMAND BUSINESS

OMEGAMON Global Data Area verification

30

OMEGAMON New Global Data Area parameters

There are 2 new parameters shown here;
MCT_VALIDATION_MESSAGES=YES|NO, and

COMPRESS_SMF112_RECORDS=YES|NO

31

IBM

MCT requirements – pre v410

- In previous releases OMEGAMON CICS required that you add MCT definitions which allow OMEGAMON data to be written to CMF.

- Sample OMEGAMON sections for OMEGBSC, OMEGDB2, OMEGDLI, CANMQ, CANUE1 and CANWLMSC are provided in *hilev.*TKANSAM

- At the end of task a series of EXEC CICS MONITOR requests take the OMEGAMON data, and write it into the CMF buffer. In our XMNOUT code the OMEGAMON data is extracted and written out to those subtasks that require that data. In this way OMEGAMON is able to send data to:

  – ONDV (near term history), RTA (Response Time Analysis) and SLA (Service Level Analysis)

Tivoli software

ON DEMAND BUSINESS

MCT requirements – v410

- In v410 the OMEGAMON MCT entries are only required IF you wish to post-process the CMF data using CICS Performance Analyser or a substitute product
  - Customers may now be able to remove the OMEGAMON MCT entries

- Our end of task TRUE code no longer uses EXEC CICS MONITOR requests to write the data into the CMF buffer

- Our XMNOUT code path has been reduced by about 600 instructions as a result of this effort

- ONDV, RTA and XE's SLA component have no requirement for the OMEGAMON MCT definitions

- Sample MCTs are shipped in *hilev*.TKANSAM and include the new OMEGCICS definitions for CICS PA support

ON DEMAND BUSINESS

OMEGAMON initialisation messages

OMEGAMON initialisation messages

OMEGAMON SMF data collection controls

Trace (ATF) controls have been moved to the ATF Status and ATF Filters panels

OMEGAMON product status – fastpath U.R

OMEGAMON History changes (ONDV)

New options, C – Trace Record View, and D – Trace Filters Management, are added.

Task numbers appended with C, S, D and F to indicate why the record was written.

ON DEMAND BUSINESS

OMEGAMON ATF via the menu system – fastpath O.W

OMEGAMON ATF via the menu system

OMEGAMON ATF via the menu system

OMEGAMON ATF via the menu system

OMEGAMON ATF via the menu system

SMF Considerations

- In C2560 a change was made so that our database SMF data is;
  - Written as a new IBM compliant number, 112
  - Buffered in CICS
    - In the past each transaction which recorded database performance data would result in at least one SMF write.
    - In C2560 the records are buffered, when the buffer fills an SMF write operation occurs.
  - May optionally be compressed, the compression uses a standard IBM utility, and occurs immediately before the physical write to SMF

- Add KOCOME00 to the PLTSD to ensure that any partial buffers are written to SMF when OMEGAMON terminates. . .

Tivoli software

ON DEMAND BUSINESS

SMF details – no compression – fastpath O.U

The buffers are not allocated unless options are set which would initiate a write to SMF for one of the supported databases – in that case all columns are set to n/a

Tivoli software

ON DEMAND BUSINESS

SMF details – with compression – fastpath O.U

OMEGAMON 112 data is optionally compressed immediately before the write to SMF.
Compression uses a standard z/OS service, CSRCESRV.

SMF status – error detected during compression

Here we see the RC 40 from the SMFEWTM requests, issued during XMNOUT (GLUE) processing. RC 40 (x'28') indicates a buffer full return.

ON DEMAND BUSINESS

SMF errors – operator console

Here we see the RC 40 from the SMFEWTM requests, issued during XMNOUT (GLUE) processing, and OCSYST (OMEGAMON termination) processing. These return codes are SMFEWTM macro return codes, and documented in the SMF manual set.

OMEGAMON XE for CICS v410 and CICS Performance Analyser v1.4

- Announcement letter
  - IBM United States Software Announcement 206-236 October 3, 2006

- Support for the new OMEGCICS EMP is implemented via CICS PA service, and includes support for Adabas, Datacom, IDMS and Supra call counts and timings, and details of those transactions which have been abended by OMEGAMON's resource limiting feature (RLIM).

