System Automation for z/OS goes Tivoli Enterprise Portal

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Tivoli Talk

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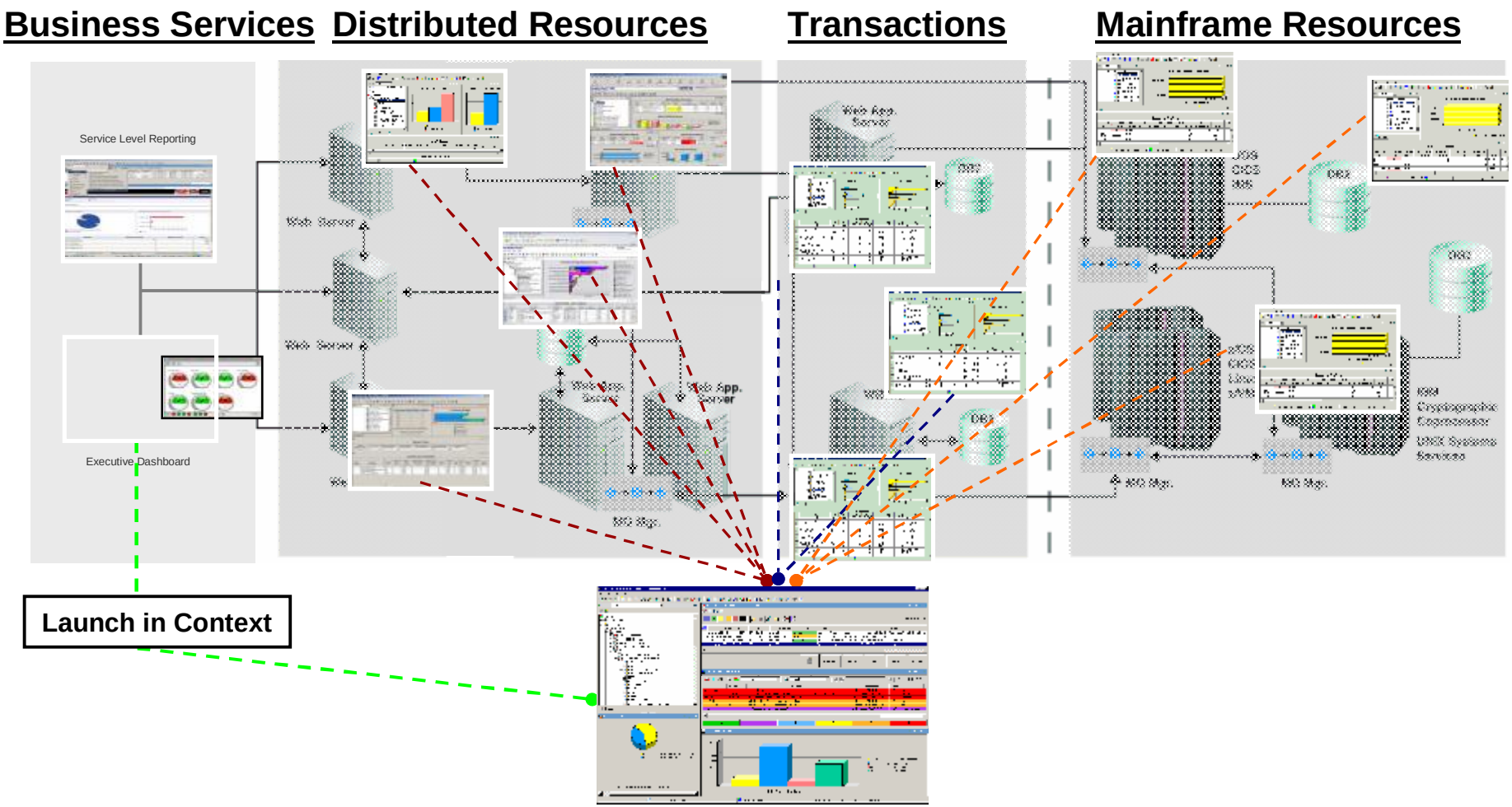
Agenda

- Introduction
- TEP Workspaces
- Situations
- Status Items
- Component Overview and Configuration

A Complete View on IT Infrastructure Performance

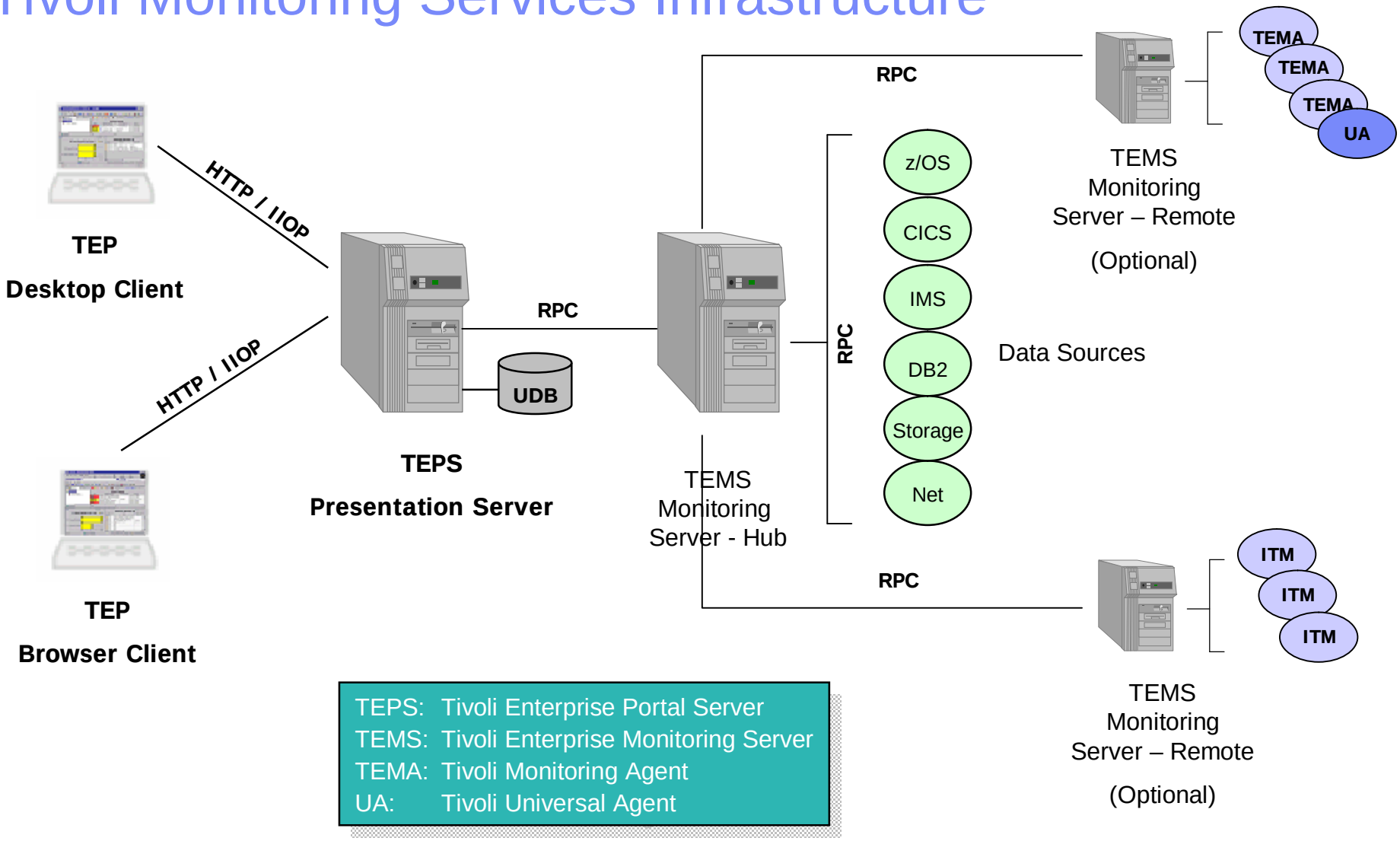
A single portal to monitor the overall health of the infrastructure



Objective

- An integrated monitoring environment that spans an IT-organization from End-to-End is an important building block in the IBM service management strategy
- The Tivoli Enterprise Portal (TEP) fulfills the needs for a user interface that provides these integration capabilities including today
  - IBM Tivoli Monitoring V5
  - IBM Tivoli Monitoring V6
  - OMEGAMON
  - IBM Tivoli Composite Application Management
- To take the integration to the next level and adding operational tasks to the TEP, automation views must be integrated as well
- System Automation for z/OS will add an initial set of views providing details about the state of automation on a system, in the sysplex, and within the enterprise
- Support is shipped as extension to SA z/OS V3.1 in OA18415

Tivoli Monitoring Services Infrastructure



SA z/OS Extensions to ITMS Infrastructure

- With OA18415, SA z/OS introduces the following extensions to the ITMS infrastructure
  - A new monitoring agent (TEMA) collecting data for queries and situations
  - Application support for the TEP desktop / browser client
- SA z/OS Agent
  - The TEMA registers the System Automation for z/OS application
  - It registers one or more System Automation for z/OS Agent sub-nodes, one for each system with SA/NetView running
  - It provides sample routines invoked by the ITMS infrastructure on behalf of queries or situations
  - The monitoring agent interfaces with NetView via the Program-to-Program Interface (PPI)
- SA z/OS application support consisting of
  - A set of default queries
  - A set of default workspaces containing one or more views based on the default queries
  - Links associated with workspaces to allow the user to navigate between different levels of detail
  - Situations that allow the user to monitor the health of the automated environment

