IBM Systems Director Enterprise Edition: High-Level Overview

Presented by:
Franklin Almonte
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Agenda

- Systems Director Enterprise Edition High-Level Overview
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  - IBM Tivoli Performance Analyzer Agent
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  - Feature Overview
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Agenda Cont.

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  - Integration Overview
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- Links to More Information

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IBM Systems Director Editions

- **IBM® Systems Director Express Edition**
  - Remotely monitor, configure and update servers and OS's
  - Troubleshoot problems faster for higher system availability
  - Reduce time to execute administrator tasks

- **IBM Systems Director Standard Edition**
  - Use Systems Director Express Edition features
  - Monitor and manage energy use and thermal output
  - Get a single view and status of networking systems
  - Reduce time to configure and deploy virtual images (AIX/Linux only)

- **IBM Systems Director Enterprise Edition**
  - Use Systems Director Standard Edition features
  - Deploy workloads faster with improved reliability in system pools
  - Increase operator productivity with prioritized information and context, real-time and historical health status
  - Use predictive capabilities to help with capacity estimation

- **AIX Enterprise Edition**
  - Includes AIX and Systems Director Enterprise Edition
  - Increase deployment flexibility with Workload Partitions

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IBM Systems Director Enterprise Edition Overview

Tivoli. software

- The Systems Director Enterprise Edition provides:
  - All features of the Systems Director Express and Standard Editions
  - Creation/removal of system pools and resource management in AIX and Linux system pools as if they were a single system
  - Addition/removal of physical servers within system pools
  - Visualization of the relationships of LPARs to servers to applications
  - **Proactive real-time and predictive monitoring of the virtualized environment**
  - **Predictive performance management and capacity estimation**
  - **Application & Dependency Discovery**
  - **Enhanced Reporting Capabilities**

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IBM Systems Director Enterprise Edition for Power V6.2

5765-EEP

Pieces and Parts:

- IBM Systems Director products
  - IBM Systems Director (ISD) 6.2
  - ➔ ISD VMControl Enterprise Edition for Power, V2.3
  - ➔ ISD Service & Support Manager V6.2
  - ➔ ISD Transition Manager for HP SIM V6.2
  - ➔ ISD Active Energy Manager V4.3
  - ➔ ISD Network Control V1.2
- Tivoli products (plus DB2 & Launchpad):
  - IBM Tivoli Monitoring (ITM) V6.2.2 FP2 plus OS,CEC,HMC and System p Agents
  - IBM Tivoli Monitoring for Energy Management V6.2.1
  - IBM Tivoli Application Discovery and Dependency Manager (TADDM) V7.2
  - IBM Tivoli Performance Analyzer V6.2.2
  - IBM Tivoli Common Reporting for Asset and Performance Management V1.2
  - DB2 Enterprise Server Edition V9.7 FP1
  - ISD Enterprise Edition Installation Launchpad V6.2

Note: Arrows indicate plug-ins (not standalone products) to IBM Systems Director

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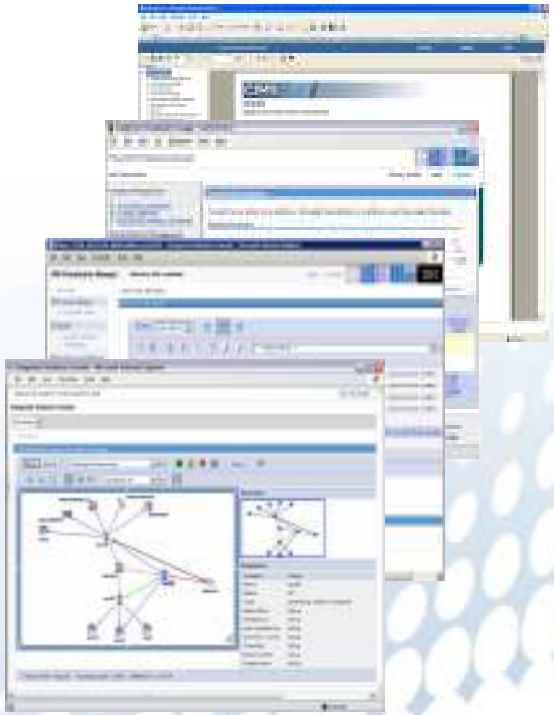
IBM Systems Director Base

- Consolidation of Platform Management Tools
  - Single consistent cross-platform management tool
  - Simplified tasks via Web based interface
  - Manage many systems from one console
- Integrated Physical and Virtual Management
  - Discovery and inventory of physical and virtual resources
  - Configuration and provisioning of platform resources
  - Status, health and monitoring of platform resources
  - Visualization of server resource topologies
  - Move virtual servers between systems without disruption to running workloads
- Platform Update Management
  - Simplified consistent cross-platform tools to acquire, distribute and install firmware and OS updates



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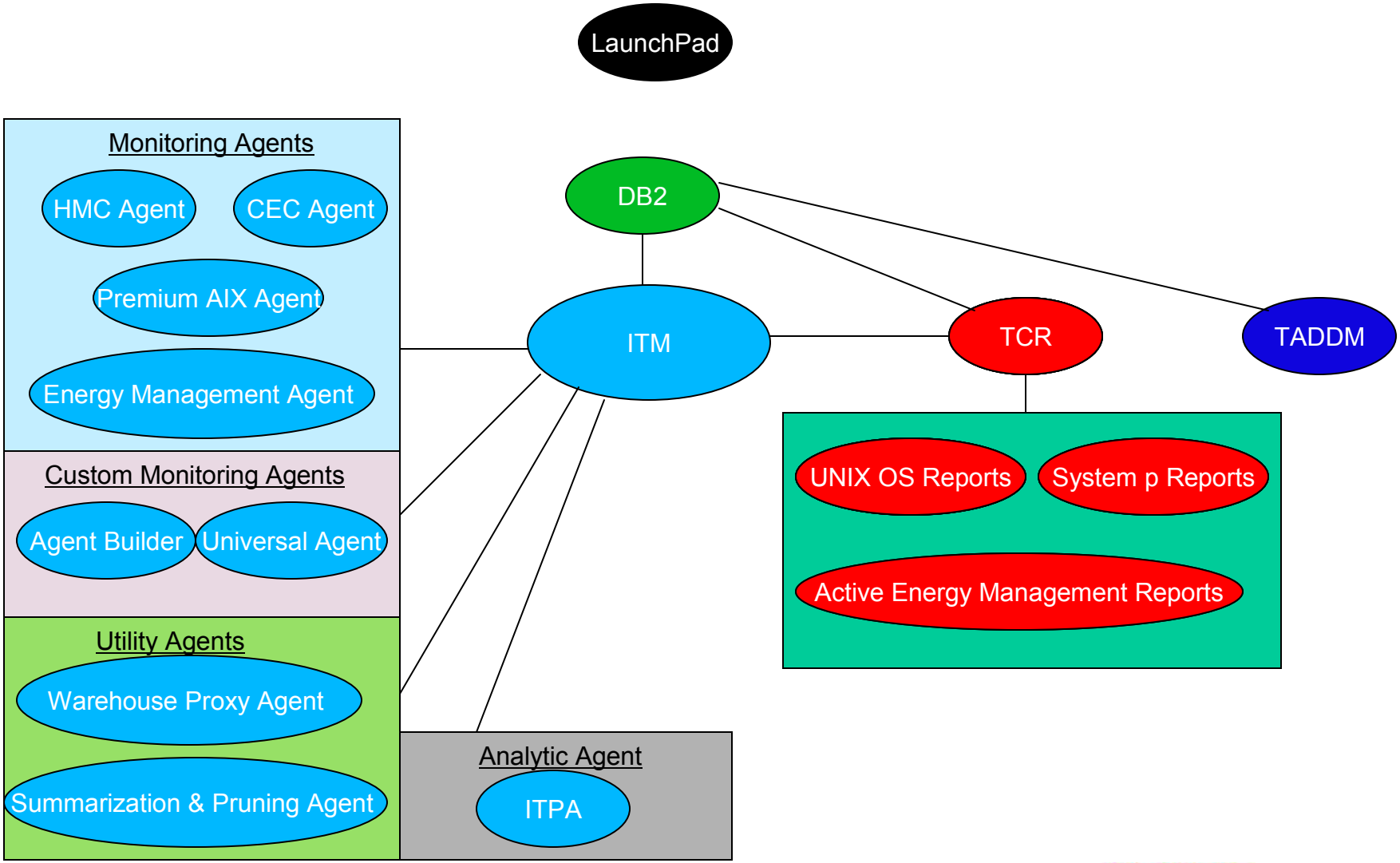
IBM Systems Director Enterprise Edition Middleware Components



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IBM Tivoli Monitoring

- Monitoring Software to Help Improve IT Department Effectiveness & Efficiency
  - Optimize IT infrastructure performance and availability
  - Simplified tasks via Web based or Java Webstart interface
  - Monitor many systems from one console
  - Includes, as part of the system monitoring software package, easy-to-use warehouse and advanced reporting capability
  - Open Systems Support
  - Oracle & DB2 Monitoring Support
  - Virtualization Aware: PowerVM, VIOS, WPAR, AMS, AME

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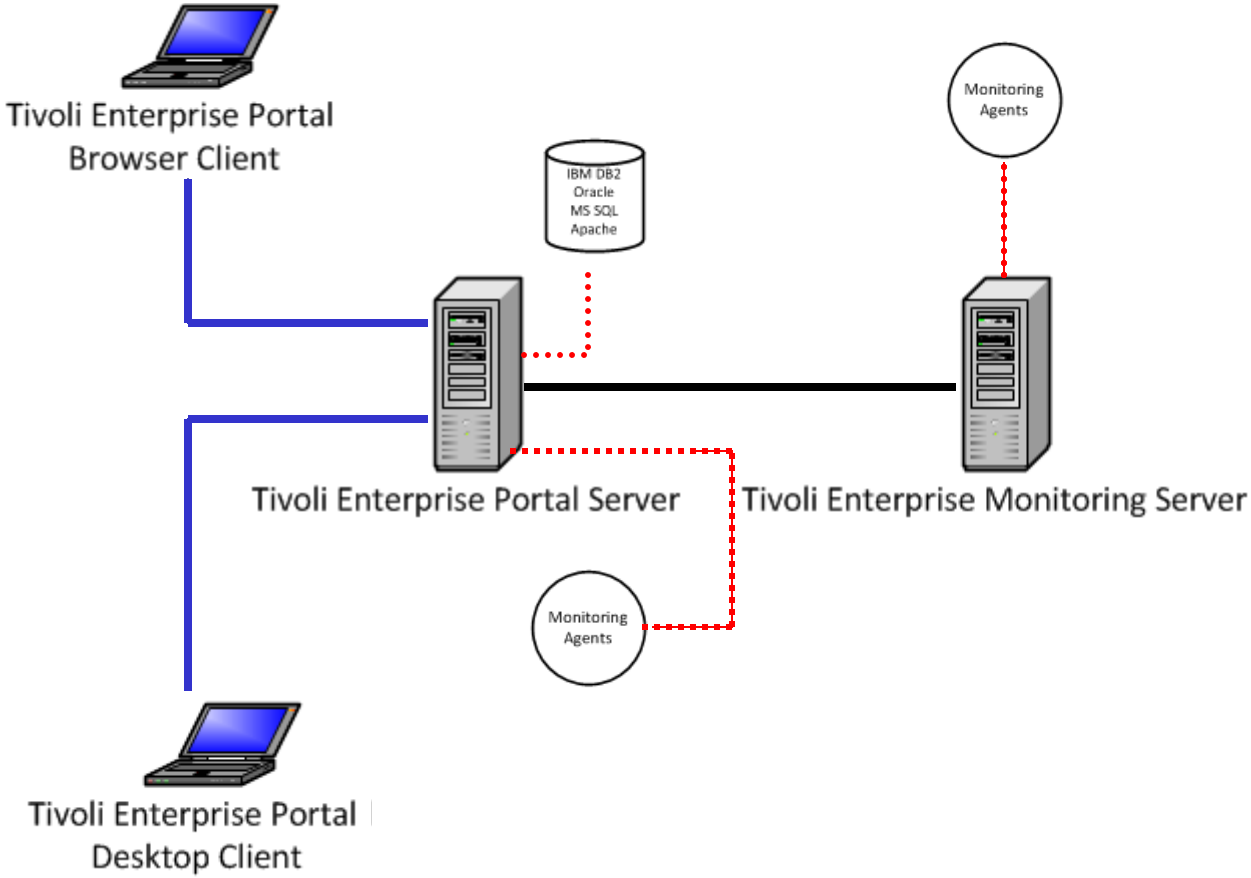
Tivoli Monitoring Topology: Basic



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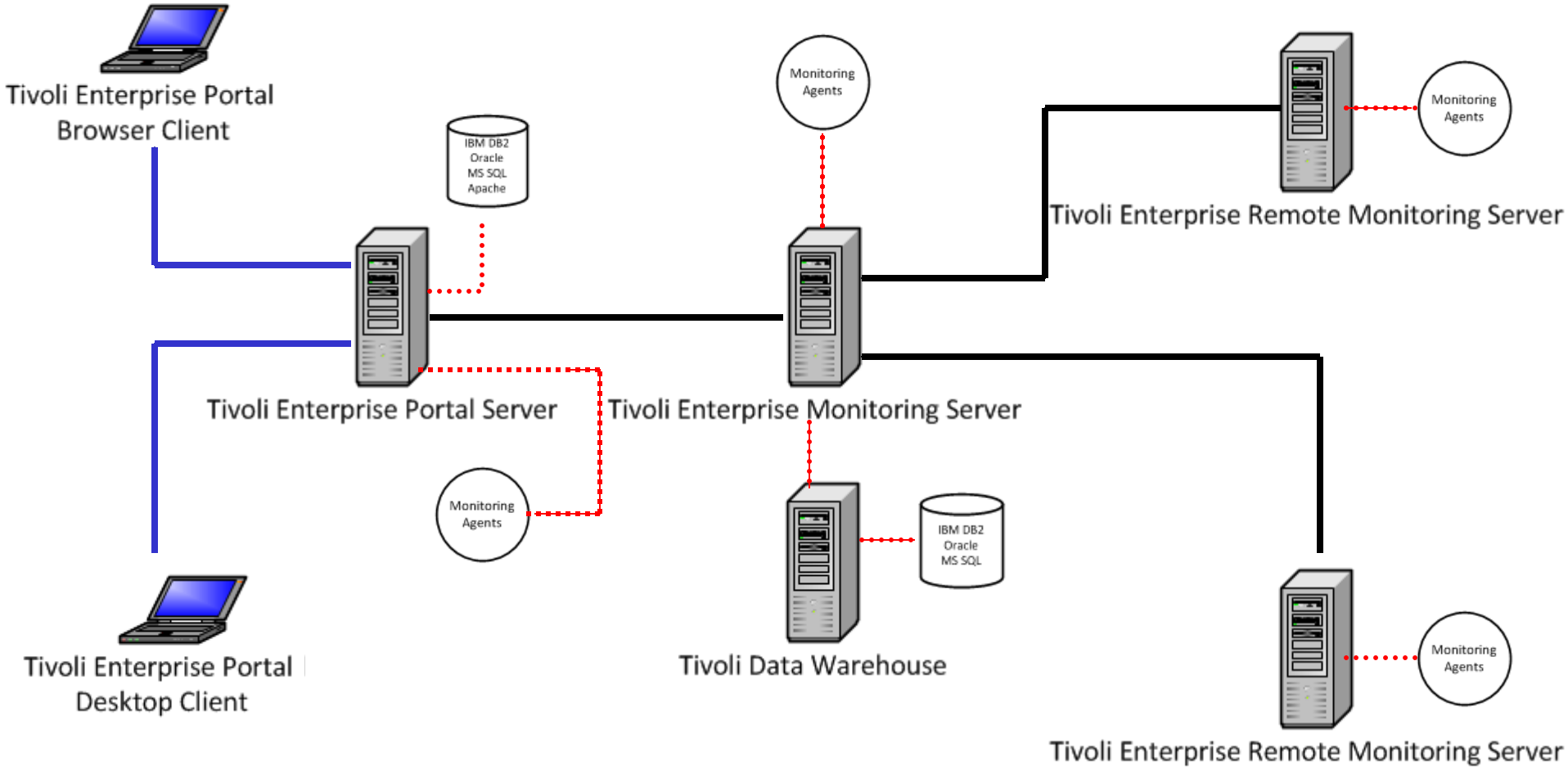
Tivoli Monitoring Topology: Advanced



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Tivoli Monitoring Components Details

Every installation requires the following components:

- Tivoli Enterprise Monitoring Server(s)
  - Act as a collection and control point for alerts received from the agents, and collect their performance and availability data.
  - The monitoring server also manages the connection status of the agents.
  - One server in each environment must be designated as the *hub*.
- A Tivoli Enterprise Portal Server
  - Provides the core presentation layer for retrieval, manipulation, analysis, and pre-formatting of data.
  - The portal server retrieves data from the hub monitoring server in response to user actions at the portal client, and sends the data back to the portal client for presentation.
  - The portal server also provides presentation information to the portal client so that it can render the user interface views suitably.
- Tivoli Enterprise Portal Clients
  - Java-based user interface for viewing and monitoring your enterprise
  - Tivoli Enterprise Portal offers two modes of operation: desktop and browser.

