



规划IT蓝图 提升业务价值  
IBM服务管理用户大会



IBM Tivoli IT运维管理



IBM软件部 葛臻彧

## 目录:

- ✓ IT服务管理日益成为客户关注的问题
- ✓ IBM 利用Tivoli 产品提供IT服务管理解决方案





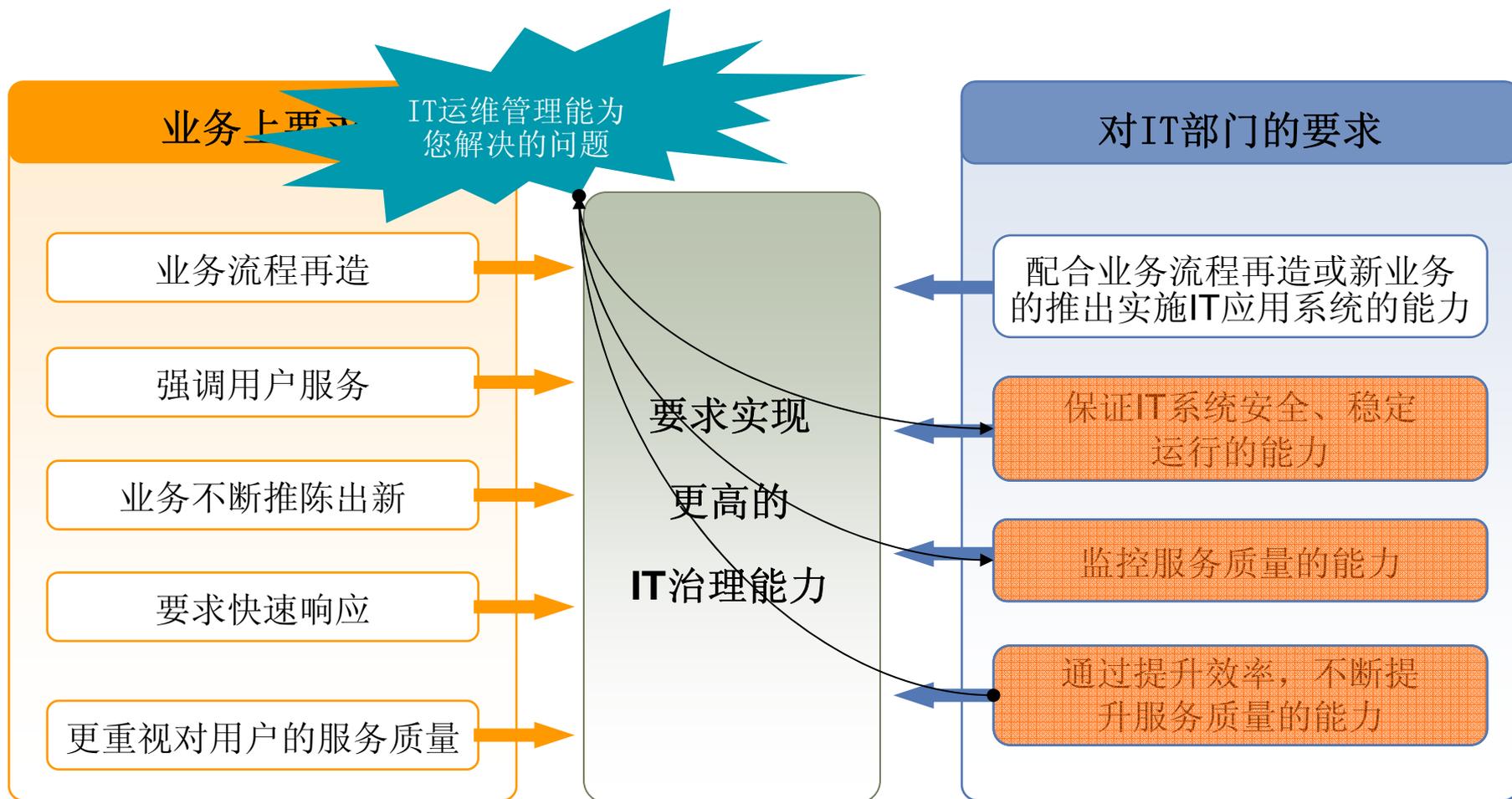
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# IT服务管理日益成为客户关注的问题

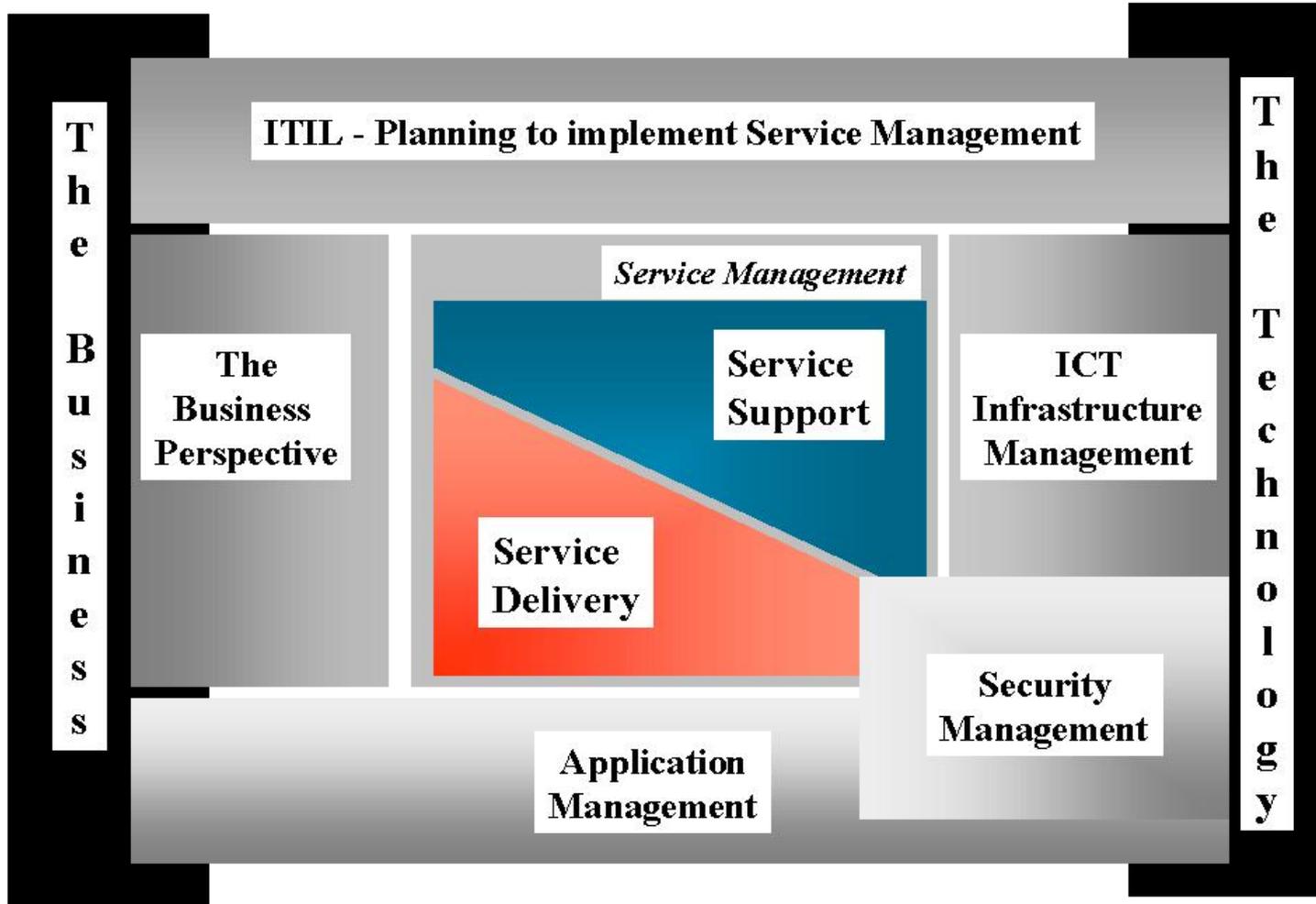


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# 业务环境上的变化对IT部门提出了更高的要求



# ITIL是目前业界普遍采用指导IT运维管理的模型



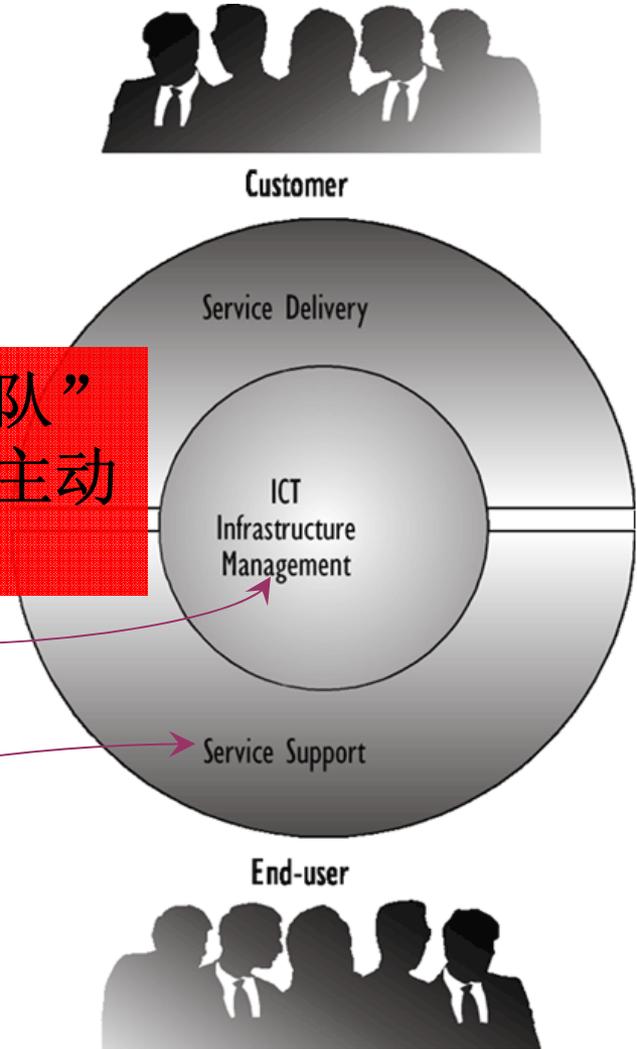
# ITIL中三个核心模块阐述了IT运维管理核心功能的涵义

■ITIL中三个核心模块处理不同领域的事情：

■ICT Infrastructure Network Services Operations Management Systems Management  
重点在提升日常操作的规范性；这块领域是IT运维管理的基础。

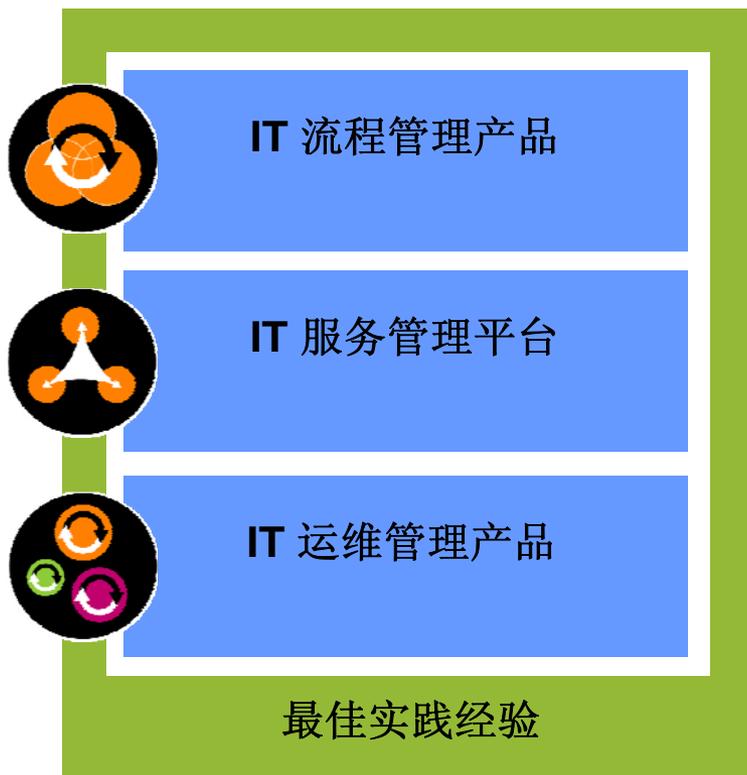
Service Delivery  
Capacity Management  
Financial Management  
Availability Management  
Service Level Management  
IT  
Customer  
Service  
Service  
Incident  
Problem Management  
Configuration management  
Change Management  
Release Management

目标是转变IT运维“救火队”模式，逐步实现有序的、主动的和面向用户的运维模式



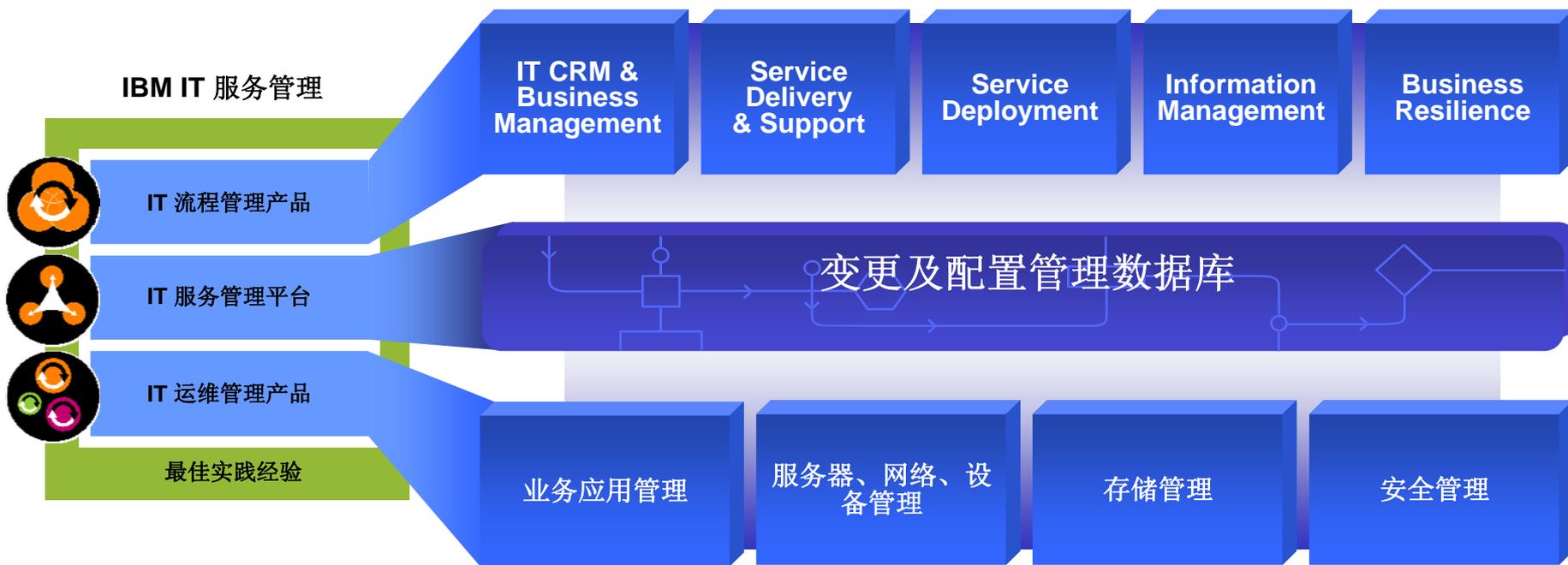
# IBM IT服务管理 – ITIL的实现

## IBM IT 服务管理



- 基于ITIL的自动化流程管理器
- 开放的、基于标准的配置管理数据库与 workflow 引擎
- 自动化的 IT 基础架构
- 最佳实践与实施支持

# IBM IT 服务管理





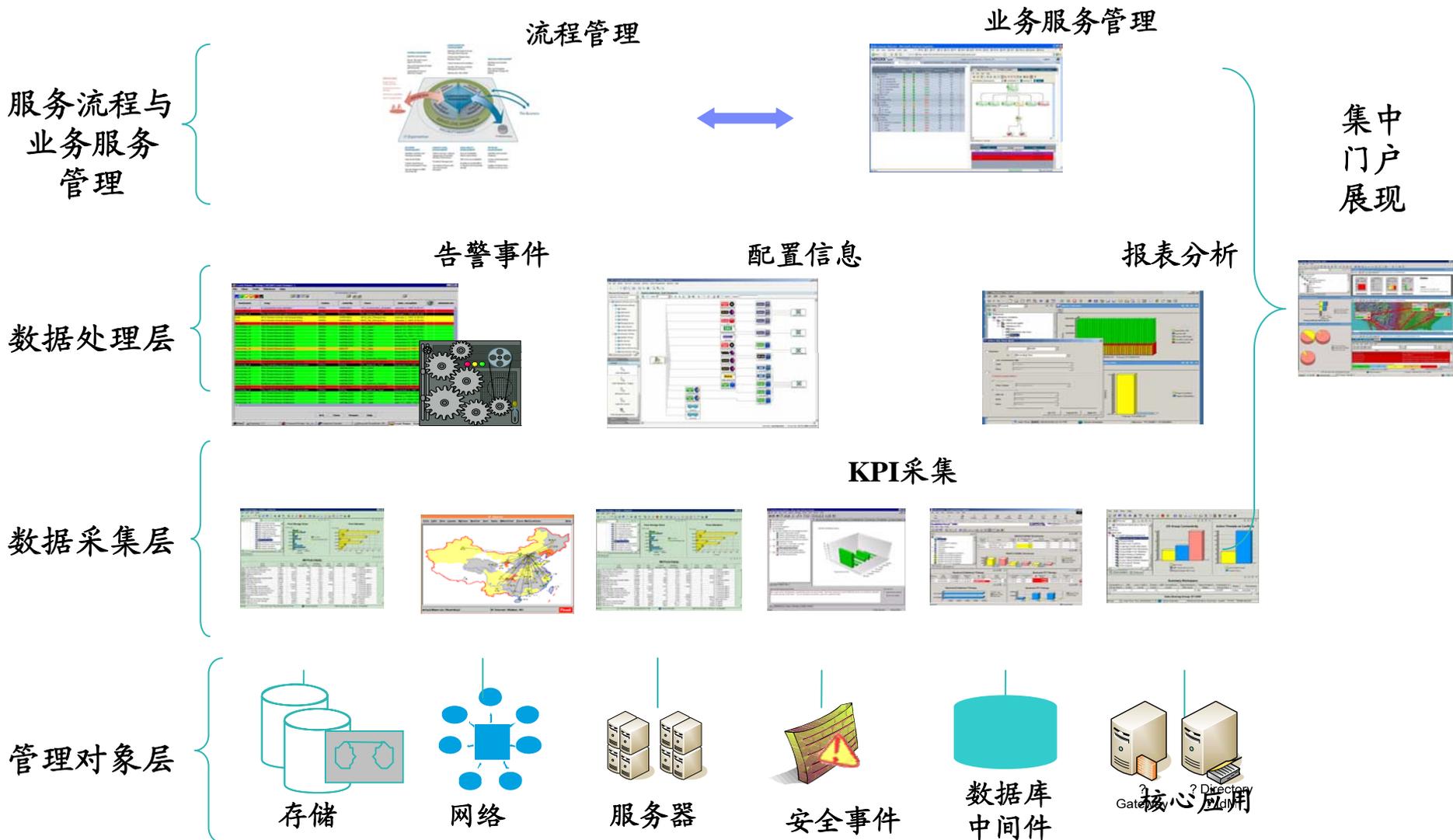
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# IBM利用Tivoli产品提供运维管理解决方案



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# IBM Tivoli运维管理总体架构



# 数据采集层

- 数据采集层的任务是获取完整、准确的IT基础架构的运行数据
  - ▶ 网络
  - ▶ 服务器
  - ▶ 数据库
  - ▶ 中间件
  - ▶ 存储
  - ▶ 应用



# 数据处理层

- 数据处理层将采集到的数据进行加工，成为有用的信息
  - ▶ 事件管理
  - ▶ 配置信息管理
  - ▶ 报表分析
  - ▶



## 流程与业务管理

- 从业务的角度去认识和管理IT，强调IT为业务提供的服务质量
- 通过流程来联系人员、技术和信息，规范化IT运维



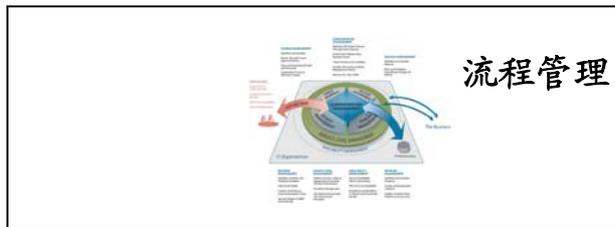
# 统一门户展现

- 统一门户展现为IT运维的各类数据提供统一的视图
  - ▶ 性能和状态数据
  - ▶ 应用交易访问
  - ▶ 事件
  - ▶ 历史数据



### IT负责人

用户



业务人员

IT运维人员





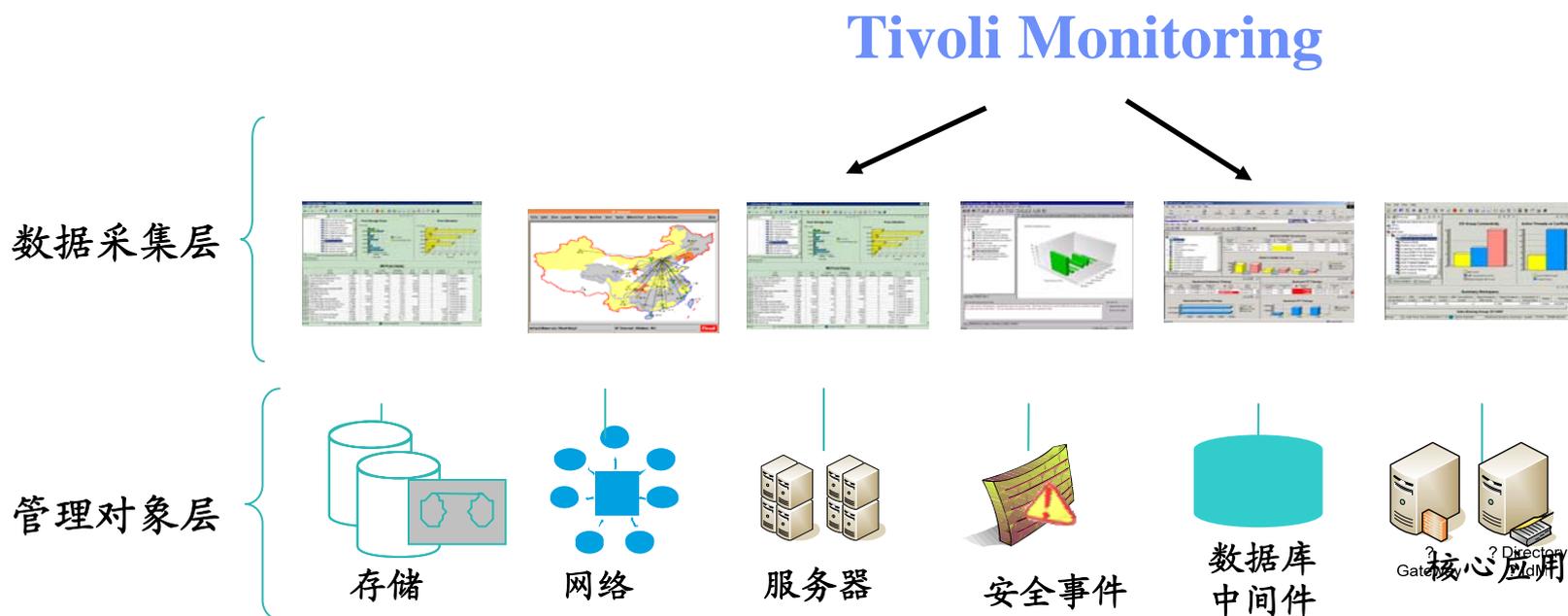
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# 系统/数据库/应用监控