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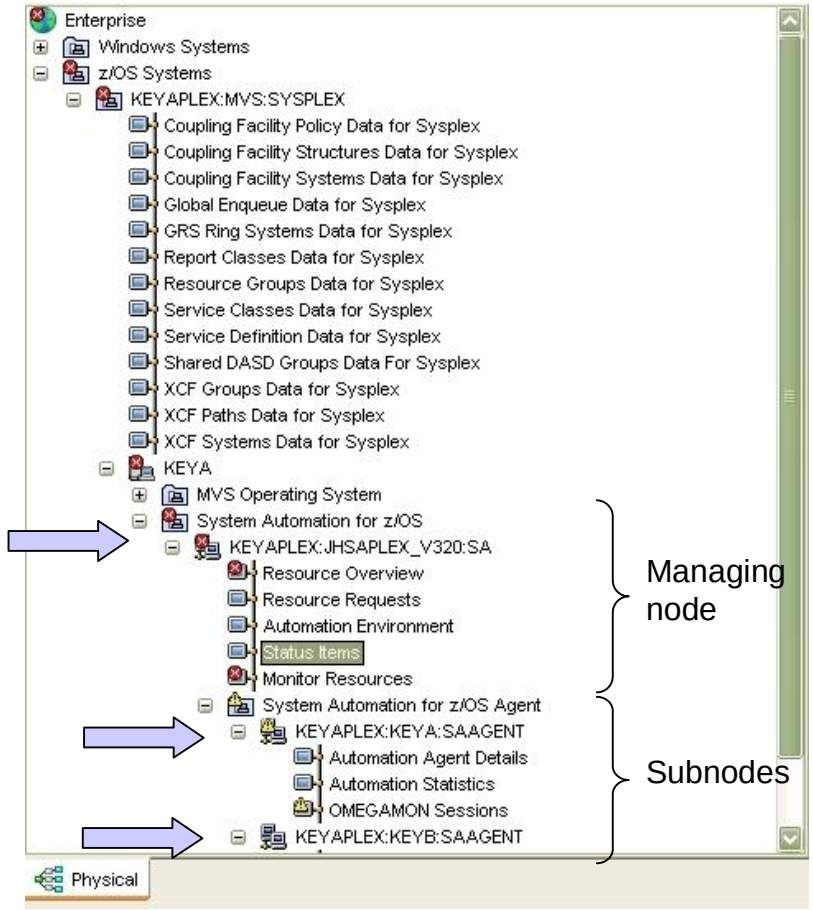
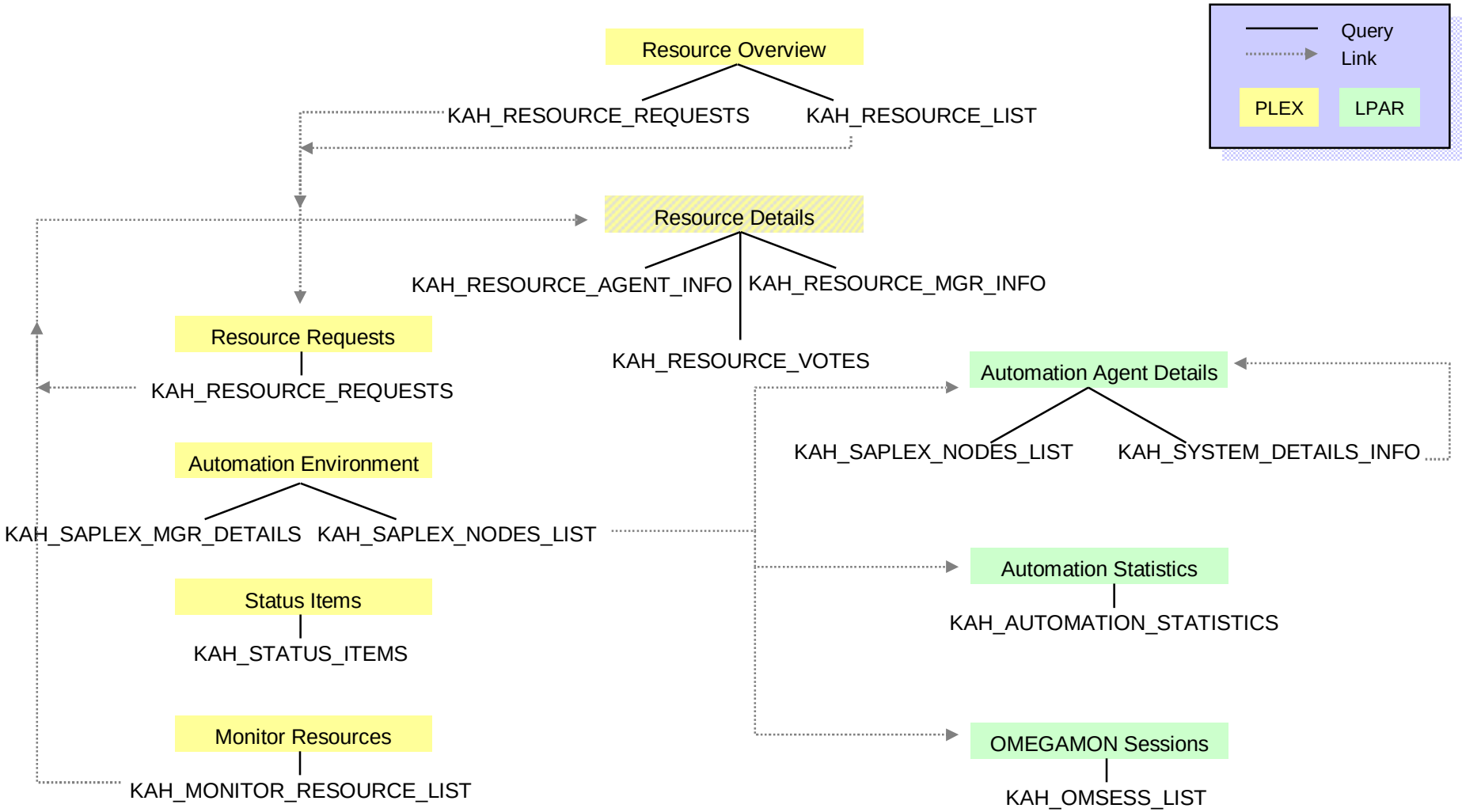
System Automation in the TEP Navigator

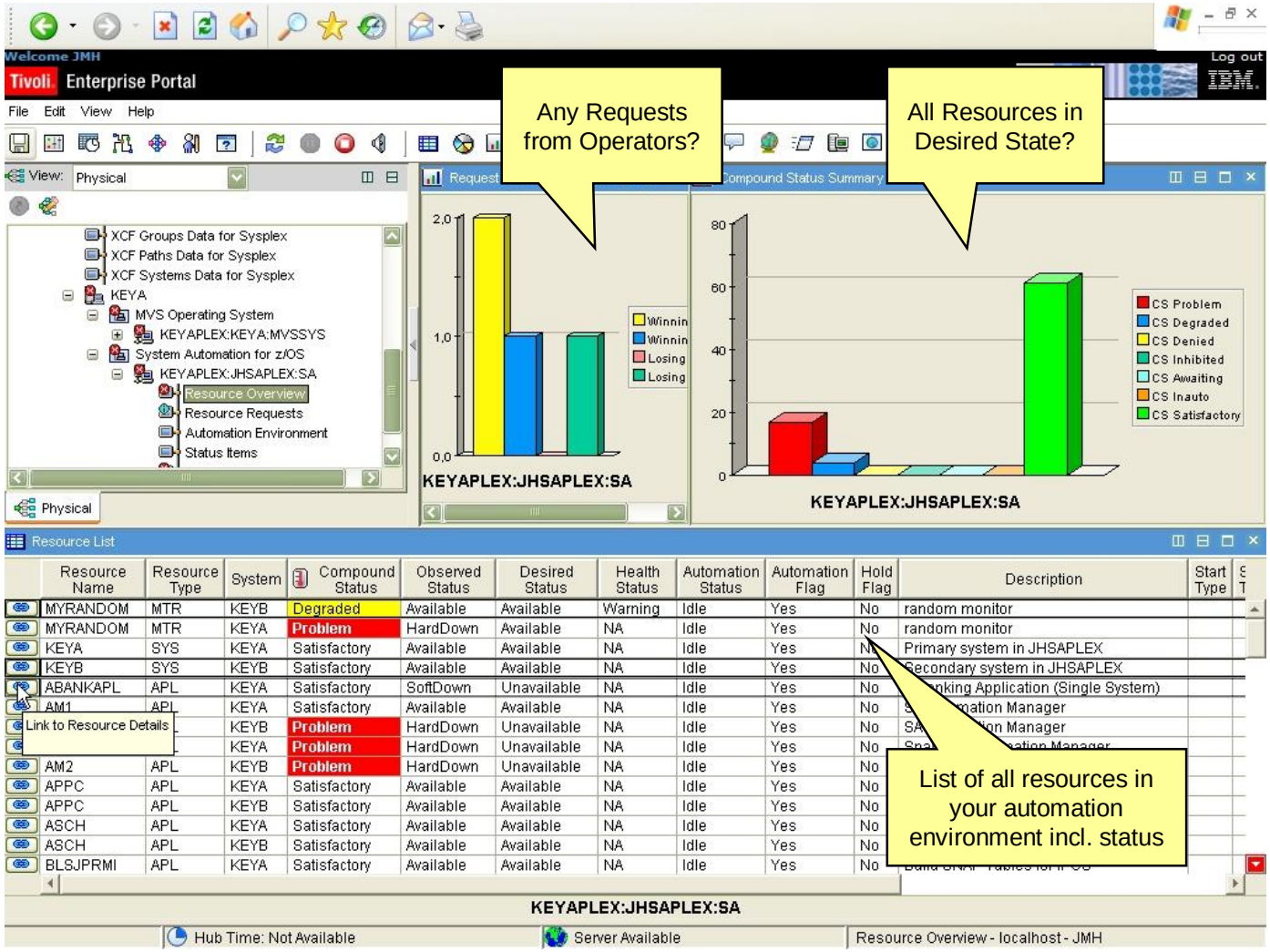


- SA z/OS appears in the z/OS Systems subtree
- The TEMA registers at the TEMS using the sysplex name, the SA sysplex group name and the constant “SA”, e.g.
  - KEYAPLEX:JHSAPLEX_V310:SA
- The node is shown on the system the TEMA is running on, here system KEYA
- Each system detected in the automation environment by the TEMA causes an additional subnode to be registered at the TEMS using the sysplex name, the SMF ID, and the constant “SAAGENT”, e.g.
  - KEYAPLEX:KEYA:SAAGENT
  - KEYAPLEX:KEYB:SAAGENT
- The existence of subnodes depends on the status of the automation agent