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Tivoli Monitoring Components Details

- Tivoli Enterprise Monitoring Agents
  - Installed on the systems or subsystems you want to monitor.
  - Collect data from monitored, or managed, systems and distribute this information to a monitoring server.
- IBM Eclipse Help Server
  - for presenting help for the portal and all monitoring agents for which support has been installed.

An installation optionally includes the following components:

- Tivoli Data Warehouse
  - Repository for historical data collected from agents in your environment.
  - The data warehouse is located on a DB2 on the workstation, DB2 on z/OS, Oracle, or Microsoft® SQL database.
  - To store data in this database, you must install the Warehouse Proxy agent.
  - To perform aggregation and pruning functions on the data, you must also install the Summarization and Pruning agent.

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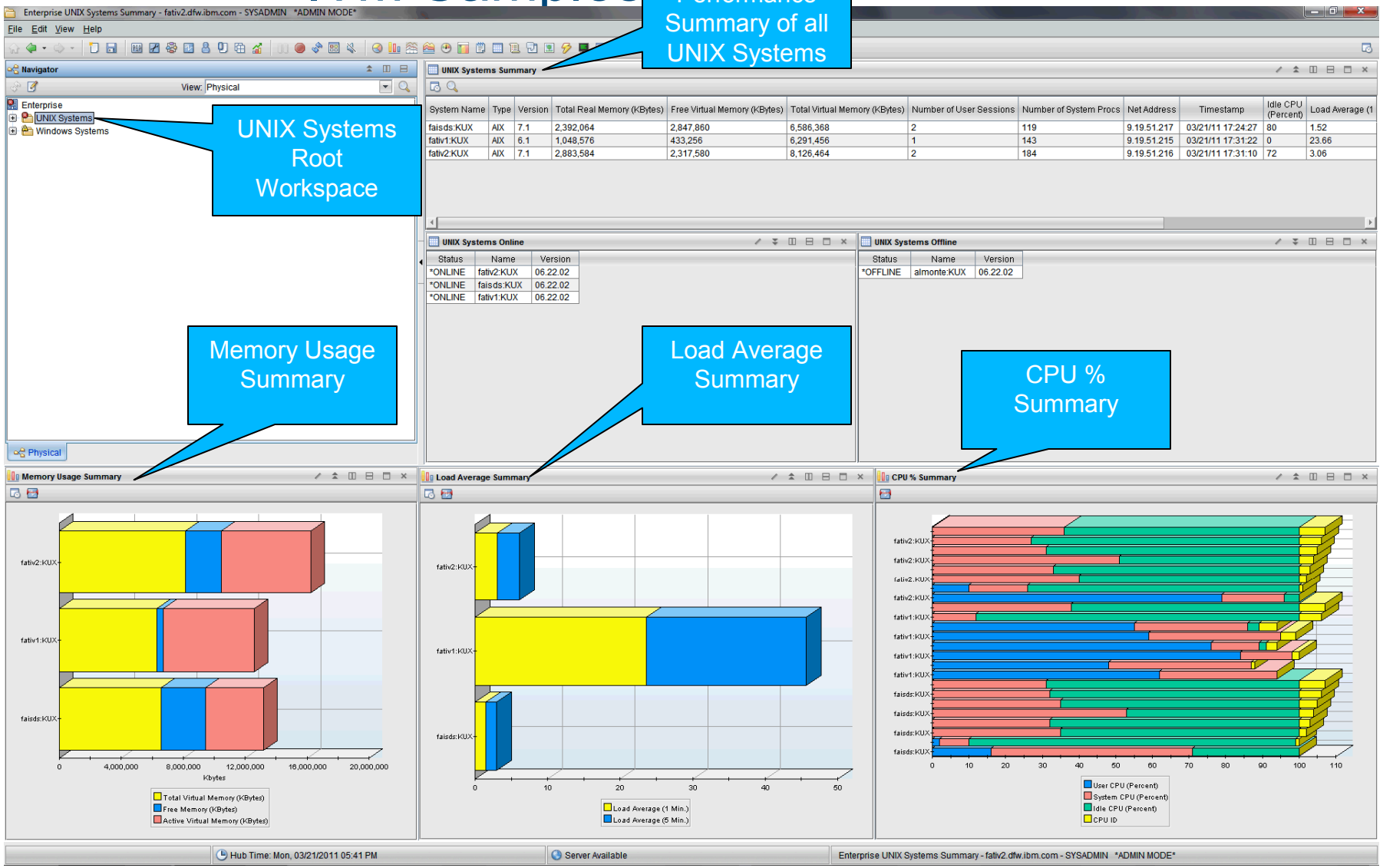
ITM Samples



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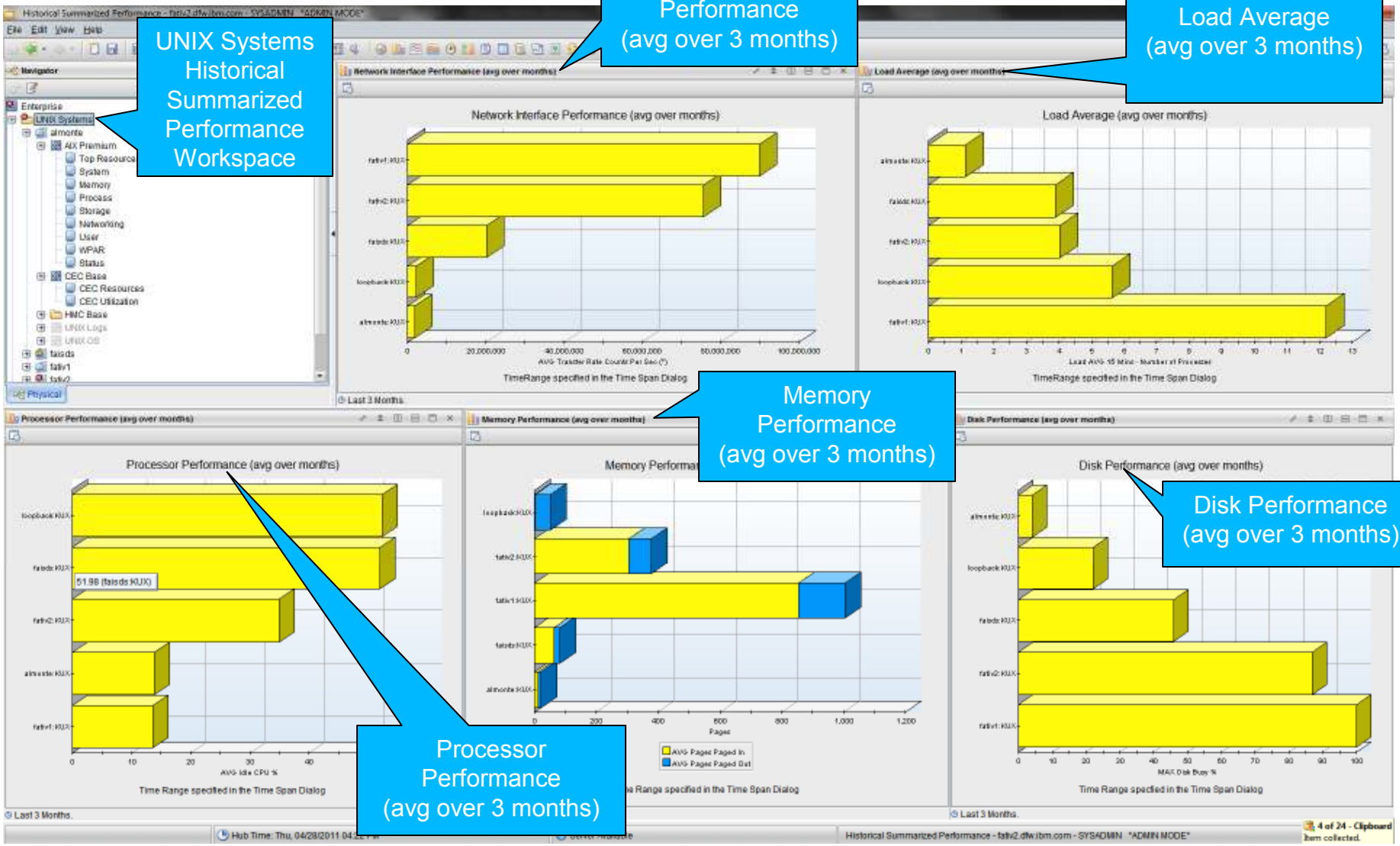
ITM Sample Screens



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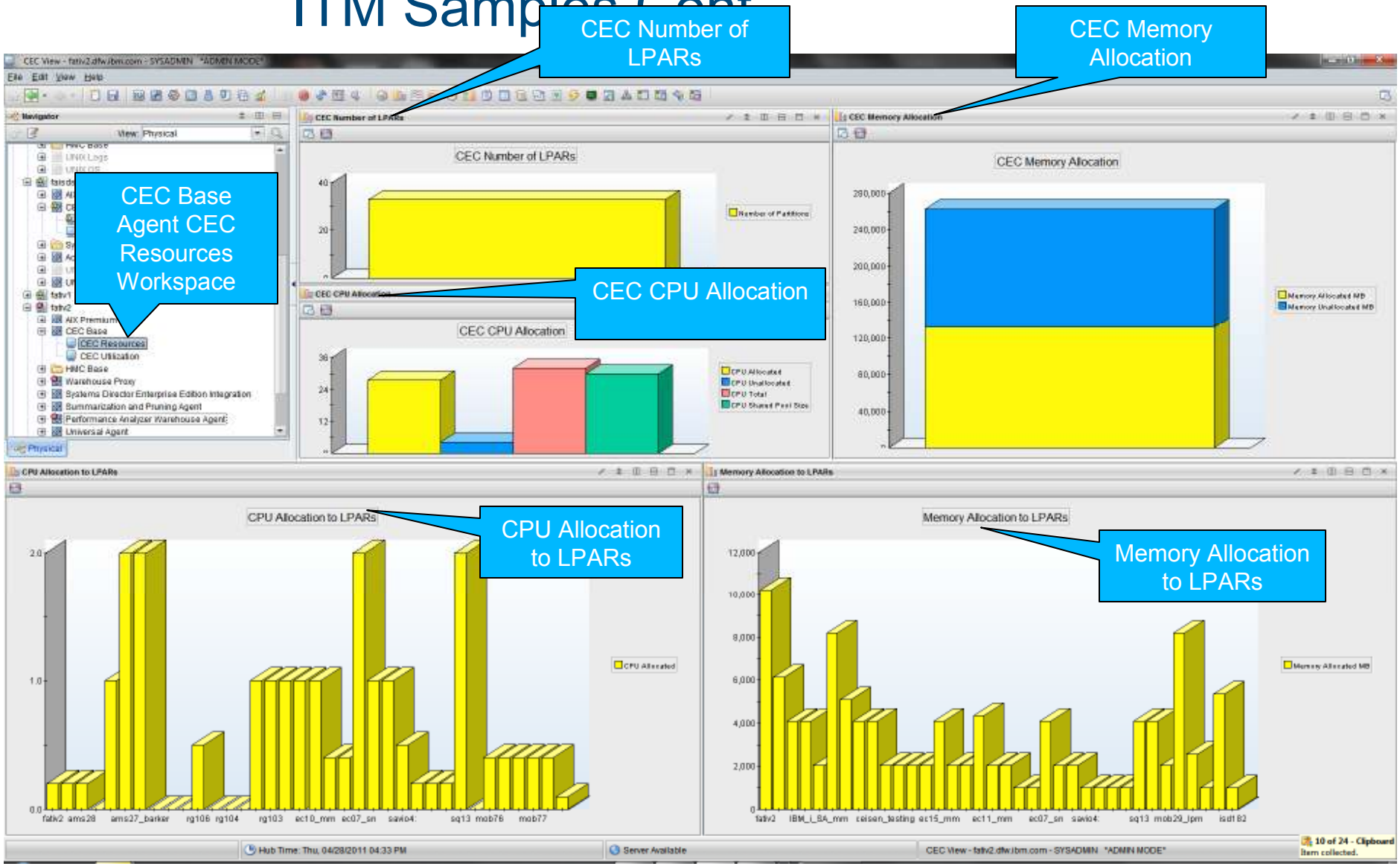
ITM Samples Cont.



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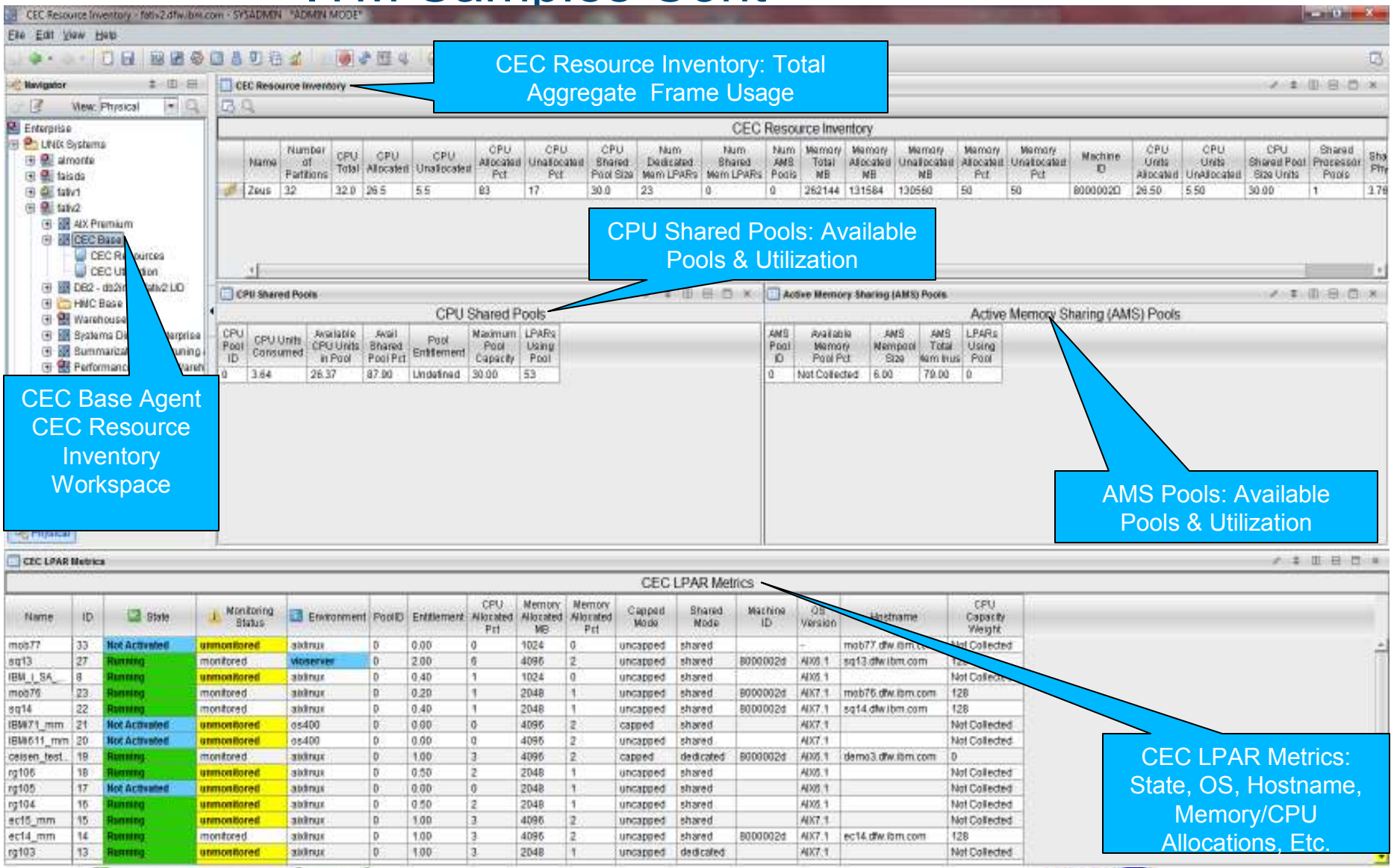