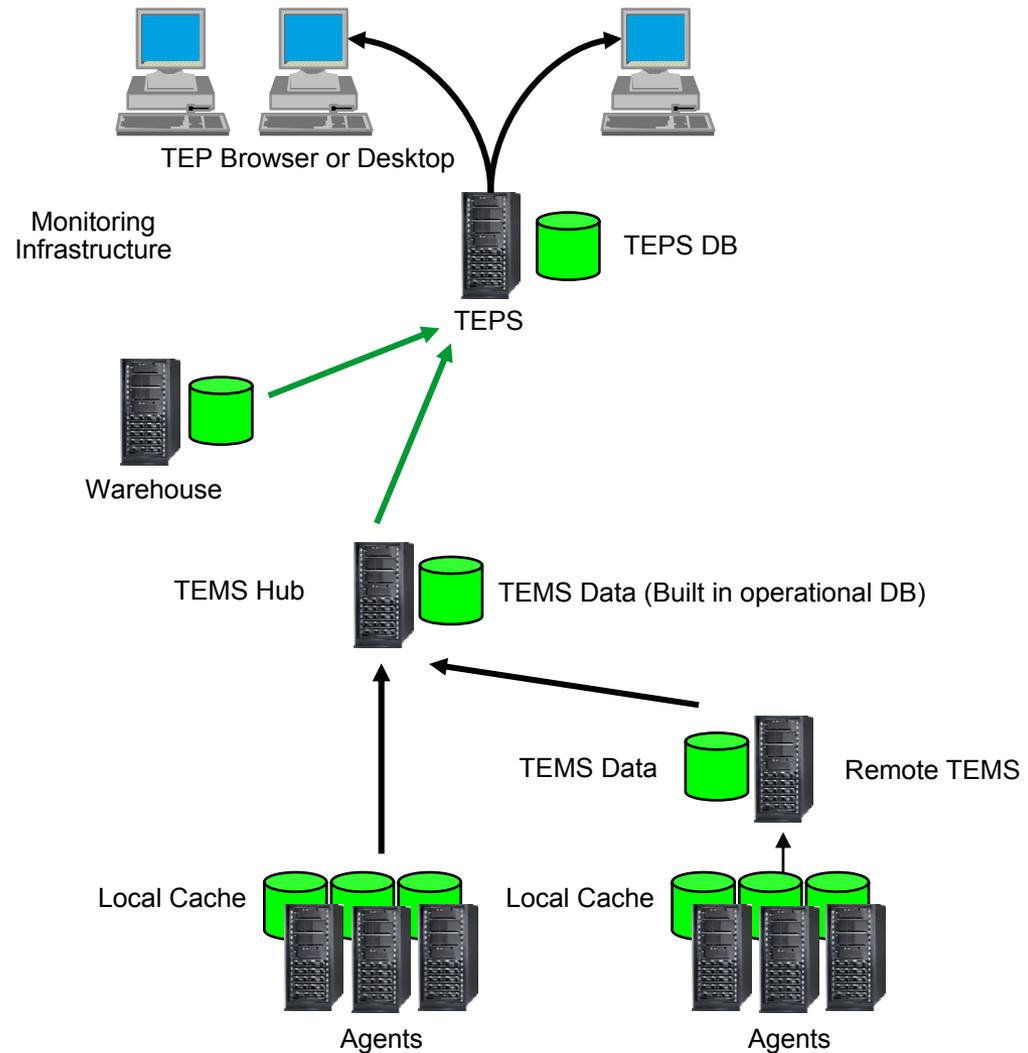
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# IBM Tivoli运维管理总体架构



# 系统和应用监控的基石 – IBM Tivoli Monitoring

- 管理服务器 (TEMS)
  - ▶ HUB
  - ▶ Remote
- 管理代理 (TEMA)
- 管理门户 (TEPS)



# Tivoli Monitoring v6提供的主要功能

## ■主要功能和特点包括:

1. 从多种IT资源中获取实时可用性和性能数据
2. 开箱即用
3. 阈值监控以自动生成告警事件 (Situation)
4. 事件报告和自动响应预定义的告警事件 (Event reporting)
5. 借助于浏览器的管理界面
6. 自定义的管理逻辑视图
7. 历史数据存储以用于统计报表和回顾



# 管理门户 – Tivoli Enterprise Portal

从单一界面管理IT资源和应用

The screenshot displays the Tivoli Enterprise Portal interface with the following components:

- Navigation:** A menu bar (File, Edit, View, Help) and a toolbar with various icons are circled in red.
- Left Panel:** A tree view showing the system hierarchy: Enterprise > Windows Systems > WINAVAIL > Universal Database - DB2:WINAVAIL:U > Windows NT > Disk.
- Logical Disk Space:** A 3D bar chart showing disk usage for the C: drive. The legend indicates yellow for '% Used' and blue for '% Free'.
- Memory Allocation:** A 3D bar chart showing memory usage in Kilobytes. The legend includes yellow for 'Available KB', blue for 'Cache KB', red for 'Commit Limit KB', and green for 'Committed KB'.
- Top Process CPU Time:** A horizontal bar chart showing CPU usage for various processes. The legend indicates yellow for '% Privileged Time' and blue for '% User Time'.
- Services Table:** A table listing system services with columns for 'Display Name', 'Current State', and 'Start Type'.
 

Display Name	Current State	Start Type
Alerter	Running	Automatic
Application Management	Stopped	Manual
Computer Browser	Running	Automatic
Indexing Service	Stopped	Manual
ClipBook	Stopped	Manual
Distributed File System	Running	Automatic
DHCP Client	Running	Automatic
Logical Disk Manager Administrative Service	Stopped	Manual
Logical Disk Manager	Running	Automatic
DNS Client	Running	Automatic
Event Log	Running	Automatic
COM+ Event System	Running	Manual
Fax Service	Stopped	Manual
Intersite Messaging	Stopped	Disabled
Keyberos Key Distribution Center	Stopped	Disabled

Easy to use Browser controls

Personalized Views

Persistent customized workspaces for future use

Intelligent Linking

# 管理事件 (Situation)

The screenshot displays the IBM Situation Editor interface. On the left, a tree view shows various system metrics under the 'Windows 操作系统' category, including 'NT\_Available\_Bytes\_Critical', 'NT\_Bottleneck\_Disk', 'NT\_Bottleneck\_Memory', 'NT\_Bottleneck\_Paging', 'NT\_Bottleneck\_Processor', 'NT\_Context\_Switches\_Sec', 'NT\_Disk\_Space\_Low', 'NT\_Invalid\_Logon\_Attempt', 'NT\_Log\_Space\_Low', 'NT\_Logical\_Disk\_Space\_Cri', 'NT\_Logical\_Disk\_Space\_Ve', 'NT\_Memory\_Pages\_Sec', 'NT\_Memory\_Pages\_Sec\_Lo', 'NT\_Missing\_Msdct\_Warning', 'NT\_Missing\_Process', 'NT\_Number\_Processes\_Crit', 'NT\_Number\_Processes\_Wa', 'NT\_Paging\_File\_Critical', 'NT\_Paging\_File\_Warning', 'NT\_Percent\_Disk\_Time', 'NT\_Percent\_Disk\_Time\_Low', 'NT\_Percent\_Processor\_Tim', and 'NT\_Percent\_Total\_Proc\_Tim'.

The main window, titled '显示公式 - sit\_test\_01', shows the configuration for a situation. The formula is defined as:

```
公式  
( Post请求数 > 10 )  
OR 发送的字节数 / 秒 > 60,000
```

The visual representation of this formula is shown in a flowchart below the text. It starts with a green 'IF' box, which branches into two conditions: 'Post请求数 > 10' and '发送的字节数 / 秒 > 60,000'. Both conditions lead to a green 'TRUE' box, indicating that the situation is triggered if either condition is met.

At the bottom of the window, there is a '显示详细公式' checkbox (unchecked) and a '确定' button. The main application window also has '确定(O)', '取消(N)', '应用(A)', and '帮助(H)' buttons at the bottom.

# 自动化处理流程

The screenshot displays the IBM Policy Center Workflow Editor interface. The main window, titled "Workflows", shows the "Policy Details" for "NT\_Log\_Management". The "Workflow Editor" pane is active, showing a "Grapher View" of a workflow. The workflow starts with a "Wait until NT Log\_Space\_Low is True" activity, followed by a "Make a choice" decision diamond. Two paths emerge from the decision: one labeled "Choice" leading to a "Take action: d:\candle\cm..." activity, and another labeled "Choice" leading to a "Suspend execution for 60 seconds" activity. The "Take action" activity is followed by a "Suspend execution for 60 seconds" activity, which then leads to a "Take action: net send Adm..." activity. The "Action Settings" dialog box is open in the foreground, showing the "Action Selection" section with "System Command" selected. The "System Command" field contains the text: `d:\candle\cma\clearlog &NT_Monitored_Logs_Report.Log_Name`. The dialog also includes buttons for "OK", "Cancel", "Attribute...", "XML...", "More options", and "Help".

# 事件报告和处理

The screenshot displays the Oracle Enterprise Manager interface. On the left, a tree view shows the hierarchy: 企业 > Windows 系统 > VM-ITM611 > Oracle - ora10g > Oracle\_Library\_Reloads\_Pct\_Cri. The main area shows two tables: '初始情境值' (Initial Context Values) and '当前情境值' (Current Context Values). Both tables list 'Library Total Reloads' with values 1294 and 1750 respectively. Below, the '命令视图' (Command View) shows an '执行操作' (Execute Operation) dialog. The '操作' (Operation) section is circled in red, showing '名称: SQLPLUS' and '命令: koresql statement'. An '编辑参数值' (Edit Parameter Values) dialog is also open, showing a table with '名称' (Name) as 'statement' and an empty '值' (Value) field.

Library Total Reloads	Origin Node	Hub Timestamp	Sample Timestamp	Server	Host Name	Database Name	Libra Total (Reque
1294	ora10g:VM-ITM611:ORA	06/04/02 22:12:54	06/04/02 22:09:41	ora10g	VM-ITM611	ora10g	47:

Library Total Reloads	Origin Node	Hub Timestamp	Sample Timestamp	Server	Host Name	Database Name	Libra Total (Reque
1750	ora10g:VM-ITM611:ORA	06/04/02 23:14:39	06/04/02 23:10:23	ora10g	VM-ITM611	ora10g	70:

名称	值
statement	

## 事件报告和处理

The screenshot shows the IBM Enterprise Status console interface. The main window displays a list of events with columns for Severity and Status. The 'Acknowledgement - Create' dialog box is open, showing event information and options for expiration and notes.

**Event List (Main Window):**

Severity	Status
Warning	Open
Warning	Acknowledged
Warning	Acknowledged
Warning	Acknowledged
Warning	Open
Warning	Open
Warning	Open
Warning	Acknowledged
Warning	Open
Critical	Open
Critical	Open

**Acknowledgement - Create Dialog:**

- Event Information:** Event: NT\_Log\_Space\_Low - Application - Primary:KUTZ:NT; Event time: Tue, 03/14/2006 09:26 AM
- Expiration:**
  - Expire at end of interval (Never)
  - Expire at specific time (03/14/2006 12:59 PM)
  - Use Server time
- Notes:** I have this event add documentation
- Add Attachments:** (Attachment icon)

**Open Situation Counts - Last 24 Hours:**

Situation	Count
NT_System_Total_Interrupts	~5
NT_System_CPU_Critical	~5
NT_Service_Error	~5
NT_Process_Memory_Critical	~5
NT_Percent_Total_Proc_Time	~5
NT_Percent_Processor_Time	~5
NT_Missing_Process	~5
NT_Memory_Pages_Seo_Low	~5
NT_Log_Space_Low	~5
NT_Context_Switches_Seo	~5
MS_Offline	~5

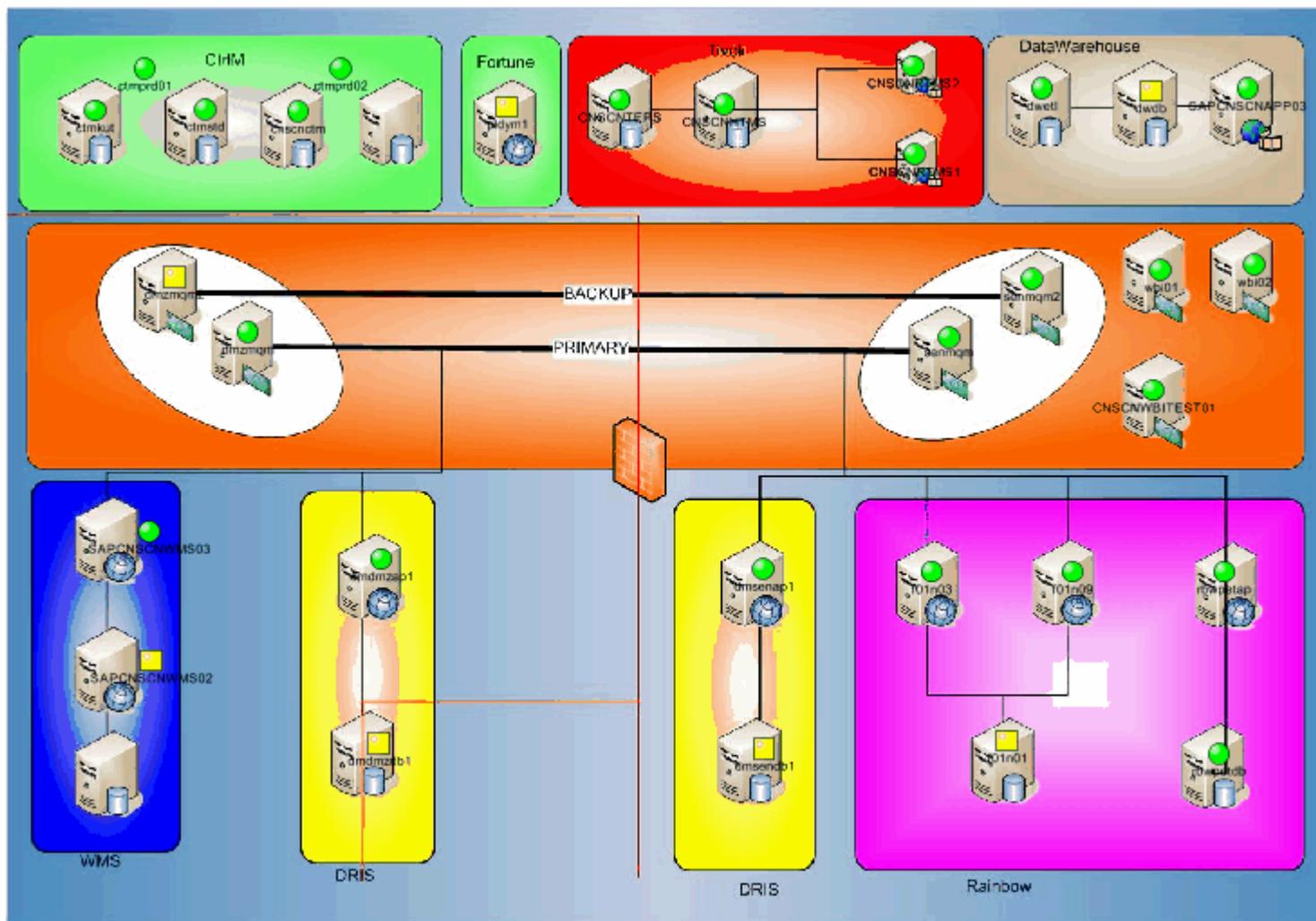
**My Acknowledged Events:**

Severity	Status
Warning	Acknowledged
Warning	Acknowledged

**System Status (Bottom Bar):** Hub Time: Tue, 03/14/2006 12:59 PM; Server Available; Enterprise Status - KUTZ - PAUL

增加说明、附件和负责人

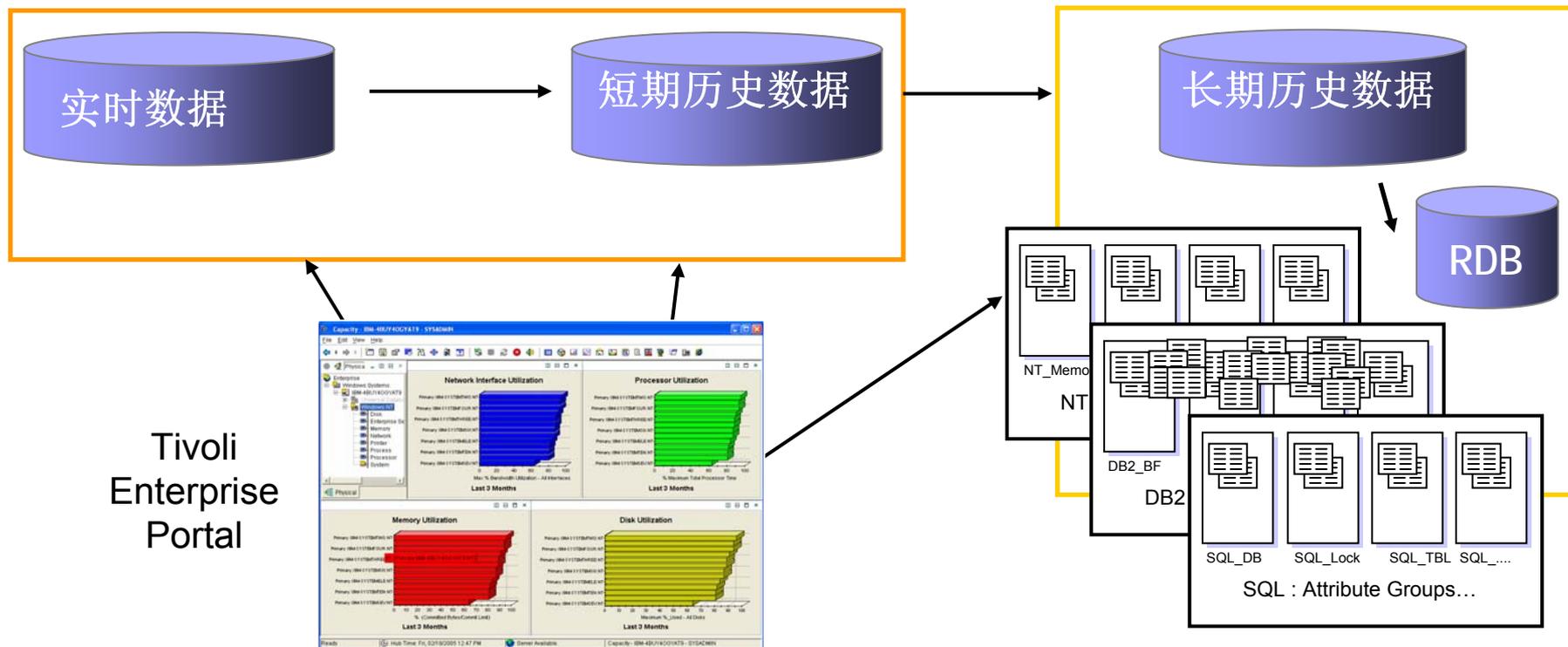
# 逻辑视图



# 历史数据采集分析

所有数据，包括实时数据和历史数据，都可以从Tivoli Enterprise Portal中展示

Tivoli Data Warehouse 2.1 汇集和剪除数据，使长期数据的管理更简单，并且提供对DB2、MS SQL和Oracle的支持



# 历史数据展示

The workspace is the working area of the application window and is made up of one or more views. A view is a pane in the workspace.

Historical or real time selection

The screenshot displays the IBM Tivoli Enterprise Monitoring console interface. The main workspace contains two views: 'Memory Allocation' and 'Paging Traffic'. The 'Memory Allocation' view shows a 3D bar chart with a Y-axis labeled 'Kiloby' ranging from 0 to 2,000,000. The legend for this view includes: Available KB (yellow), Cache KB (blue), Cache KB Peak (red), Commit Limit KB (green), and Committed KB (red). The 'Paging Traffic' view shows a 3D bar chart with a Y-axis labeled 'Pages/sec' ranging from 0.0 to 1.0. Its legend includes: Pages Input/sec (yellow) and Pages Output/sec (blue). A 'Select the Time Span' dialog box is open in the foreground, allowing users to choose between 'Real time' and 'Historical' data. The 'Real time' section includes options for 'Recording Time' and 'Use summarized data' (with 'Shift' and 'Days' dropdowns). The 'Historical' section includes options for 'Use detailed data' and 'Use summarized data' (with 'Time Column', 'Interval', 'Shift', and 'Days' dropdowns). The dialog has 'OK (O)', 'Cancel (N)', and 'Help (H)' buttons. The bottom status bar shows 'Hub Time: 星期四, 04/20/2006 02:19 下午', 'Server Available', and the application title 'Memory - TIV-DEMO - SYSADMIN'.

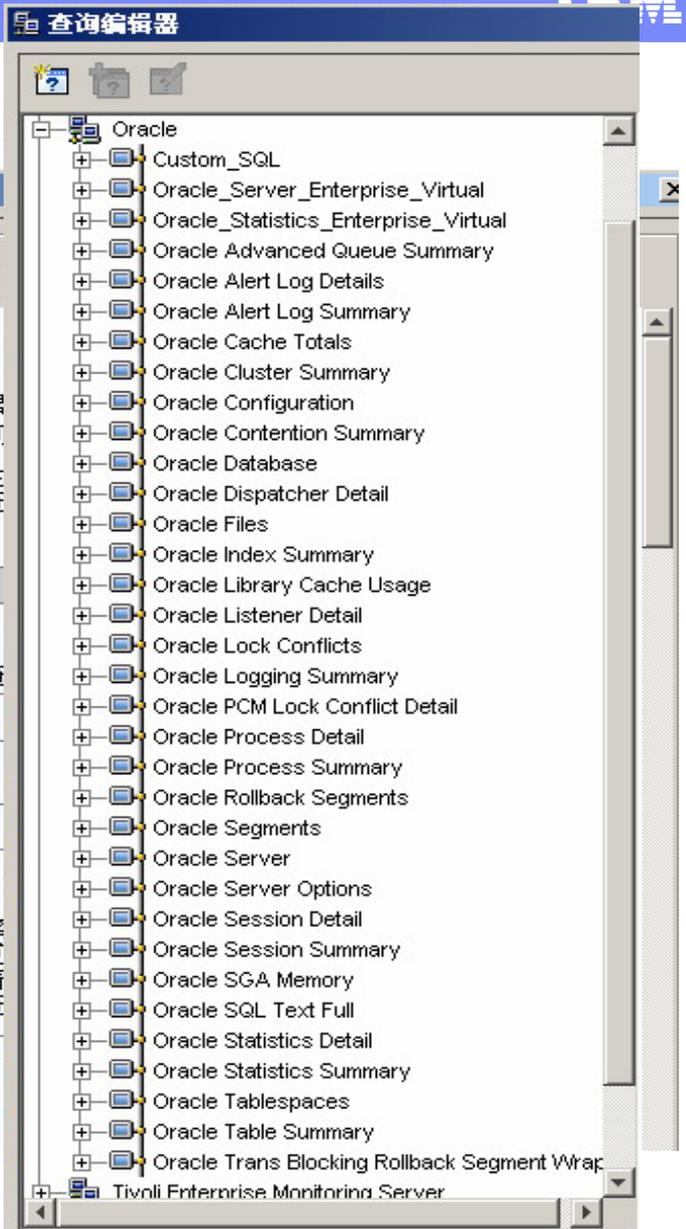
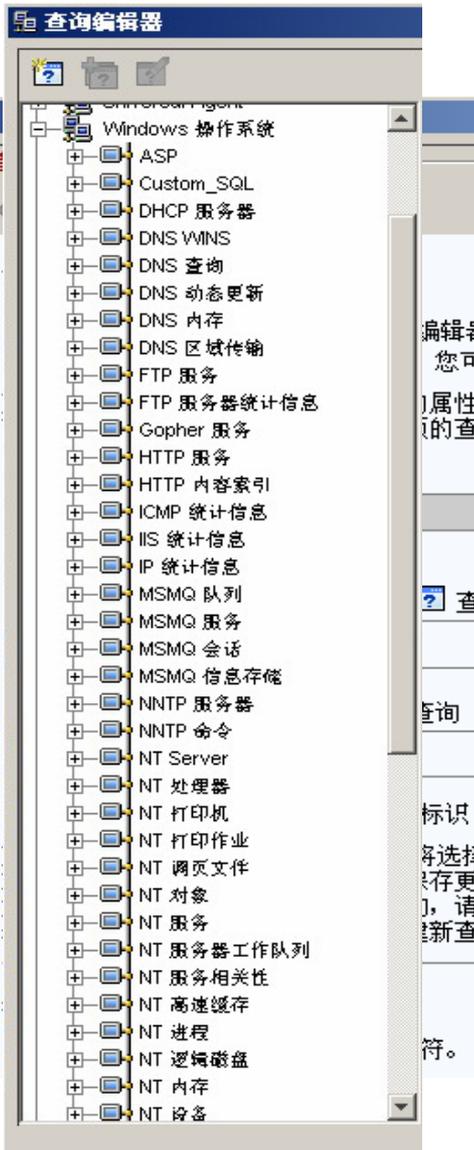
# 系统和应用监控范围

*IBM Tivoli 监控程序支持您的整个IT环境，并且可以快速实施，实现价值*

平台	数据库	应用	商业集成	Web 架构	通信 & 协作
Unix	DB2 (Z & Distributed)	SAP	CICS	WebSphere (Z & Distributed)	Lotus Domino
Windows		MySAP	Web Services		
Cluster(s)	Oracle	<b>New</b>	IMS	IIS	Exchange
Linux	SQL	.NET	WebSphere MQ	iPlanet	
z/OS	Sybase	<b>New</b> Citrix	WebSphere MQ	Apache	
VMWare	Informix	Siebel	WebSphere MQ Integrator	WebLogic	
OS/400		Tuxedo			