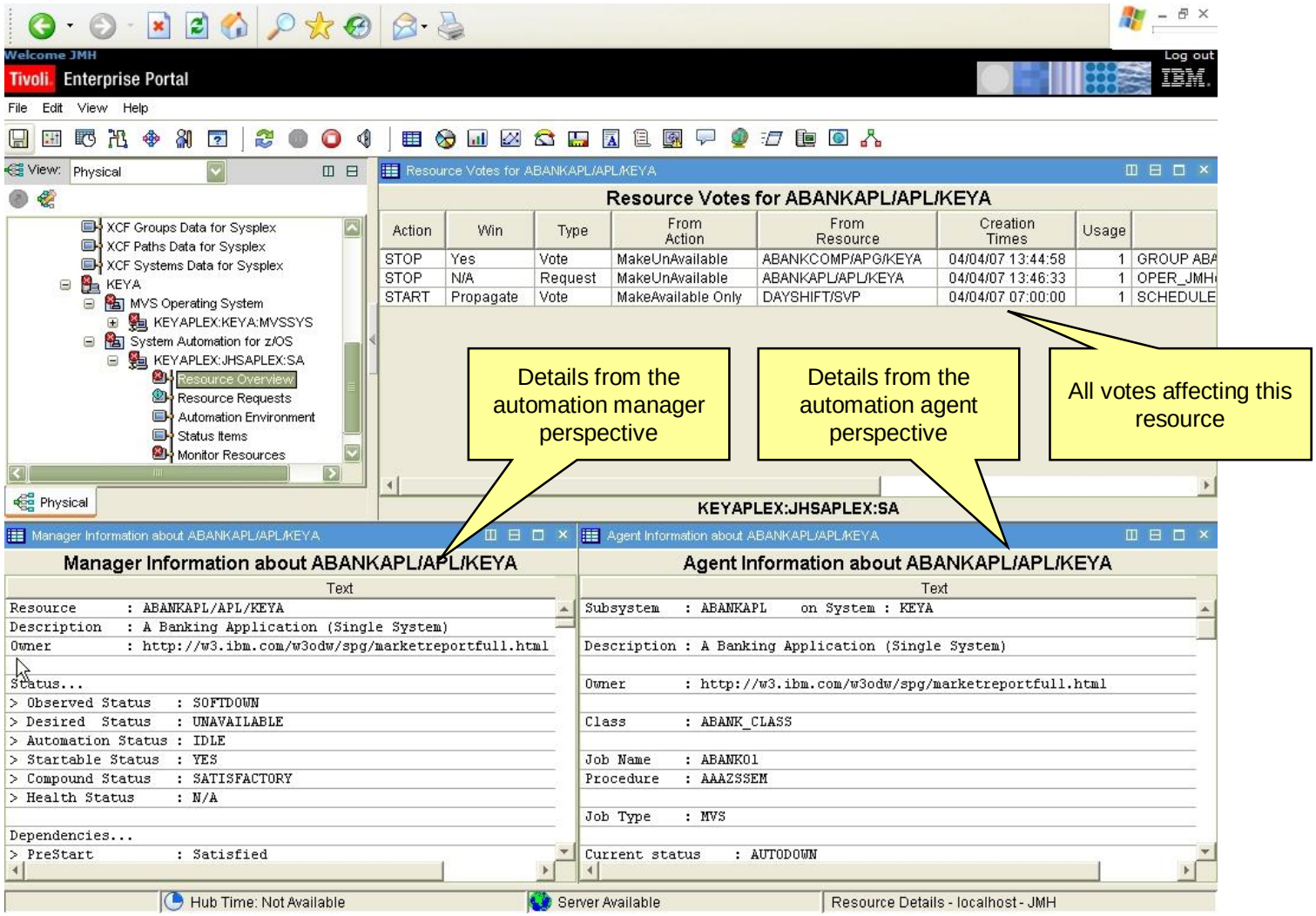
Workspaces and Queries



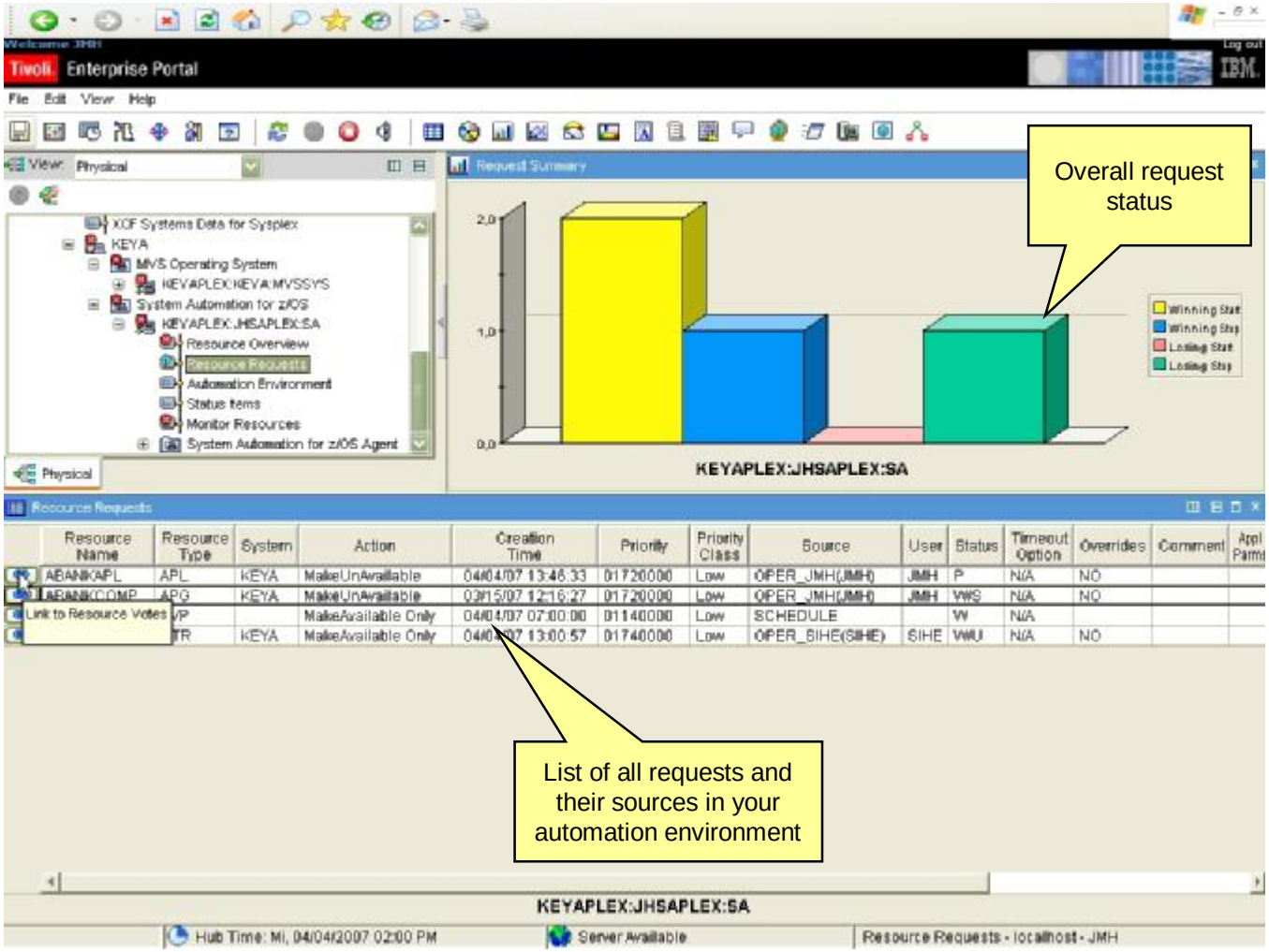
Resource Overview



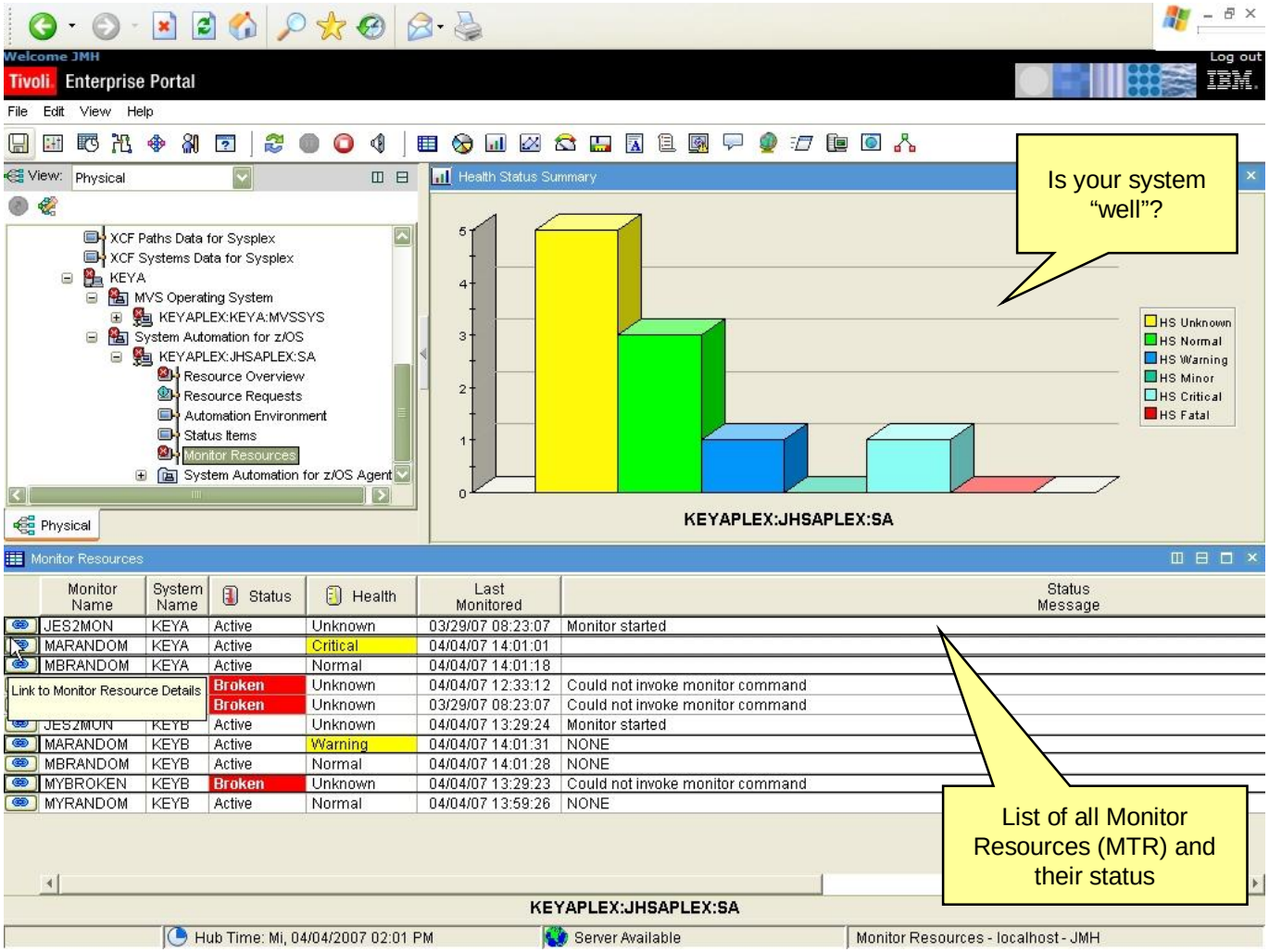
Resource Details



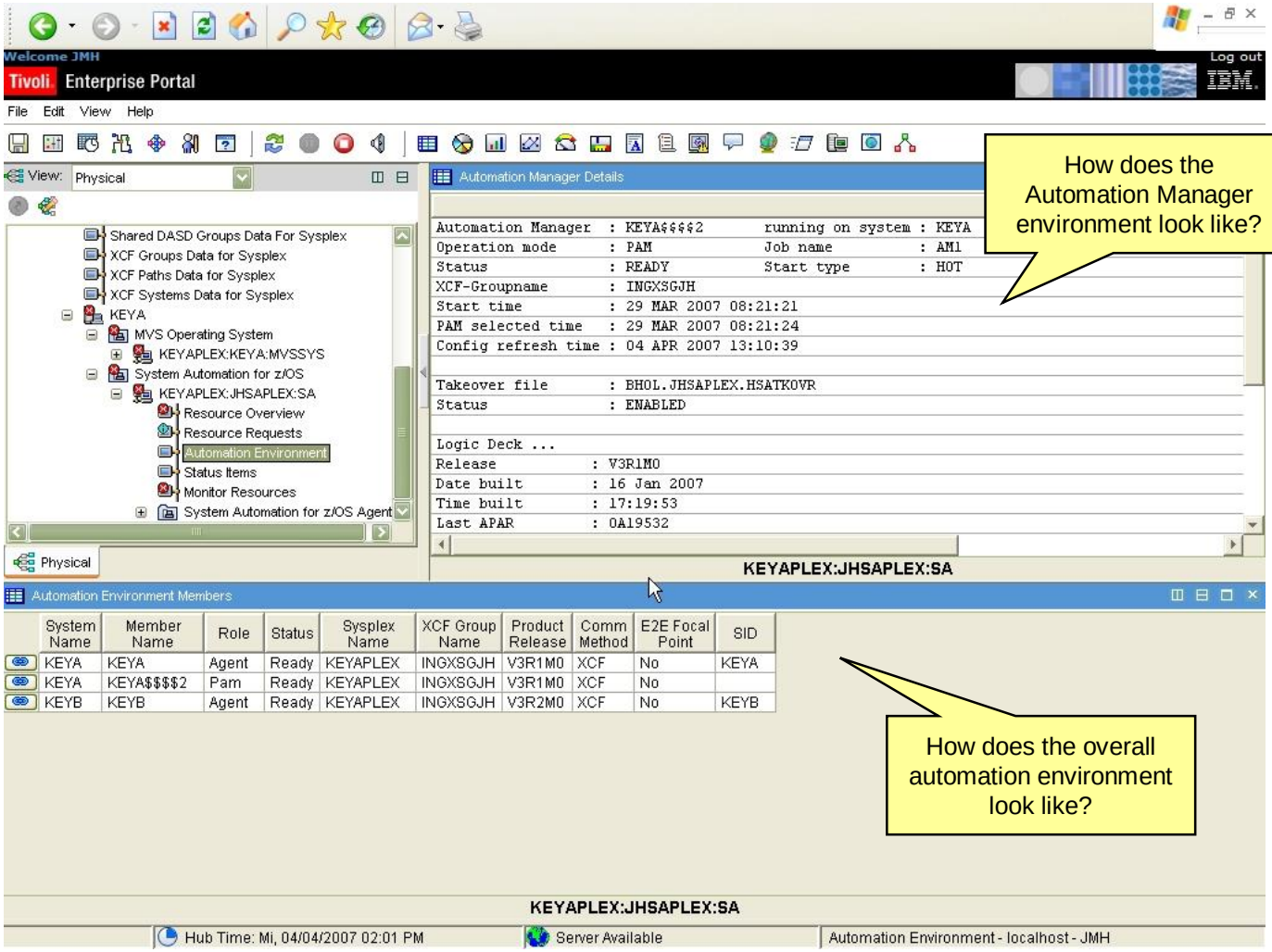
Resource Requests



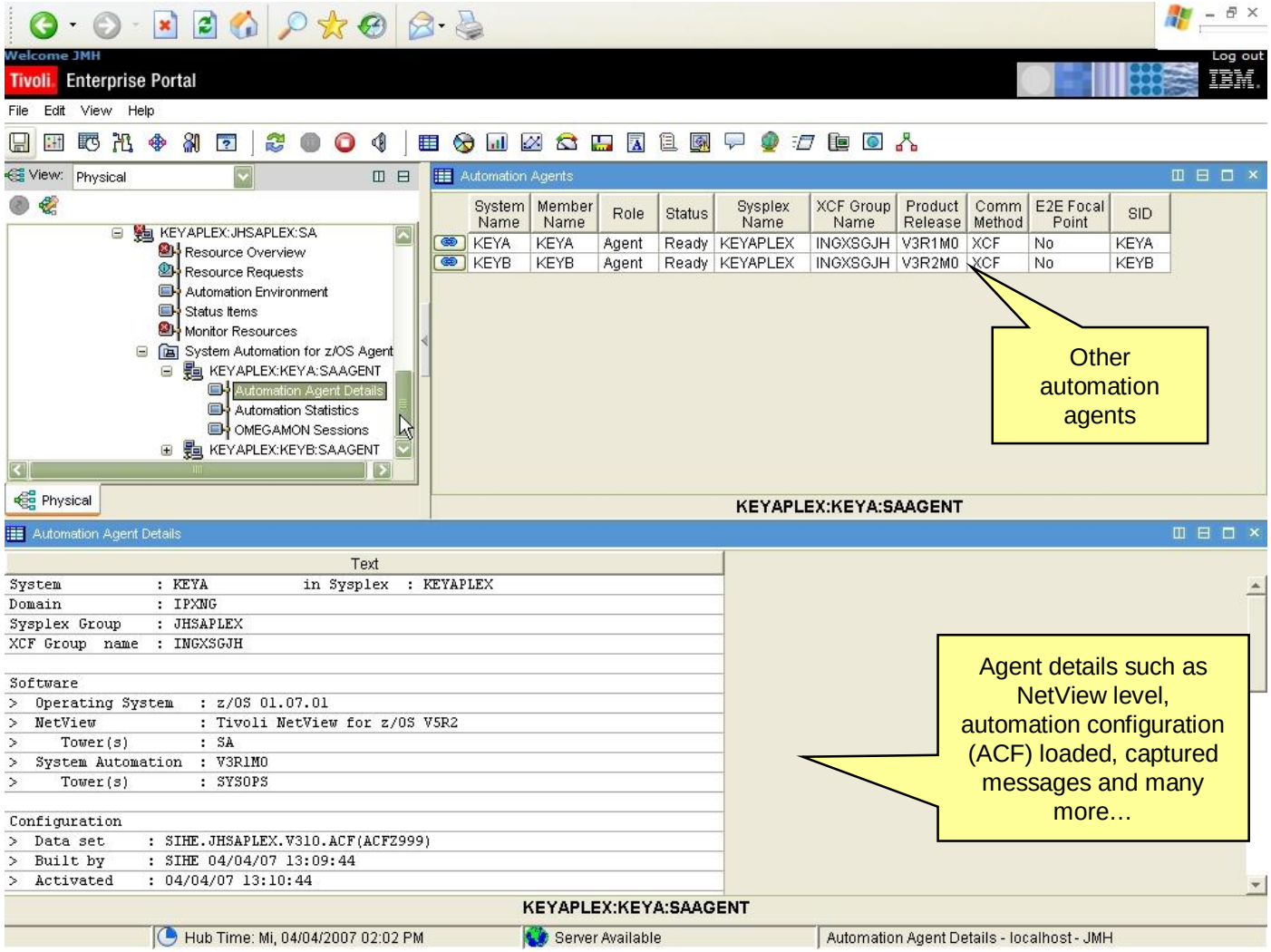
