

# Pulse

2008

*In Touch. In Tune. In Sync.™*

THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida



## Transitioning to the Next Generation of Tivoli Business Service Manager

*Planning for Successful Distributed and Mainframe Deployments*

*Doug McClure, Senior Managing Consultant*

*IBM Tivoli Lab Services (ISST) – Netcool BSM Practice Lead e: [dmcclure@us.ibm.com](mailto:dmcclure@us.ibm.com)*

# Agenda

- Overall Migration and Upgrade Planning
- Architectural and Functional Planning
- TIP Planning
- Event Source Planning
- LoB, Service and Application Decomposition
- Service Model Design Planning
- TBSM v3 to TBSM v4 Planning
- TBSM v4.2 Migration, Upgrade and Architecture Options

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida



# Migration and Upgrade Planning

- The next generation of Tivoli Business Service Manager (TBSM) is different and offers opportunities for re-evaluating the past to succeed in the future (v4.1.x, v4.2)
- Don't treat your migration and upgrade as just another routine step in the TBSM maintenance lifecycle
- You may not need to do everything you've done previously – and probably shouldn't anyway
- The more effort and time you place in architecture, design and planning, the more successful you will be
  - *Your tactical efforts will ultimately fail without a strategic direction and purpose*

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# Migration and Upgrade Planning

- Begin planning now by creating fully documented use cases on how you use your current version
  - Use cases for how you'd like to use the new version or new features
  - BSM use cases, Operations Use Cases, Other Use Cases
  - Understanding existing audiences and personas
- Gain insight into your current usage loads, performance expectations and growth plans
- Understand end user computer environment (desktop/laptop, browser, JRE, monitor resolution, etc)
- Document your integration scenarios, system interactions and expectations

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**

# Migration and Upgrade Planning

- Complete event and data source assessments
- Develop an event standard and event normalization schema
- Establish best practices for core TBSM features such as template and instance creation, modeling, rules, propagation, etc.
- Establish visualization guidelines (dashboards, reports)

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**

# Architectural and Functional Planning

- How will you use the core product capabilities in TBSM?
- How will you use the enabling product capabilities – TIP, OMNIbus, WebTop, Impact?
- How will you use the supporting technologies – WebTop, Impact, ITM, ITCAM, TADDM, Other Vendors, etc.?
- How will you leverage integration capabilities?

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™

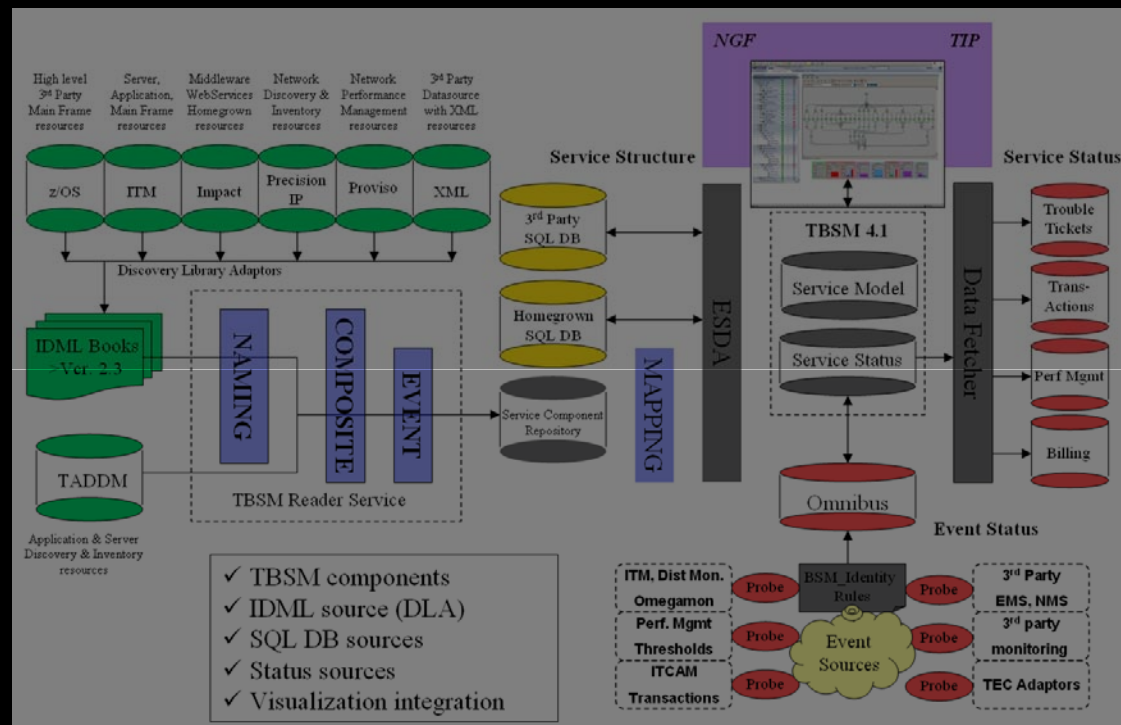


THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# Architectural and Functional Planning

- Planning for value from TBSM starts with planning your integration strategy
- Integration with a purpose using your use cases and scenarios
- Don't limit your thinking to just operations or the command center audiences and integrations



Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# Architectural and Functional Planning

- Understand TBSM architecture options
  - How do you use TBSM (or Netcool/RAD) today?
  - How will you use TBSM v4.2?
  - How does TBSM fit into your organization? Groups? Datacenters? Global?
  - How do you plan to use it in the future?
- How will your organization adopt Tivoli's strategic directions?
  - How do you do event management?
  - How do you do trouble ticket integration, paging, notifications?
  - How do you do event based reporting? Other reporting?
- Do you have a strategic architecture vision? Should you?