# 资源监控组



编辑器  
您可  
属性  
的查  
  
查  
  
查询  
  
标识  
符选择  
保存更  
新查  
新查  
符。

# ITM对UNIX和DB2数据库的监控

## UNIX主要监控项目:

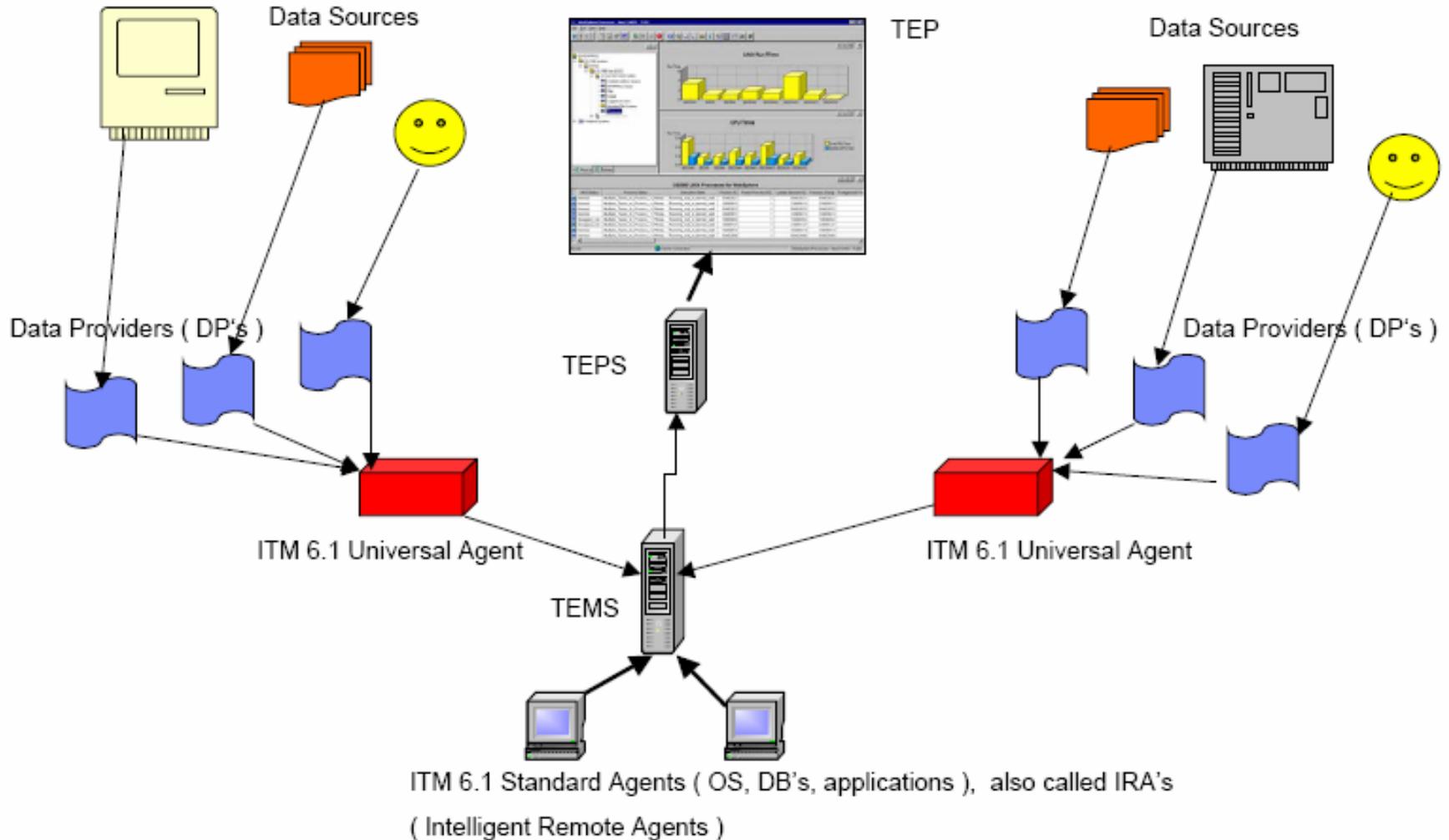
- CPU
- 内存
- 文件系统
- 磁盘
- 文件
- 进程
- 用户
- 网络
- NFS/RPC
- Top Ten排序

## DB2主要监控项目:

- DB2 Server状态
- DB2 Server连接
- DB2配置信息
- DB2 Agent信息
- Buffer Pool Hit Ratio
- Buffer Pool Read/Write
- Tablespace
- Deadlock
- Lock Timeout
- SQL Activity
- Sort Activity
- Hash Join Activity
- Package/Catalog Cache Hit Ratio
- Package/Catalog Cache Activity
- Application相关信息
- Top Ten排序

# Universal Agent

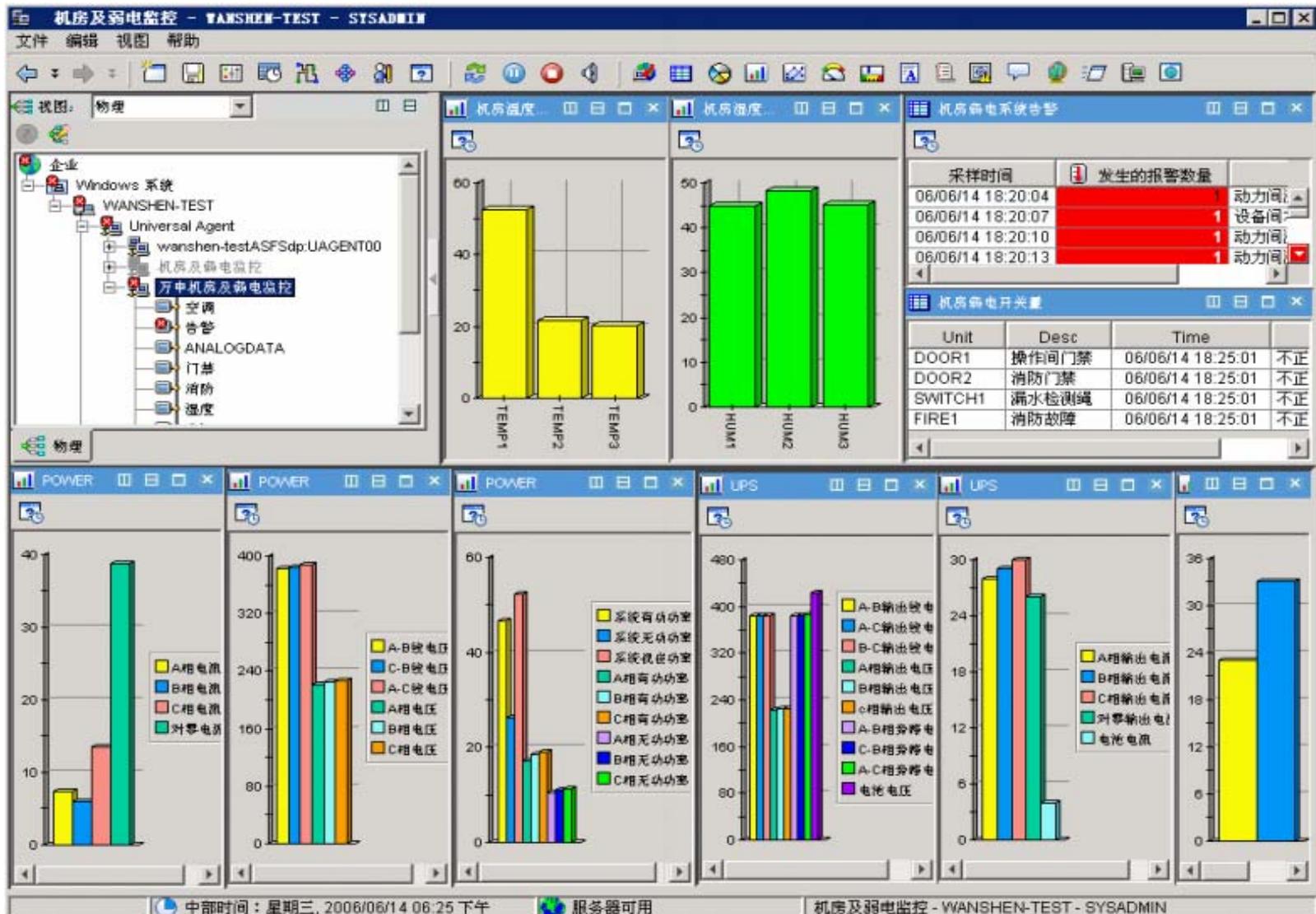
*Universal Agent为ITM提供了极大的扩展能力*



# Universal Agent提供的Data Provider

- **API Server**
- **API, Socket, File Script (ASFS)**
  - ▶ Consolidates four types of data providers into one package, which is started as a single thread to save resource usages
  - ▶ This is the default data provider when you install the IBM Tivoli Universal Agent.
- **File**
  - ▶ Monitors sequential files, such as system or message logs
  - ▶ Provides the most direct, simplest method of collecting data
- **HTTP**
  - ▶ Allows monitoring of Internet URLs for availability and response time
- **ODBC**
- **Post**
- **Script**
  - ▶ Allows data collection from any script or program that sends results to standard output
- **SNMP**
- **Sockets**

# 合作伙伴利用UA实现监控集成案例



机房弱电系统的监控集成

# 代理数据收集

- IBM开放过程自动化库 (OPAL) 通过ITM Universal Agent提供对超过100种资源的监控管理
- 并且在以5个/月的速度递增
- 在项目实施中可以无偿使用IBM提供在OPAL上的UA扩展代理

<http://catalog.lotus.com/wps/portal/tm>

IBM Tivoli 开放过程自动化库 >

## IBM Tivoli Monitoring

自动监控基本的系统资源，以检测性能瓶颈和潜在的问题

Tivoli. software

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[IBM](#)

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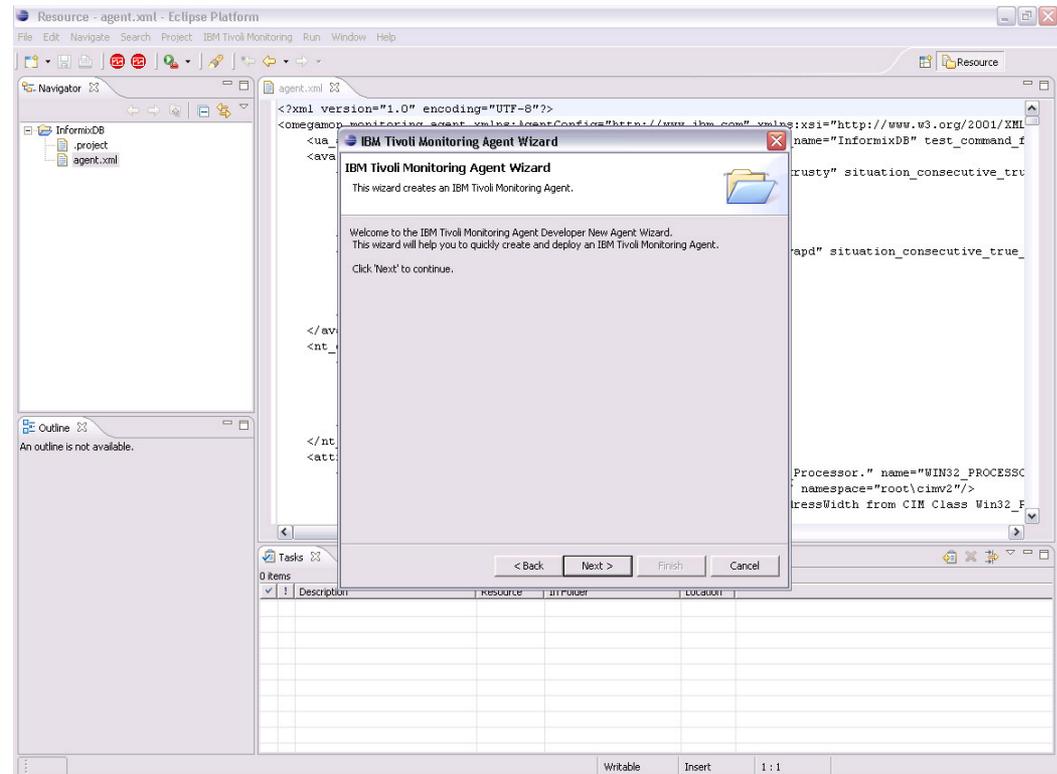
[按页面显示](#)

企业	标题	版本	描述	下载
IBM	Akara SAN over Sonet appliance Monitoring Solution using the ITM 6.1 Universal Agent	1.0	The Solution provides the capability of monitoring Akara SAN over Sonet appliances using the ITM 6.1 Universal Agent.	<a href="#">立即下载</a>
IBM	Apache Monitoring Solution using the ITM 6.1 Universal Agent	1.0	The Solution provides the capability of monitoring an Apache web server using the ITM 6.1 Universal Agent.	<a href="#">立即下载</a>
IBM	APC UPS & PDU Monitoring Solution using the ITM 6.1 Universal Agent	1.0	The Solution provides the capability of monitoring APC appliances including PDUs and UPCs using the ITM 6.1 Universal Agent.	<a href="#">立即下载</a>
IBM	AS/400 Monitoring Solution using the ITM 6.1 Universal Agent	1.0	The Solution provides the capability of monitoring AS/400 using a Perl script on the AS/400 machine to communicate with the Universal Agent's Socket Data Provider.	<a href="#">立即下载</a>
IBM	Automated Deployment of IBM Tivoli Monitoring 6.1 OS agents in Windows HUB	1.0	The deployITM6agents vbscript automates the deployment and status for Tivoli Monitoring 6.1 OS agents to quickly install the base infrastructure for additional monitoring solutions. This solution speeds the deployment of Agents in a Windows environment.	<a href="#">立即下载</a>
IBM	Automatic Agent Update Deployment (itmpatchagents) for IBM Tivoli Monitoring 6.1	2.0	The itmpatchagents script enables you to automatically deploy updates to the monitoring agents in your environment.	<a href="#">立即下载</a>
IBM	BayNetworks Monitoring Solution using the ITM 6.1 Universal Agent	1.0	The Solution provides the capability of monitoring BayNetworks networking hardware including using the ITM 6.1 Universal Agent.	<a href="#">立即下载</a>

# 利用Agent Builder创建自己的监控代理

- 基于Eclipse的Agent Builder
- Standard / Best Practice Data Sources
  - ▶ WMI
  - ▶ Windows Performance Monitor (Perfmon)
  - ▶ Windows Event Log
  - ▶ SNMP
  - ▶ Script
  - ▶ JMX
  - ▶ Coming Soon
    - CIM
    - WMI Reference/Association Groups
    - Log File
    - Statistical Calculations
    - (min, max, mean, standard dev.)
    - Unix / Linux variants
- OPAL包含了很多例程

- **Agent Builder** 大量减少开发时间。可以在几十分钟内就创建一个特定的监控代理，而不是数小时。





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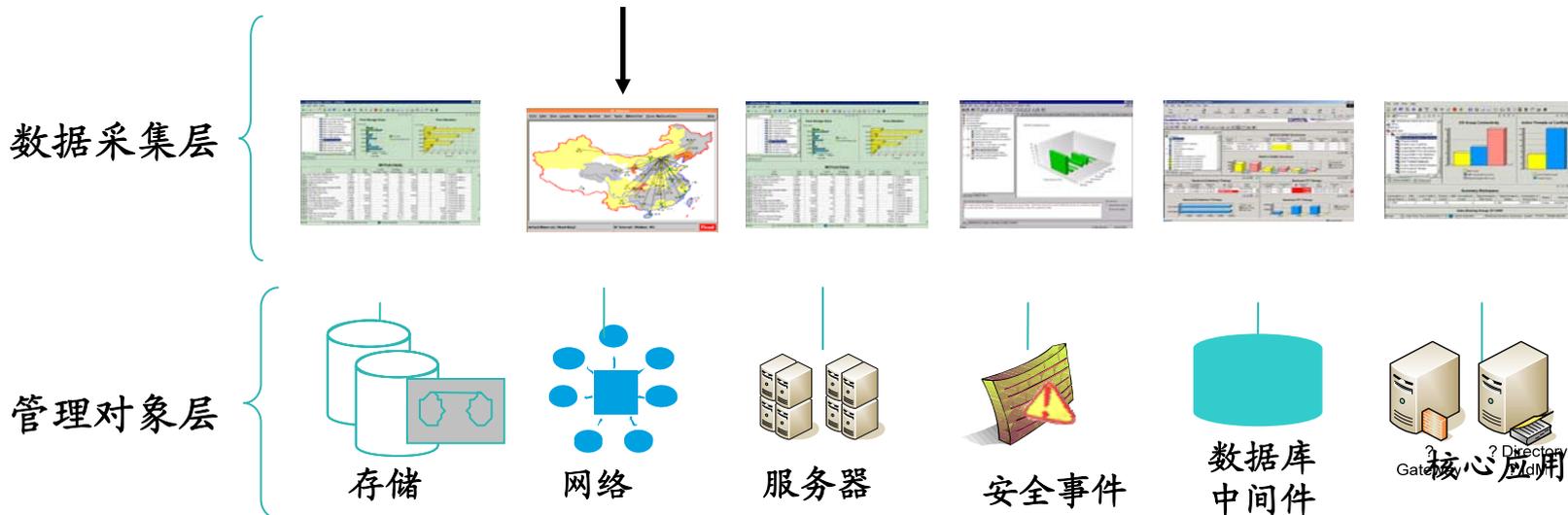
# 网络监控



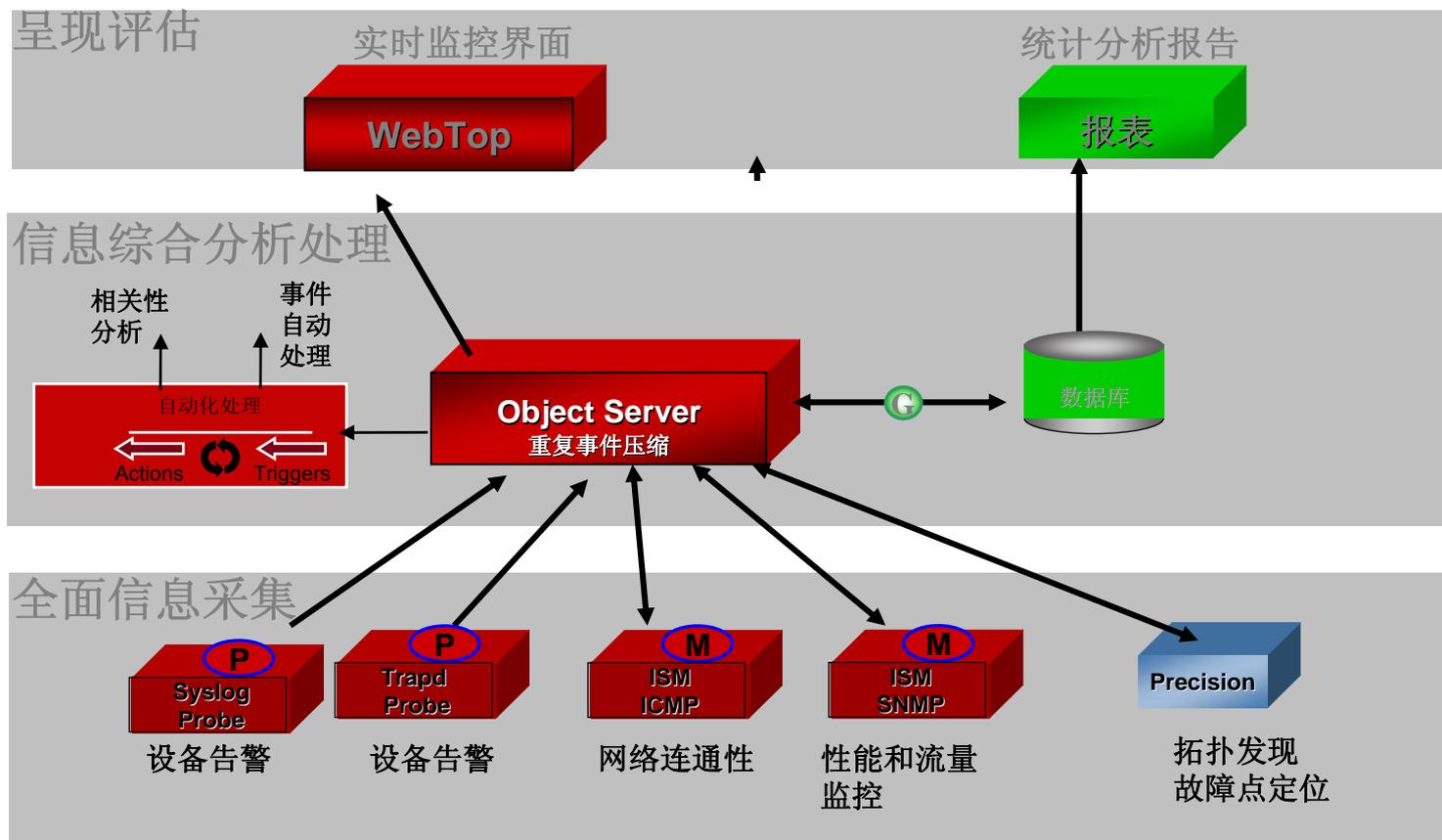
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# IBM Tivoli运维管理总体架构

## Tivoli Netcool



# Netcool网络管理运维平台



## 优秀的网络运维平台是整个网管系统成功的技术基础

- ▶ 高性能的核心满足大型网络管理性能要求
- ▶ 体系结构能够适合大型网络管理的结构要求
- ▶ 实现运维流程，提供足够的灵活性

- 网络管理基本包
- 二/三层拓扑管理(可选项)
- 客户自有数据库和报表系统

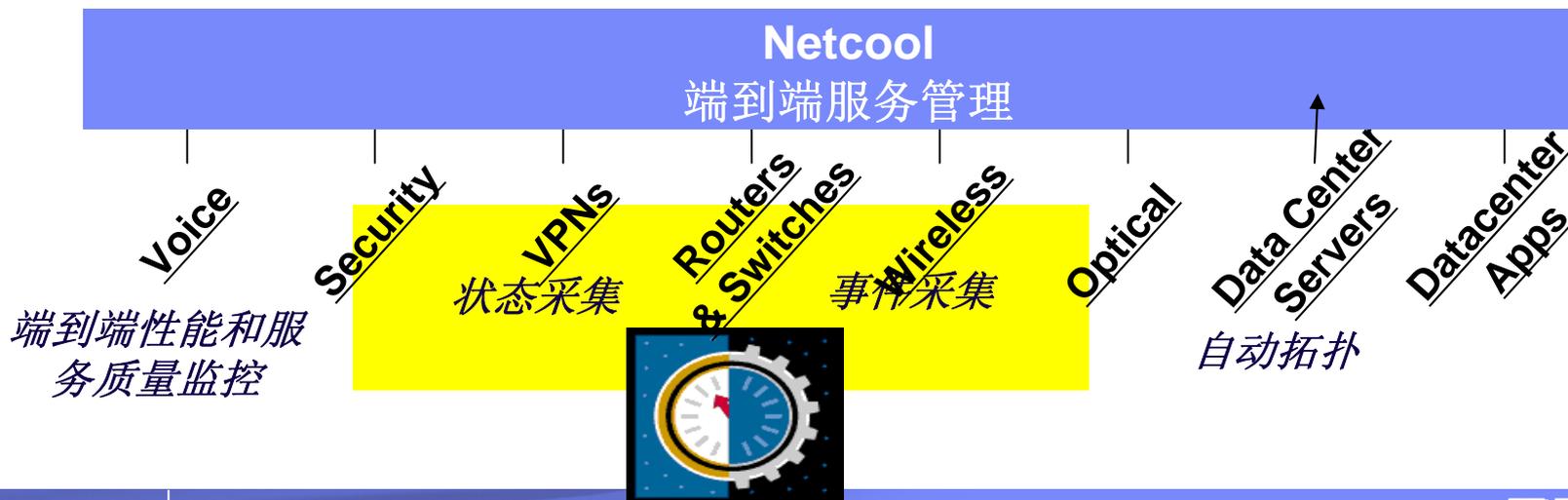
# Netcool深入的网络监控和信息采集

## 网络事件类型和来源

◆	←	◆ 路由器/交换机
Syslog	←	◆ 路由器/交换机
◆ Trap	→	◆ 线路和设备连通性
◆ ICMP	→	◆ 路由器/交换机
◆ SNMP		

## Netcool事件采集特点

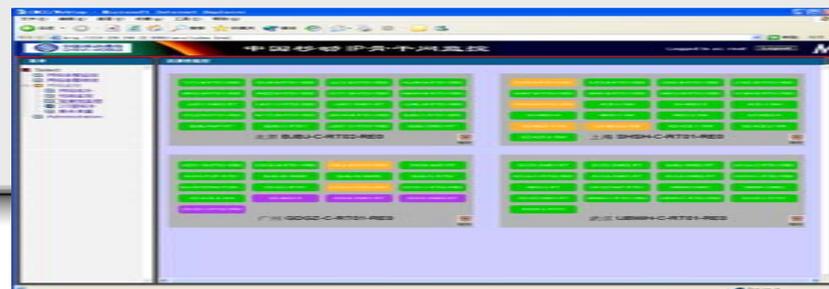
- ▶ Netcool探针，集成网元等各种管理信息
- ▶ Netcool Syslog Probe 提供对Cisco Syslog几千行规则，Syslog 信息详细的分类，解释和严重性判断，不仅仅只是简单的数行字符串匹配
- ▶ 对其他厂商Syslog处理规则
- ▶ 全球用户信息处理经验的大量累积
- ▶ 对原始信息的丰富，以实现更灵活和方便的信息过滤、分析和丰富
- ▶ 自动的存储转发功能