Monitor Resources



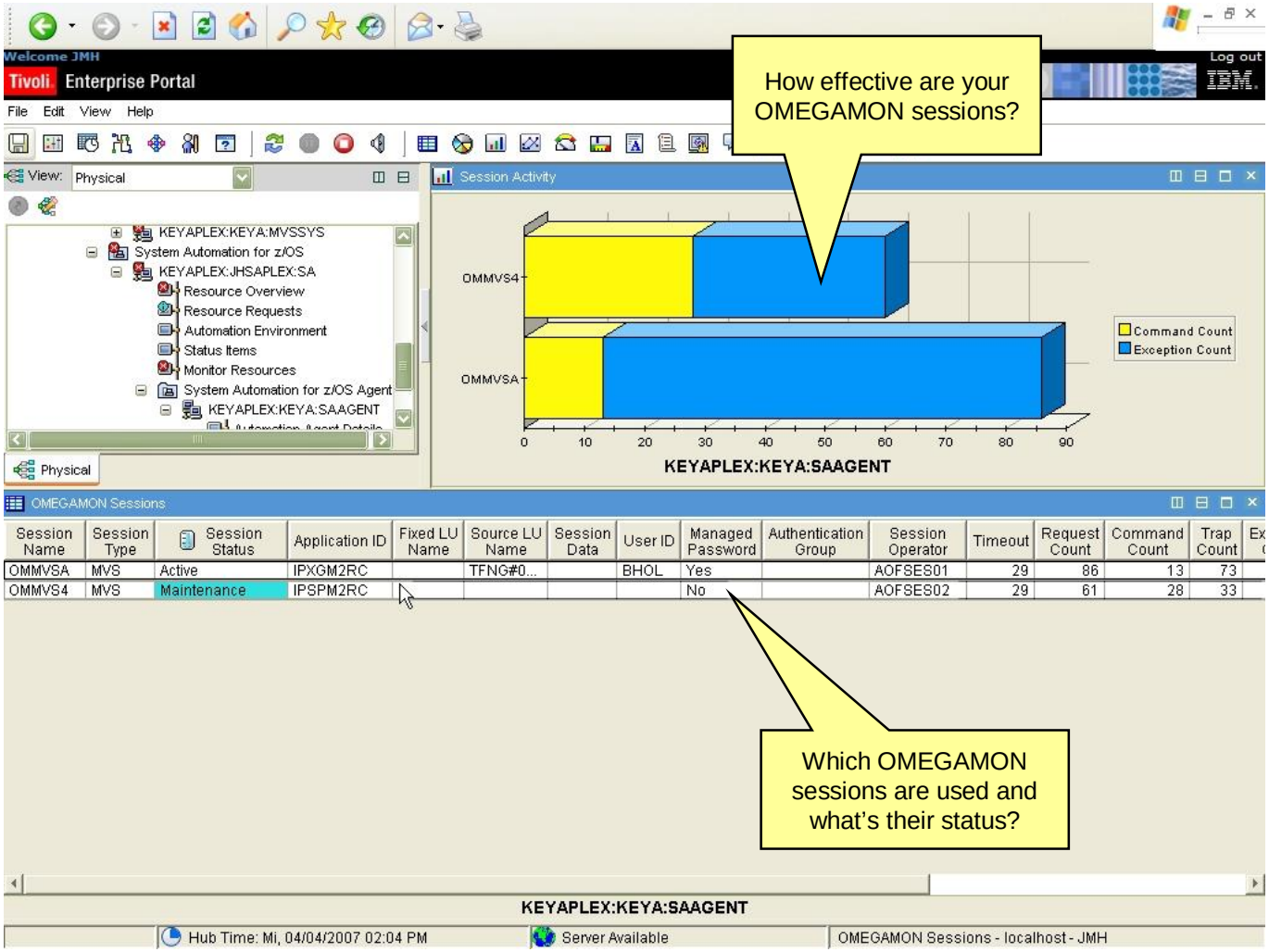
Automation Environment



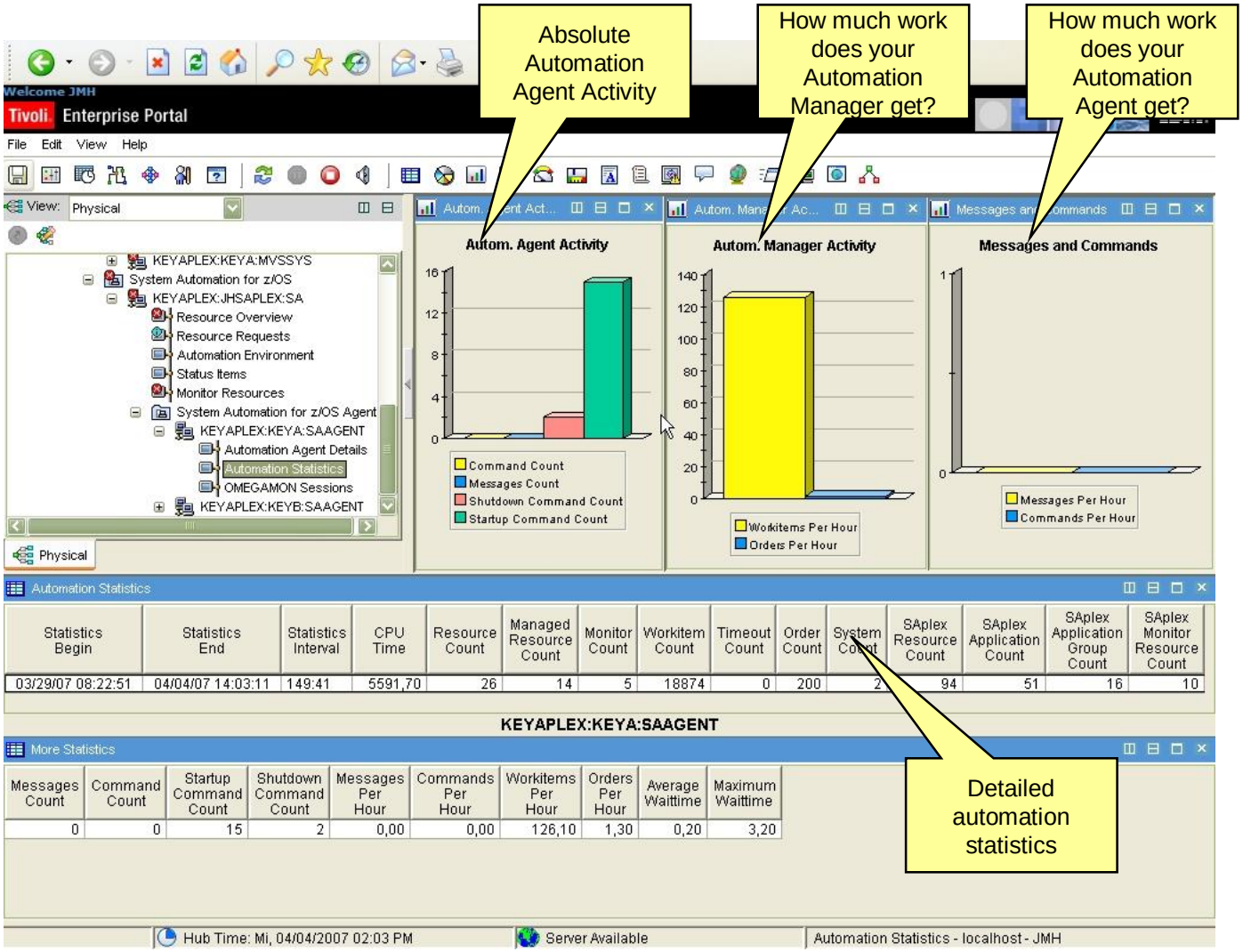
Automation Agent Details



OMEGAMON Sessions

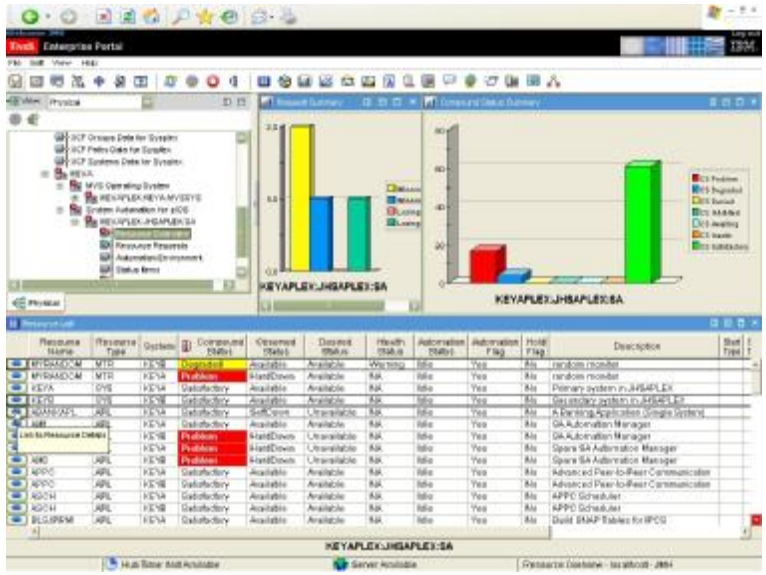


Automation Statistics



Future Additional Workspaces

From ESP-Feedback and Additional Ideas



- Automation Flags
- Critical messages
- Historical analysis
- Job details
- Gateway status information
- Outstanding replies
- IPL data
- Processor Operations: Partitions, options and status
- I/O Operations: Connections
- Combined workspaces with other monitoring products