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM



# Tivoli Integrated Portal (TIP)

- Security: Access, Authorization, Authentication, SSO
- Portlet Navigation and Messaging, Integrations, Layouts, LIC
- TIP Charts, BIRT RT, TCR Reporting, ITM Web Service
- High Availability and Failover

eWAS 6.1

ISC AE 7.5

CGI Server

SSO / ESS Service

TIP Charts

BIRT Runtime 2.2

Authentication Service

ITM Web Service

Authorization Service

Tivoli Common Reporting

Tivoli Scheduler Service

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# Access, Authorization, Authentication Planning

- Define your user, group, role requirements – KISS!
- Create a AAA strawman and incorporate into your use cases and scenarios
- Determine level of access control needed – TBSM, TCR, OMNIbus / Event Lists
- Review navigation, LIC, reporting and other areas for AAA
- Authentication sources – OMNIbus, LDAP/AD, VMM File-Based (POC)

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**

# Navigation, LIC, Actions Planning

- With TBSM v4.2, navigation between portlets and external sources should be easier than NGF based hacking
- As part of your use case and scenario driven design, incorporate expected navigation and launch in context (LIC) elements
- Your goal should be to incorporate 80% of what you'd expect those audiences or personas to do
  - leave the other 20% to self service or request driven work
- In the future, TIP based solutions intend to adopt “Web 2.0” style situational applications or mashups where navigation and scenarios are driven by the end-user exclusively

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**

# Visualization

- TIP Pages, Views and Portlets – The sum of all the parts to deliver message. (note new naming style)
- Custom Canvas Dashboards - Use TBSM v4.2 custom canvas capabilities over Netcool/WebTop maps
- Scorecards – Very powerful capability for communicating real time information. Leverage conditional formatting and LIC!
- TIP and TCR based Reports, Charts, Graphs – Learn how to create custom BIRT reports from numerous data sources!
- Other content integration – Incorporate other content into consolidated TIP based displays. Learn how to use TIP Navigation messaging!

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**

# Event Source Profiling, Cataloging and Data Dictionary

- **This is a CRITICAL activity that should be started now!**
- **Identify all known event sources**
  - Not just the tool providing, but the ultimate source (hardware, OS, LPAR, SYSPLEX, DB2 table, CICS transaction, batch job, etc.)
- **Profile all of these events. Capture characteristics such as**
  - Normal, poor, bad behaviors
  - What causes events to be generated and cleared
  - Expected event volumes normal, peak, maintenance window, future event
- **Capture known impact** that these events may have on LoB, services, applications, transactions, etc.
  - Business and IT impact in terms of KPI, \$\$\$, other services and applications

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# Event Source Profiling, Cataloging and Data Dictionary

- **Log in event catalog or event data dictionary**
  - All of the above
  - How the events will be formatted
  - Required event fields, optional event fields
  - Event fields that are populated via source information, via rules files and lookup tables, via Netcool/OMNIBus or via Netcool/Impact
- **Develop your own Event Standard**
  - This will become the basis for which all incoming events will held to
  - Clearly documents every field in Netcool/ObjectServer alerts.status table
- **Keep this up to date!**

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# Event Standard and Event Normalization

- The more effort put towards getting incoming events right, the more pleasant your TBSM v4.x and Business Service Management experience will be
  - The right events enable efficient use of the core TBSM v4.x features and accurate service and application modeling
  - The right events will provide useful Information to support operations activities and workflows (display, ticketing, escalations, paging, email notifications, etc.)
  - The right events enable powerful historical event based reporting by LoB, service, application
  - The right events convey the business and IT impact, business severity and IT severity

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**

# Network, Distributed and Mainframe Event Integration

- Take advantage of the depth and breadth of the Netcool/OMNIbus suite of probes and gateways
- Leverage probe rules and lookup tables, Netcool/Impact, etc. to normalize and enrich all events
- Work through the organizational challenges to integrate all management and monitoring products into Netcool/OMNIbus
- The more visibility you have, the better your end-to-end service modeling can become
- Consider “BSM Events” specifically to drive your TBSM solutions (discovery, instance creation and placement, metrics, heartbeats, etc.)

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM



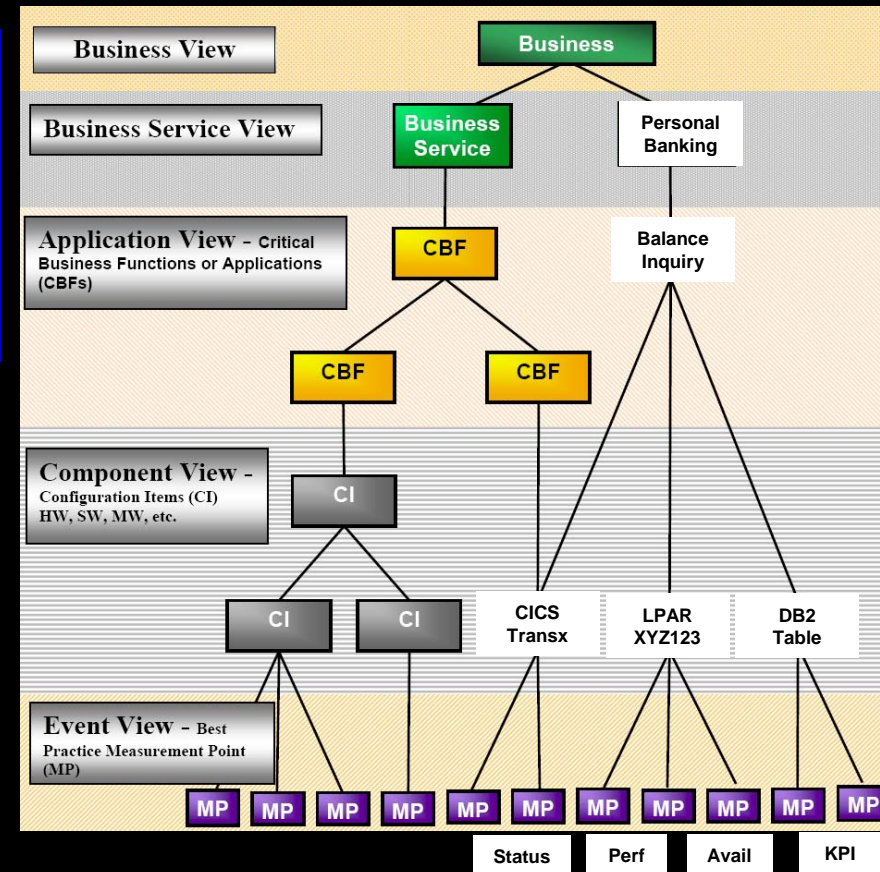
# LoB, Service and Application Decomposition

**Business Service View** - Through a hierarchy of associations considering physical assets, functional groupings and ordering the service level illustrates the effect of IT on business delivery of services. Business management uses this dashboard level to understand the current condition of their service offerings to their customers.