# 对网络资源的性能和质量进行分析

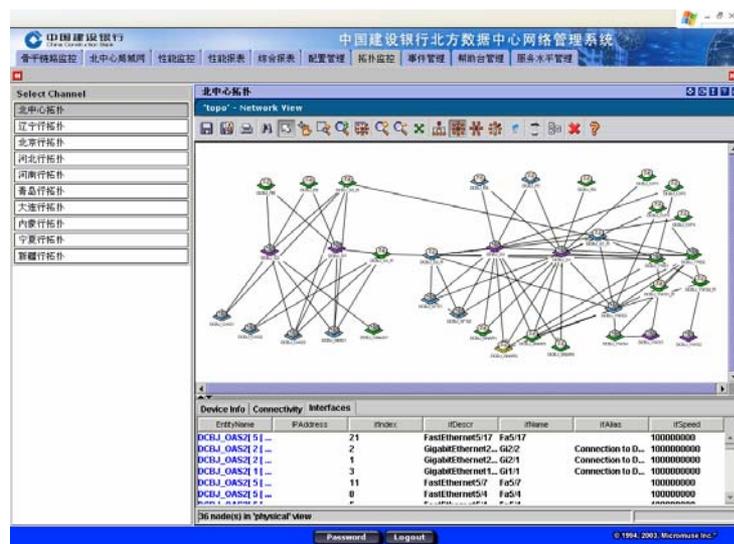
## 端到端的性能采集：

- ◆ 基础网络设备性能（SNMP）
  - ◆ 网络路径服务质量（ICMP）：可用性、响应时间、SLA
- 在性能出现问题时通过事件进行报警，统一报告到故障平台



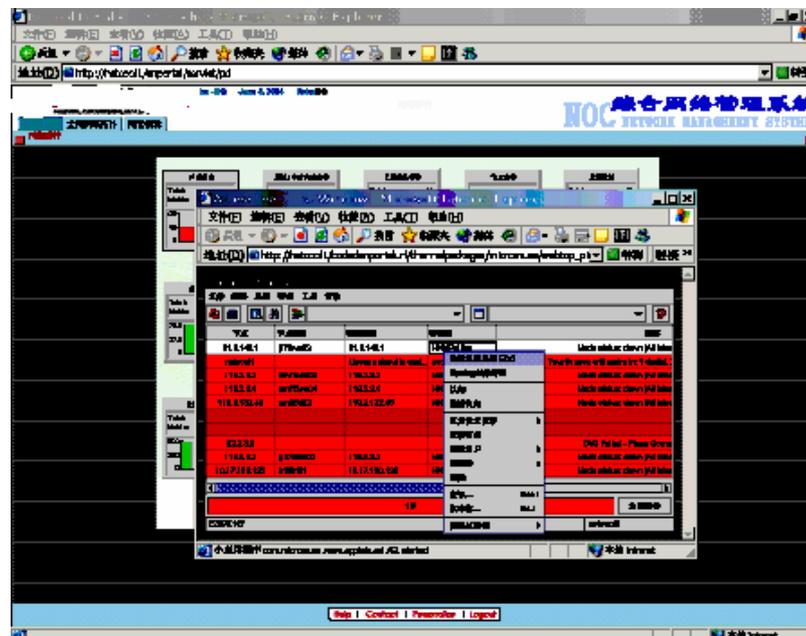
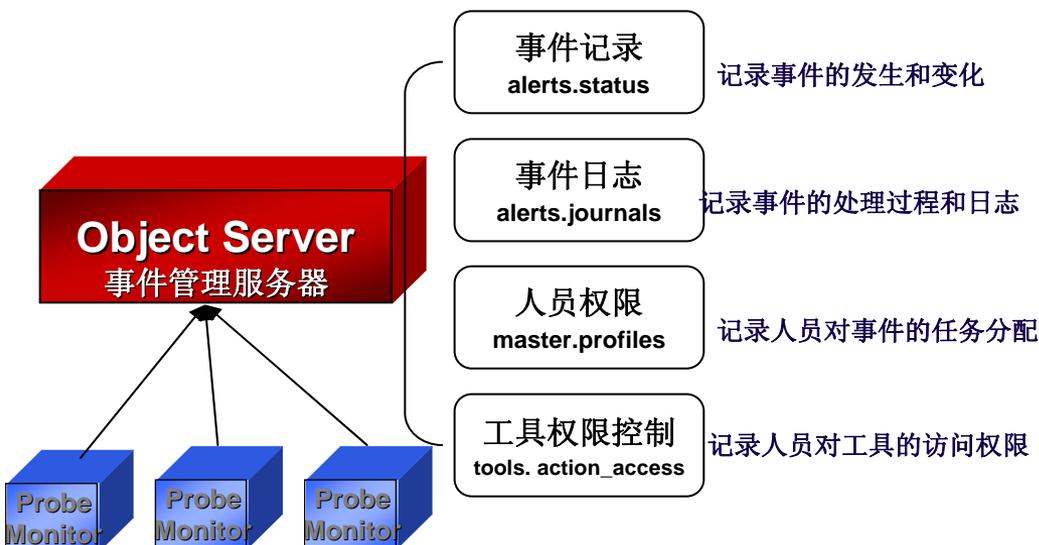
# Netcool/Webtop灵活定制的综合集成的网络管理呈现

- 综合呈现，提高监控的直观性，加快运维人员快速发现网络问题
- 分权管理，支持分层次，分职责，分范围的管理分工
- 灵活定制的管理界面，建立适合用户运维监控的管理
- 集成的管理界面，实现网络管理的互操作



# 网络运维流程的实现和支持

- 网络运维流程
  - ▶ 职责分工，提高效率
  - ▶ 对问题的处理效率进行监控
  - ▶ 有助于提早将问题解决在萌芽阶段
- 事件标记有用户和组的分配信息，能够根据事件流程完成手工或自动
  - ▶ 事件的分配
  - ▶ 事件的确认
  - ▶ 事件转发
  - ▶ 事件升级
  - ▶ 事件关闭
  - ▶ 处理日志的记录



# 网络拓扑自动发现和根源故障分析

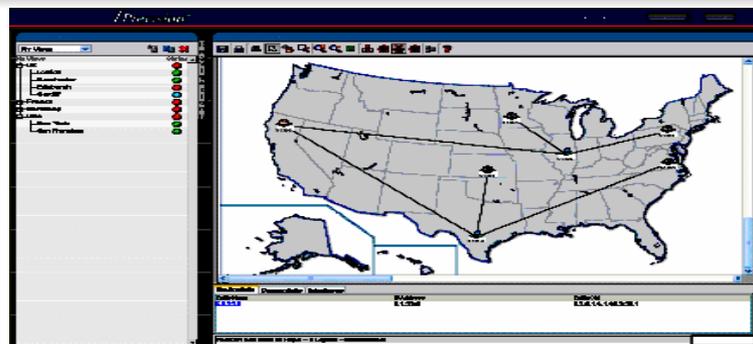
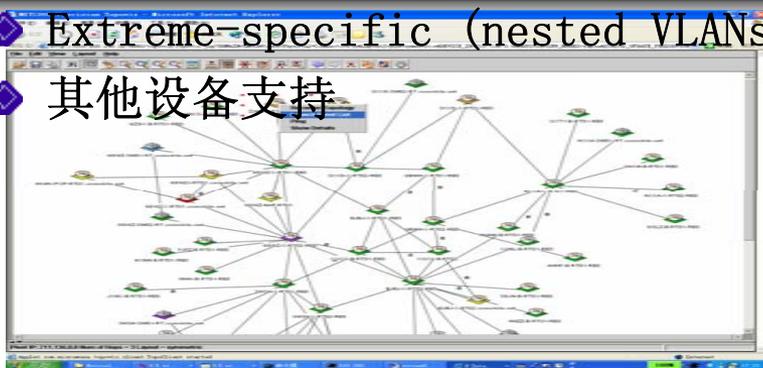
## 自动发现:

- ◆ Layer 3 (inc. dup. IP / static NAT)
- ◆ Layer 2 (inc. VLAN membership)
- ◆ ATM Topology (SNMP PNNI/ILMI)
- ◆ MPLS (LSP paths and VPN via VRF)
- ◆ Frame Relay (customer edge DLCI)
- ◆ Cisco-specific (HSRP, ATM PVC's, ..)

- ◆ Extreme-specific (nested VLANs)
- ◆ 其他设备支持

## 更好的帮助进行事件管理:

- 在发生问题时快速定位故障点
- 资源信息丰富到事件中, 帮助管理人员获得解决问题更多的管理信息



# 网络设备告警管理与拓扑管理紧密集成

The image displays two overlapping windows from a network management application. The background window, titled 'NETCOOL/Precision Topoviz - Microsoft Internet Explorer', shows a network topology diagram with various nodes and connections. The foreground window, titled 'Active Event List Window - Microsoft Internet Explorer', displays a table of active events for a specific node.

**Active Event List Window - Microsoft Internet Explorer**

Address: [http://218.200.248.22:8080/AELView/?entity=GUGAN\\_QHXNRT01&datasource=](http://218.200.248.22:8080/AELView/?entity=GUGAN_QHXNRT01&datasource=)

URL: [http://218.200.248.22:8080/GUGAN\\_QHXNRT01/](http://218.200.248.22:8080/GUGAN_QHXNRT01/)

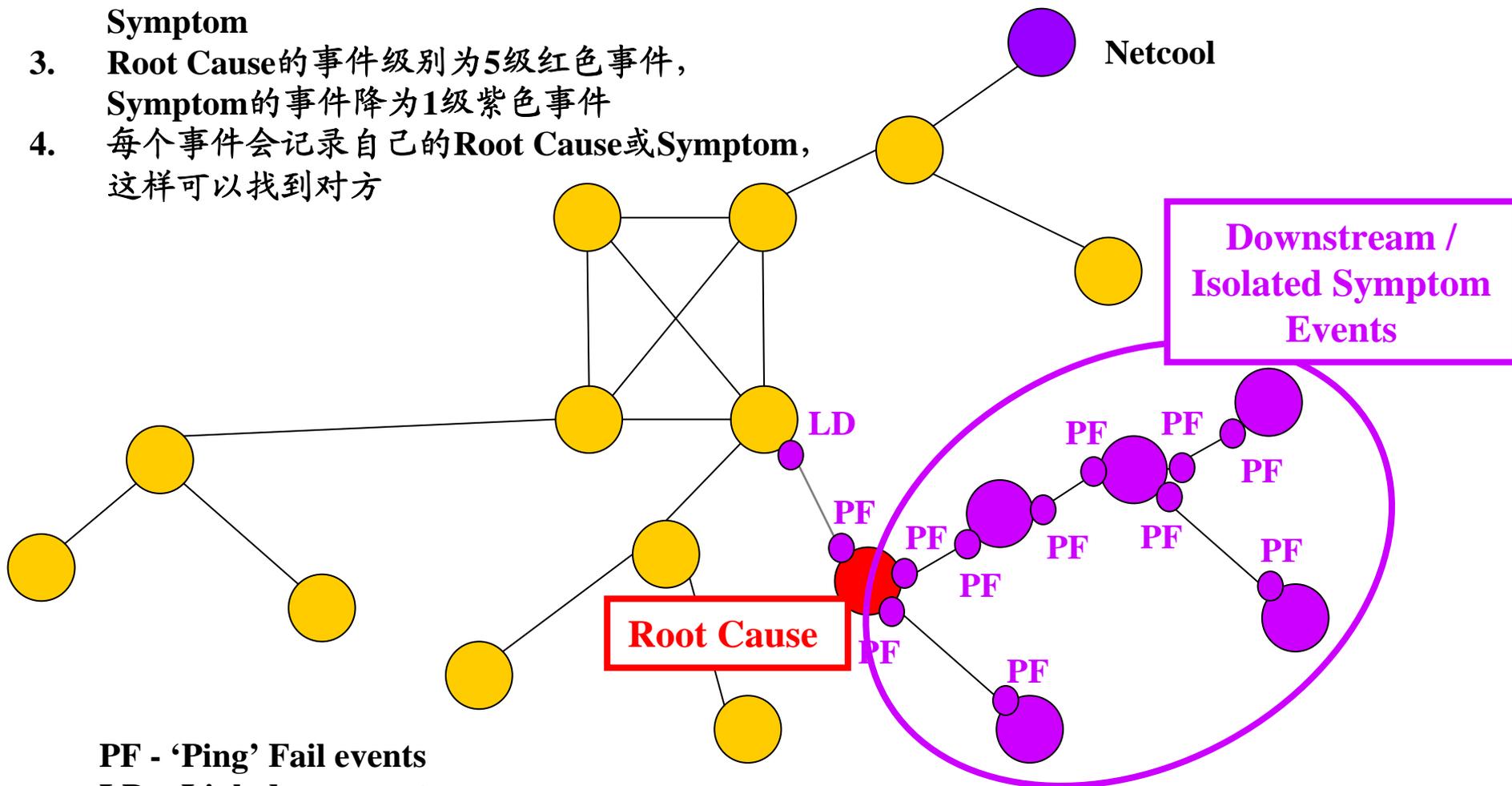
Node	AlertGroup	Summary	Last Occurrence
211.136.0.73		DVC Good - Node 211.136.0.73 is reachable	5/29/04 4:39:45 PM
211.136.0.73	SNMP	SNMPD_AUTH_FAILURE: validate_SNMP_community: unauthorized snmp co...	5/28/04 11:14:03 PM
211.136.0.73	SNMP	SNMPD_AUTH_FAILURE: validate_SNMP_community: unauthorized snmp co...	5/28/04 11:14:00 PM
211.136.0.73	security	login from 211.136.17.227 on tty0 as sinomo82	5/28/04 12:20:40 PM
211.136.0.73	security	login from 211.136.11.158 on tty0 as mo82	5/28/04 9:50:52 AM
211.136.0.73	BGP Peer Status	BGP Peer Connection Idle ( bgpPeerRemoteAddr: 211.136.11.158 )	5/27/04 2:30:53 PM
211.136.0.73	BGP Peer Status	BGP Peer Connection Idle ( bgpPeerRemoteAddr: 211.136.0.43 )	5/27/04 1:01:35 PM
211.136.0.73	Precision Monitor	Ping fail for 211.136.0.73-ICMP-related out	5/27/04 11:55:32 AM
211.136.0.73	security	login from 211.136...	5/26/04 6:53:15 PM
211.136.0.73	RPD	RPD_TASK_REINIT	5/25/04 6:33:37 PM

1 rows selected

Applet com.micromuse.wave.applets.ael.AEL started

## RCA关联示例: 单个设备的故障导致所有下联设备的故障

1. 某个节点故障导致所有下联设备ping不通
2. 将故障节点定位为Root Cause, 其它节点为Symptom
3. Root Cause的事件级别为5级红色事件, Symptom的事件降为1级紫色事件
4. 每个事件会记录自己的Root Cause或Symptom, 这样可以找到对方



PF - 'Ping' Fail events  
LD - Link down events

TopoViz - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media History Mail Print Edit

Address [http://194.203.200.205/topo/login?DEVICE\\_ID=104&HOPS=3&LAYOUT=SYMMETRIC&USERNAME=root&PASSWORD=](http://194.203.200.205/topo/login?DEVICE_ID=104&HOPS=3&LAYOUT=SYMMETRIC&USERNAME=root&PASSWORD=) Go Links

File Edit View Layout About

IP / ID: 172.20.1.3  
Hops: 4  
Include:  Router  Switch  Node  
Filter: on: IPAddress using: Like where:   
Apply Hide

故障根源指示  
(二三层设备包  
括终端节点显示在  
一张图上)

SOURCEip	SOURCEEna...	SOURCEInte...	SOURCEInte...	SOURCECar...	DESTip	DESTname	DESTInterfac...	DESTInterfac...	DESTCardPort
172.20.1.3	cisco2916.e...	1	1/33		172.20.1.2	172.20.1.2	172.20.1.2	1	
172.20.1.3	cisco2916.e...	2	1/34		172.18.1.102	rch-test-cat5...		157	8/1
172.20.1.3	cisco2916.e...	21	1/28		172.20.8.10	172.20.8.10	172.20.8.10	1	

Pivot IP: 172.20.1.3 Num of Hops = 4 Layout = symmetric

Applet started. Internet

# 基于协议的性能数据收集--ISM

## Complex Transaction Monitors

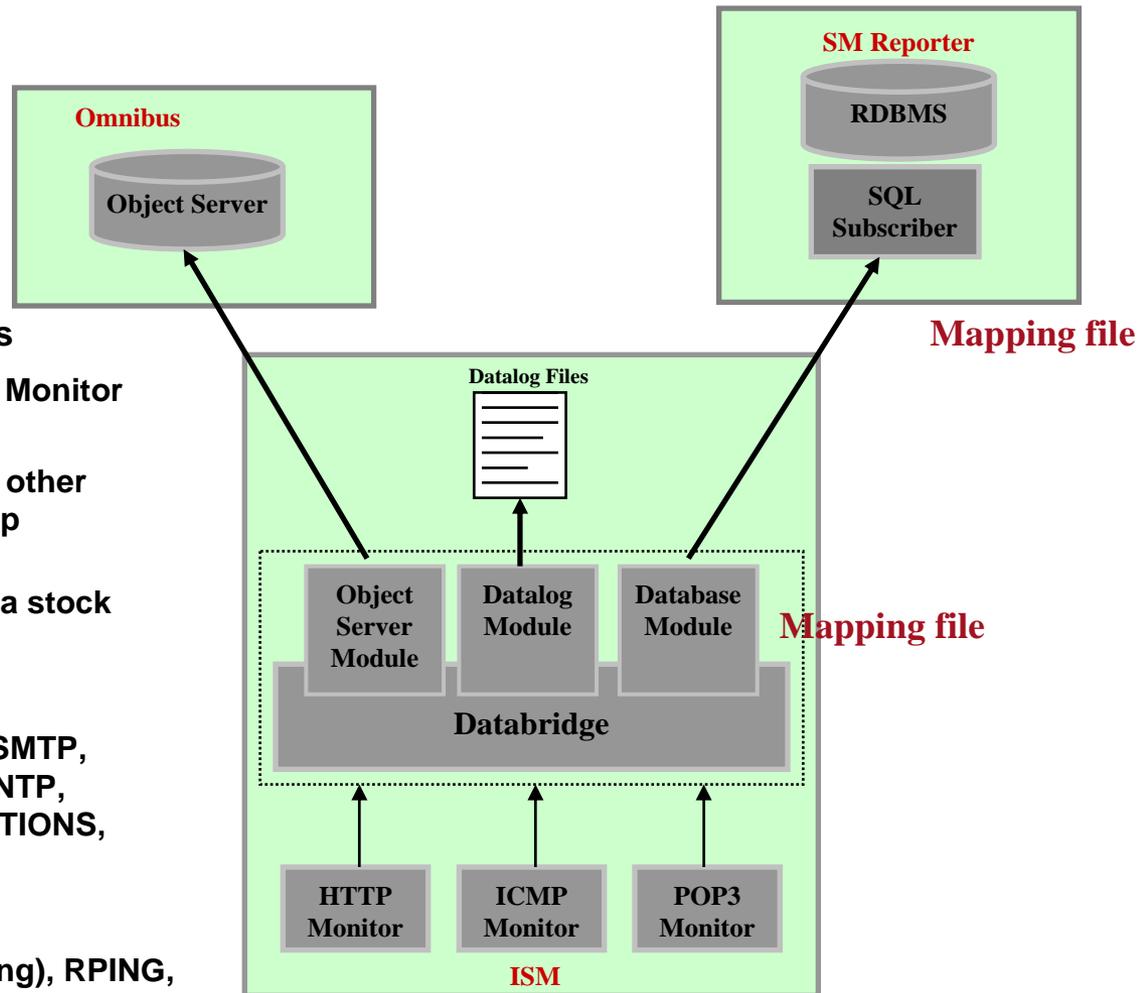
- Windows Application Monitor
- Transaction Monitor
- Combined Test using other monitors for each Step
- e.g. Full E-commerce Transaction - Making a stock trade

## User Services / Applications

- HTTP, HTTPS, DIAL, SMTP, POP3, IMAP4, FTP, NNTP, TCP, PORT, TRANSACTIONS, RTSP, WMS

## Supporting Services

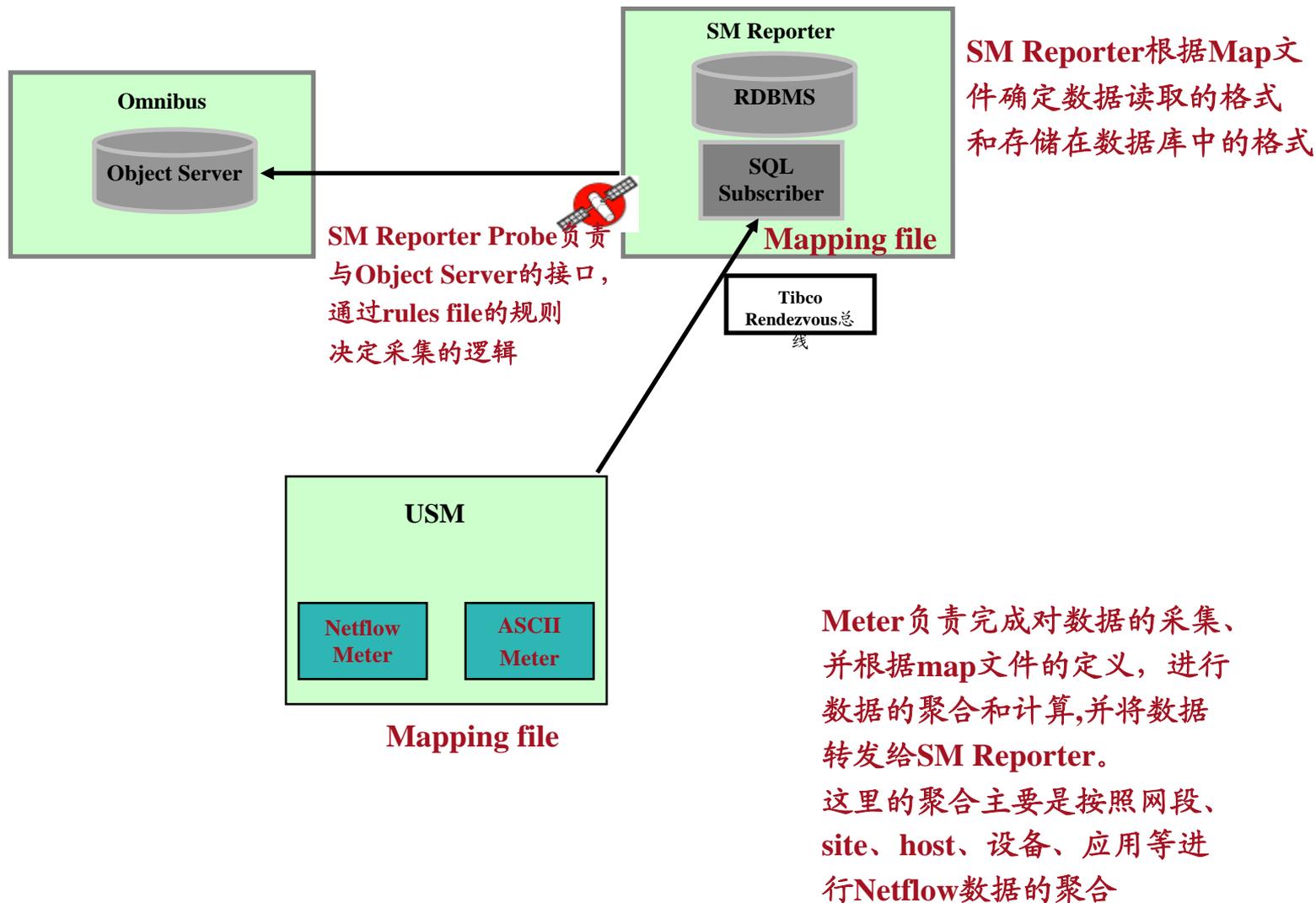
- DNS, SNMP, ICMP (ping), RPING, RADIUS, NTP, DHCP, LDAP,
- Cisco SAA