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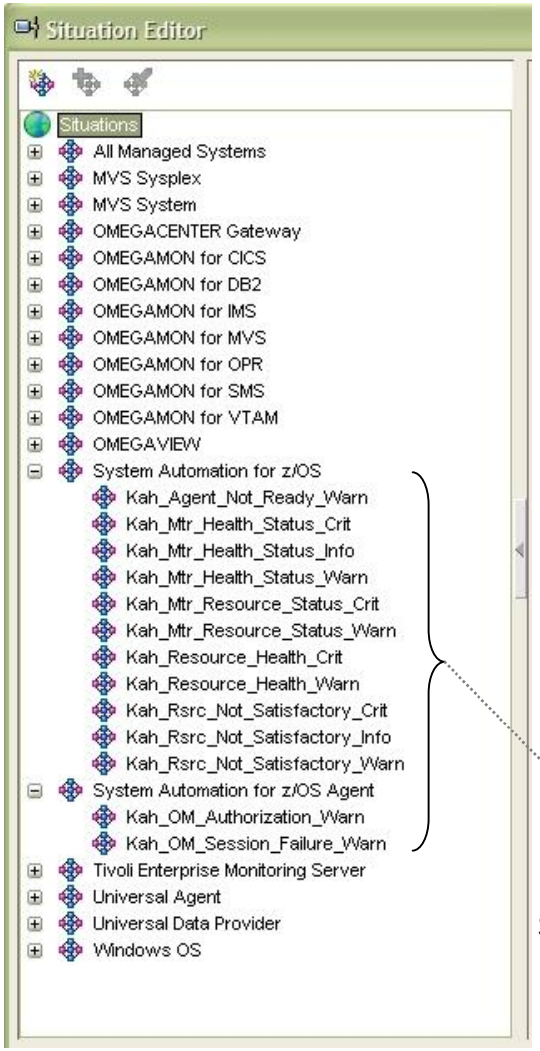
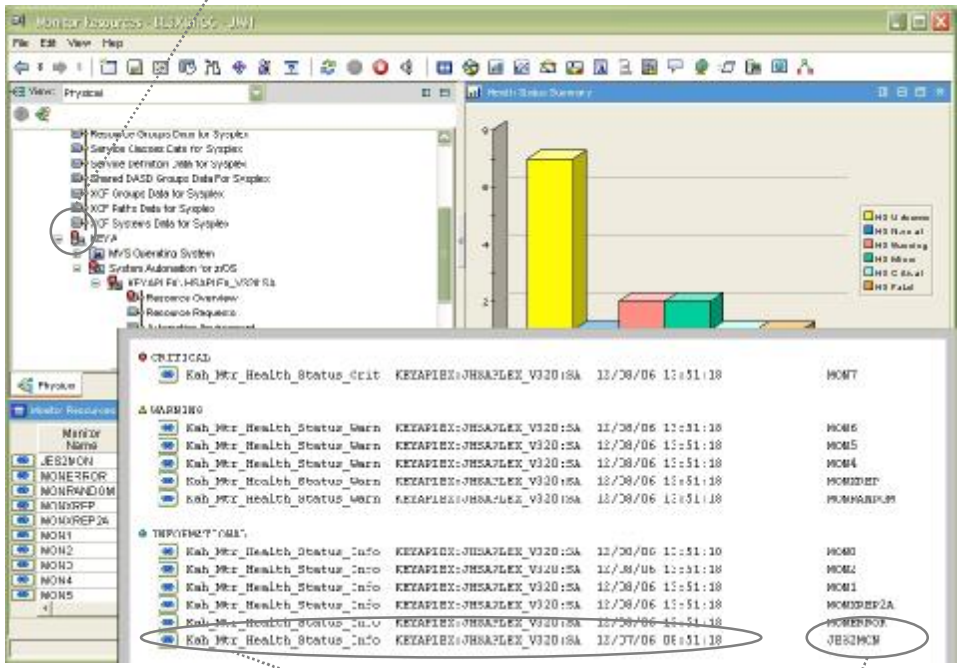
Situations Provided by SA z/OS



- The initial set of situations provided by the product is listed on the left-hand side
- All situations start with the prefix “Kah_” which is the new product prefix assigned to the monitoring agent
- Most situations are based on data associated with the managing node called System Automation for z/OS
- Only OMEGAMON session-related situations are associated with the System Automation for z/OS Agent subnode
- The situations are active by default
- The user can use or modify the product provided situations but can also add new situations if required

Situation Example

Color of most severe situation in this node or the underlying subtree



Situation name, node, and date/time

Display item setup with the situation

- When a situation is true, the icon of the workspace it is associated with changes to the color corresponding to the situation's severity
  - Critical situations are shown in red
  - Warning situations are shown in yellow
  - Informational situations are shown in turquoise
- When the mouse hovers above such an icon, a popup panel like shown on the left side appears
- On the panel, the individual situation is listed
- A link is provided that guides you to detailed information

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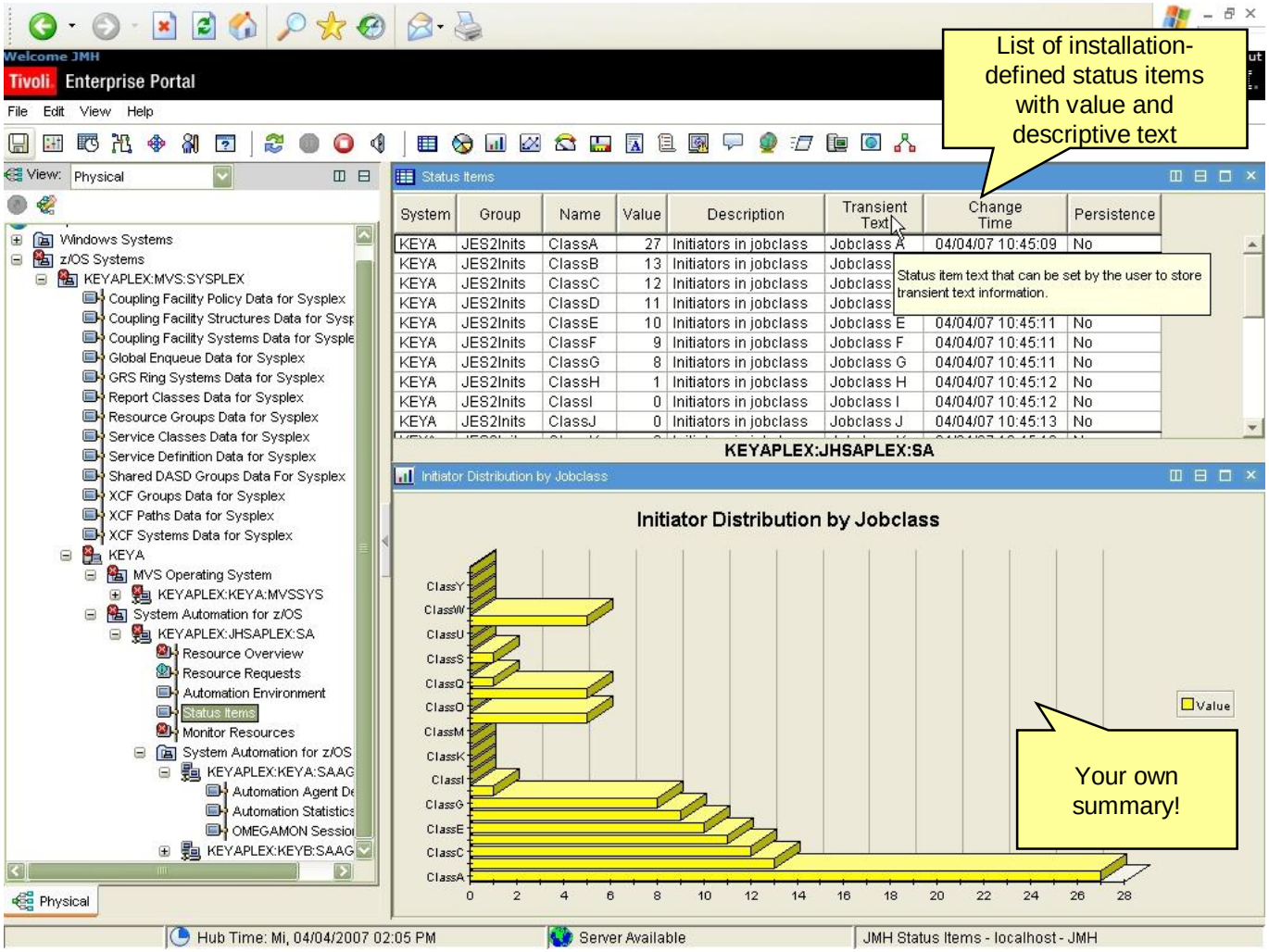
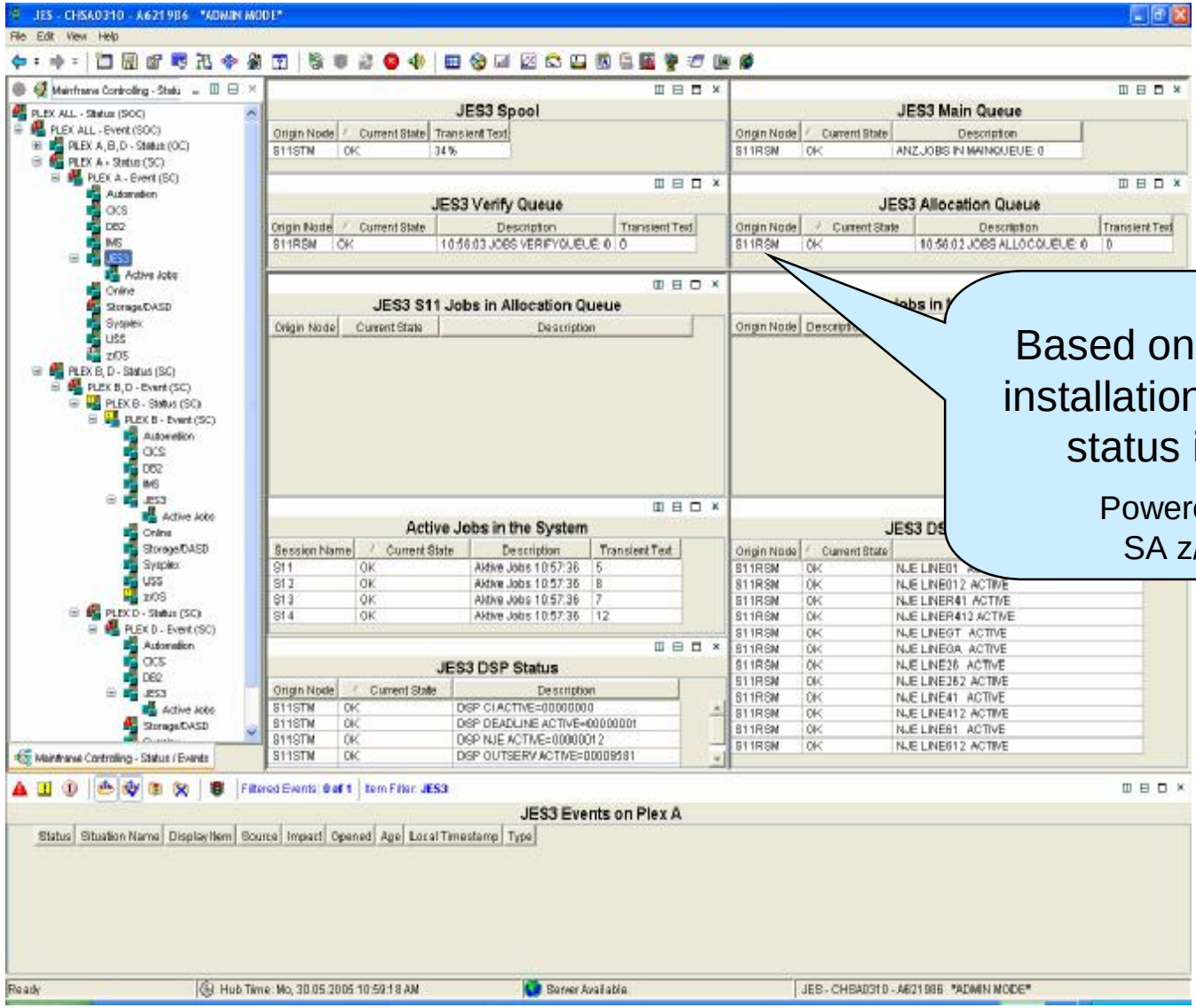
Status Items