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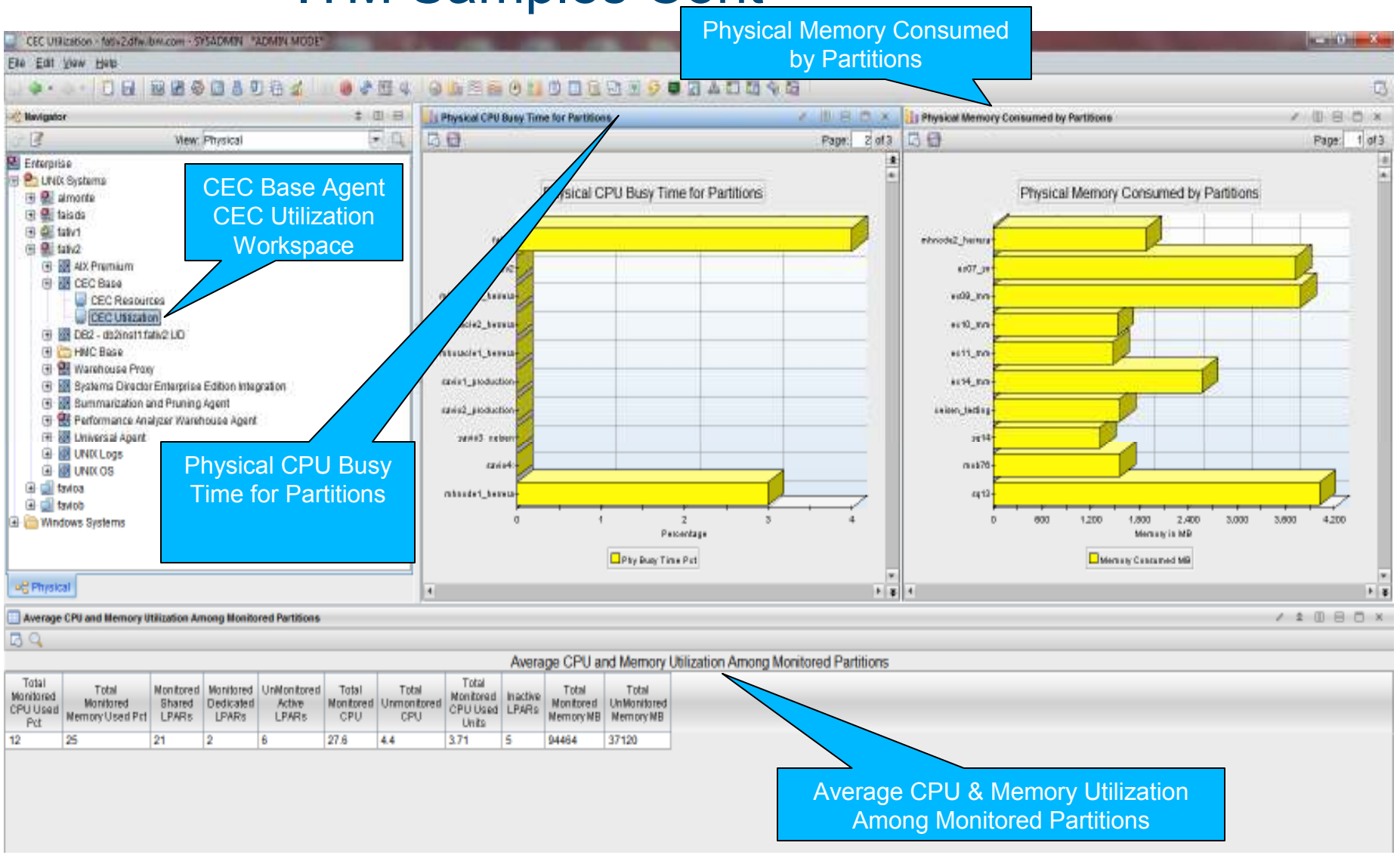

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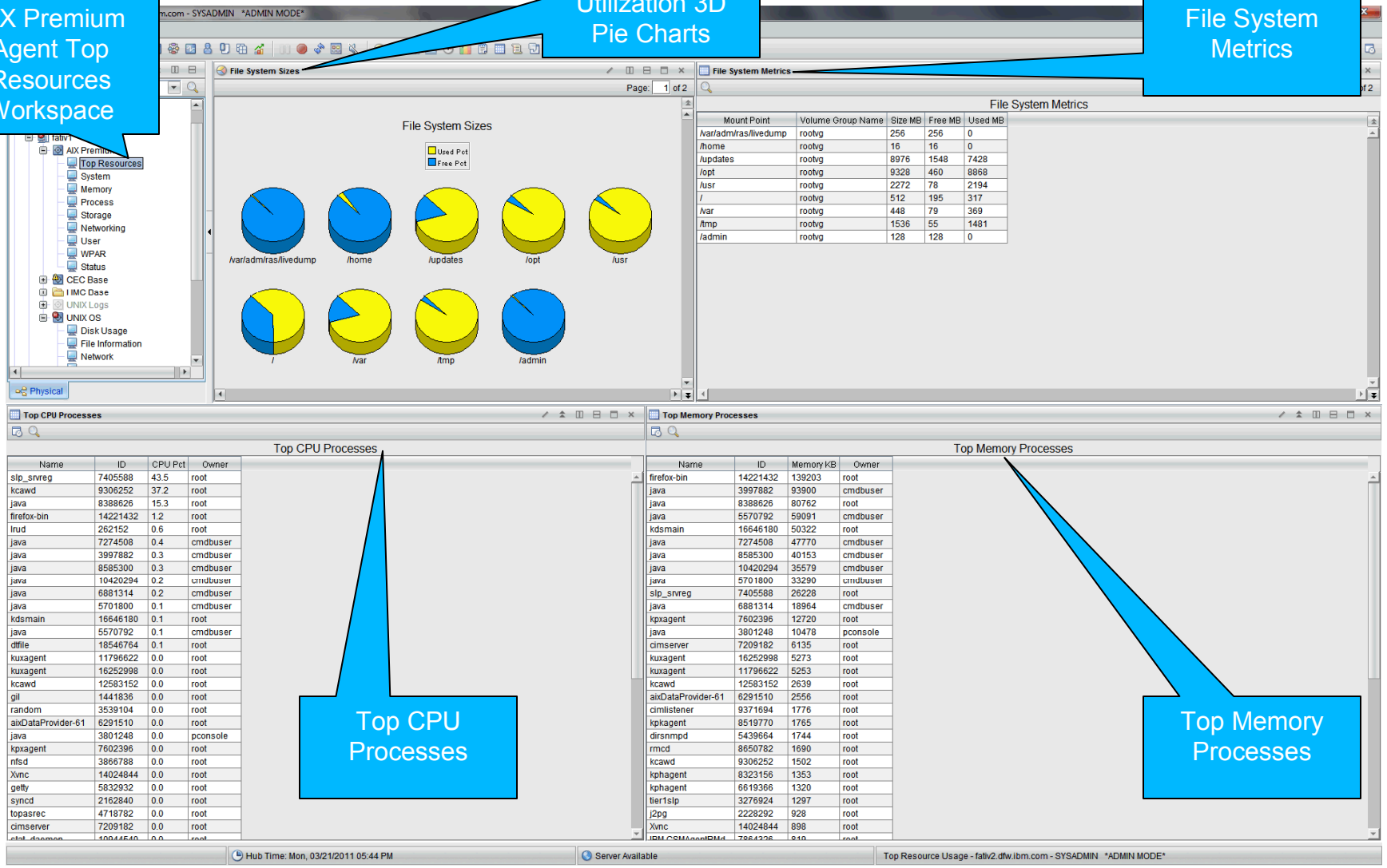
ITM Sam[illegible]t

AIX Premium Agent Top Resources Workspace

File System Sizes & Utilization 3D Pie Charts

File System Metrics



Top CPU Processes

Top Memory Processes

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Tivoli Data Warehouse

- Optional database that allows ITM components to interact to collect and manage historical data.
- The components that make up the Tivoli Data Warehouse solution are:
  - Tivoli Enterprise Monitoring Server
  - Tivoli Enterprise Portal Server
  - Warehouse Proxy Agent
  - Summarization and Pruning Agent
- TWD requires ITM Base environment to be properly installed and properly configured.

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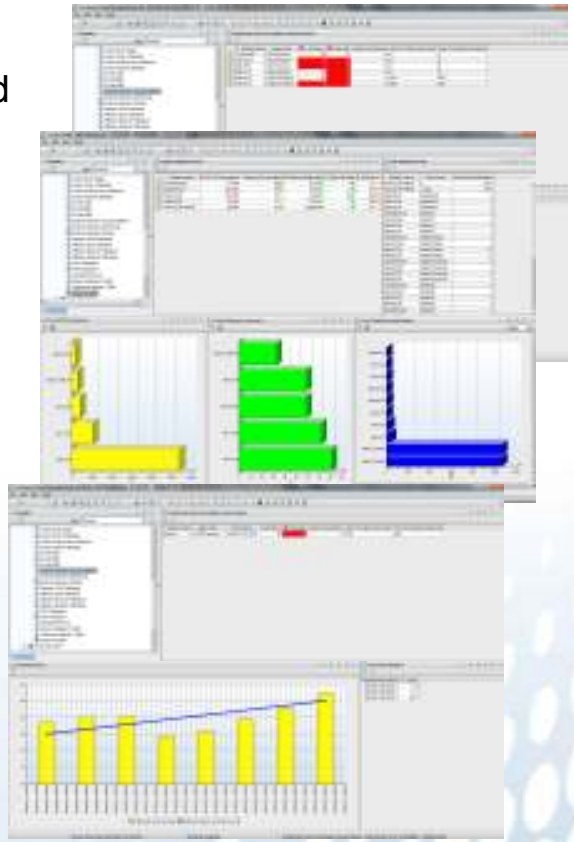
IBM Tivoli Performance Analyzer Agent



- Tivoli Performance Analyzer extends the capability of Tivoli Monitoring by analyzing and enriching the data that is collected by its monitoring agents and by providing reports about the performance and capacity of your systems.
- Tivoli Performance Analyzer enhances ITM with Predictive Capabilities
  - Monitor resource consumption trends
  - Anticipate future performance issues
  - Predict application bottlenecks and create alerts for potential service threats
- Tivoli Performance Analyzer performs the following functions for individual IT components:
  - Gathers and stores IT components such as CPU, disk, and memory utilization in a central data repository
  - Provides a predictive analysis component that indicates trends in IT component utilization
  - Retains the analyzed data in a central repository for reporting purposes

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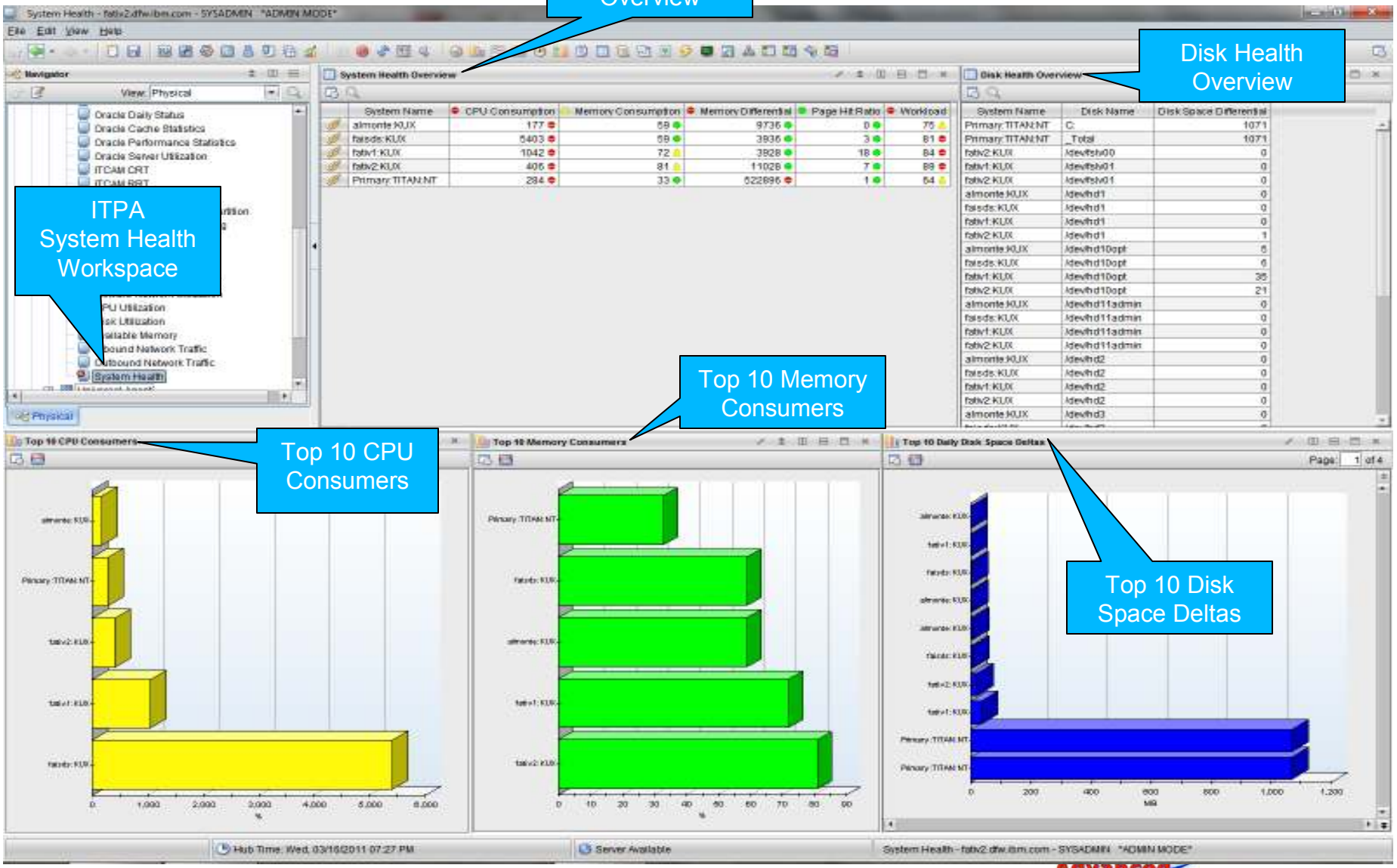
ITPA San



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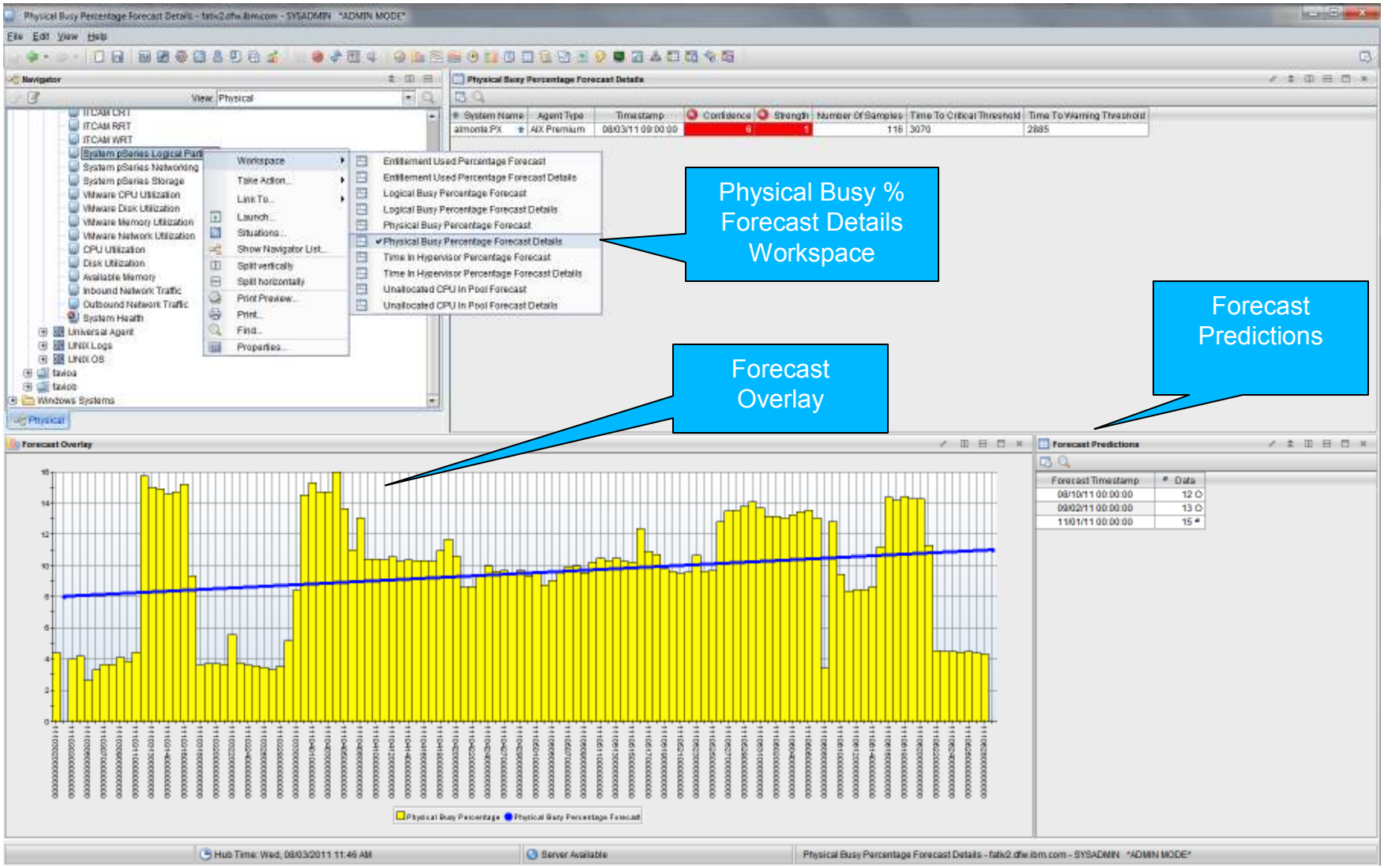
ITPA Samples Cont.