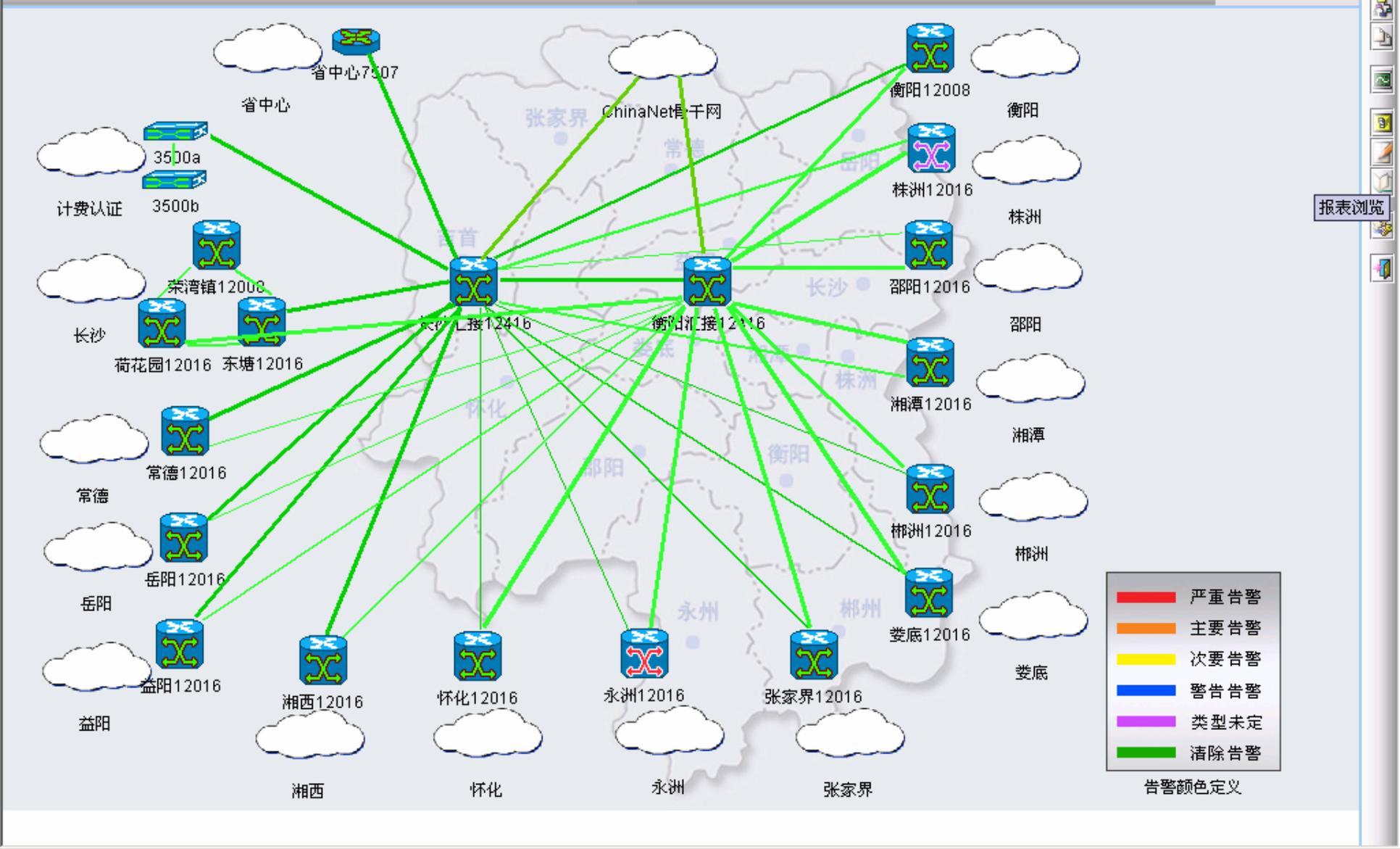


ISM通过Map文件确定性能数据转发给数据库的格式

SM Reporter根据Map文件确定数据读取的格式和存储在数据库中的格式

# 基于NetFlow的性能数据收集-- USM





报表浏览

Microsoft Internet Explorer  
地址: http://21.12.2.28:9090/ncc/index.html

**中国银行** BANK OF CHINA  
信息中心(北京)网络管理系统  
用户名: root

主页 报表 工具 ARES 退出

地区划分:

- 全国运行视图
  - 全国联通性
  - 华北地区联通性
  - 信息中心(北京)各省市行联通性
    - 黑龙江
    - 吉林
    - 辽宁
    - 内蒙古
    - 河北
    - 河南
    - 北京
    - 天津
    - 山东
    - 山西
  - 信息中心(北京)内部网
    - 核心生产
    - 网络连接图
    - 局域网
    - OA(测试)网

Microsoft Internet Explorer  
地址: http://22.1.2.34:9090/hq/index.html

**中国银行** BANK OF CHINA  
总行网络管理系统  
用户名: root

主页 报表 工具 ARES 退出

地区划分:

- 运行
  - 广域网
  - 局域网
  - 环球
  - 同城
  - 省行
    - 华北
      - 北京市
      - 天津市
      - 河北省
      - 河南省
      - 山东省
      - 内蒙古自治区
      - 辽宁省
      - 吉林省
      - 黑龙江省
    - 华中
      - 湖北
      - 湖南
      - 江西
      - 安徽
      - 福建
      - 浙江
      - 江苏
      - 上海
      - 天津
      - 北京
      - 河北
      - 山西
      - 山东
      - 河南
      - 陕西
      - 甘肃
      - 宁夏
      - 青海
      - 新疆
      - 四川
      - 重庆
      - 贵州
      - 云南
      - 广西
      - 广东
      - 海南
      - 台湾
      - 香港
      - 澳门

● 局域网 ● 同城网 ● 环球网

Microsoft Internet Explorer  
地址: http://770.0.176.129:8080/demo1/indexnew2.html

**中国银行** BANK OF CHINA  
网络管理系统  
用户名: \_\_\_\_\_

主页 分类事情 报表 工具

地区划分:

- 统计视图
- 网络监控视图
  - 省行
    - 局域网
    - 广域网
  - 城市行
    - 石家庄市
    - 张家口
    - 秦皇岛
    - 保定
    - 承德
    - 唐山
    - 廊坊
    - 保定
    - 沧州
    - 衡水
    - 邯郸

局域网

河北省石家庄市 新华路80号

路由层 核心 数据层 服务 逻辑 性能

- 路由2 (1)
- 核心1 (2)
- 核心2 (3)
- 核心1 (4)
- 核心2 (5)
- 核心1 (6)
- 核心2 (7)
- 路由2 (8)
- HSRP (9)
- DHCP (10)
- STP (11)
- VTP (12)
- Mem (13)
- 配置 (14)
- 重启 (15)

Microsoft Internet Explorer  
地址: http://21.12.61.47:8080/huabei/index.html

**中国银行** BANK OF CHINA  
华北中心主机监控项目  
用户名: root

主页 报表 退出

主机监控视图:

- 华北中心
  - Job
  - 安全
  - EIBS MERVIA
  - SWIFT MERVIA
  - CICS
  - VTAM
  - 小机
  - DB2
  - VSAM
  - 系统基础
  - 华东中心

电子联行 MERVIA LINK 监控

# NetCool 成功用户案例-国内

## 中国移动

- 全国IP骨干网 CMNet
- 广东省移动 IP骨干网
- 安徽省移动IP骨干网
- 江西省移动IP骨干网
- 江西省移动BOSS网管
- 中国移动 9 城市GPRS

## 中国电信

- 中国电信全国ChinaNet 163/169骨干网
- 中国电信全国ChinaNet DCN网
- 中国电信四大数据中心
- 中国电信上海热线
- 中国电信上海IP城域网
- 中国电信上海长信IDC
- 上海奉贤电信局
- 浙江省电信公司163/169
- 山东省电信公司163/169
- 广东省电信公司163/169
- 甘肃省电信公司IP骨干网

- 湖南省电信公司IP骨干网
- 贵州省电信公司IP骨干网
- 云南省电信公司IP骨干网
- 中国电信全专业集中告警管理：  
上海、安徽、湖南、河北

## 中国网通VPN网络管理

## 湖北网通IP宽带网管

## 中国联通

- VoIP 网
- 全国GMS
- 四川联通VoIP
- 四川联通传输

## 中国吉通

- 金桥 全国IP骨干网
- 吉通IDC综合网管

## 中国铁通

- 全国IP骨干网

## 广电

- 北京市广电骨干网
- 天津市广电骨干网
- 上海市广电骨干网

## 中国银联

## 云南电力IP网管

## 人民银行总行

## 中国银行

- 中国银行全国骨干网及三大数据中心(北京、上海、广州)
- 中国银行北方10省
- 中国银行华东西南西北10省

## 建设银行

- 建设银行全国骨干网及南北数据中心(北京、上海)
- 建设银行北方10省
- 建设银行全国所有分行
- 上海建行

## 招商银行广东分行

## 深圳证券交易所

## 工商银行全国骨干网、南北数据中心 (北京、上海)、全国所有省行

## 浦东发展银行

## 广东发展银行

## 太平洋保险总公司及全国所有分公司

## 泰康人寿保险公司

## 上海政务网

## 上海公安网

## 上海数讯

# 全面的网络资源管理 - Tivoli NetView

- 网络基础架构的管理
  - ▶ 网络设备的发现和拓扑的自动生成
  - ▶ 故障的自动定位和影响分析
  - ▶ 网络事件的集中和自动分析
- 网络性能的管理
  - ▶ 性能数据的报警和收集
  - ▶ 基于数据仓库的分析和报表
- 支持新的管理环境
  - ▶ 网络地址转换
  - ▶ 防火墙友好
  - ▶ 网络管理权限和范围的分配

The screenshot displays the Tivoli NetView Administrator interface. The main window is titled 'Submap Explorer' and shows a network topology map with various nodes and connections. The 'Event Browser' window is open, displaying a list of events with columns for Time, Node, Description, and Severity.

Time	Node	Description	Severity
5/1/01 11:11 AM	<none>	otopmd registering with trapd daemon	Indeterminate
5/1/01 11:11 AM	<none>	SNMP Data Collector started	Indeterminate
5/1/01 11:14 AM	<none>	ipmap registering with trapd daemon	Indeterminate
5/1/01 11:14 AM	<none>	ipmap done synchronizing	Indeterminate
5/1/01 11:16 AM	westford-vl-2514.ma.dev...	Interface Tunnel0 down. CRITICAL	Critical
5/1/01 11:16 AM	westford-vl-2514.ma.dev...	Router marginal	Warning
5/1/01 11:41 AM	westford-gate.ma.dev.tiv...	BandwidthUtilHdx 3 threshold triggered (> 20.00): 35...	Indeterminate
5/1/01 11:41 AM	westford-vl-2514.ma.dev...	BandwidthUtilHdx 7 threshold triggered (> 20.00): 12...	Indeterminate
5/1/01 2:00 PM	<none>	Insufficient available memory detected by netmon. di...	Critical
5/1/01 2:32 PM	hal.ma.dev.tivoli.com	Interface en0, down. CRITICAL	Critical
5/1/01 2:32 PM	hal.ma.dev.tivoli.com	Node Down.	Critical
5/1/01 2:32 PM	146.84.242	Segment 146.84.242.Segment1 Marginal.	Indeterminate
5/1/01 2:32 PM	146.84.242	Network 146.84.242 Marginal.	Indeterminate
5/1/01 2:35 PM	echobase	Demand polling on node echobase.	Indeterminate
5/1/01 2:35 PM	echobase	Demand polling on node echobase.	Indeterminate
5/1/01 2:35 PM	echobase	Demand polling on node echobase.	Indeterminate
5/1/01 2:38 PM	echobase	Demand polling on node echobase.	Indeterminate

Total: 101 Displayed: 101 Selected: 0

Last Updated at 5/1/01 2:43 PM

Submap Explorer - default - [IPMap - Segment.146.84.242.Segment1]

# 基于WEB的网络管理

## ⇒ 远程的问题诊断

- dial-in
- 远程节点

## ⇒ 方便的信息共享

- 在所有级别和地方的人员能够浏览相关的信息

## 优势

- 容易使用
- 实施费用低
- 扩展能力
- 与第三方产品简单的集成

The screenshot displays the Tivoli NetView Administrator interface. The main window is titled "Submap Explorer" and shows a network topology map with various nodes and connections. The nodes are labeled with names like "amper-", "anubis", "azhan-", "dammi-", "echob-", "hemlo-", "indigo", "itchy", "ke-", "madev-", "maple", "monet", "nvntg-", "odess-", "ohm", "seja", "sequoi-", "sig", "ups", "volta", "washi-", "westfo-", "westfo-", "westfo-", "winsto-", "wopr", and "yojimb-".

An "Event Browser" window is open, displaying a list of events. The table below shows the data from this window:

Time	Node	Description	Severity
5/1/01 11:11 AM	<none>	ovtopmd registering with trapd daemon	Indeterminate
5/1/01 11:11 AM	<none>	SNMP Data Collector started	Indeterminate
5/1/01 11:14 AM	<none>	ipmap registering with trapd daemon	Indeterminate
5/1/01 11:14 AM	<none>	ipmap done synchronizing	Indeterminate
5/1/01 11:16 AM	westford-vtl-2514.ma.dev...	Interface Tunnel0 down. CRITICAL	Critical
5/1/01 11:16 AM	westford-vtl-2514.ma.dev...	Router marginal.	Warning
5/1/01 11:41 AM	westford-gate.ma.dev.tiv...	BandwidthUtilHdx 3 threshold triggered (> 20.00): 35...	Indeterminate
5/1/01 11:41 AM	westford-vtl-2514.ma.dev...	BandwidthUtilHdx 7 threshold triggered (> 20.00): 12...	Indeterminate
5/1/01 2:00 PM	<none>	Insufficient available memory detected by netmon; di...	Critical
5/1/01 2:32 PM	hal.ma.dev.tivoli.com	Interface en0, down. CRITICAL	Critical
5/1/01 2:32 PM	hal.ma.dev.tivoli.com	Node Down.	Critical
5/1/01 2:32 PM	146.84.242	Segment 146.84.242.Segment1 Marginal.	Indeterminate
5/1/01 2:32 PM	146.84.242	Network 146.84.242 Marginal.	Indeterminate
5/1/01 2:35 PM	echobase	Demand polling on node echobase.	Indeterminate
5/1/01 2:35 PM	echobase	Demand polling on node echobase.	Indeterminate
5/1/01 2:35 PM	echobase	Demand polling on node echobase.	Indeterminate
5/1/01 2:38 PM	echobase	Demand polling on node echobase.	Indeterminate
5/1/01 2:38 PM	echobase	Demand polling on node echobase.	Indeterminate

The interface also shows a "Submap Explorer" window with a "Topology View" and a "Last Updated at 5/1/01 2:43 PM" message.

# 定义角色

每个用户都有一个角色:

- Operator
- Administrator
- Customer ....

每个角色具有相应的权限:

- PING, but not Demand Poll
- View Status, but don't modify devices....

The screenshot shows the 'Security Console - Tivoli NetView' interface. On the left, a tree view shows the hierarchy: Users (public, netview, admin, root, native, beth) and Roles (User, Operator, Administrator, SuperUser, User2, Scopes). The 'User2' role is selected. The right pane shows the configuration for 'User2', including a comment field with the text 'This is a comment.', a checked checkbox for 'Allow Scoping in Event Browser', and a table of actions.

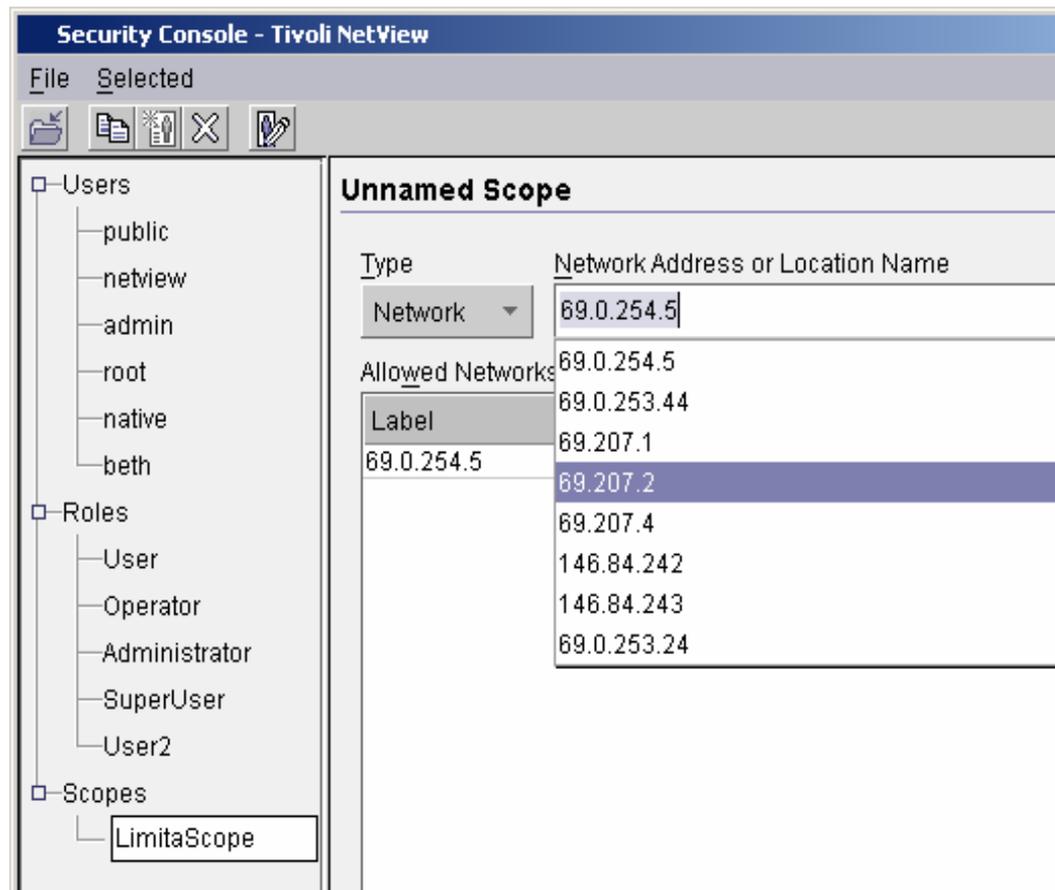
Select	Name	Description
<input type="checkbox"/>	Onacknowledge	\$(onackno
<input type="checkbox"/>	Object Properties	object prop
<input type="checkbox"/>	MIB Browser	Browse ST
<input type="checkbox"/>	Connectivity	\$(connecti
<input checked="" type="checkbox"/>	Ping	\$(ping.sho
<input type="checkbox"/>	Demand Poll	\$(demand
<input checked="" type="checkbox"/>	Locate Route	\$(locateroi
<input checked="" type="checkbox"/>	QuickTest	\$(quicktes
<input type="checkbox"/>	QuickTest Critical	\$(quicktes
<input type="checkbox"/>	Home Page	\$(homepa
<input type="checkbox"/>	Management Page	\$(manage
<input type="checkbox"/>	Diagnostics	\$(diagnost
<input type="checkbox"/>	Object Properties	object prop
<input type="checkbox"/>	Event Browser	Event Brow
<input type="checkbox"/>	MIB Browser	Browse ST

Total: 51 Displayed: 51 Selected: 4

# 定义管理范围

每个用户具有相应的管理范围：

- 管理范围可以自定义，多个用户可以使用同一个管理范围
- 管理范围基于子网和Location





IBM Software Group

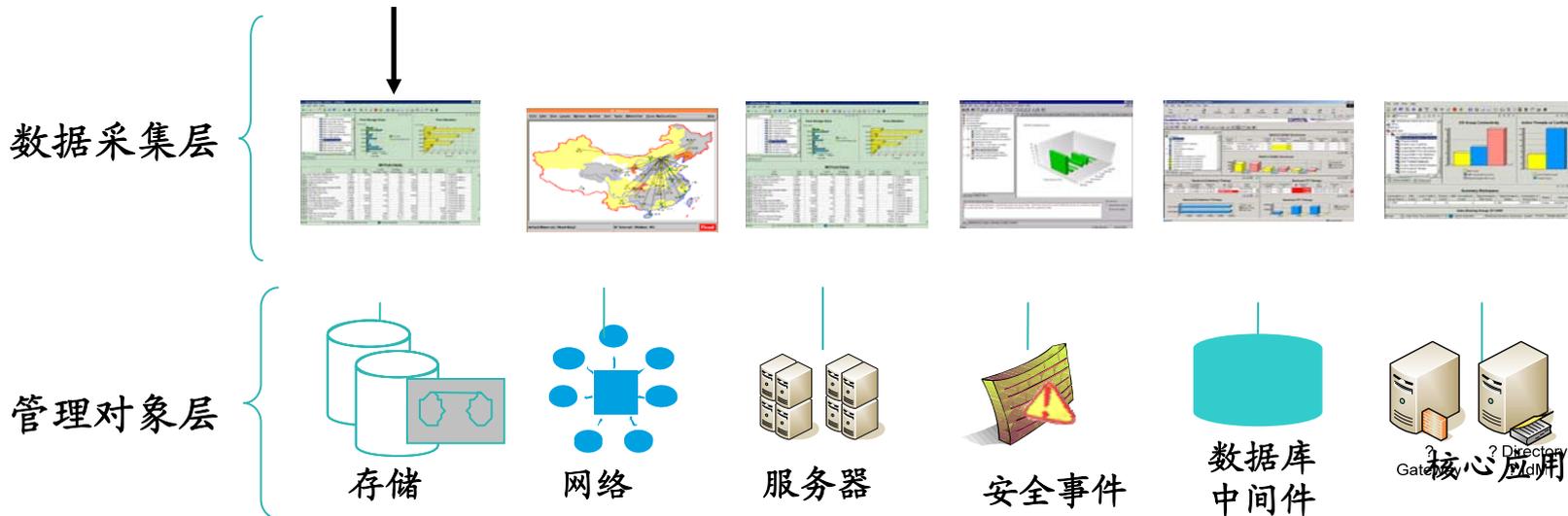
# 存储监控



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# IBM Tivoli运维管理总体架构

## TotalStorage Productivity Center



# IBM TotalStorage Productivity Center (TPC)

## TotalStorage Productivity Center for Data

- ◆ 数据收集和分析, 文件系统和数据库
- ◆ 报告, 收费 和配额
- ◆ 自动化的操作
- ◆ 异构磁盘支持(**IBM, EMC, HDS, HP, Engenio**)
- ◆ 磁带库资产报告

## TotalStorage Productivity Center for Fabric

- ◆ **SAN** 拓扑展示和管理
- ◆ 事件报告
- ◆ 性能报告
- ◆ **Zone** 控制
- ◆ 异构Fabric支持 (**Brocade, Cisco, McData, etc.**)

## TotalStorage Productivity Center for Disk

- ◆ 磁盘阵列管理
- ◆ 性能管理 – **IBM** 和异构存储
- ◆ 卷性能建议 (**ESS Only**)
- ◆ 存储容量供应 – **IBM** 和异构存储
- ◆ 高级性能管理 – **IBM DS4000/6000/8000/SVC**



# IBM TotalStorage Productivity Center (TPC)

提高投资回报率

TPC被设计用以:

- ◆ 降低系统当机时间
- ◆ 提高管理人员的工作效率
- ◆ 提高硬件设备的使用率

**Pinning to keep selected entities in the view regardless of zoom level**

**Minimap to provide environmental context and navigate the primary view**

**Context menus to support global, group, and/or entity-level view function**

**Institutes progressive information disclosure and semantic zooming to focus on an entity without losing environmental context**

Fabric	Switch	Computer	Subsystem	Tape Library	Other/Unknown	Connection	Zone								
Group	Label	Operatio...	WWN	Domain	IP Address	Vendor	Model	Serial#	Version	Descript...	Parent...	Element...	UDP1	UDP2	UDP3
All	All	000000...	000000...	9.4.3.22	Brocade	2106	56345	1.2					B3-251		
All	All	000000...	000000...	9.4.3.25	Brocade	2106	56866	1.2					B3-251		

# TPC对于各厂家设备的支持

Storage Subsystem	Discovery, Monitoring, Asset/Capacity Reporting	Fabric Support (associated zoning)	Disk Provisioning	Performance Management	Replication Mgt	Topology Viewing
ESS	√	√	√	√	√	√
DS6000 / 80000	√	√	√	√		√
SVC	√	√	√	√	√	√
DS4000	√	√	√	√		√
EMC, HDS, HPQ, Engenio...	√	√	√	√		√
Brocade, McData, Cisco, Qlogic..	√	√	N/A	√		√
NetApp	√					
Tape Device	√		N/A			√