- From the announcement letter;

- **New enhancements to CICS PA V1.4 will be added through the service channel.**
- For example, support for OMEGAMON CMF performance (SMF110) MCT User fields (PTF for APAR PK30209) will be implemented.
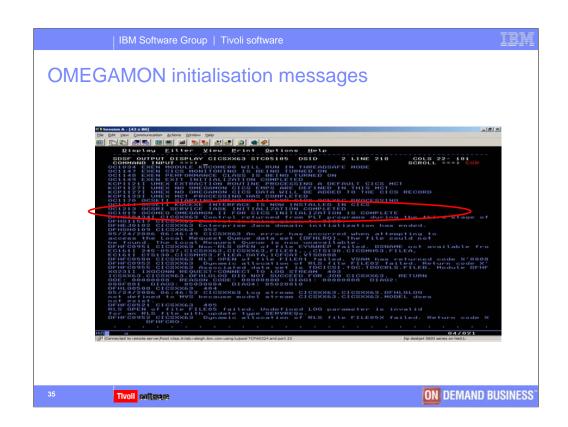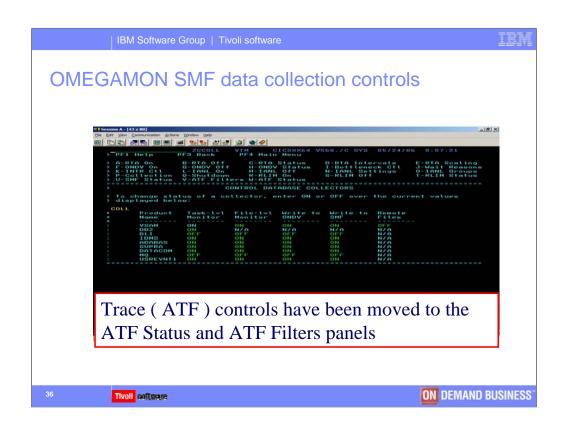
Tivoli software

ON DEMAND BUSINESS

49

Report Forms – Field Categories - OMEGAMON

Report Forms – OMEGAMON Third Party Support

List Report Form showing the OMEGAMON Third Party Support fields available.