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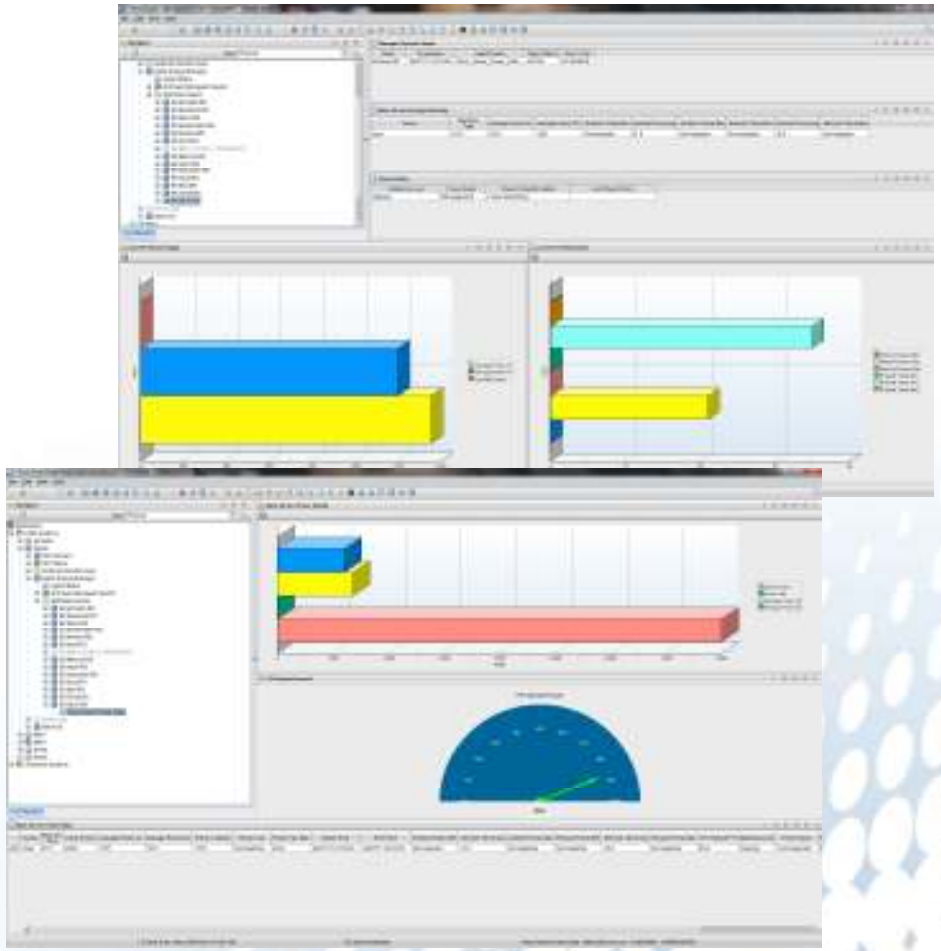
IBM ITM Monitoring for Energy

- ITM Systems Director Application Agent leverages Systems Director Active Energy Manager to report and alert on energy related events from within ITM

- Allows for the following active management tasks:
  - Changing the Power Mode
  - Changing the Power Cap for Rack Servers
  - Changing the Power Saver Mode
  - Anticipate future performance issues

- Predefined Reports available for import into Tivoli Common Reporting



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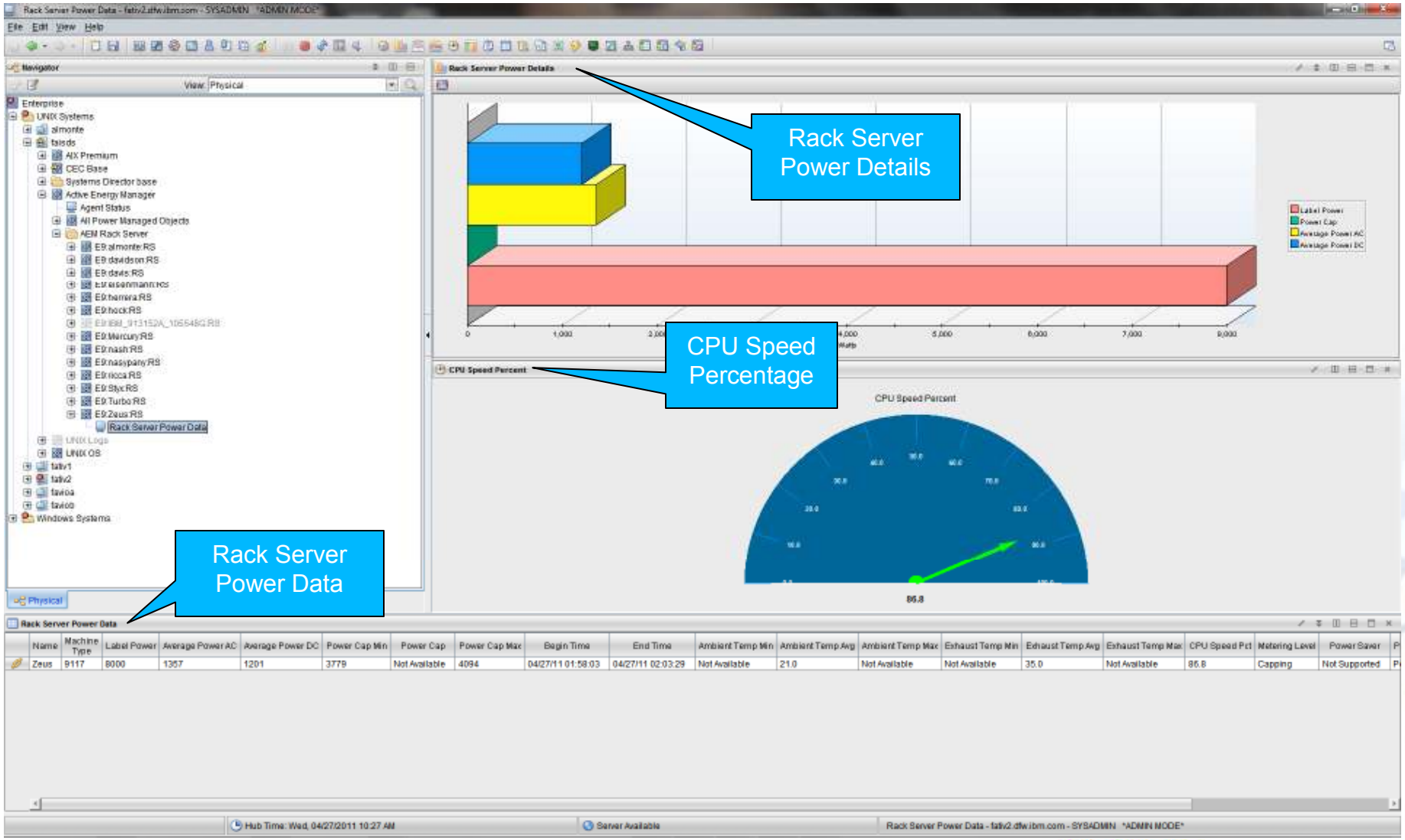
IBM ITM Monitoring for Energy Samples



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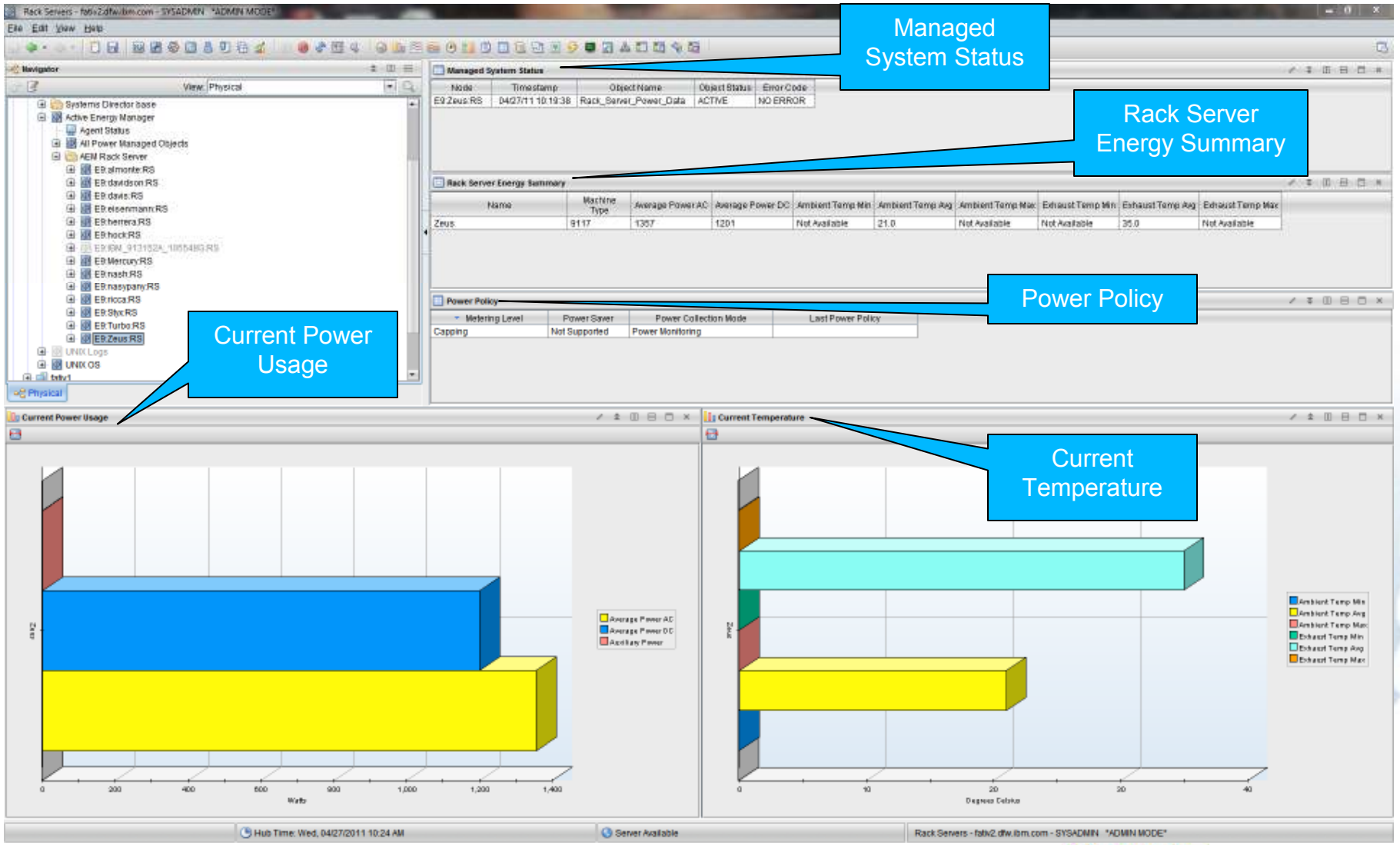
IBM ITM Monitoring for Energy Samples



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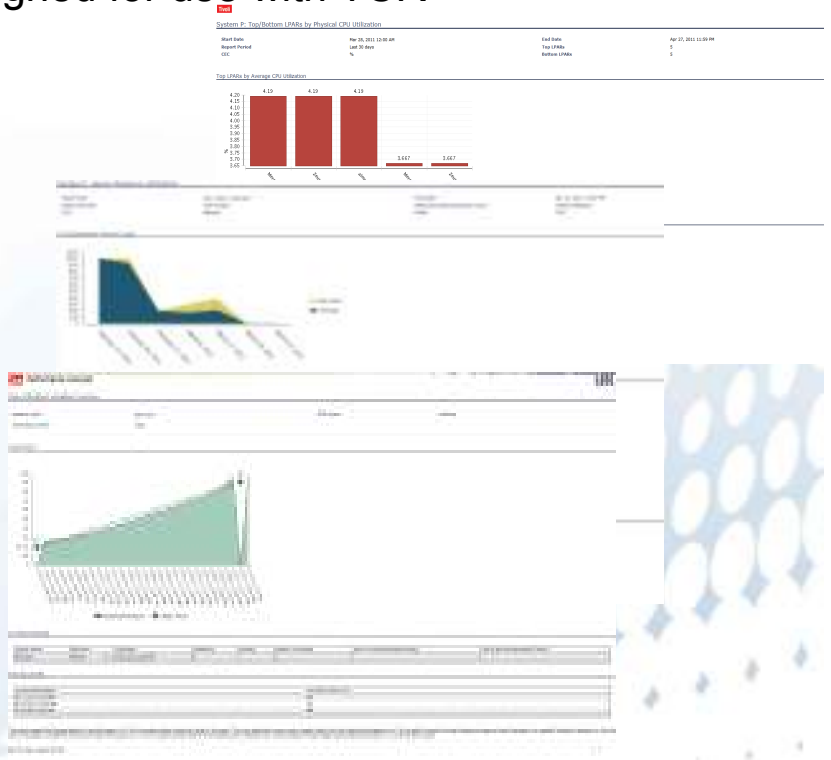
IBM Tivoli Common Reporting

- Robust reporting tool which is available to users of Tivoli Products
  - Consistent approach to viewing and administrating reports
  - Simplified reporting via intuitive Web based interface
  - Tivoli products can provide report packages designed for use with TCR
  - Reports have consistent look and feel
  - Ability to schedule reports
  - Reports available in different formats
  - Ability to email reports



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TCR Sam

System P: Top/Bottom LPARs by Physical CPU Utilization

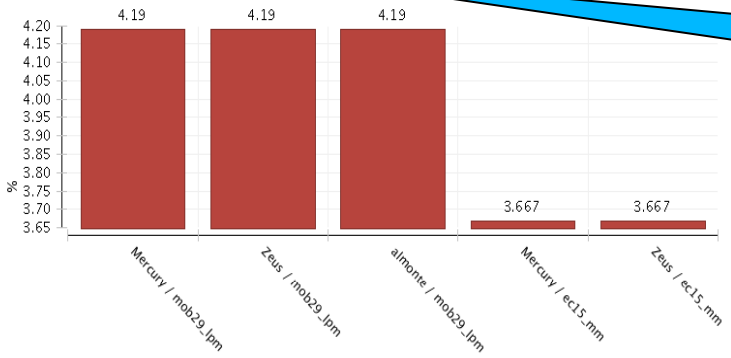
Tivoli

System P: Top/Bottom LPARs by Physical CPU Utilization

Start Date	Mar 28, 2011 12:00 AM	**End Date**	Apr 27, 2011 11:59 PM
Report Period	Last 30 days	**Top LPARs**	5
CEC	%	**Bottom LPARs**	5