- Status items are generic resources not otherwise tied to resources in the automation configuration
- They are created, updated, and deleted by installation defined routines
- Each status item consists basically of a
  - Identifier, optionally divided in a group part and name part
  - Description
  - Transient text describing the current status
  - Value representing the current status
- Status items can be persistent, i.e. their status survives in the automation manager's takeover file until a cold start is made, however, the default lifetime is that of a NetView session
- Status items are anchored at a particular system in the SA sysplex

Installation-Defined Status Items

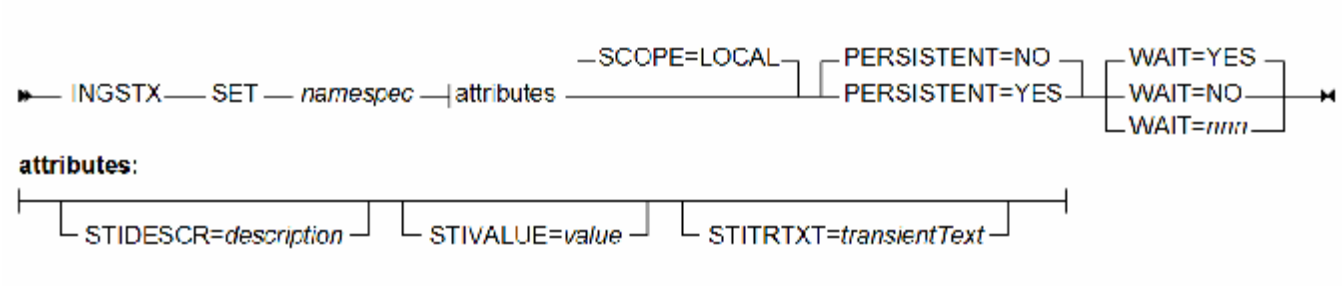


Example: JES3 Workspace



Creating and Updating Status Items …

- Status items are created by means of the INGSTX SET command
- The syntax is



- Note that INGSTX is case sensitive
  - Entered without the NetView command NETVASIS, the identifier and all attributes are translated to uppercase
  - When using the NetView command NETVASIS, the identifier is used as-is and the case of attributes is preserved when you enclose them in single or double quotes or in parenthesis
- When the status item does not yet exist, it is created
  - Only at creation time, the persistence of the status item can be set
- When the status item does already exist, it is updated
  - Attributes specified override existing attributes

Creating Status Items *(cont.)*

- The status item belongs to the system where INGSTX is invoked
- The following example creates a non-persistent status item My.StatusItem with an initial value of 20:

Case is preserved!

"My" is the group, "StatusItem" is the name

```
NETVASIS INGSTX SET My.StatusItem STIVALUE=20
STIDESCR="Description" STITRTXT="Initial value"
```

- Here is an example that updates the status item AnotherStatusItem to set a new value:

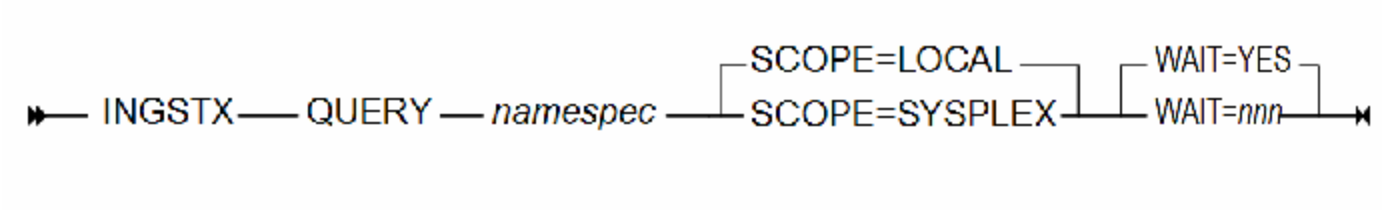
```
INGSTX SET AnotherStatusItem STIVALUE=10 STITRTXT="New Value"
```

The status item is really called "ANOTHERSTATUSITEM"

The transient text will be "NEW VALUE"

Querying Status Items

- Status items are queried by means of the INGSTX QUERY command
- The syntax is

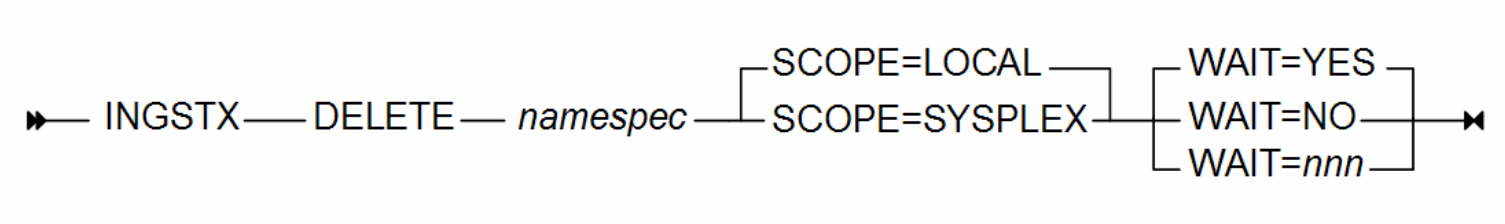


- Status items are queried SA sysplex wide
  - To query just the local status items, use SCOPE=LOCAL
- The following example queries all status items that begin with “My”:

```
NETVASIS INGSTX QUERY My*
```

Deleting Status Items

- Status items are deleted by means of the INGSTX DELETE command
- The syntax is



- Status items are deleted SA sysplex wide
  - To delete just the local status items, use SCOPE=LOCAL
- The following example deletes all status items that begin with “My”:

```
NETVASIS INGSTX DELETE My*
```