IBM Software Group

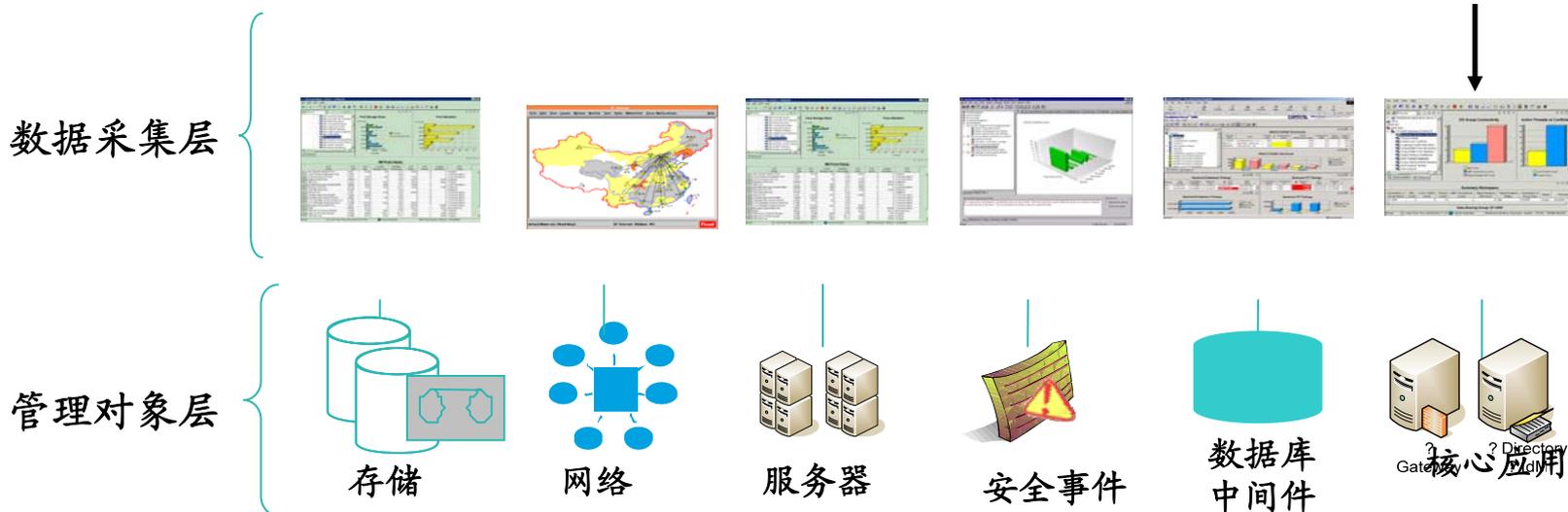
# 应用与交易监控



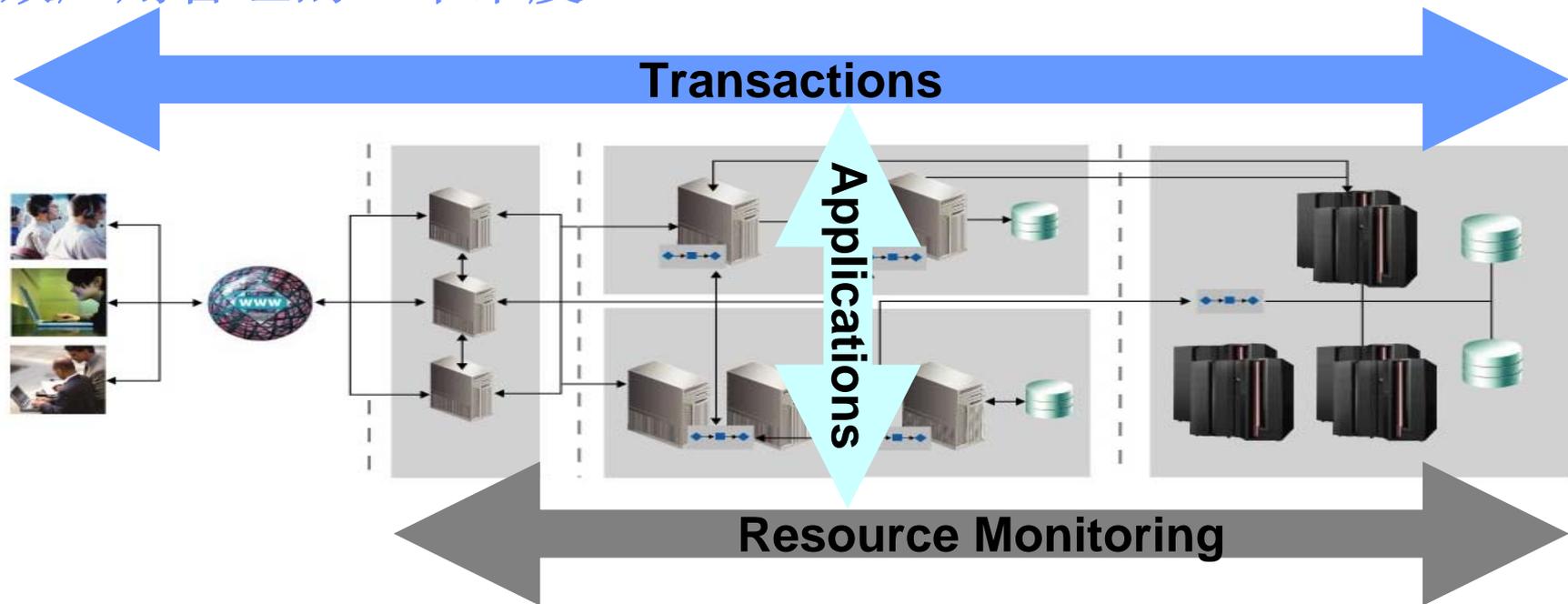
@business on demand software

# IBM Tivoli运维管理总体架构

## Tivoli Composite Application Manager



# 有效应用管理的三个维度



**交易监控**  
 响应时间  
 故障隔离

- 从用户体验的角度监控端到端交易
- 追踪交易流
- 隔离故障部件

**应用监控**  
 深入诊断  
 跨系统关联分析

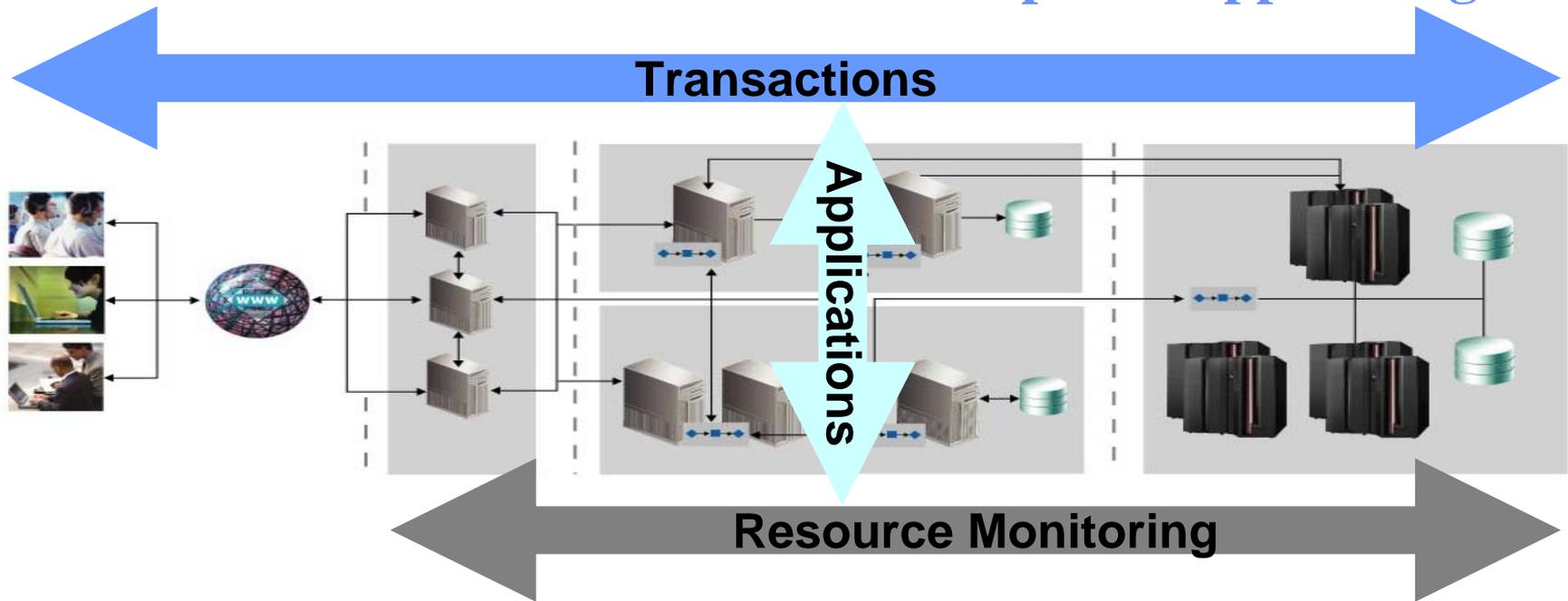
- 应用和中间件诊断
- 应用性能分析
- 深入到代码级的分析

**资源监控**  
 应用服务器监控  
 自动化响应

- 对J2EE、MQ、Database等的监控
- 应用资源消耗分析
- 负载趋势分析



# Tivoli应用管理解决方案 - IBM Tivoli Composite App Manager



**ITCAM for Response Time Tracking  
ITCAM for Response Time**

- 端到端交易监控和故障隔离

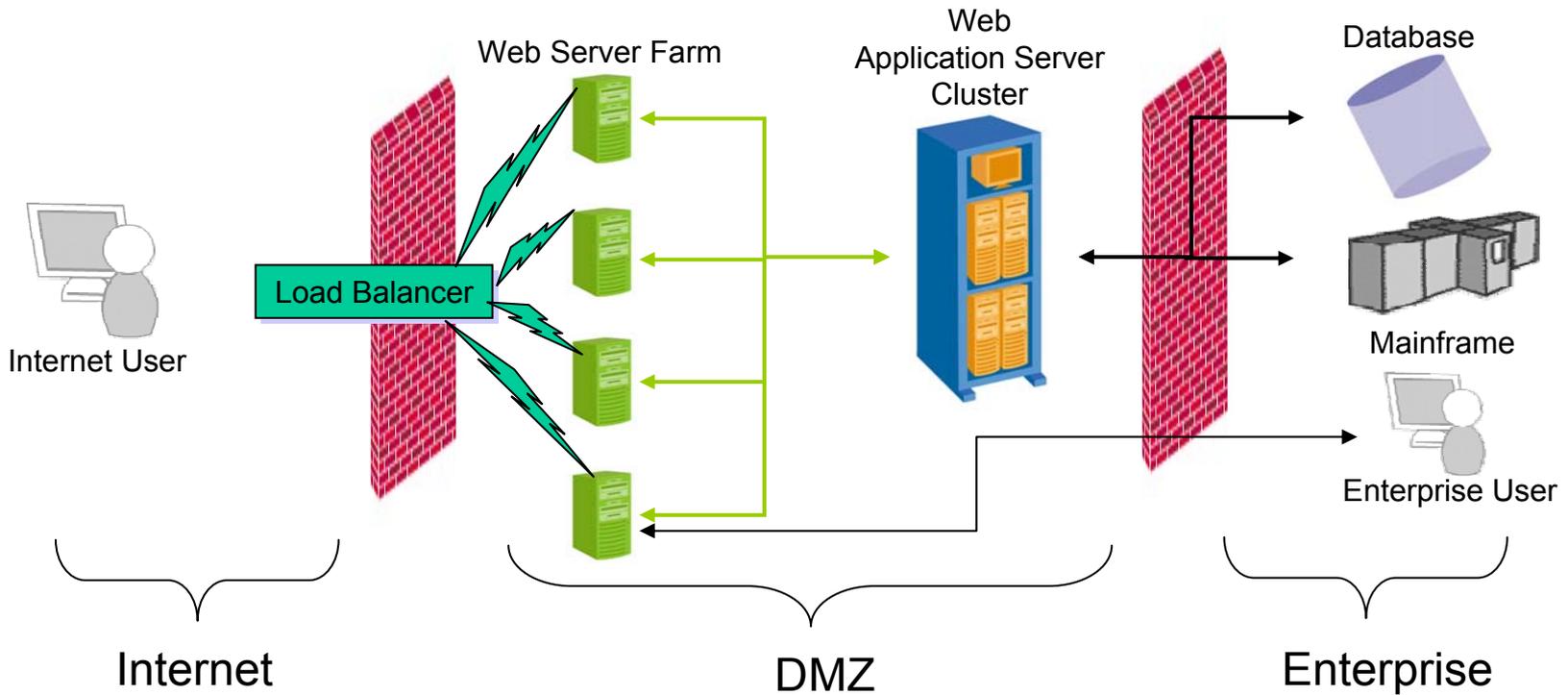
**ITCAM for WebSphere  
ITCAM for J2EE**

- 应用性能问题的深入分析

**ITCAM for Web Resource  
ITCAM for SOA**

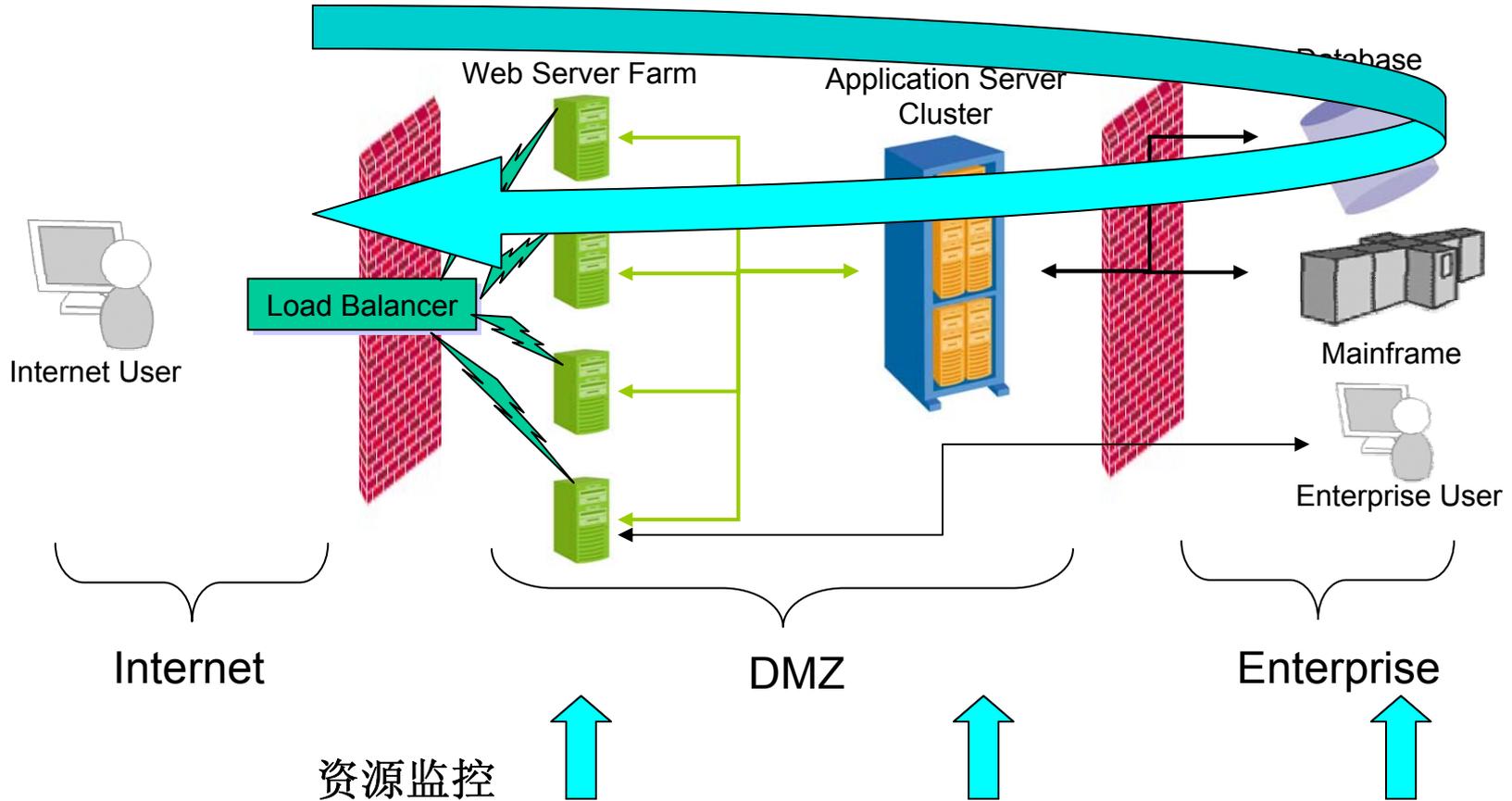
- 对 J2EE应用平台的监控
- 对SOA/Web Service的监控

# 端到端交易系统架构



# 应用交易监控 - 端到端的交易性能与用户感受

交易监控

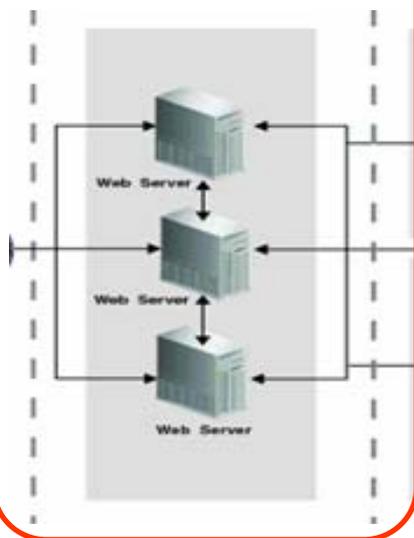


Tivoli Monitoring for OS/Database/WebSphere

# 服务可用性和性能测试

## 客户端 访问探测

探测客户端访问应用的响应情况，从而发现访问性能是否满足企业要求



### •Robotic Response Time Agent

–Rational Robot, RPT, Mercury LoadRunner, CLI commands

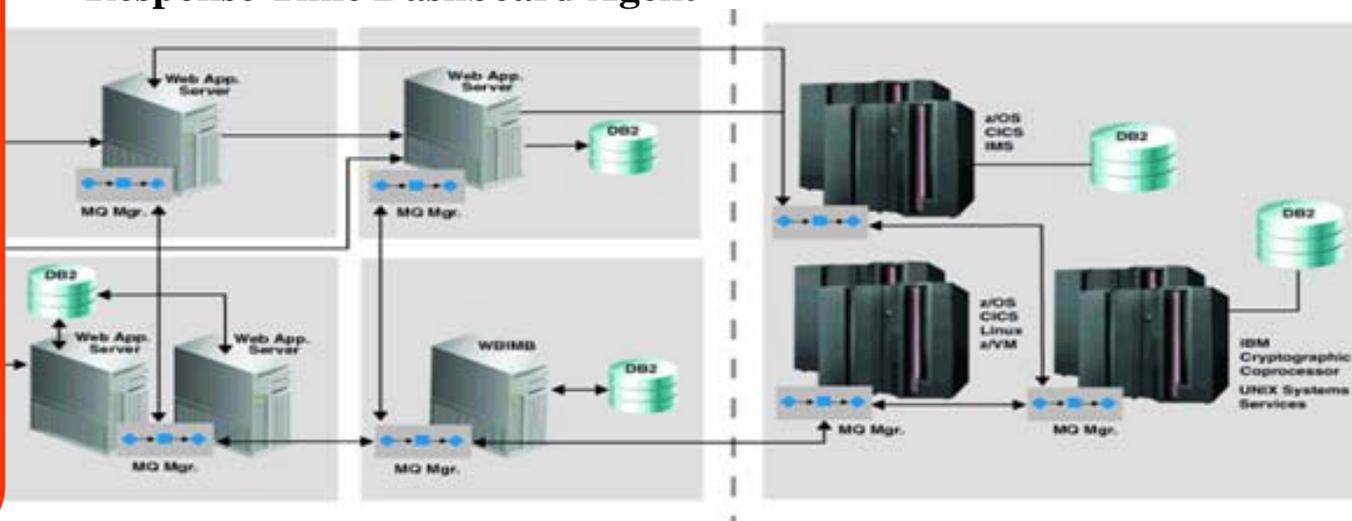
### •Web Response Time Agent

•Monitors real end user web transactions (HTTP/S)

### •Client Response Time Agent

•Lotus Notes, Microsoft Outlook

### •Response Time Dashboard Agent



# ITCAM for Response Time

Welcome SYSADMIN  
**Tivoli Enterprise Portal** Log out

File Edit View Help

View: Physical

- Enterprise
  - Windows Systems
    - ERNE
    - RTTREPORTVM1
      - Robotic Response Time
      - Universal Agent
      - Web Response Time
      - Applications
      - Clients
      - Servers
      - Transactions
    - Windows OS
    - RTTREPORTVM2
      - End User Response Time
      - Robotic Response Time
    - SEAHORSE

Application Volume

Application Response Time

First Level SubTransactions Response Time

- http://rtvt2.tivlab....envlet?action=productdetail&itemID=V0006
- http://rtvt2.tivlab....envlet?action=getimage&inventoryID=V0006
- http://rtvt2.tivlab....ntsBy/WebSphere/images/item\_selection.jpg
- http://rtvt2.tivlab....yWebSphere/images/button\_add\_to\_cart.gif

Welcome SYSADMIN  
**Tivoli Enterprise Portal** Log out

File Edit View Help

View: Physical

- Enterprise
  - Linux Systems
  - Windows Systems
    - RTEVT1
      - End User Response Time
      - Robotic Response Time
      - Universal Agent

Current Robotic Playback Status

Robotic Script Name	Robotic Script Type	CLI Playback Command	Last Run Status	Last Run Start Time	Last Run Duration
websphere_BuyFruit.zip	Rational Performance Tester		COMPLETE	03/11/07 18:42:03	3203
ints_154.zip	Rational Robot VU		COMPLETE	03/11/07 18:27:25	6844
vt1_170.zip	Rational Robot VU		COMPLETE	03/11/07 18:27:25	10125
	Generic Playback	badcommand	Failed	03/11/07 18:54:09	3813

Robotic Playback Availability Events

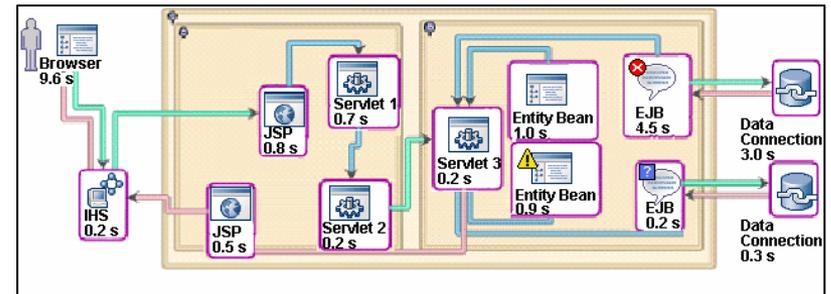
Additional Details	Message Date and Time	Severity	Component	Message ID	
stdout=, stderr='badcommand' is not recognized as an internal or external command, operable program or batch file.	03/11/07 18:45:49	Error	BWM.msg.playback.common	BWMPB0103	No robotic scr
	03/11/07 18:45:49	Error	BWM.msg.playback.common	BWMPB0103	No robotic scr
	18:45:49	Error	BWM.msg.playback.common	BWMPB0103	No robotic scr
	18:30:49	Error	BWM.msg.playback.common	BWMPB0103	No robotic scr
	18:30:49	Error	BWM.msg.playback.common	BWMPB0103	No robotic scr
	18:30:49	Error	BWM.msg.playback.common	BWMPB0103	No robotic scr
	03/11/07 18:27:36	Information	BWM.msg.genwin.vu.service	BWMSGW0111	The Generic V
	03/11/07 18:27:32	Information	BWM.msg.genwin.vu.service	BWMSGW0111	The Generic V
	03/11/07 18:25:06	Warning	CAnalyzer		
	03/11/07 18:21:55	Warning	CAnalyzer		
	03/11/07 18:15:49	Error	BWM.msg.playback.common	BWMPB0103	No robotic scr
	03/11/07 18:15:49	Error	BWM.msg.playback.common	BWMPB0103	No robotic scr

Application Details

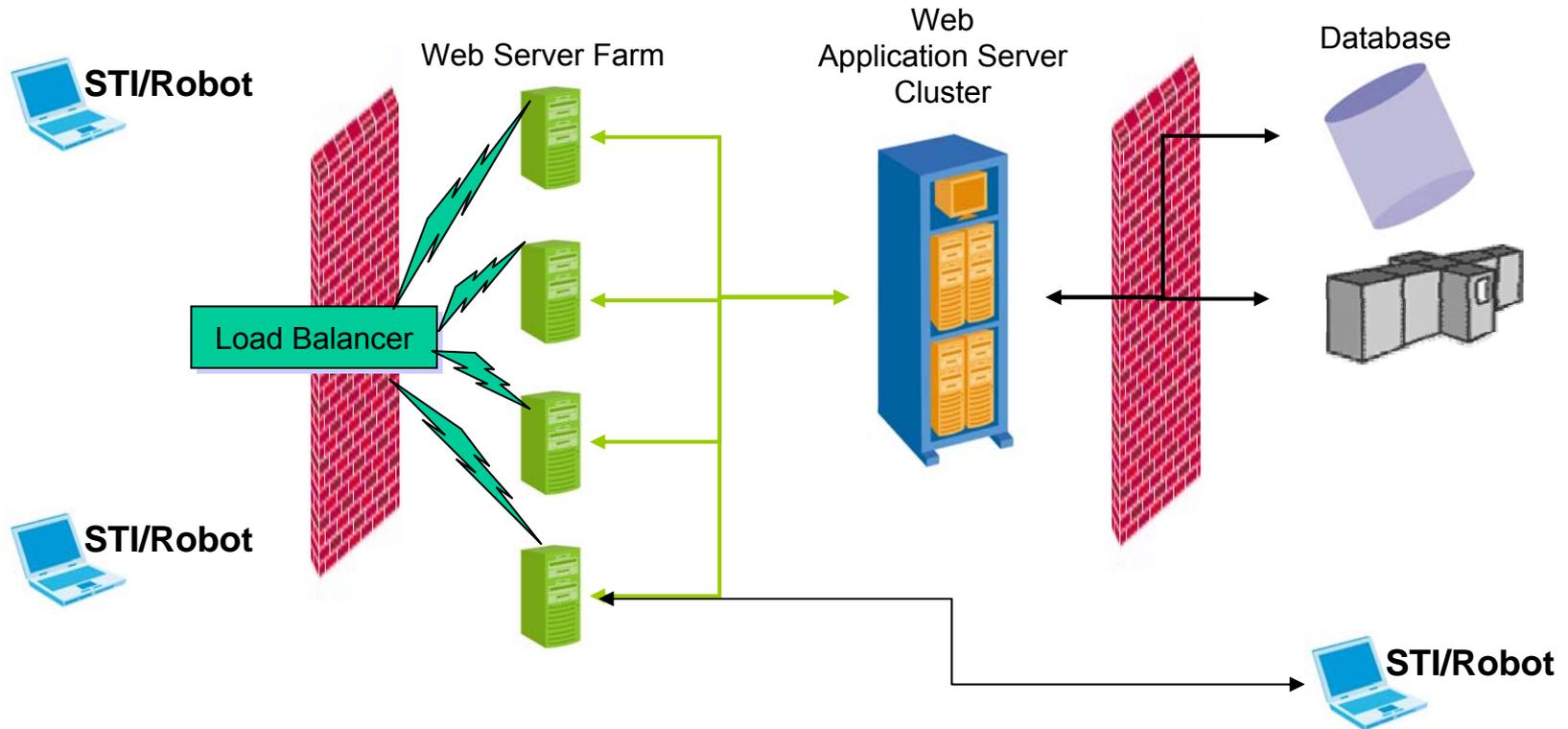
Application	Importance	Percent Failed	Percent Slow	Percent Good	Percent Available	Average Response Time(sec)	Failed Requests	Total Requests
PlantsByWebSphere	Medium	0.000	0.000	100.000	100.000	1.046	0	39
PlantsByWebSphere	Medium	0.000	0.000	100.000	100.000	0.814	0	39
PlantsByWebSphere	Medium	0.000	0.000	100.000	100.000	1.096	0	40