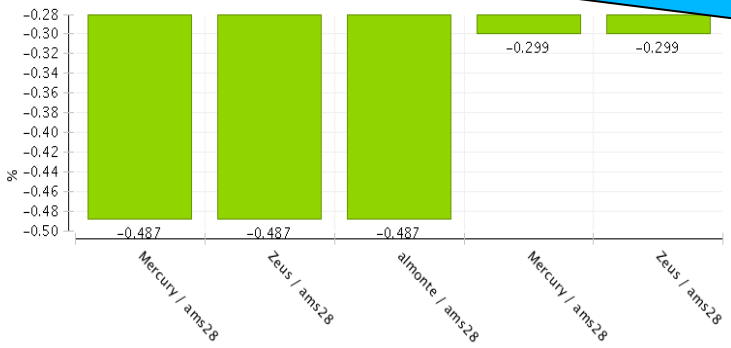
Top LPARs by Average CPU Utilization

Top LPARs by Average CPU Utilization



Bottom LPARs by Average CPU Utilization

Bottom LPARs by Average CPU Utilization



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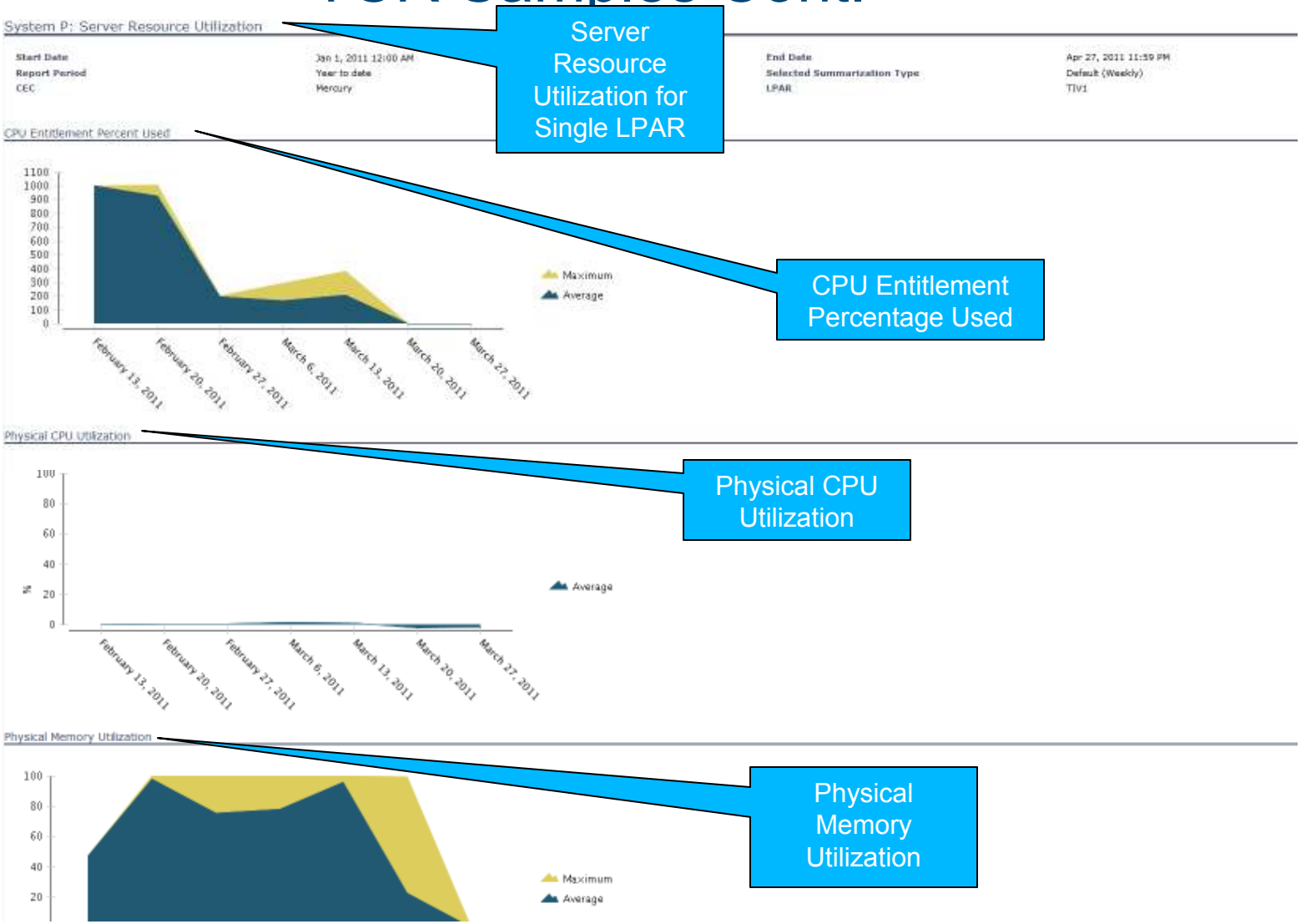

Server Resource Utilization for Single LPAR

CPU Entitlement Percentage Used

Physical CPU Utilization

Physical Memory Utilization

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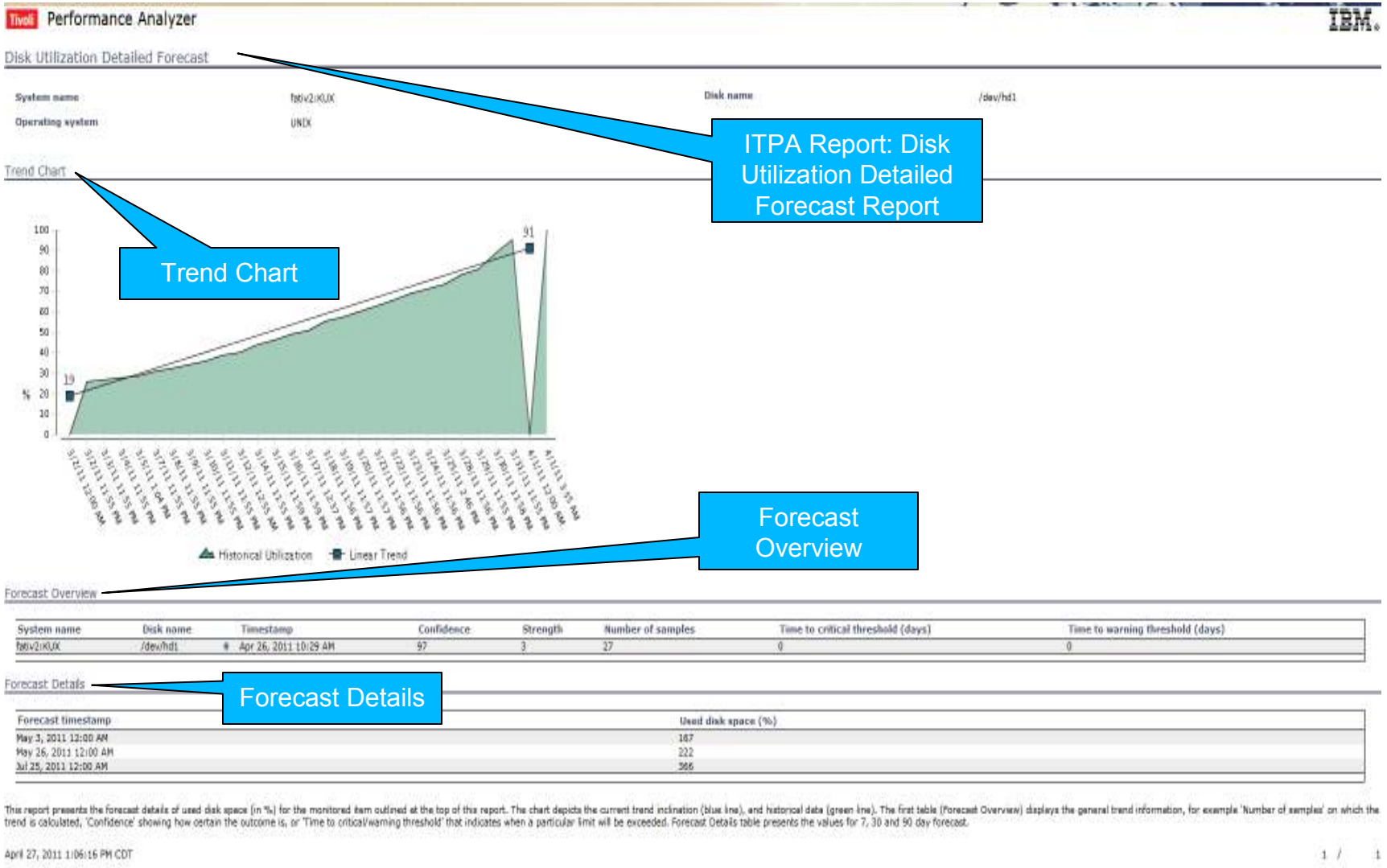

System name	Disk name	Timestamp	Confidence	Strength	Number of samples	Time to critical threshold (days)	Time to warning threshold (days)
fpbv2:KUX	/dev/hd1	Apr 26, 2011 10:29 AM	97	3	27	0	0

Forecast timestamp	Used disk space (%)
May 3, 2011 12:00 AM	187
May 26, 2011 12:00 AM	222
Jul 25, 2011 12:00 AM	366

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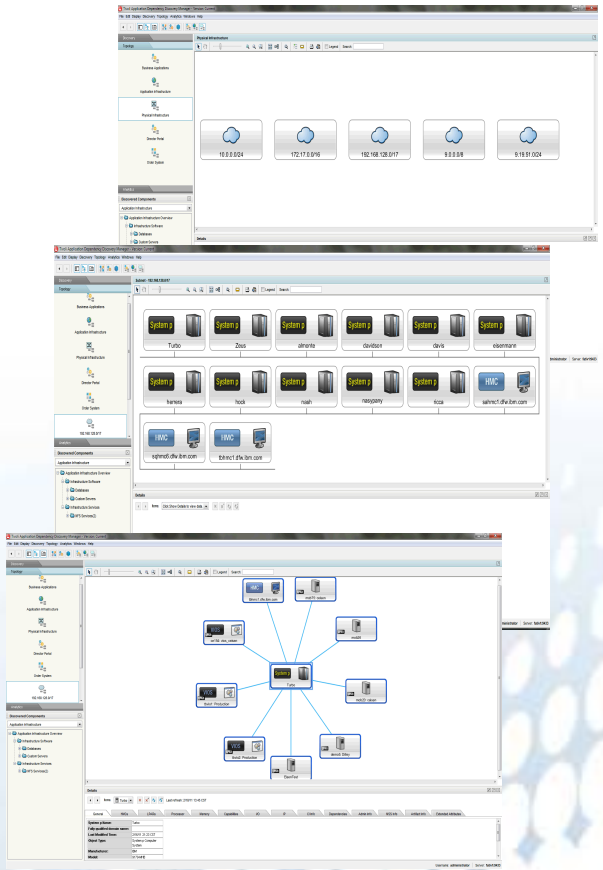
Tivoli Application Discovery Dependency Manager

- Visualize interdependencies and relationships between applications, computer systems and network devices through application mapping and agentless, credential-free discovery capabilities
- Configuration items are configured and changing over time by capturing the configuration of each CI, tracking changes to it and providing analytics to report on the history of configuration changes
- Determine if configurations comply with your policies by comparing discovered configurations to a “reference master” to reveal policy compliance violations



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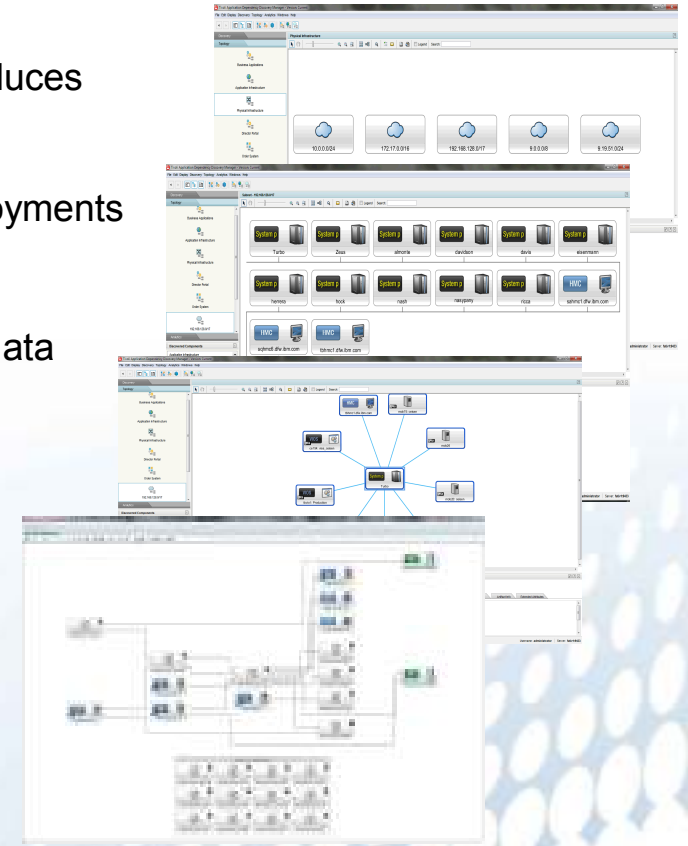
Tivoli Application Discovery Dependency Manager

- Understand the structure of interdependent and complex applications
- Rapidly isolate configuration-related application problems, which reduces troubleshooting time from hours and days to minutes
- More effectively plan change so that application upgrades and deployments can occur without disruptions
- In summary, you can use TADDM to accomplish four tasks in your data center environment:
  1. Discover components
  2. Discover the configuration of components
  3. Discover the relationship of components
  4. Discover and track the changes



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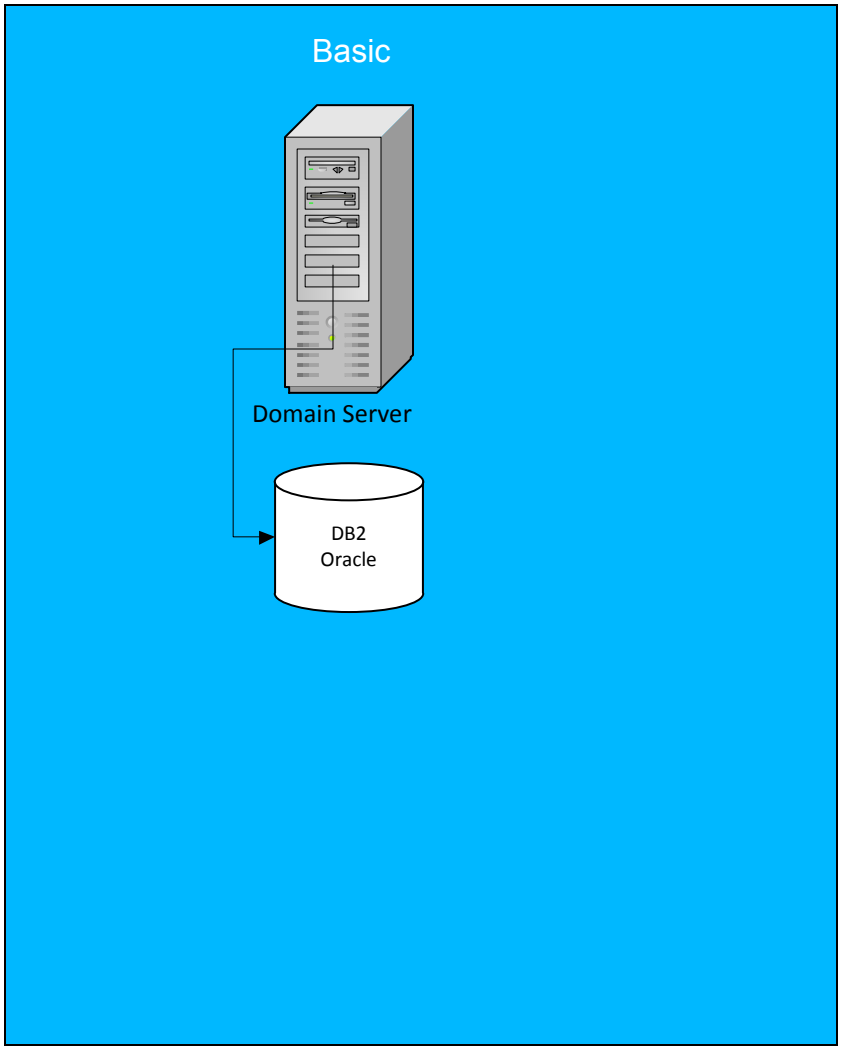
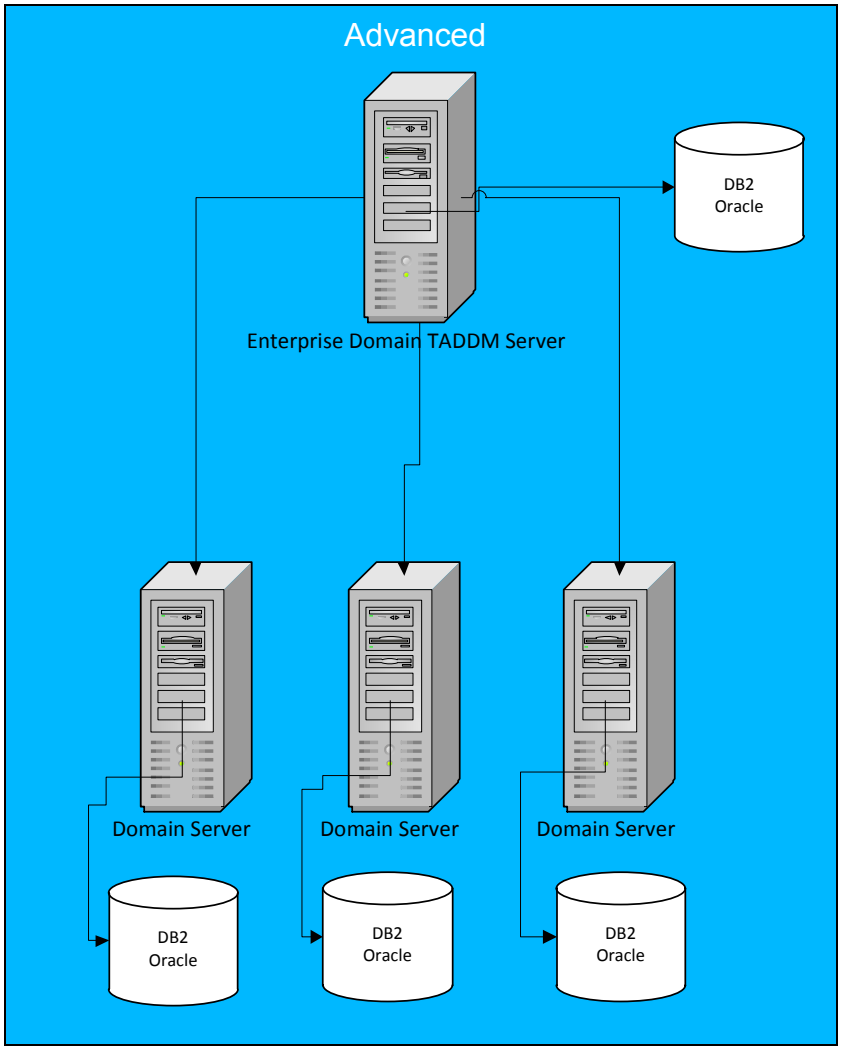
TADDM Topology: Basic & Advanced





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TADDM Discovery Process

TADDM provides you with three levels of discovery:

Level 1 Discovery

A Level 1 discovery does not require credentials and scans the TCP stack, discovers computer systems and network devices. It is a very shallow discovery that captures the host name, OS, Internet Protocol (IP) interface, and fully qualified domain name (FQDN). This discovery discovers the Media Access Control (MAC) address on Windows® and zLinux computers.