**Application View** - Consolidates technology components into logical applications or business functions that are critical to delivering the business service. Application support teams would most likely use this view to manage the day-to-day operations of their applications.

**Component View** - Aggregates all of the monitoring measurements defined in best practice templates for each technology. This level aids troubleshooting efforts by identifying the root-cause specific technology impacting the business.

**Event View** - This is all of the instrumentation and measurements that can affect a business service. These are better describes as “best practice” monitoring for each component.



**TBSM Design Patterns:** See <http://dougmcclure.net> for the WYNTK on TBSM Design Patterns blog posts for more information.

THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

# LoB, Service and Application Decomposition

- Determine the level of detail required to adequately map out LoBs, services and applications
  - This is a balance between a high level and low level of detail that is determined by your available datasources and capabilities
  - There's no right or wrong way to do this, focus on what makes sense to the group and mature this over time into total solution
  - You can have multiple models or perspectives of the same things
- Most clients start out with technology grouping
  - MF, LPAR, SYSPLEX, DB2, STORAGE, TRANSACTIONS
- Followed closely by organizing by the LoB, business service or application that they support
  - Personal Banking → Inquiry → Transaction XYZ123 → LPAR XYZ123 → MF 1

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**

# Service Model Design Planning

- Define the approach for modeling systems technology, service, application, transaction, batch job behaviors using your own **TEMPLATE LIBRARY**
  - Each template (or library) should model the **Behavior and Characteristics, State and Status, Performance, Quality, Availability, Reliability, User Experience, etc.**
    - *This is easily accomplished if the event profiling and cataloging and the event standard has been previously completed*
- The goal of service modeling should be to do just enough to enable your use cases and scenarios for
  - Operations and Support, Presentation Layer Dashboards, Scorecards, Reports
  - Simple and efficient TBSM support lifecycle
  - Low impact on TBSM solution administrators
- **Don't create complexity unless it is absolutely needed!**

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™

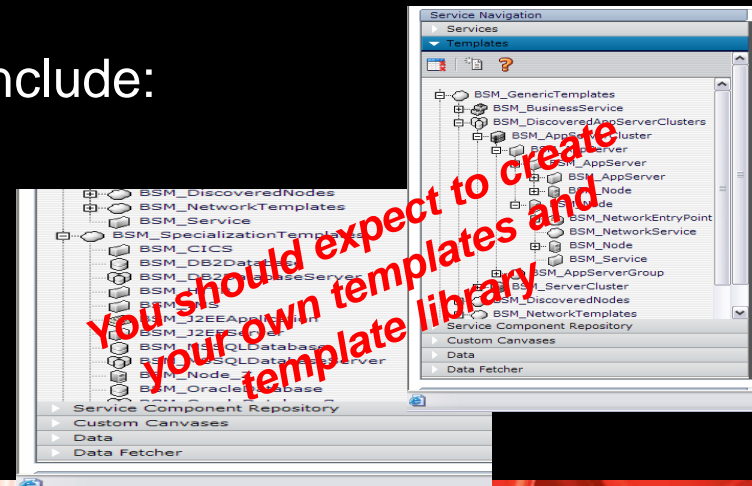


THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# Service Model Design Planning

- Develop a naming schema for all templates and instances
  - Templates follow an approach such as “function\_component-detail”
    - arch\_mf, arch\_LPAR, svc\_personalBanking, app\_db2
  - Instances follow an approach that identifies the template type and unique instantiation of that template
    - arch\_mf-z10-sys123, svc\_personalBanking-inquiry, app\_db2-db2110-1
- Examples of template classifications include:
  - arch\_: architecture component
  - svc\_: service component
  - trans\_: transaction component
  - org\_: organizational component
  - loc\_: location component



# Service Model Design Planning

- Best Practice Template Design Approach: *Find points of commonality first, then uniqueness*
  - **One core template for db2 generic behaviors and characteristics**
    - **arch\_db2-core**: this template contains the generic model for how to manage and monitor any version of db2. This contains the standard event, metric and KPI rules
  - **Then specific templates for unique implementations, versions or requirements**
    - **arch\_db2-v9**: this template contains any specifics that only apply to DB2 v9
    - **arch\_db2-MF**: this template contains any specifics that only apply to DB2 on the MF
    - **arch\_db2-Open**: this template contains any specifics that only apply to DB2 for Open Systems
  - **Instances are then “tagged” with the appropriate template types**
    - Service instance **arch\_db2-XYZ123** will be assigned the **arch\_db2-core** template as it's primary template and **arch\_db2-v9** and **arch\_db2-MF** for specific implementation of db2 v9 on the MF

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# Service Model Design Planning

- **ABSOLUTELY** avoid broad based event matching rules
  - Such as incoming status rules that match any severity, any type of event, etc. to the managed system or host name
- Use automated service model building techniques as much as possible
  - Autopopulation rules are extremely easy **ONLY** if the incoming events are of high quality and normalized!
  - If a CMDB exists, the use of ESDA rules are best for building service models
  - Key thought in complex environments– **Autopopulation rules create instances, ESDA rules place instances.**