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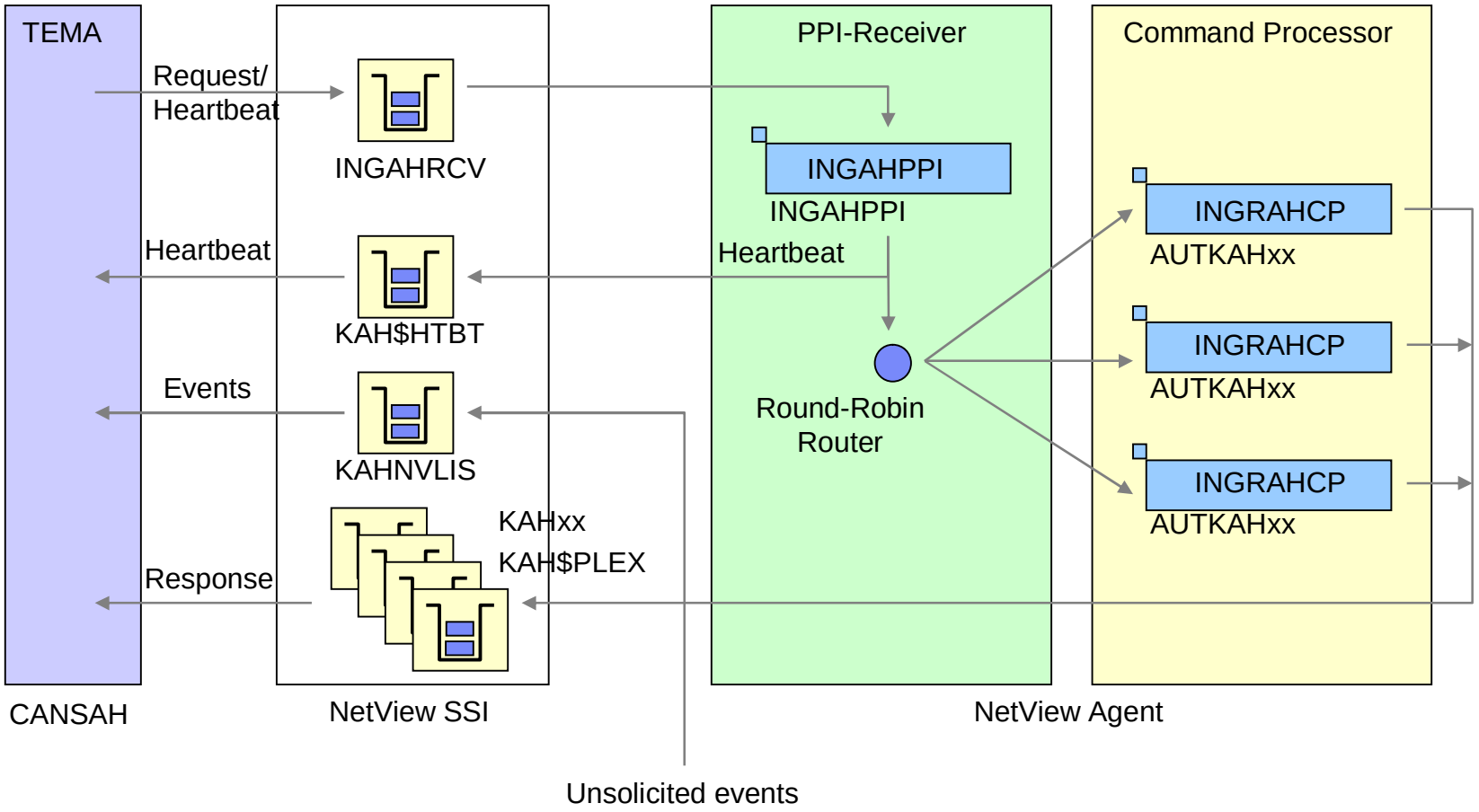
- Fixed Source LU for OMEGAMON sessions
- Component Overview and Configuration

Component Overview



NetView Configuration…

- KAH operators must be configured in the automation policy
  - AOP entry must be created with automation functions starting with prefix AOFKAH
  - Each KAH operator must be assigned a task
- Tasks must be defined for the KAH operators
  - Member AOFOPFSO included in DSIOPF already contains tasks AUTKAH01 to AUTKAH03
- PPI receiver task may be defined and started through CNMSTYLE
  - Sample member AOFSTYLE contains task definition statements in comments
  - For automatic start, set INIT=YES
- PPI receiver task may be defined as an application in the automation policy
  - Start and stop of that task is controlled by SA z/OS
  - Task is defined with job type NONMVS and monitor routine AOFATMON
  - Start command: `START TASK=&SUBSJOB,MOD=INGAHPPI[,MEM=member]`
  - Stop command: `STOP TASK=&SUBSJOB`

NetView Configuration *(cont.)*

- The PPI-receiver task reads the PPI-configuration from the initialization member passed upon start of the task
- The initialization member located in DSIPARM library specifies
  - KAH_PPI_RECEIVER, default value is INGAHRCV
  - KAH_PPI_LISTENER, default value is KAHNVLIS
  - PPI_BUFFER_SIZE, default value is 512 bytes
  - TIMEOUT, default value is 45 seconds
- Refresh automation policy and validate PPI status after PPI-receiver task was started using the NCCF DISPPI command

```
CNMKWIND OUTPUT FROM  DISPPI RCVRID=INGAHRCV                  LINE 0 OF 5
*------------------------------- Top of Data --------------------------------*
DWO948I RECEIVER  RECEIVER  BUFFER      QUEUED      TOTAL       STORAGE    RCVR
DWO949I IDENTITY  STATUS    LIMIT       BUFFERS     BUFFERS     ALLOCATED  ASID
DWO950I --------  --------  ----------  ----------  ----------  ---------- ----
DWO951I INGAHRCV  ACTIVE          1000           0        9710          0 003C
DWO968I END OF DISPLAY
*------------------------------ Bottom of Data ------------------------------*
```

TEMA Configuration…

- The monitoring agent is configured through ICAT
- Decision points
  - Configuring the monitoring agent in its own address space (recommended) vs. in an existing ITMS address space, for example a remote TEMS
  - Creating a Full Run-Time-Environment (RTE) vs. Sharing RTE
  - Communication protocols (IP vs. IPv6 vs. SNA vs. UDP and combinations)
- Pre-requisite Configuration
  - Before the SA z/OS monitoring agent can be configured, a TEMS must be configured in the same or in a different RTE, or on another platform
  - The SA z/OS monitoring agent must support at least one communication protocol that is also supported by the TEMS it connects to

TEMA Configuration *(cont.)*

- Monitoring agent specific parameters set through dialog

KAHENV variable name	Meaning
KAH_PPI_RECEIVER	Name of the SA z/OS PPI receiver in the automation agent.
KAH_PPI_LISTENER	Name of the TEMA PPI receiver listening for events from the automation agent.
KAH_PPI_BUFFER_SIZE	Size of output buffer.
KAH_PPI_TIMEOUT	Timeout after which a request is terminated if no data is returned.
KAH_PPI_HEARTBEAT_INTVL	Time between validations that connection is still up.
KAH_PPI_CHECK_UP_INTVL	Time between validations that connection is still down.

- Run-time datasets
  - *&rhilev.*RKANPARU contains the KAHENV member with the application specific configuration options set during ICAT processing
  - *&rhilev.*RKANPARU also contains other parameter members that reflect the configuration settings done with ICAT
  - *&rhilev.*RKANCMDU contains members KAHAGST and KAHOPST used to startup the monitoring agent
  - *&rhilev.*RKANSAMU contains procedures and VTAM definitions that must be copied into PROCLIB and VTAMLST datasets for use

TEMA Configuration *(cont.)*

- Start monitoring agent through procedure name specified in ICAT
  - Procedure must be copied into PROCLIB before use
  - Example: S CANSAH
- Validate PPI status after monitoring agent was started using the NCCF DISPPI command

```
CNMKWIND OUTPUT FROM  PIPE (END %) NETV DISPPI | SEPARATE |  LINE 0 OF 18
*------------------------------ Top of Data -------------------------------*
DWO948I RECEIVER  RECEIVER  BUFFER      QUEUED      TOTAL       STORAGE    RCVR
DWO949I IDENTITY  STATUS    LIMIT       BUFFERS     BUFFERS     ALLOCATED  ASID
DWO950I --------  --------  ----------  ----------  ----------  ---------- ----
DWO951I KAHA00    ACTIVE          1000           0           8          0 00A0
DWO951I KAHA01    ACTIVE          1000           0        5622          0 00A0
DWO951I KAHA02    ACTIVE          1000           0        2250          0 00A0
DWO951I KAHA03    ACTIVE          1000           0        1129          0 00A0
DWO951I KAHA04    ACTIVE          1000           0           8          0 00A0
DWO951I KAHA05    ACTIVE          1000           0          29          0 00A0
DWO951I KAHA06    ACTIVE          1000           0        1156          0 00A0
DWO951I KAHA07    ACTIVE          1000           0       45960          0 00A0
DWO951I KAHA08    ACTIVE          1000           0         411          0 00A0
DWO951I KAHA09    ACTIVE          1000           0           9          0 00A0
DWO951I KAHA10    ACTIVE          1000           0          15          0 00A0
DWO951I KAHA11    ACTIVE          1000           0           4          0 00A0
DWO951I KAH$PLEX  ACTIVE          1000           0           5          0 00A0
DWO951I KAH$HTBT  ACTIVE          1000           0        5605          0 00A0
DWO951I KAHNVLIS  ACTIVE          1000           0           4          0 00A0
*---------------------------- Bottom of Data ------------------------------*
```

Bibliography

- Related Documentation
  - ITM V610 Administrator's Guide (SC32-9408)
  - ITM V610 User's Guide (SC32-9409)
  - ITM V610 Configuring Tivoli Enterprise Monitoring Server on z/OS (SC32-9463)
  - SA z/OS V3.1 Monitoring Component Configuration and User's Guide (SC33-8337)
- Other
  - CCR2 Article: Bringing System Automation for z/OS into the Tivoli Enterprise Portal (http://www-306.ibm.com/software/tivoli/features/ccr2/ccr2-2007-05/enterprise-portal.html)
  - STE Web Seminar: System Automation for z/OS goes Tivoli Enterprise Portal June 19, 2007

End of Presentation

Thank you very much for your attention

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http://www-03.ibm.com/servers/eserver/zseries/software/sa/

SA MP http://www-306.ibm.com/software/tivoli/products/sys-auto-linux/

User forums

SA z/OS http://groups.yahoo.com/group/SAUSERS/

SA MP http://groups.yahoo.com/group/SA4DIST/