Level 2 Discovery

A Level 2 discovery requires computer system credentials and captures deep host configurations. It is a shallow application discovery that does not require additional application credentials. This discovery captures application names, ports, and computer systems on which it is running. If the application has an established TCP session with another application, it is discovered as a dependency.

Level 3 Discovery

A Level 3 discovery does not require application credentials and is the TADDM standard deep-dive discovery. It captures network devices, host configurations, application configurations and web services.

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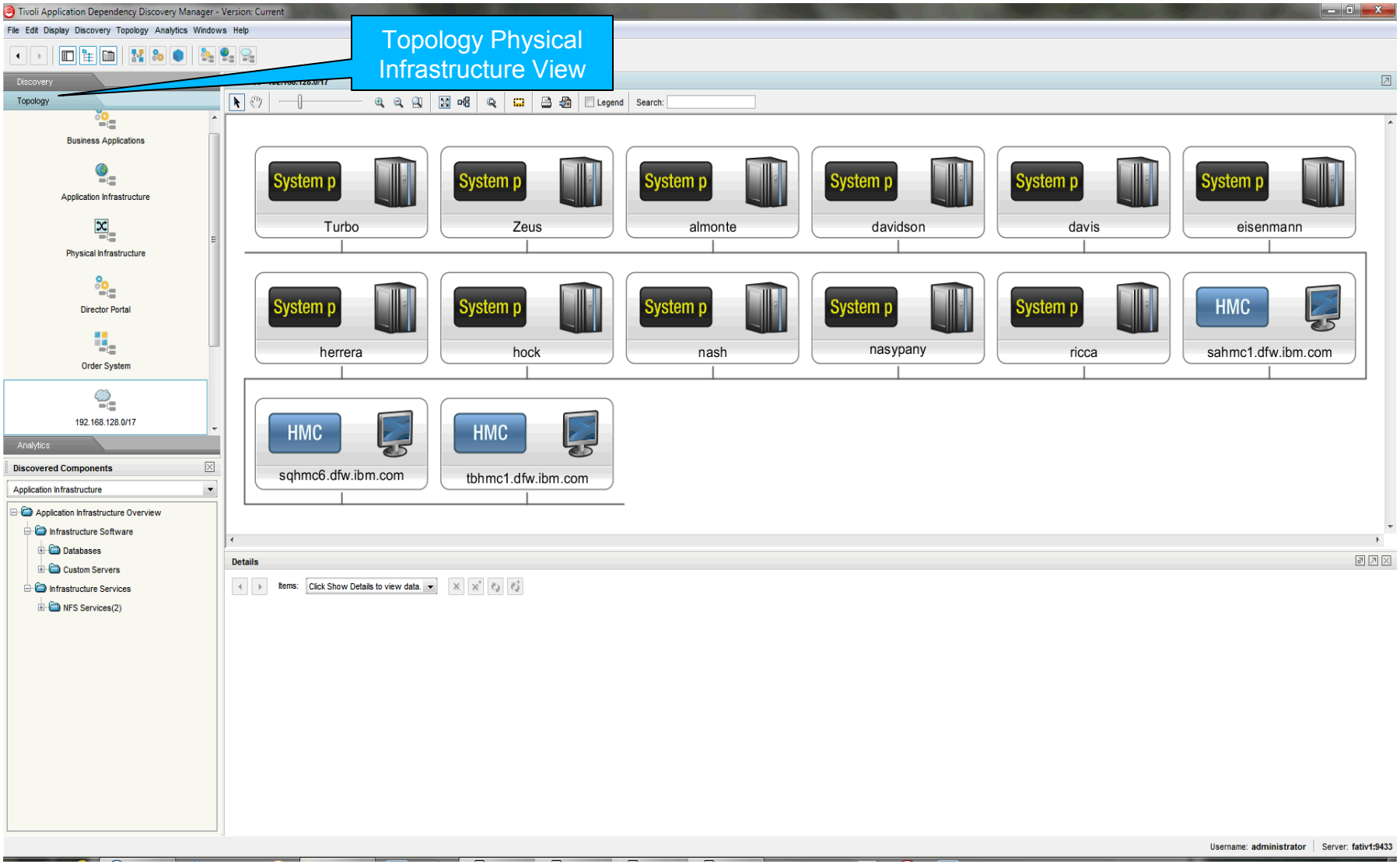
TADDM Samples



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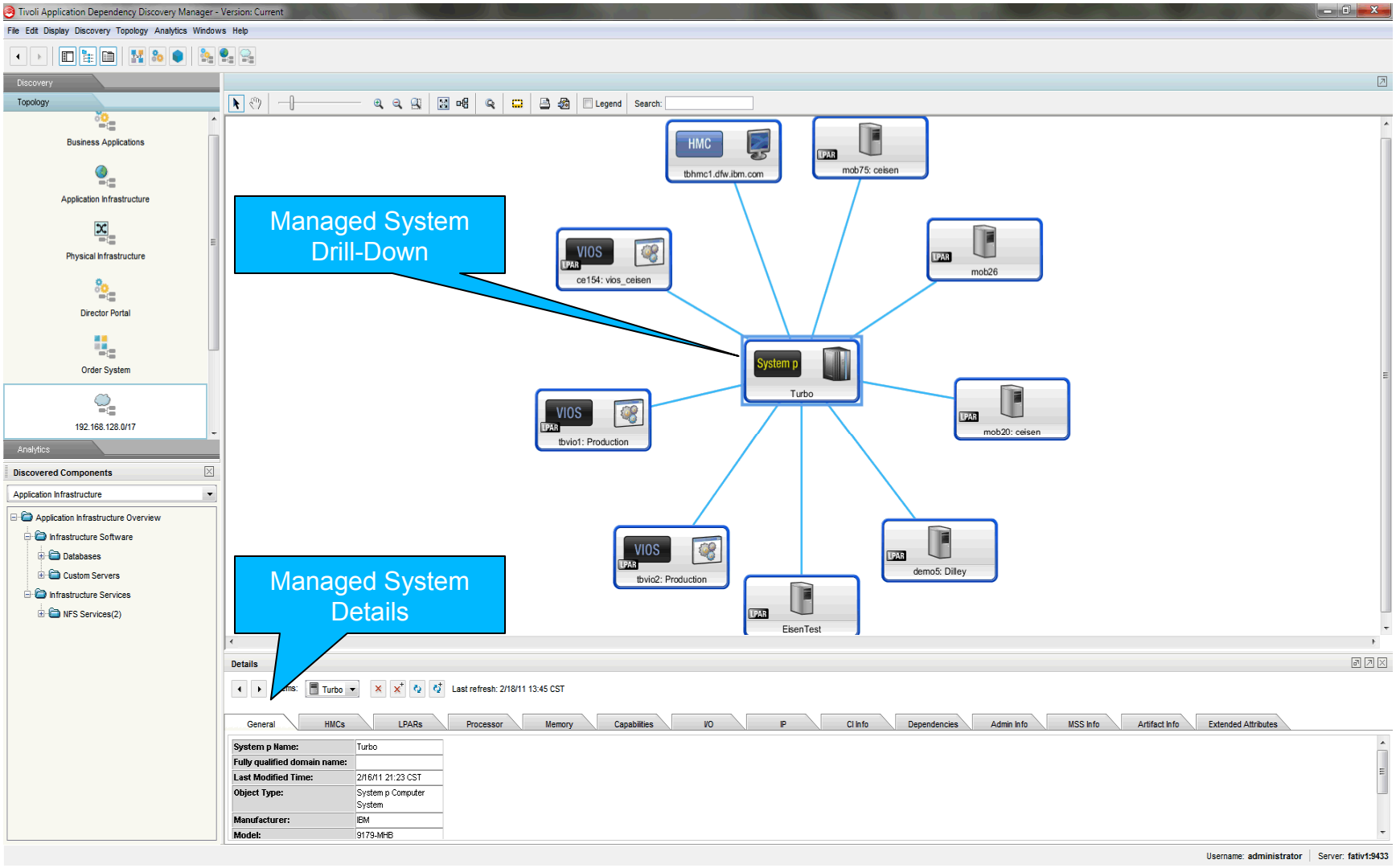

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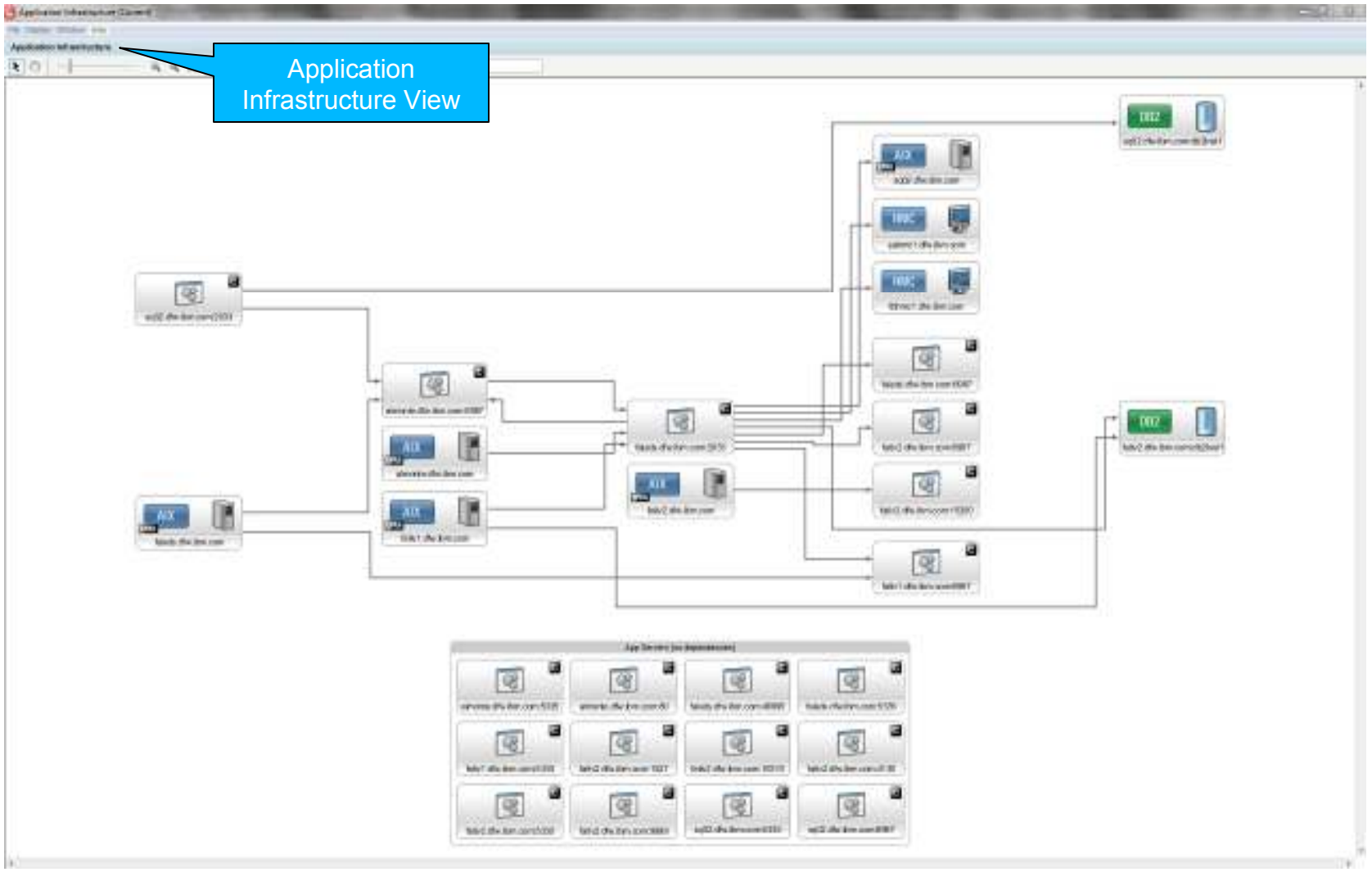
TADDM Samples Cont.



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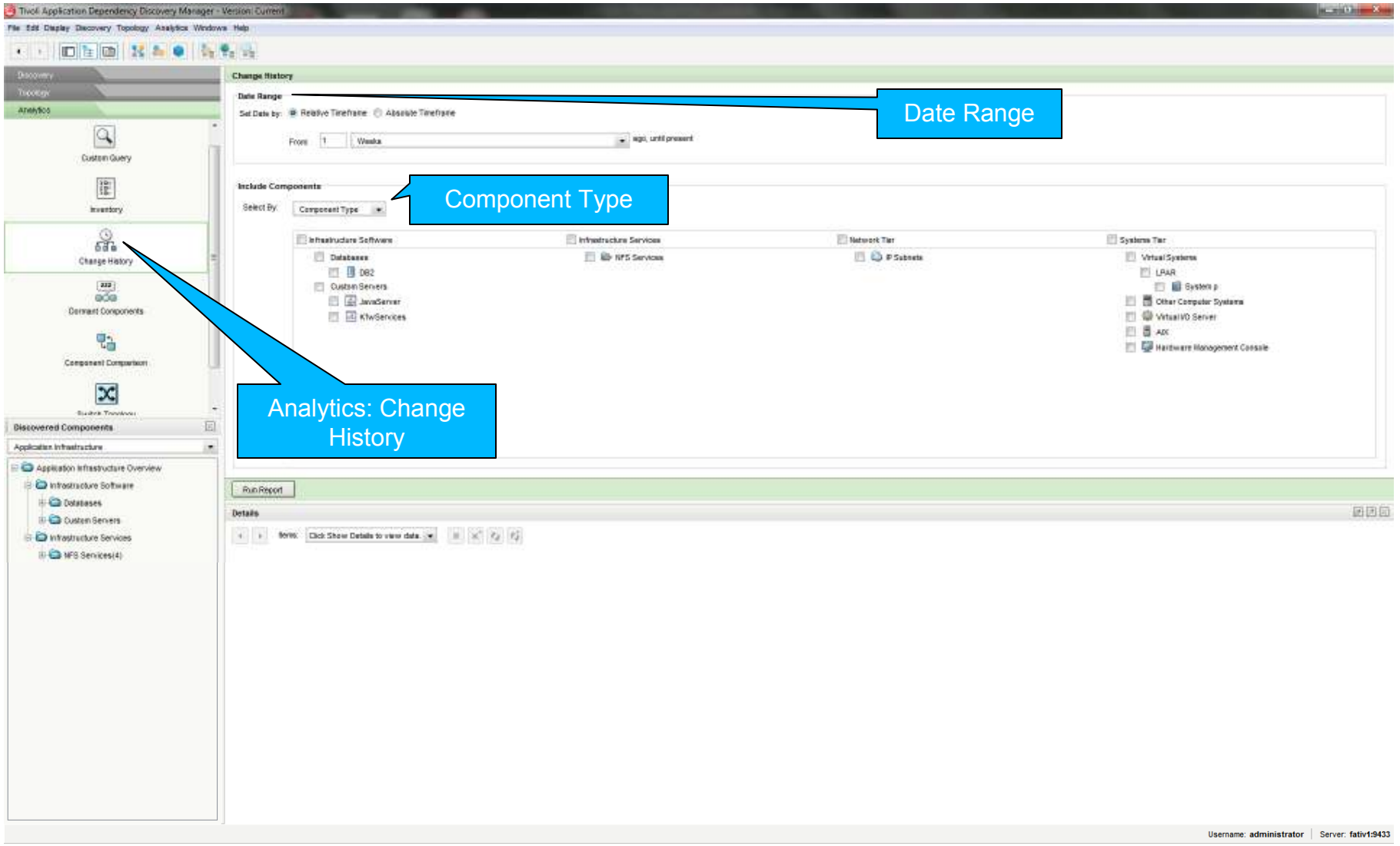
TADDM Samples Cont.