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™

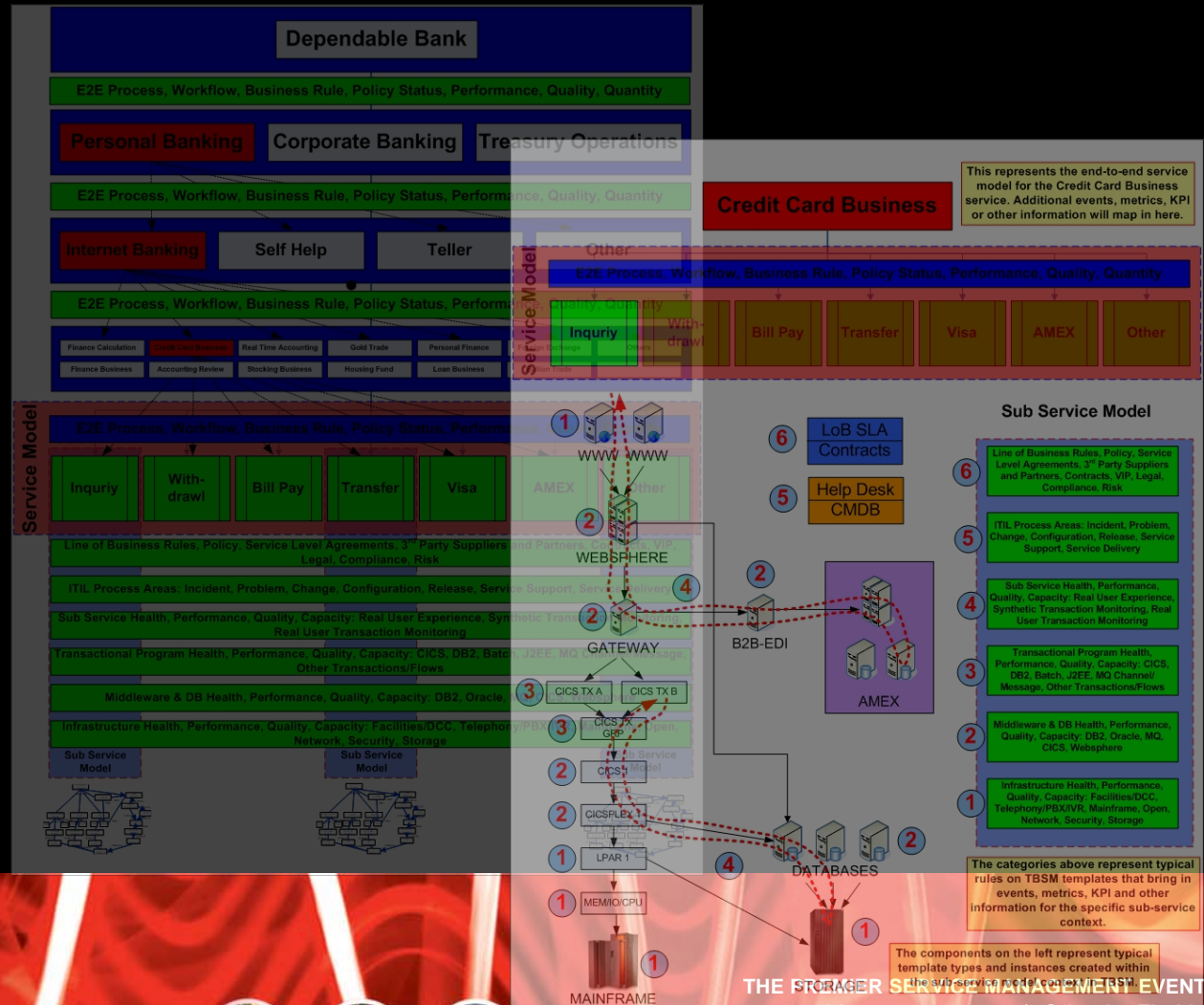


THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# Service Modeling Summary

- Know what you want
- Start small
- Know how to get it
- Keep it documented
- Keep it accurate
- Assess value
- Change it if none!



Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™



THE STRONGER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida



# TBSM v3 to TBSM v4 Planning

- v3/v4 migration
  - TBSM v4 provides equivalent capability as well as new capabilities that did not exist in TBSM v3
    - *This next generation of TBSM provides opportunities for re-evaluating the past to succeed in the future*
    - *Several functions are available to help preserve investment in the v3 system but the process of moving from one system to another is to implement a new v4 system and hook in to existing v3 integration points*

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM



# TBSM v3 to TBSM v4 Planning

- There are several points of integration that have been delivered or will be delivered to assist customers in migrating from v3 to v4 including:
  - **TBSM v3.1 ESDA Feature** - provides function to represent TBSM 3.1 Business System folders in an IBM Tivoli Business Service Manager (TBSM 4.1) system. This allows the user to build advanced dashboards incorporating TBSM v3 LOBs.
    - *This is considered an interim step for those customers who wish to move to v4 over time but take advantage of v4 capabilities. It is not a migration tool. Available today via OPAL.*
  - **TBSM v3.1 Event Enablement Integration Features** - provides ability to forward events via IHSTTEC to TBSM v4 to preserve customer investment in event enablement scripts. Available in TBSM v4.1.1

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# TBSM v3 to TBSM v4 Planning

- **TBSM v3.1 Request Processor Integration Feature** - provides ability to use customer built request processors for trouble ticket or change request system integration with v4.2. This supports capabilities such as auto-ticketing or manual ticketing.
  - *Available in TBSM v4.2 (POR July 2008)*
- **System z Data Pump** – provides ability to integrate z/OS data sources. z/OS messages, exceptions, resolution events would be routed to TBSM v4 via OMNIBus.
  - *The first round of support is scheduled for TBSM v4.2. This will support z/OS data sources that include z/OS, DB2, IMS, CICS, SA, OPS/MVS.*
  - *Available in TBSM v4.2 (POR July 2008)*

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**

# TBSM v3 to TBSM v4 Planning

- v3/v4 migration
  - Additional post v4.2 releases will add additional z/OS capability in support of the zService Center concept including the ability to run on zLinux and z/OS command support via zNetView.
  - The ISST team is also developing tooling / scripts to migrate service model data from a v3 system to a v4 system. This utilizes and existing v3 service model export capability and scripts to create a RADShell command script.