List Report – OMEGAMON Third Party Support

```
V1R4M0                                  CICS Performance Analyzer
                                          Performance List
                    _____

LIST0001 Printed at  9:36:33 10/05/2006    Data from 18:56:43  9/18/2006              APPLID CICSXX64      Page      2
OMEGAMON Third Party Support - Detail

Tran Userid     TaskNo Stop          IDMS Req IDMS Req ADAB Req ADAB Req SUPR Req SUPR Req DCOM Req DCOM Req User Evt User Evt
                       Time          Time     Count    Time     Count    Time     Count    Time     Count    Time     Count
ADA3 CICSXX64      171 18:56:44.210  .0000        0    .0005        8    .0000        0    .0000        0    .0000        0
IDM1 CICSXX64      172 18:56:44.210  .0001       10    .0000        0    .0000        0    .0000        0    .0000        0
ADA4 CICSXX64      174 18:56:44.212  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
DCO1 CICSXX64      176 18:56:44.213  .0000        0    .0000        0    .0000        0    .0002       15    .0000        0
ADA4 CICSXX64      178 18:56:44.214  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
SUP1 CICSXX64      179 18:56:44.215  .0000        0    .0000        0    .0001       11    .0000        0    .0000        0
ADA4 CICSXX64      181 18:56:44.216  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
SUP1 CICSXX64      182 18:56:44.216  .0000        0    .0000        0    .0001       11    .0000        0    .0000        0
ADA3 CICSXX64      186 18:56:44.218  .0000        0    .0002        8    .0000        0    .0000        0    .0000        0
IDM1 CICSXX64      187 18:56:44.219  .0001       10    .0000        0    .0000        0    .0000        0    .0000        0
ADA4 CICSXX64      189 18:56:44.220  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
DCO1 CICSXX64      191 18:56:44.222  .0000        0    .0000        0    .0000        0    .0002       15    .0000        0
ADA4 CICSXX64      193 18:56:44.223  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
SUP1 CICSXX64      194 18:56:44.224  .0000        0    .0000        0    .0001       11    .0000        0    .0000        0
ADA3 CICSXX64      197 18:56:44.225  .0000        0    .0001        8    .0000        0    .0000        0    .0000        0
IDM1 CICSXX64      198 18:56:44.226  .0001       10    .0000        0    .0000        0    .0000        0    .0000        0
ADA4 CICSXX64      200 18:56:44.227  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
DCO1 CICSXX64      202 18:56:44.229  .0000        0    .0000        0    .0000        0    .0004       15    .0000        0
ADA4 CICSXX64      204 18:56:44.230  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
SUP1 CICSXX64      205 18:56:44.230  .0000        0    .0000        0    .0001       11    .0000        0    .0000        0
ADA4 CICSXX64      207 18:56:44.232  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
SUP1 CICSXX64      208 18:56:44.233  .0000        0    .0000        0    .0001       11    .0000        0    .0000        0
ADA3 CICSXX64      212 18:56:44.234  .0000        0    .0002        8    .0000        0    .0000        0    .0000        0
IDM1 CICSXX64      213 18:56:44.235  .0001       10    .0000        0    .0000        0    .0000        0    .0000        0
ADA4 CICSXX64      215 18:56:44.236  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
DCO1 CICSXX64      217 18:56:44.238  .0000        0    .0000        0    .0000        0    .0002       15    .0000        0
ADA4 CICSXX64      219 18:56:44.239  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
SUP1 CICSXX64      220 18:56:44.239  .0000        0    .0000        0    .0001       11    .0000        0    .0000        0
ADA3 CICSXX64      223 18:56:44.241  .0000        0    .0002        8    .0000        0    .0000        0    .0000        0
IDM1 CICSXX64      224 18:56:44.241  .0001       10    .0000        0    .0000        0    .0000        0    .0000        0
ADA4 CICSXX64      226 18:56:44.243  .0000        0    .0003       16    .0000        0    .0000        0    .0000        0
DCO1 CICSXX64      228 18:56:44.244  .0000        0    .0000        0    .0000        0    .0002       15    .0000        0
```

Tivoli software

ON DEMAND BUSINESS

52

Summary Report – OMEGAMON Third Party Support

```
V1R4M0                                      CICS Performance Analyzer
                                              Performance Summary
                                       _____

SUMM0001 Printed at  9:25:19 10/05/2006     Data from 16:41:03  9/18/2006 to 19:26:14  9/18/2006           Page     1
OMEGAMON Third Party Support - Summary

                      Avg     Avg     Avg     Avg     Avg     Avg     Avg     Avg     Avg     Avg
Tran       #Tasks IDMSREQ IDMSREQ ADABREQ ADABREQ SUPRREQ SUPRREQ DCOMREQ DCOMREQ USREVNT USREVNT
                     Time   Count    Time   Count    Time   Count    Time   Count    Time   Count
ADA3         6736  .0000       0   .0002       8   .0000       0   .0000       0   .0000       0
ADA4        16840  .0000       0   .0003      16   .0000       0   .0000       0   .0000       0
ADA5         3369  .0000       0  8.3947       7   .0000       0   .0000       0   .0000       0
ADA6            1  .0000       0  8.5790       8   .0000       0   .0000       0   .0000       0
DCO1         6736  .0000       0   .0000       0   .0000       0   .0026      15   .0000       0
IDM1         6736  .0026      10   .0000       0   .0000       0   .0000       0   .0000       0
OMEG            4  .0000       0   .0000       0   .0000       0   .0000       0   .0000       0
SUP1        10104  .0000       0   .0000       0   .0029      11   .0000       0   .0000       0
Total       50526  .0004       1   .5601       6   .0006       2   .0003       1   .0000       0
```

ON DEMAND BUSINESS

Questions?

Any questions about the product enhancements?

ON DEMAND BUSINESS