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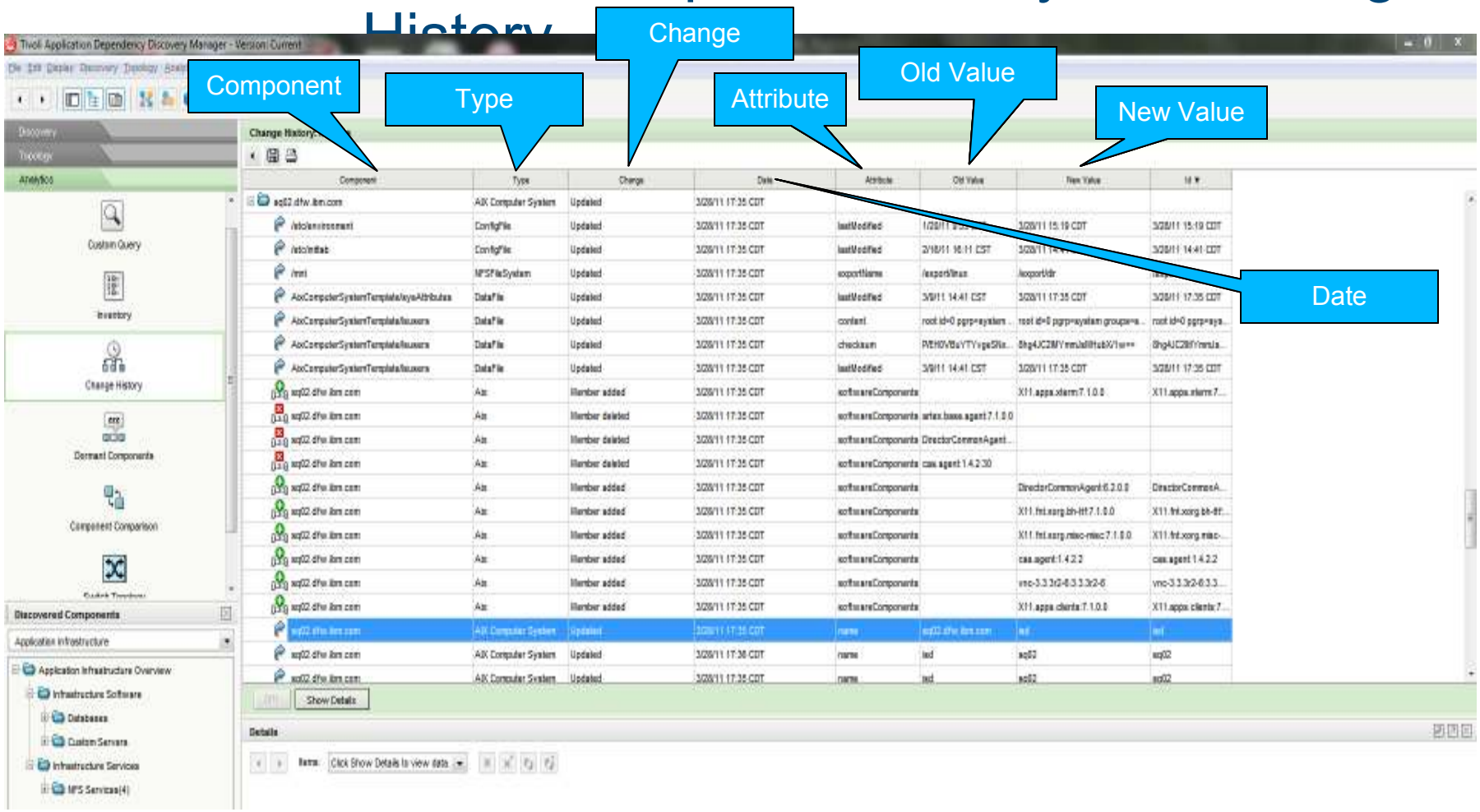
TADDM Samples Cont.: System Change History



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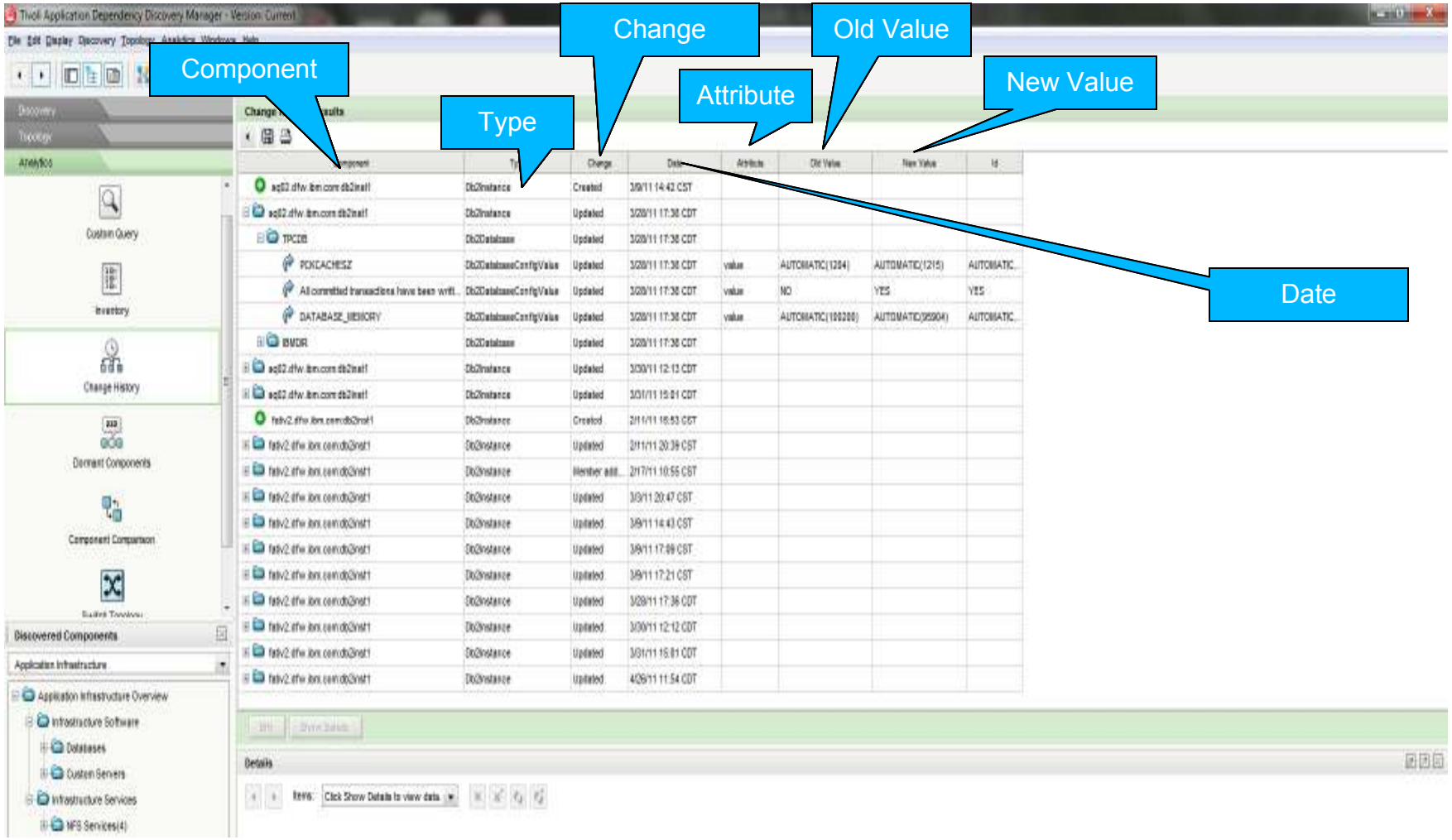
TADDM Samples Cont.: DB2 Change



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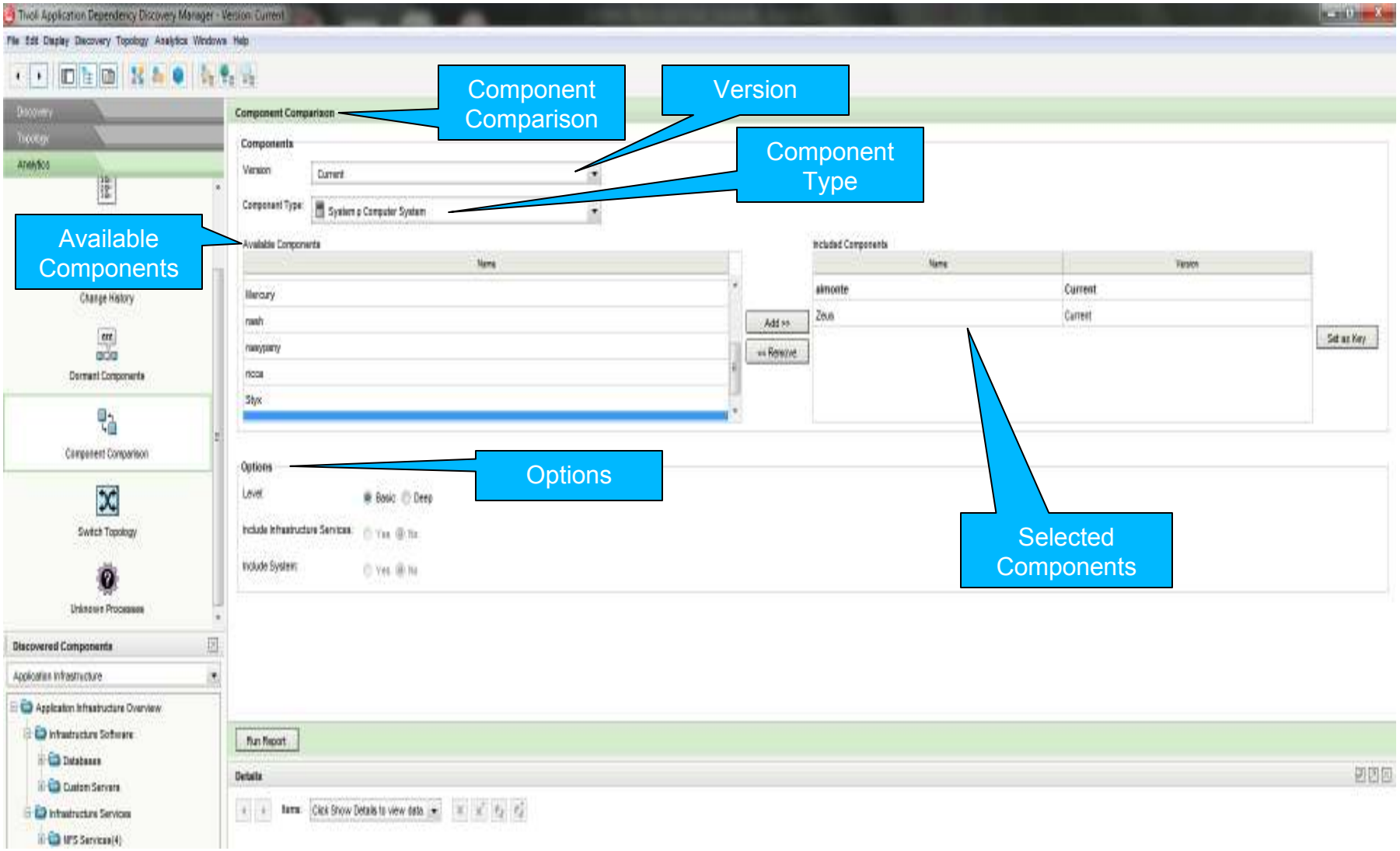
TADDM Samples Cont.: Managed System



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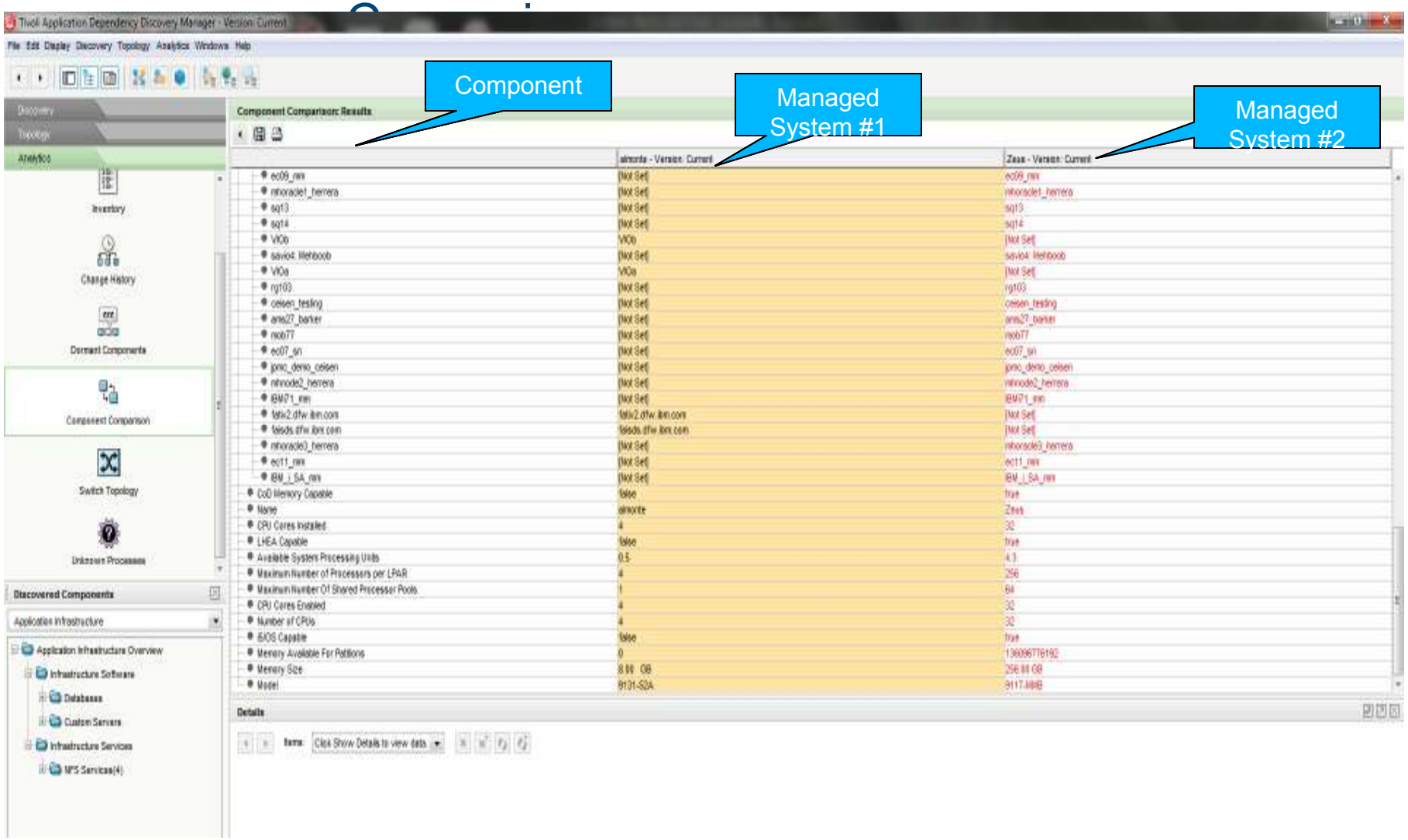
TADDM Samples Cont.: Managed System