# ITCAM for Response Time Tracking

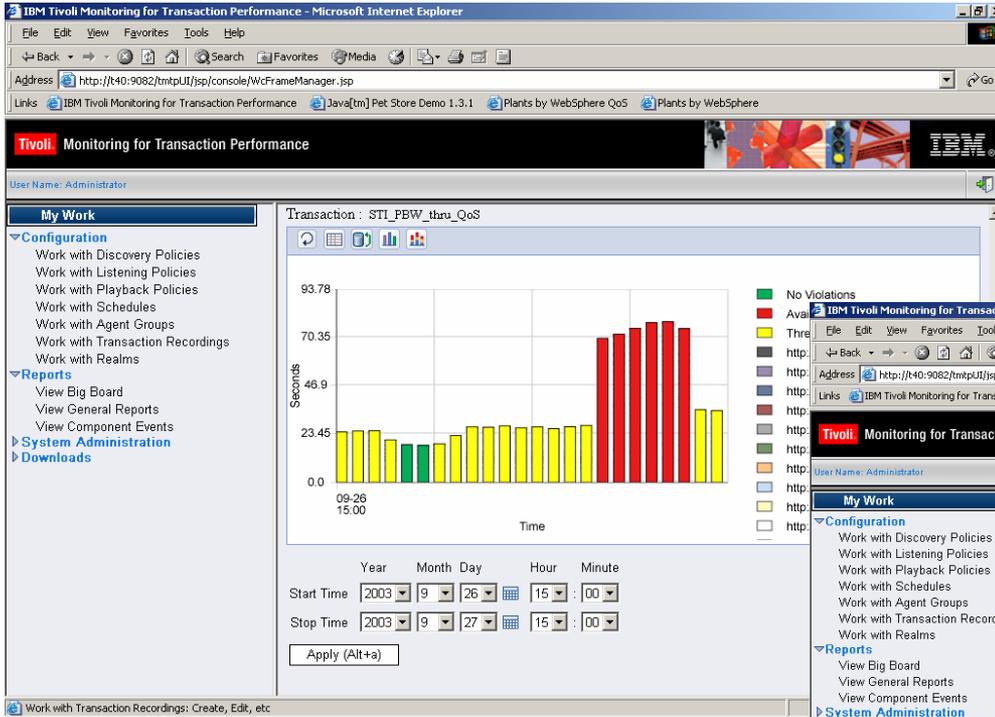
- 交易仿真
  - ▶ 实际交易的录入与回放;交易仿真
- 实际用户交易监控(基于B/S结构)
  - ▶ 动态交易拓扑结构发现与性能基线设定
- 交易分解
  - ▶ 即时采样, 可视化交易分解
- ITCAM for RTT组成部分
  - ▶ Discovery Component
  - ▶ 2 listeners(QoS and J2EE monitoring)
  - ▶ 2 playback components (STI, Rational Robot)



# STI交易仿真(Simulated Transaction Investigator)

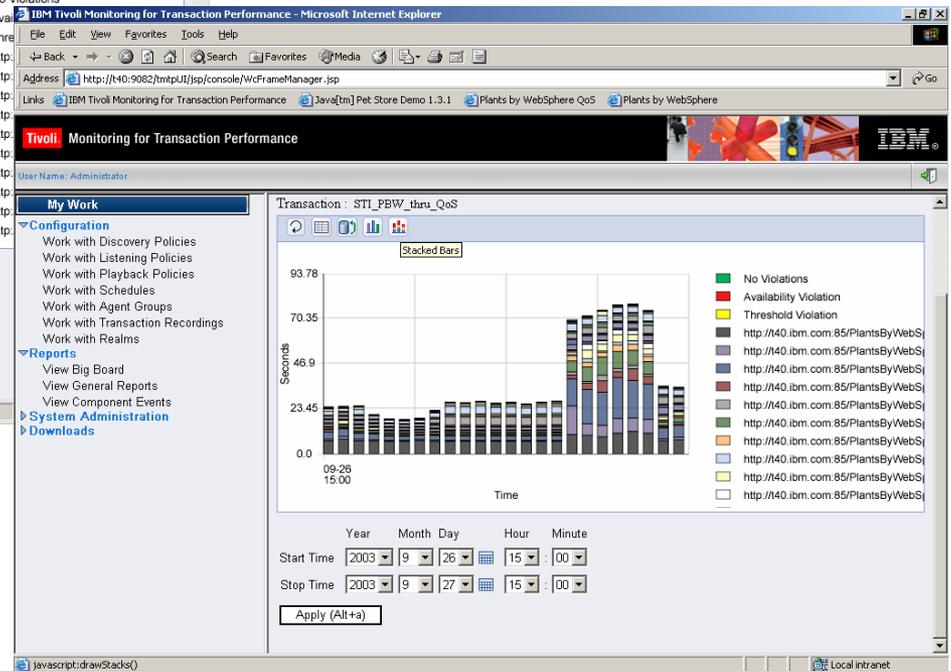


# STI的交易性能报告

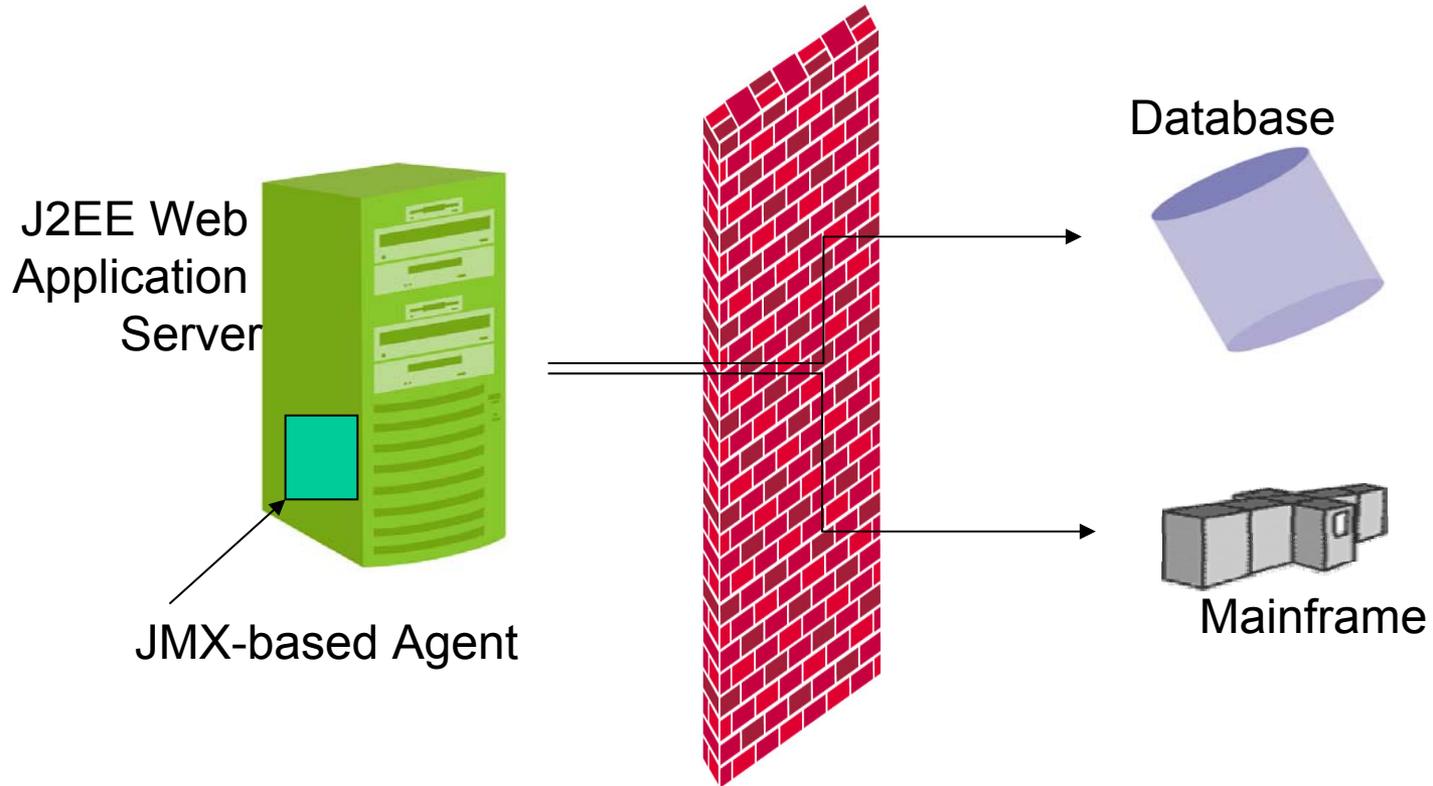


24 Hour view of Transaction availability

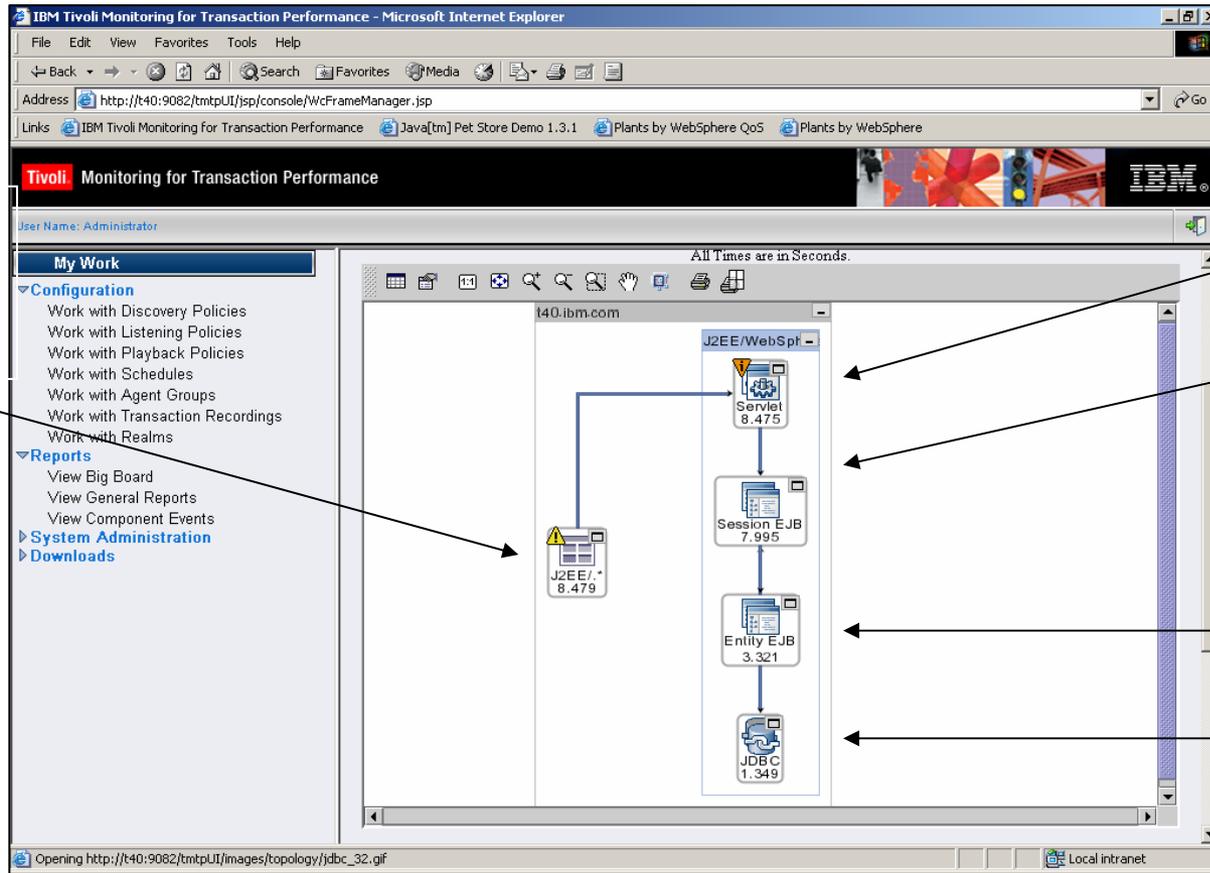
Same report showing Transaction URLs



# J2EE 交易分解



# J2EE 交易分解



J2EE  
Transaction  
Time: 8.479s

Servlet: 8.475s

Session  
Bean: 7.995s

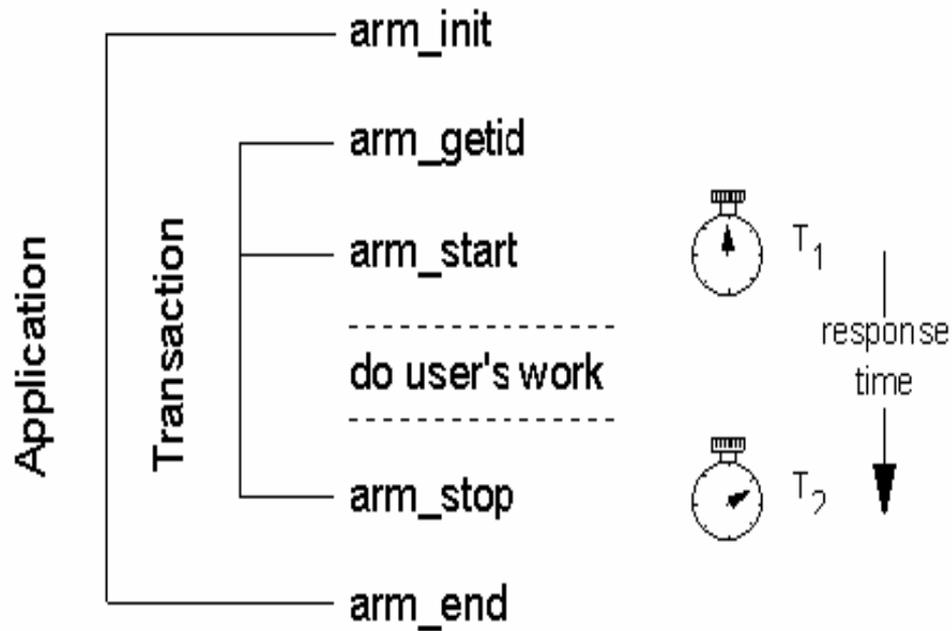
Entity  
Bean: 3.321s

JDBC  
Call: 1.349s

## ARM介绍

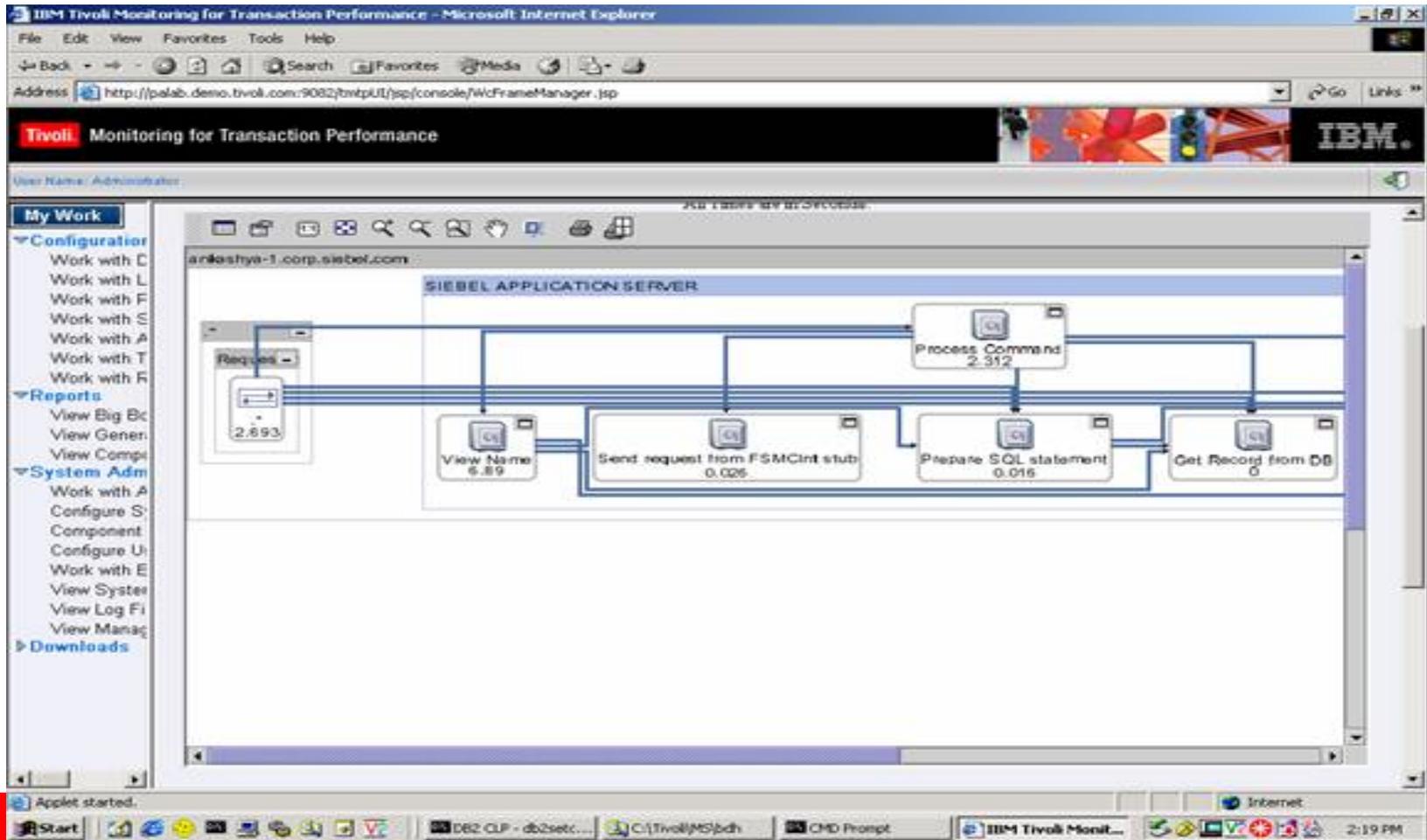
- ARM（Application Response Measurement）是监控应用交易响应时间的API
- ARM能够跨多台服务器对交易进行关联，提供了生成交易拓扑和快速定位问题的能力
- 为使用ARM，应用必须在交易边界调用ARM API
  - ▶ 基于策略enable和disable
- ITCAM for RTT支持ARM 2.0和4.0标准

# ARM 2.0 API示例



# Generic ARM: Siebel 7.7支持ARM

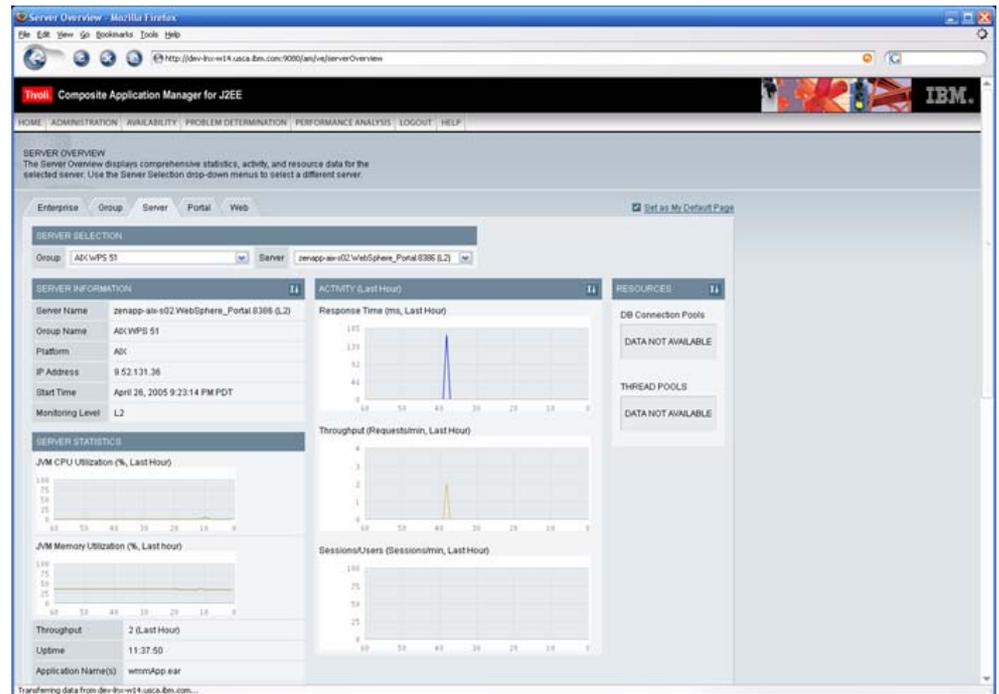
- Siebel拓朴视图
- 通过ITCAM for RTT分析Siebel应用
- Siebel应用故障根源分析



# 针对WebSphere/J2EE的深入诊断和分析

## IBM Tivoli Composite Application Manager for WebSphere/J2EE

- 降低**WebSphere/J2EE**平台的宕机时间
  - ▶ 它是一个深入的，实时的解决方案 (监测，分析，修复)
  - ▶ 它可以深入到语句级进行监控并查找错误，极有助于快速定位错误并对其进行修复
  - ▶ 它可以提高对应用层问题的分析能力—快速判定解决问题的路径
- 前瞻性的预防问题的发生
  - ▶ 预测新的应用对资源的占用情况
  - ▶ 图形化的界面直观的展现出系统中资源占用情况及趋势分析
- 跨平台的解决方案
  - ▶ 它是一个成熟的解决方案，可对IMS, CICS, MQ, J2EE 和 WebSphere Portal进行监控



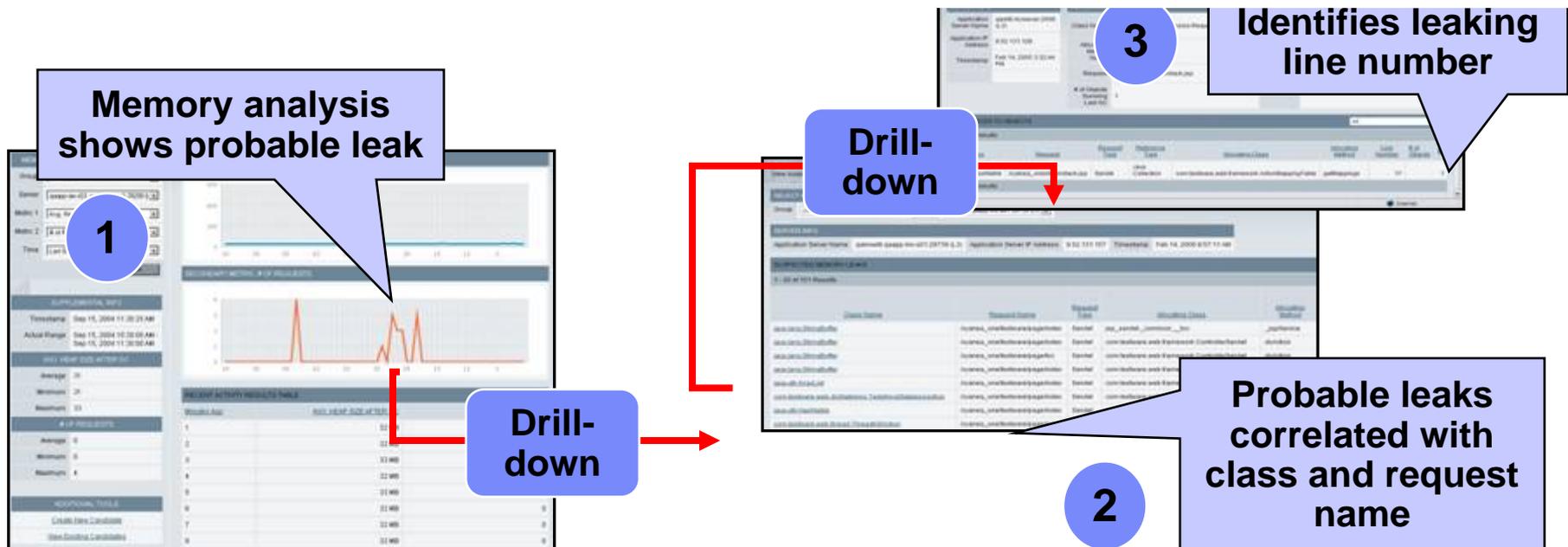
# 针对WebSphere/J2EE的深入诊断和分析

## IBM Tivoli Composite Application Manager for WebSphere/J2EE

### Memory leaks是最难以隔离和诊断的问题之一

#### How The Tool Works

- (1) Collect and compare key indicators such as JVM heap free, garbage collection cycles, request rates and resource consumption patterns associated with memory leaks and related problems
- (2) Drill-down analysis to provide information about specific, long-lived objects in JVM heap
- (3) The allocating classes containing the leaking code segments