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**



Tivoli. software

THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

# Pulse

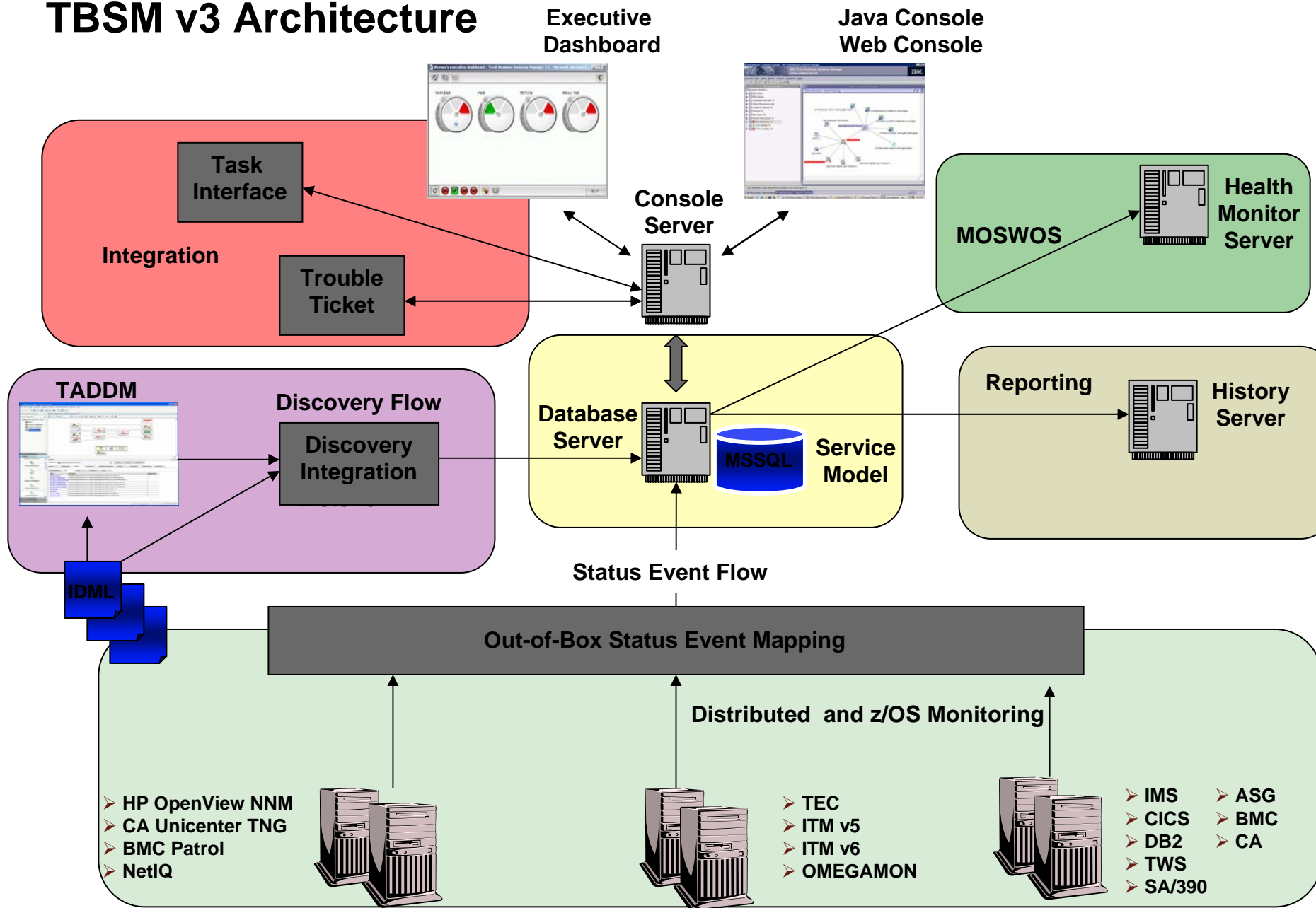
2008

*In Touch. In Tune. In Sync.™*



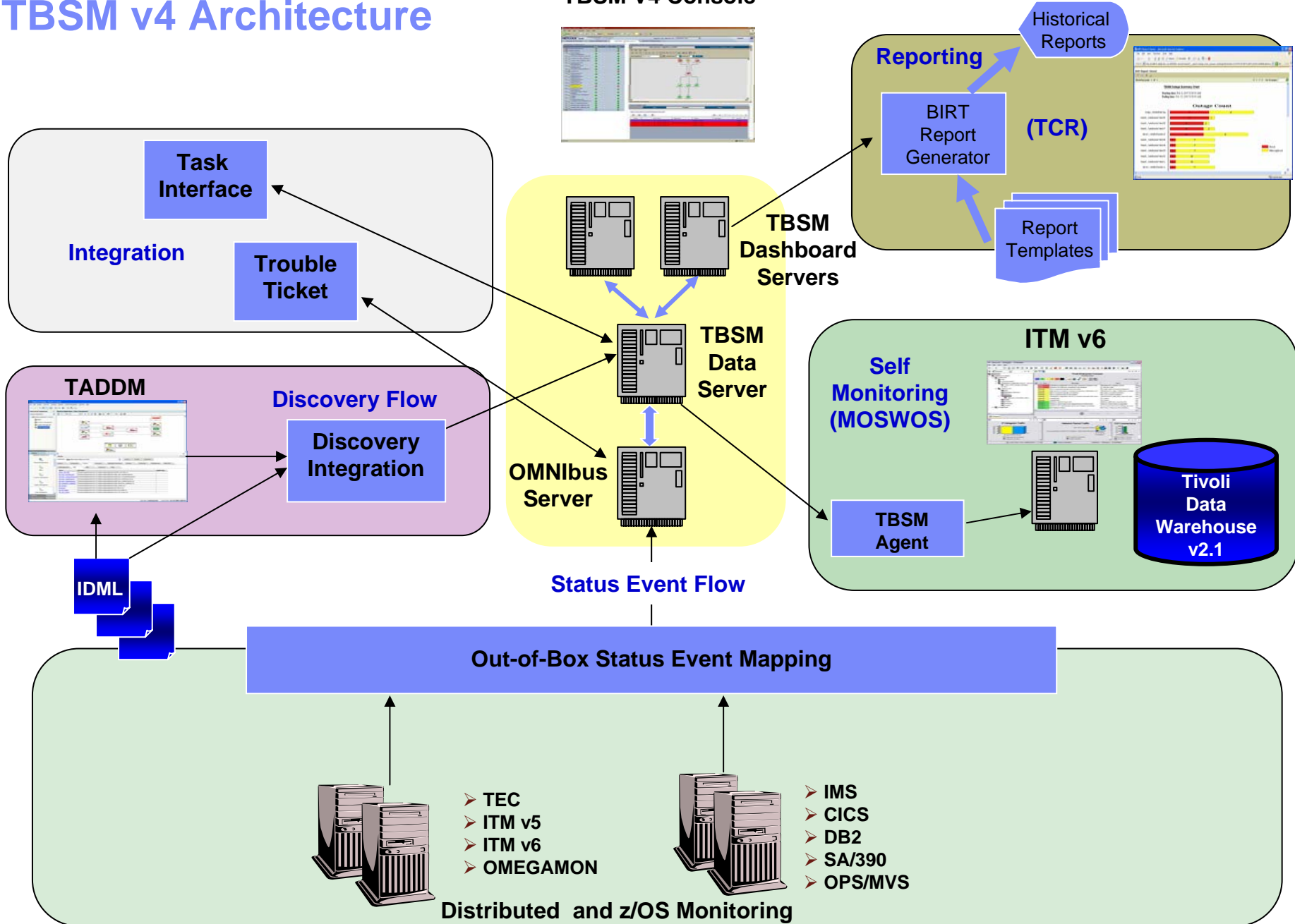
## TBSM v4.2 Migration and Architectural Options