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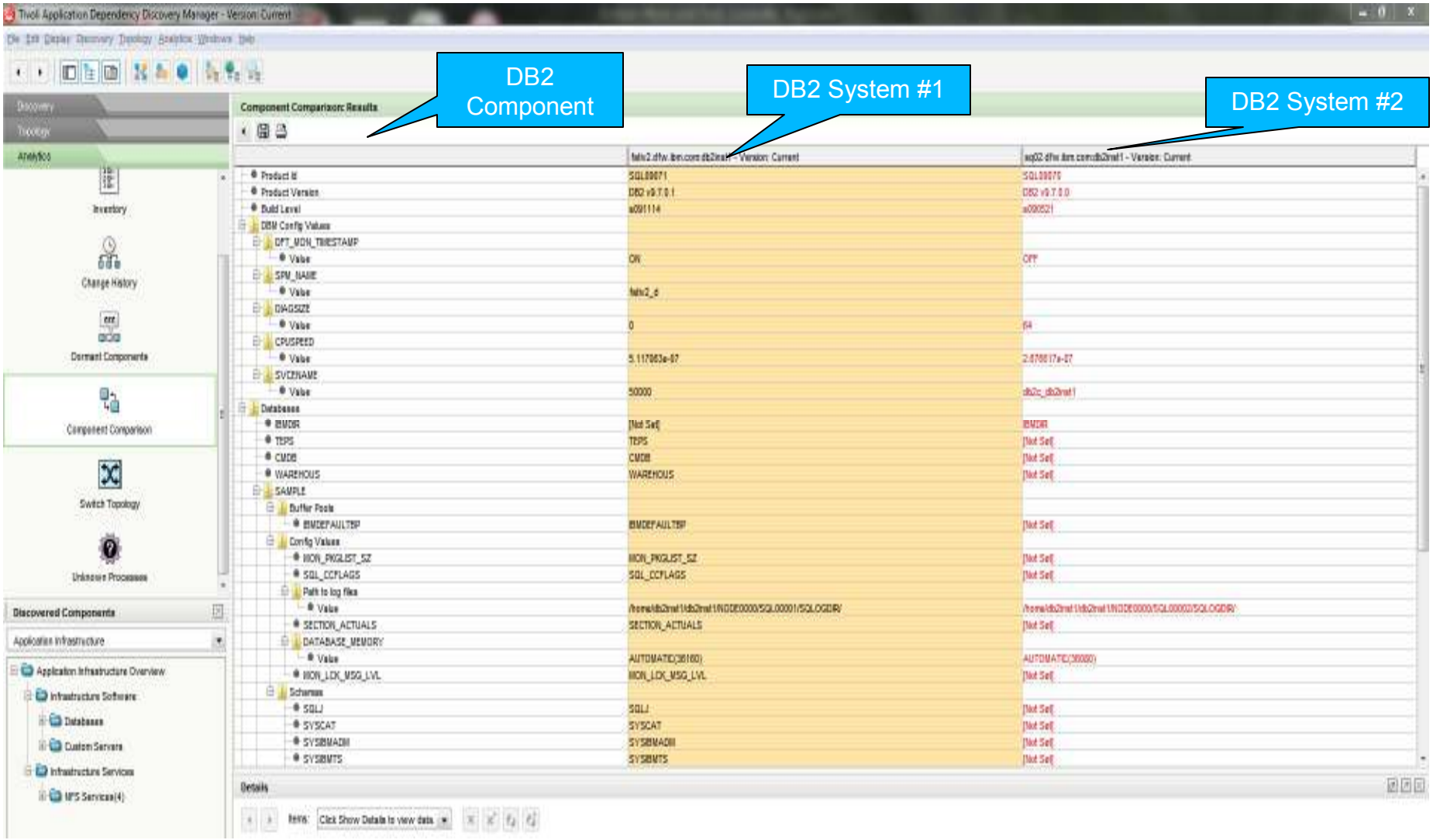
TADDM Samples Cont.: DB2 Comparison



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IBM DB2 9.7

- A DB2 database system consists of a DB2 server and IBM® data server clients.
- A DB2 server is a relational database management system (RDBMS) that delivers data to its IBM data server clients.
- An IBM data server client is an application that allows you to run commands and SQL statements against a DB2 server, connect to a remote DB2 server, and access its databases.
- IBM DB2 is the backbone of the IBM Systems Director Enterprise Edition solution and used with the following components:
  - IBM Systems Director
  - IBM Tivoli Monitoring
  - Tivoli Data Warehouse
  - IBM Tivoli Performance Analyzer Agent
  - Tivoli Common Reporting

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Systems Director Integration

- ITM for Systems Director Base V6.2.2 FixPack 2
  - Monitoring and management for Systems Director V6.1.2.2 and above
  - Core Director functionality: Hardware Inventory, real-time Events and Jobs
  - Inventory covers approximately 60 device, physical. network and system types
  - 3 Tier Reporting structure
    - All Systems currently managed by Systems Director
    - System Groups, as defined by Systems Director
    - Individual Systems
  - Core Director tasks are available as TEP Take Actions such as:
    - System Discovery
    - Inventory collection
    - System, event, job and discovery job removal
  - 90+ workspaces and 140 workspace views

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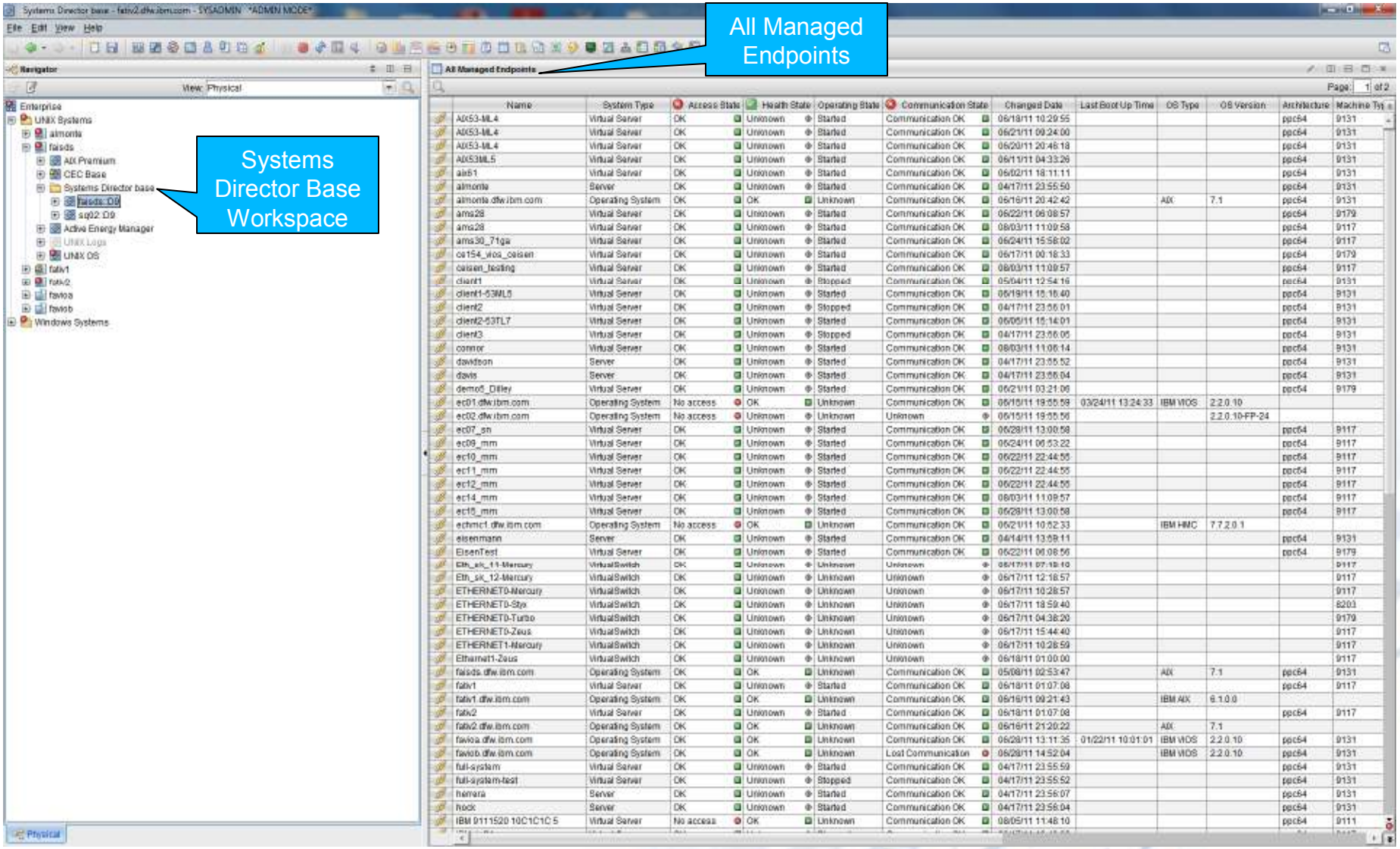
Systems Director Integration Samples



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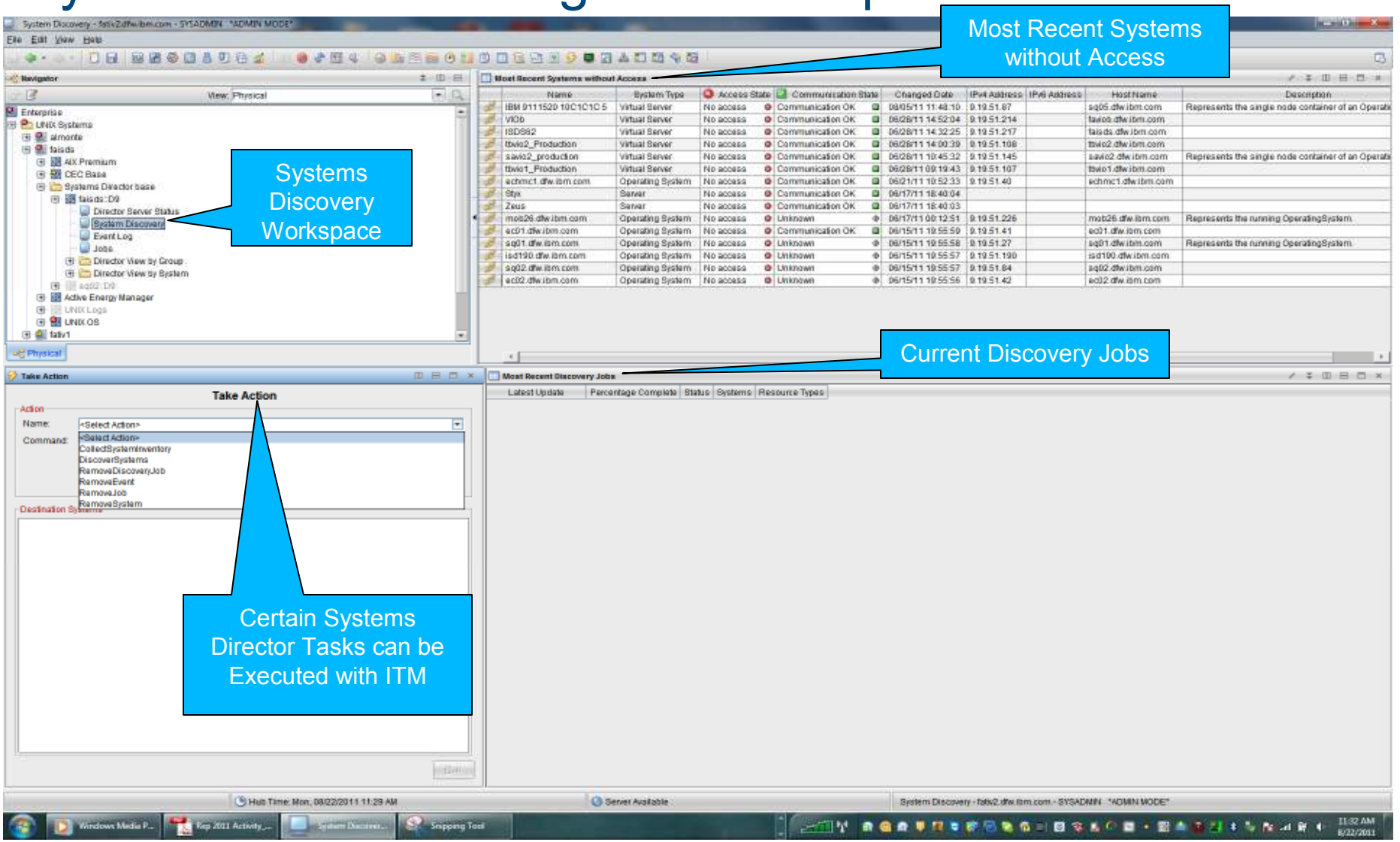
Systems Director Integration Samples



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Systems Director Enterprise Edition Requirements

Product/component	Memory	Disk
Launchpad GUI	10 MB	10 MB
DB2	1 GB	Review InfoCenter for guidance
Tivoli Application Dependency Discovery Manager	4-8 GB	100 GB
Tivoli Enterprise Monitoring Server	400 MB	1.3 GB
Tivoli Enterprise Portal Server	650 MB	1.2 GB
UNIX OS Agent	55 MB	380 MB
Tivoli Data Warehouse database	8 GB	Review InfoCenter for guidance
Warehouse Proxy Agent	200 MB	150 MB
Summarization and Pruning Agent	200 MB	150 MB
IBM Tivoli Performance Analyzer agent	Review InfoCenter for guidance	Review InfoCenter for guidance
Tivoli Common Reporting	2 GB	662 MB
Monitoring Agent for IBM Systems Director Enterprise Edition Integration	5 MB	5 MB
Eaton Power Xpert Agent	3 MB	20 MB
Active Energy Manager Agent	3 MB	55 MB

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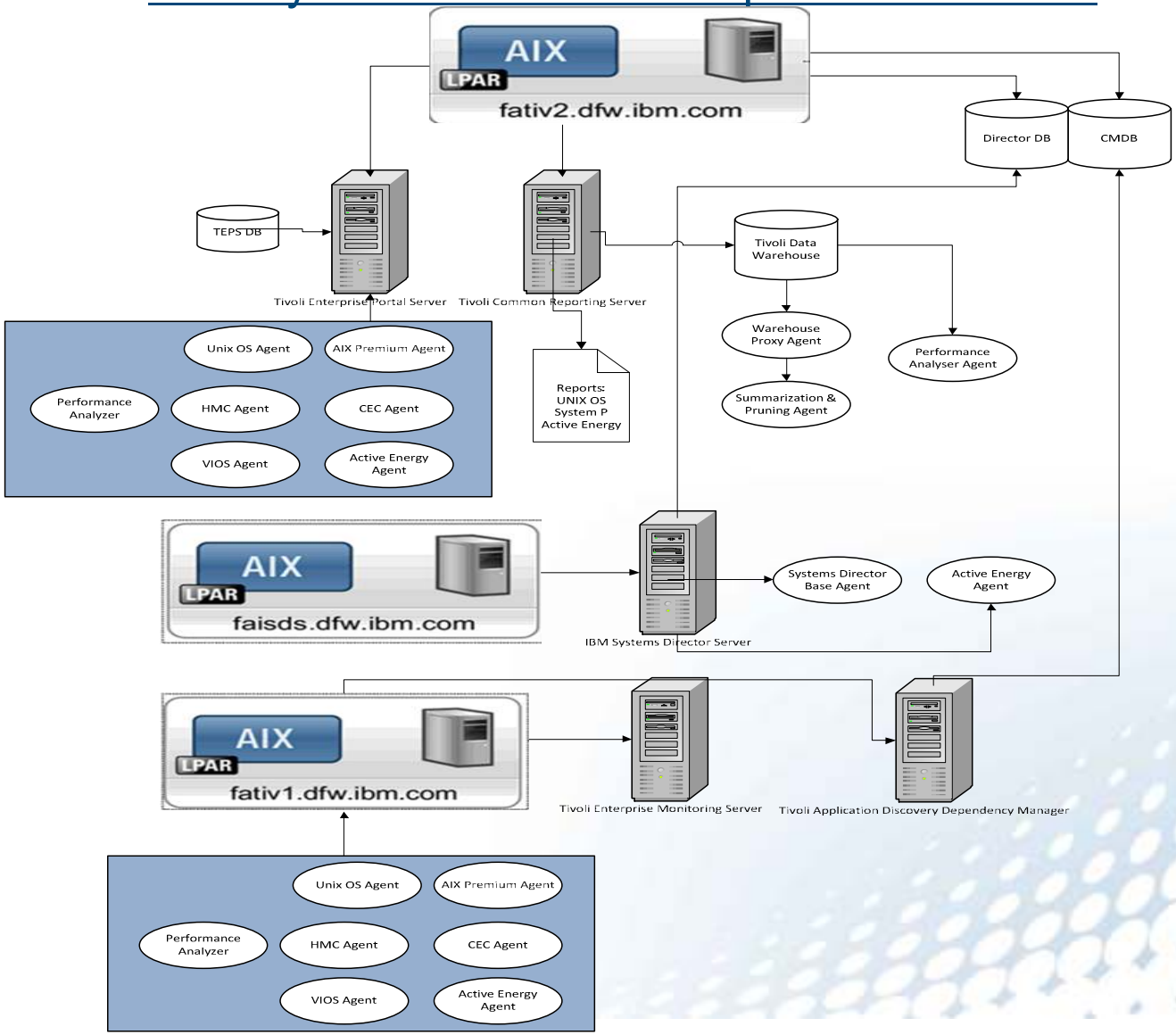
ATS Systems Director Enterprise Edition Lab



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Links to More Information

- Systems Director Enterprise Edition Links
  - ISDEE Planning and Implementation Guide
    - http://publib.boulder.ibm.com/infocenter/director/v6r2x/topic/com.ibm.director.editions.doc/sdee_install_guide.pdf
  - ISDEE Users' Guide
    - http://publib.boulder.ibm.com/infocenter/director/v6r2x/topic/com.ibm.director.editions.doc/sdee_users_guide.pdf
- Information on how to use ITM
  - http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.itm.doc_6.2.2fp2/welcome.htm
- Information on how to use ITM Energy Management Reporting & Optimization
  - http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.itmem.doc/welcome.htm
- Information on how to use TADDM
  - http://publib.boulder.ibm.com/infocenter/tivihelp/v10r1/topic/com.ibm.taddm.doc_7.2/welcome_page/welcome.html

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Links to More Information Cont.

- Information on how to use Tivoli Common Reporting
  - http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr_cog.doc/tcr_welcome.html
- Information on how to use ITPA
  - http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.kpa.doc/itpa_welcome.html

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