# TBSM v3 Architecture

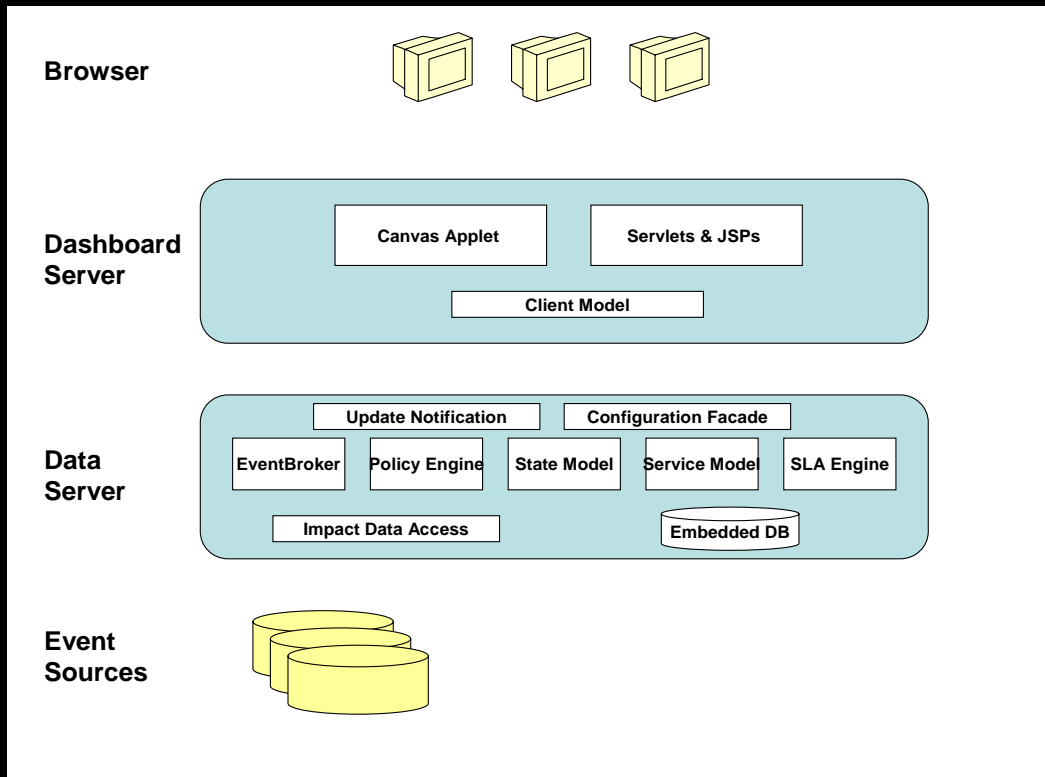


# TBSM v4 Architecture

## TBSM V4 Console



# TBSM Server Separation – Component Overview



## Dashboard Server

- Can deploy one or more Dashboard Servers
- Can deploy users across multiple servers manually or using load balancing device or software
- TIP HA supports replication across servers
- Data is cached for improved performance

## Data Server

- Can deploy one or two Data Servers
- TBSM Failover for HA
- 64-bit support (run-at) will support much larger numbers of service instances

Tivoli software

# Pulse

2008

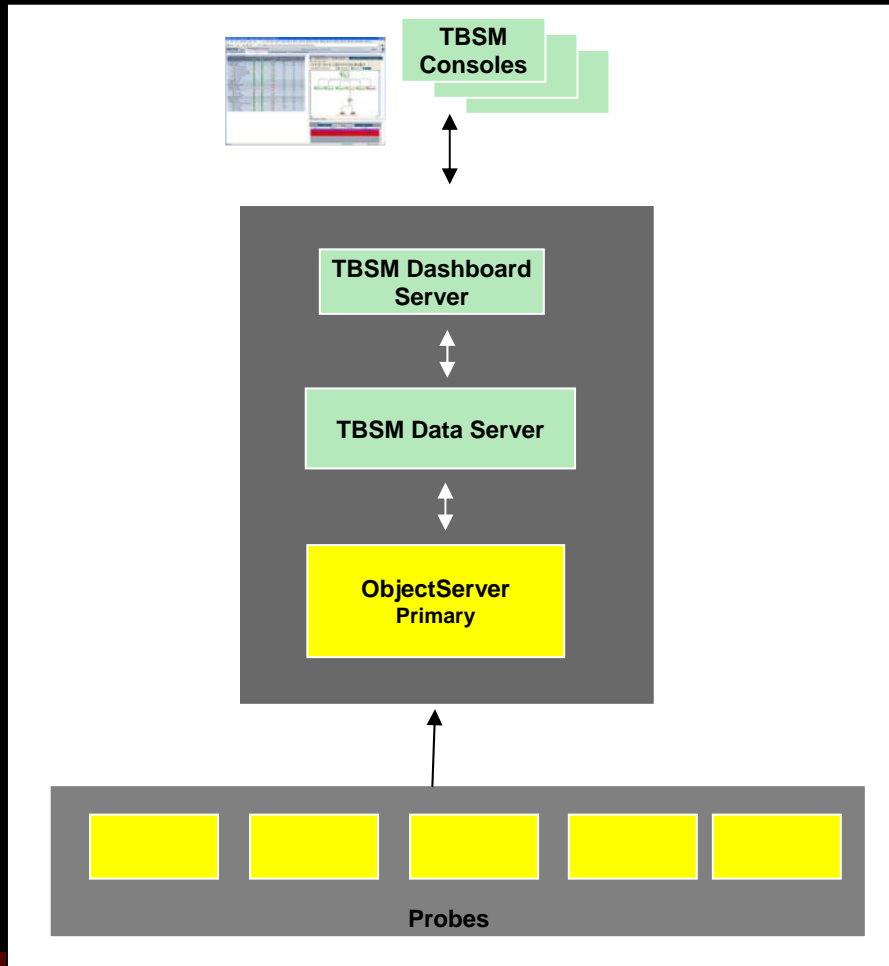
In Touch. In Tune. In Sync.™



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# TBSM Server Separation – Deployment Options



- *POC environment*
  - *Dashboard and Data Servers on single server*
  - *Single Dashboard Server*
  - *No Failover / HA Configuration*
  - *OMNibus on same server*

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™

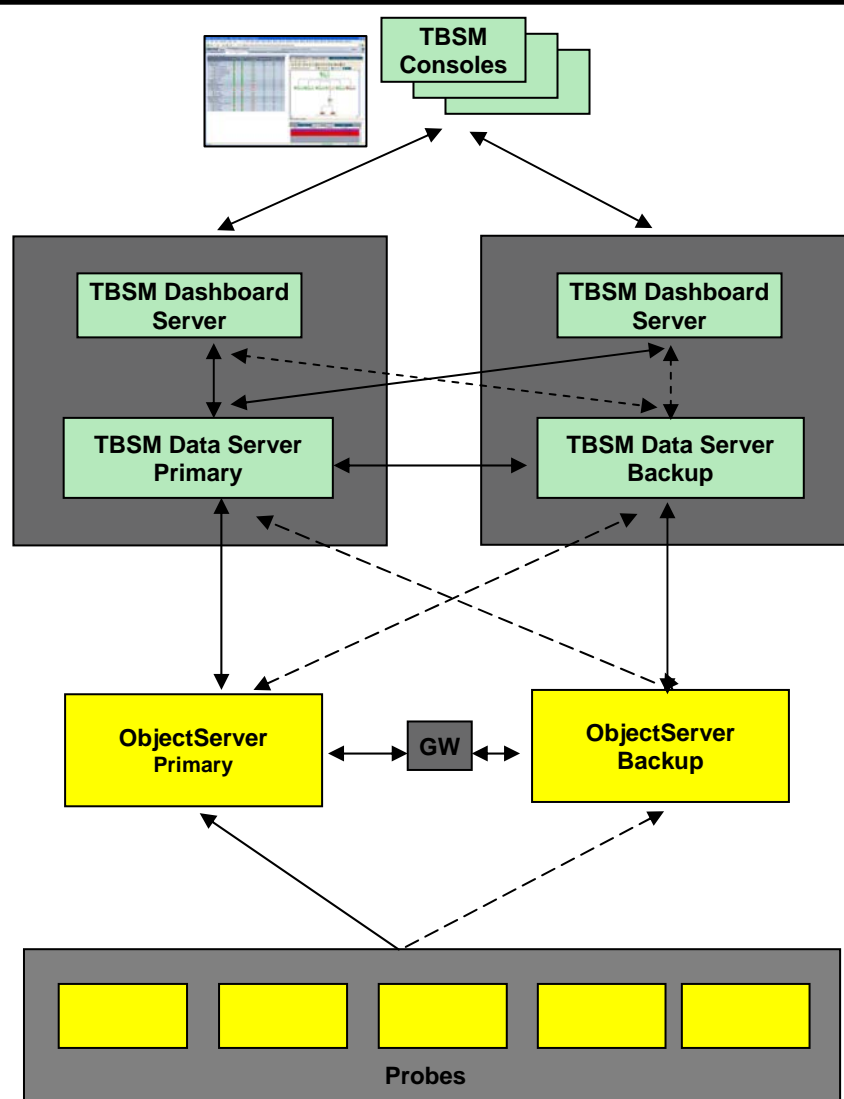


THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

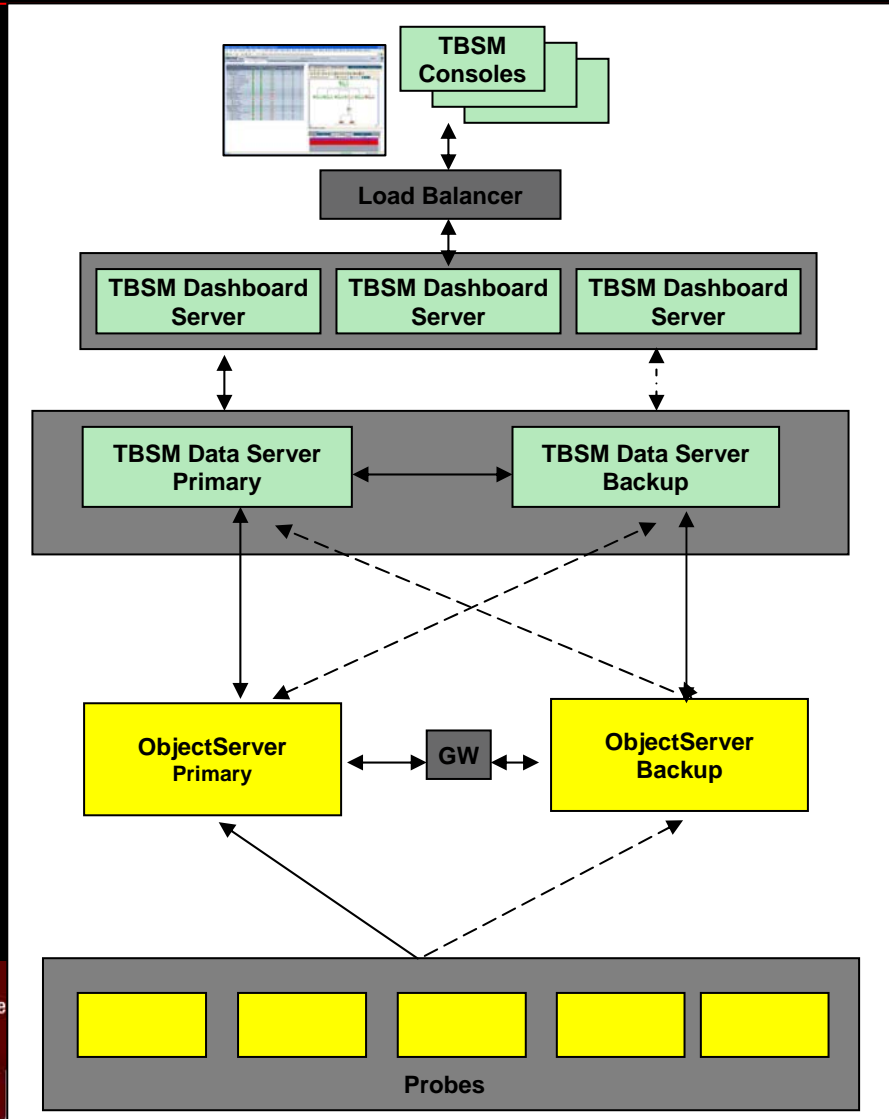


# TBSM Server Separation – Deployment Options



- *Low volume environment*
  - *Dashboard and Data Servers on same servers*
  - *Multiple Dashboard Servers*
  - *Failover / HA Configuration*

# TBSM Server Separation – Deployment Options



- *High volume environment*
  - *Dashboard and Data Servers on separate servers*
  - *Multiple Dashboard Servers load-balanced*
  - *Failover / HA Configuration*

# Core NGF Migration Plans

## What is being migrated for TBSM

- Custom canvases -- *no limitations expected*
- Custom icons/images -- *no limitations for graphics that have been added - TBSM 4.2 may be updating its out of the box template icons.*
- Custom view definitions -- *some manual updates may be required - still under development*
- Tree templates for scorecards -- *no limitations expected*
- Tree template policy – *some manual updates may be required - still under development*
- Custom right click actions -- *no limitations expected*
- Portlet communication -- *no limitations expected*
- Charting -- *may require some manual configuration - still under development*
- Custom maps (using mapbuilder utility)-- *no limitations expected*
- Custom content -- *will attempt to copy non-TBSM content found in the subtree rooted at NCHOME\guifoundation\webapps\sla, which is the TBSM NGF default URL context (goal is to pick up content used from IFrames)*

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

# Summary

- Start planning now! Evaluate the bigger Tivoli strategic picture in terms of event management, reporting, integrations, TIP, etc. from the broader organizational perspective
- Establish a design and methodology (best practices, standards, etc) for every core component of TBSM v4.2 and your architecture.
- The more effort placed into creating quality, normalized and enriched events over “just integrating event sources” the better
- You may not have to do everything you did before and probably shouldn't
- Ask for help! Forum, Wiki, Services, Custom Training, etc.

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**

# TBSM Resources

- **developerWorks Wiki:**  
<http://www.ibm.com/developerworks/wikis/display/tivolibsm/Home>
- **developerWorks Forum:** <http://www-128.ibm.com/developerworks/forums/forum.jspa?forumID=1243&start=0>
- **Service Management Portal:**  
<http://www.ibm.com/developerworks/spaces/sm>
- **Netcool Users Group:** <http://netcoolusers.org>
- **My Personal Blog:** <http://dougmccclure.net>

Tivoli software

# Pulse

2008

*In Touch. In Tune. In Sync.™*



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

**IBM**



## Tivoli User Community

An active and lively community for Clients, Business Partners, and IT professionals. **Free membership** provides you with valuable resources, tools and networking capability. Log on to [www.tivoli-ug.org](http://www.tivoli-ug.org) or visit the ped in the IBM Pulse Expo



## Tivoli Training

IBM offers technical training and education services to help you acquire, maintain and optimize your IT skills. For a complete Tivoli Course Catalog and Certification Exams visit [www.ibm.com/software/tivoli/education](http://www.ibm.com/software/tivoli/education)



## Tivoli Services

With IBM Software Services for Tivoli, you get the most knowledgeable experts on Tivoli technology to accelerate your implementation. For a complete list of Services Offerings visit [www.ibm.com/software/tivoli/services](http://www.ibm.com/software/tivoli/services)



## Tivoli Support

IBM Software Premium Support provides an extra layer of proactive support, skills sharing and problem management, personalized to your environment. Visit [www.ibm.com/software/support/premium/ps\\_enterprise.html](http://www.ibm.com/software/support/premium/ps_enterprise.html)

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM

Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries./ Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both. IT Infrastructure Library is a registered trademark of the Central Computer and Telecommunications Agency which is now part of the Office of Government Commerce. ITIL is a registered trademark, and a registered community trademark of the Office of Government Commerce, and is registered in the U.S. Patent and Trademark Office. UNIX is a registered trademark of The Open Group in the United States and other countries. Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both. Other company, product, or service names may be trademarks or service marks of others. Information is provided "AS IS" without warranty of any kind.

The customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer.

Information concerning non-IBM products was obtained from a supplier of these products, published announcement material, or other publicly available sources and does not constitute an endorsement of such products by IBM. Sources for non-IBM list prices and performance numbers are taken from publicly available information, including vendor announcements and vendor worldwide homepages. IBM has not tested these products and cannot confirm the accuracy of performance, capability, or any other claims related to non-IBM products. Questions on the capability of non-IBM products should be addressed to the supplier of those products.

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

Some information addresses anticipated future capabilities. Such information is not intended as a definitive statement of a commitment to specific levels of performance, function or delivery schedules with respect to any future products. Such commitments are only made in IBM product announcements. The information is presented here to communicate IBM's current investment and development activities as a good faith effort to help with our customers' future planning.

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

Prices are suggested U.S. list prices and are subject to change without notice. Starting price may not include a hard drive, operating system or other features. Contact your IBM representative or Business Partner for the most current pricing in your geography.

Photographs shown may be engineering prototypes. Changes may be incorporated in production models.

© IBM Corporation 1994-2008. All rights reserved.

References in this document to IBM products or services do not imply that IBM intends to make them available in every country.

Trademarks of International Business Machines Corporation in the United States, other countries, or both can be found on the World Wide Web at <http://www.ibm.com/legal/copytrade.shtml>.

Tivoli software

# Pulse

2008

In Touch. In Tune. In Sync.™



THE PREMIER SERVICE MANAGEMENT EVENT  
May 18 - 22, 2008 | Orlando, Florida

IBM