# 用户案例 — TravelSky

## 用户面临的问题

- 网上应用运行不稳定，每周重起一次
- 应用常常响应缓慢
- WebSphere专家对代码进行了数周的分析，解决了部分问题

## 使用的产品

- IBM Tivoli Composite Application Monitor for WebSphere

## 效果

- 花费两个小时安装并检测业务系统，找到五个问题，并迅速解决三个。
  - 用户请求响应时间过长
  - 内存溢出。
  - DB连接设置不合理
  - GC消耗过多CPU
  - 无效线程过多

新版本应用运行稳定性大幅提高。



# IBM Tivoli Composite Application Manager产品家族

## 交易监控 响应时间 故障隔离

- 从用户体验的角度监控端到端交易
- 追踪交易流
- 隔离故障部件

## 应用监控 深入诊断 跨系统关联分析

- 应用和中间件诊断
- 应用性能分析
- 深入到代码级的分析

## 资源监控 应用服务器监控 自动化响应

- 对HTTP、J2EE以及数据库和系统资源的监控
- 应用资源消耗分析
- 负载趋势分析

- ITCAM for Response Time Tracking (ITCAM for RTT)
- ITCAM for Response Time (ITCAM for RT)
- ITCAM for Internet Service Monitoring (ITCAM for ISM)

- ITCAM for WebSphere
- ITCAM for J2EE

## SOA构架下的 服务性能视图 服务拓扑 调用性能

- ITCAM for SOA

- ITCAM for Web Resources
- IBM Tivoli Monitoring 家族



IBM Software Group

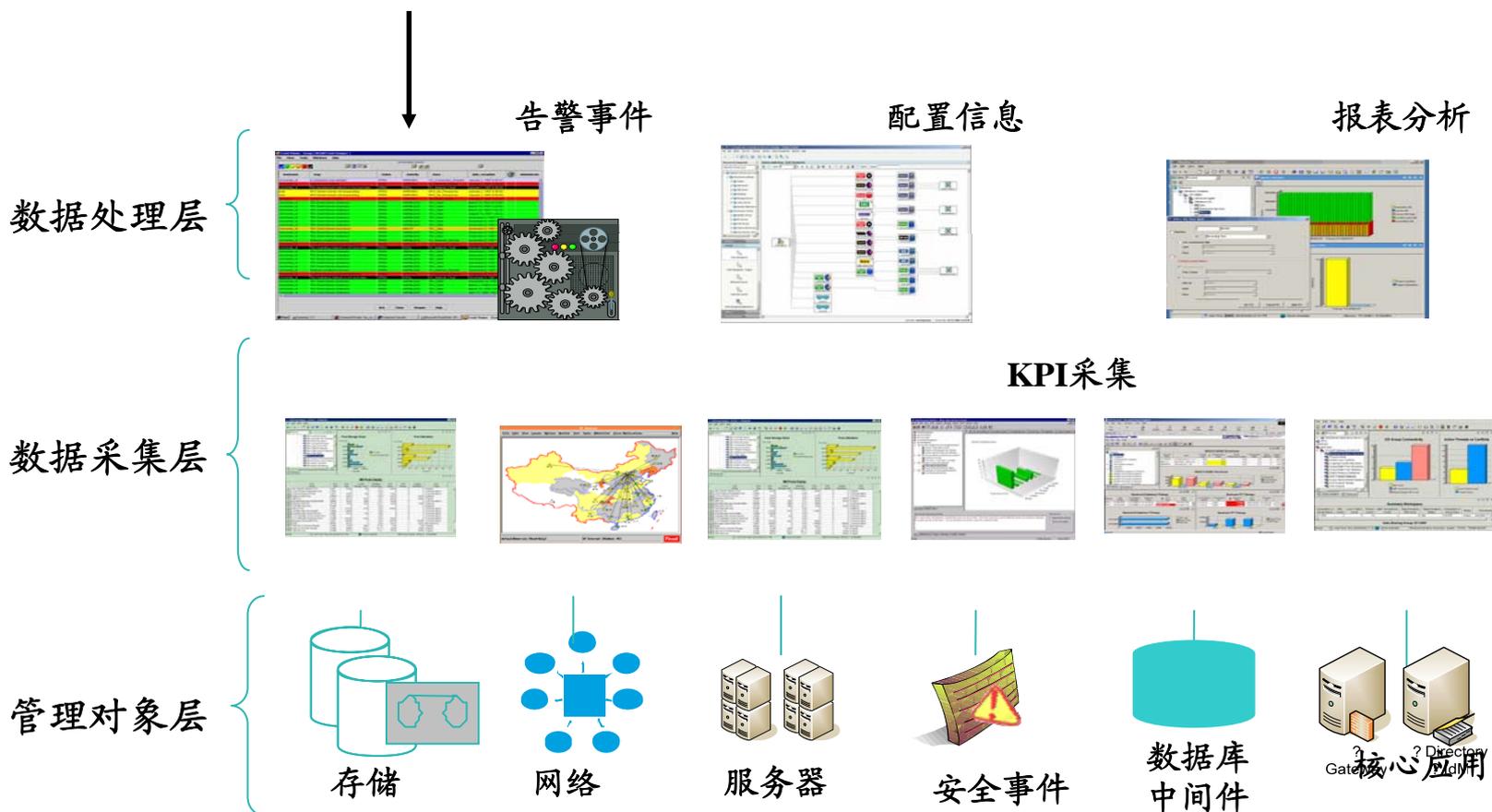
# 事件管理



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# IBM Tivoli运维管理总体架构

## Tivoli Netcool Omnibus

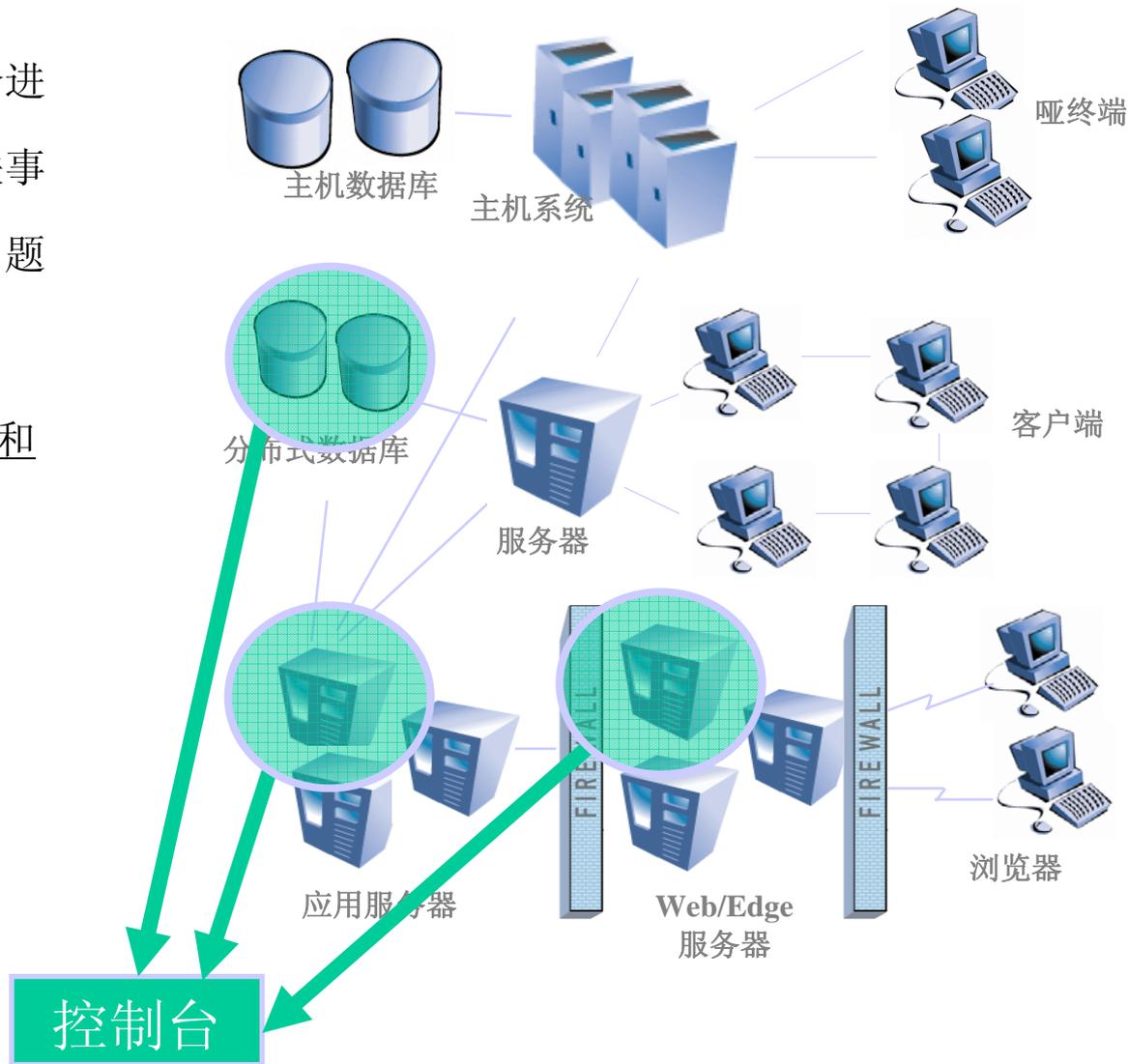


# 进行跨资源的管理事件关联分析

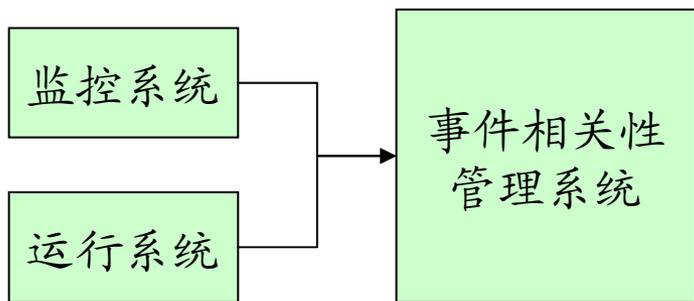
- 对应用和其他资源集合进行识别，通告和修正
- 从多个资源收集并相关事件
- 通过问题签名来确定问题根源
- 集中地自动修复

增加遍布全企业的可用性和性能

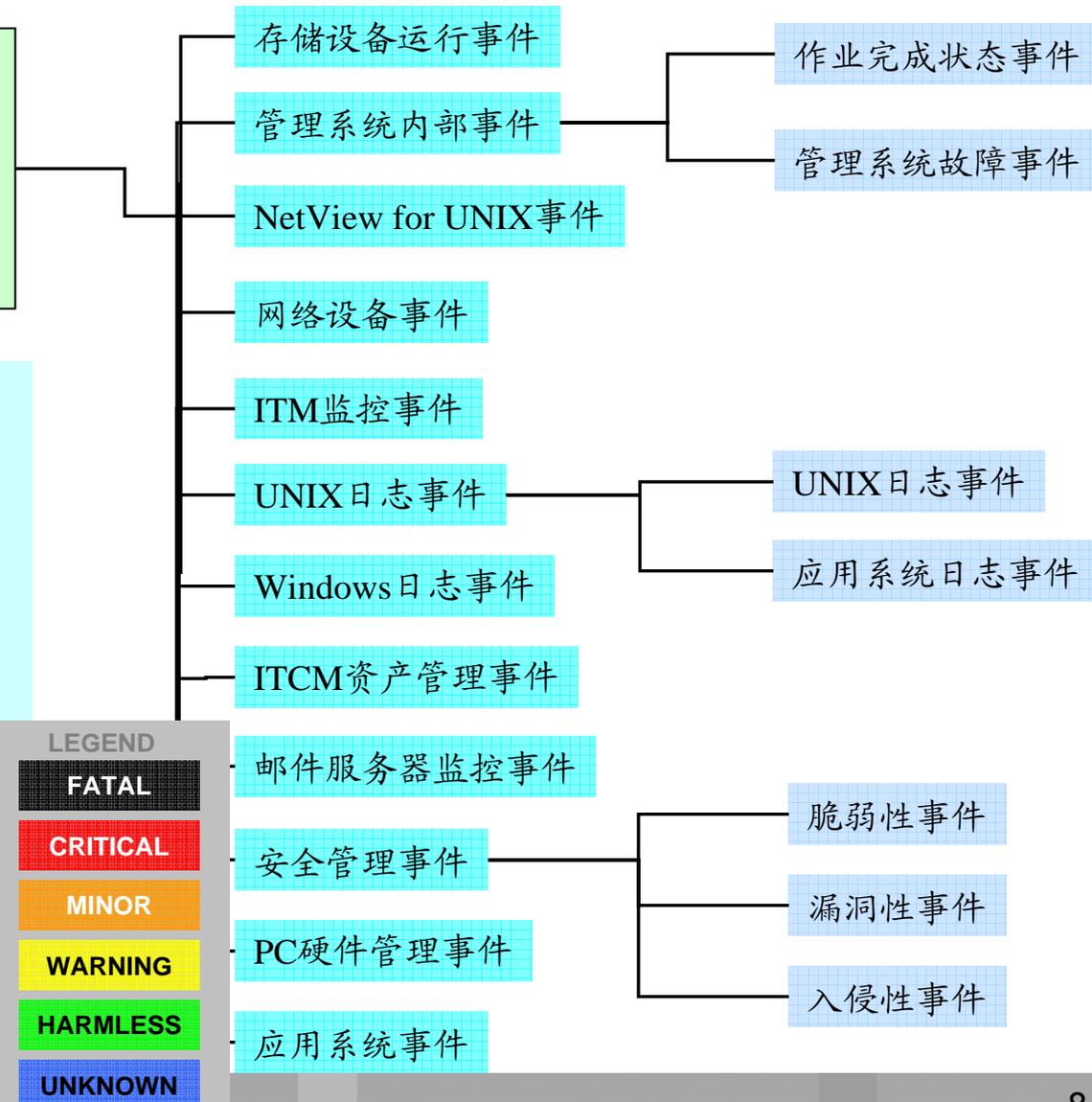
- ▶ 网络
- ▶ 分布系统
- ▶ 主机
- ▶ 中间件
- ▶ 应用



# Tivoli事件管理系统



- 事件过滤与累加
- 事件模式识别与相关性链接
- 事件延时处理
- 事件自动升级
- 由变更触发的事件连锁处理
- 配置信息插入

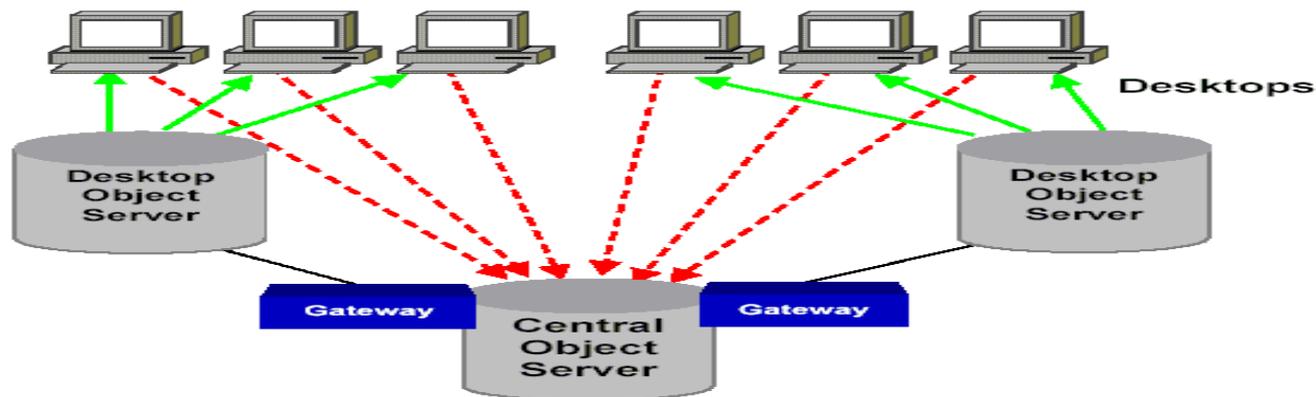


LEGEND

FATAL
CRITICAL
MINOR
WARNING
HARMLESS
UNKNOWN

## 高效的事件管理核心 -- Omnibus

- 高效的事件管理服务器，保障整个管理系统的稳定运行
- 全面的网络、安全信息采集和管理能力



### Netcool ObjectServer Benchmark测试:

每天处理3百万条事件的吞吐率, 200个并发用户, 响应时间 < 2.5秒

测试公司: McClellan Consulting

主要从事深入分析新兴的网络技术工作。

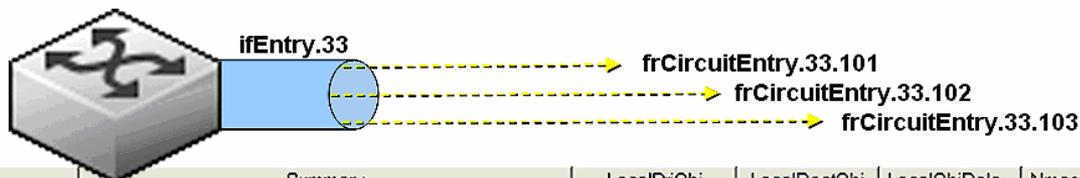
提供客观的分析结果方便了最终用户对网络新技术的评估

benchmark 分析技术和经验来自于与哈佛大学的Scott Bradner  
(哈佛的网络设备测试实验室)的合作研究

# 深入的故障关联，帮助定位根源故障点

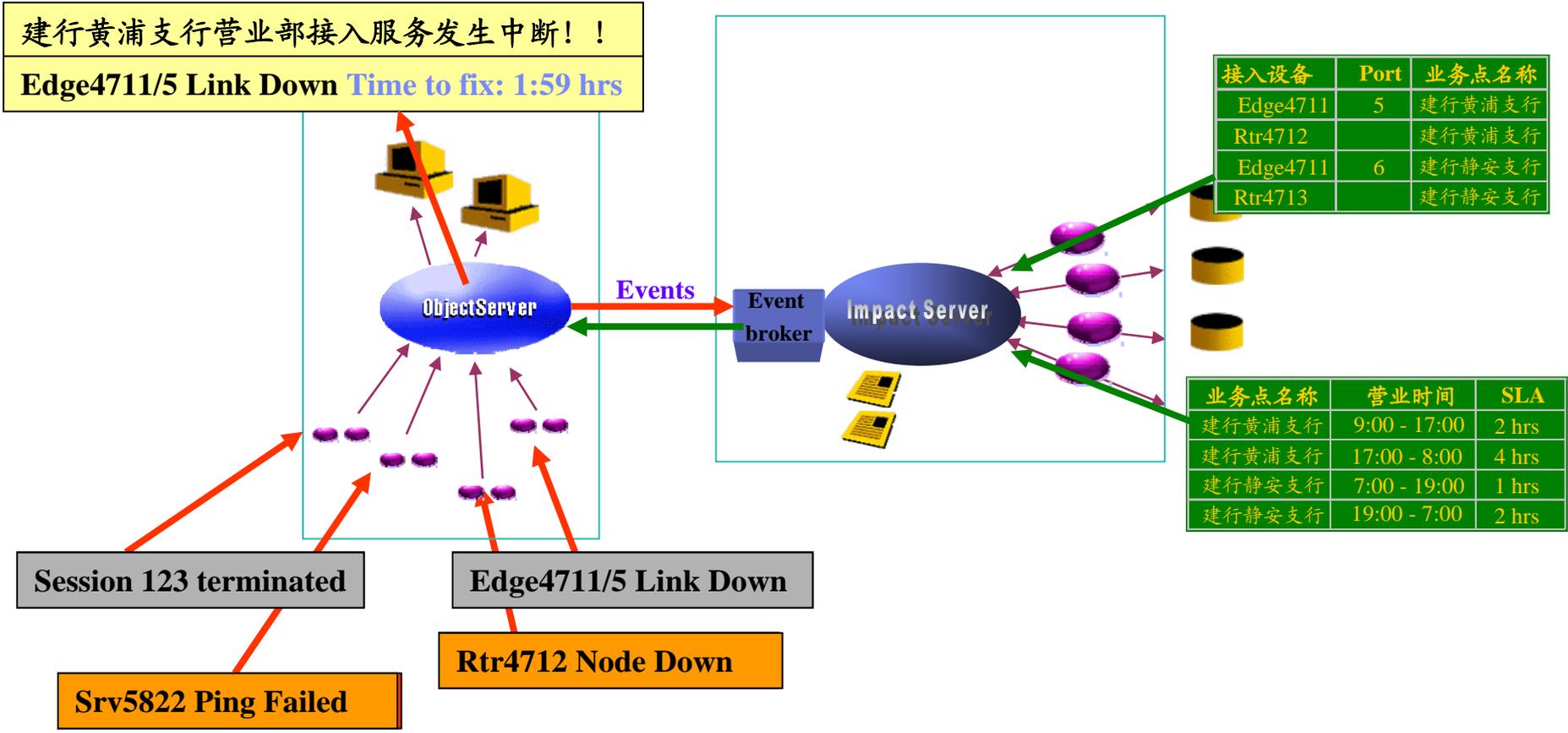
- 自动故障/恢复关联
- 自动基于拓扑连接的故障根源点定位
  - ▶ 物理端口故障导致逻辑端口报警
  - ▶ 上层连接设备故障导致下级设备报警
  - ▶ 板卡故障导致端口报警
  - ▶ 物理资源故障导致逻辑协议，如路由报警
- 灵活的策略编辑，定义事件的关联策略

10.1.1.3	SYSLOG-cisco-ios-DIAG-SP-NO_TEST	Singularity	Module 2: No test to run
10.1.1.3	SYSLOG-cisco-ios-OIR-SP-REMCARD	Root Cause	Card removed from slot 2 in interfaces disabled
10.1.1.3	SYSLOG-cisco-ios-OSPF-ADJCHG	Symptom	Process 100 Nbr 10.1.253.1 on Serial2/0/0 from FULL to DOWN Neighbor...
10.1.1.3	SYSLOG-cisco-ios-OSPF-ADJCHG	Symptom	Process 100 Nbr 10.1.253.1 on Serial2/1/0 from FULL to DOWN Neighbor...
10.1.1.3	SYSLOG-cisco-ios-OSPF-ADJCHG	Symptom	Process 200 Nbr 10.1.254.20 on Serial2/0/3:0 from FULL to DOWN Neighbor...



Node	Summary	LocalPriObj	LocalRootObj	LocalObjRela...	NmosCauseType
203.198.220.95	Frame Relay Virtual Circuit Inactive (ifIndex: 33, DLCI: 101)	frCircuitEntry.33...	ifEntry.33	3	Symptom
203.198.220.95	Frame Relay Virtual Circuit Inactive (ifIndex: 33, DLCI: 102)	frCircuitEntry.33...	ifEntry.33	3	Symptom
203.198.220.95	Frame Relay Virtual Circuit Inactive (ifIndex: 33, DLCI: 103)	frCircuitEntry.33...	ifEntry.33	3	Symptom
203.198.220.95	Link Down, Administratively (Physical port: fr.1.2)	ifEntry.33	ifEntry.33	1	Root Cause

# Impact – 业务关联影响分析示例



# Impact – 业务关联影响分析示例

Active Event List Window - Microsoft Internet Explorer

Address: http://svr1-o:8000/AELView?entity=pinliangju&datasource=NCOM5

http://svr1-o:8000/AccessEvent/

文件 编辑 显示 警报 工具 帮助

AccessEvent IPMAN

位置	警报组	警报键码	项目名称	上网方式	所属区局	M5200	M5200端口	6509端口	VID	广域网设备本端
xinlong	LINE_DOWN	Serial2/0	鑫隆公寓	PPPoE	东区局	平凉局	0/4	控江6509/1-3/12	2038	218.1.32.194/24
xinlong	LINE_DOWN	Serial3/0	鑫隆公寓	PPPoE	东区局	平凉局	0/4	控江6509/1-3/12	2038	218.1.32.194/24
taopu8cun	CONFIG		桃浦八村	PPPoE	北区局	甘泉局	2/2	甘泉6509/1-4/01	2034	218.1.35.72/30

接入故障源头追溯与业务影响关联

1 2 全部事件

3行已插, 3行已更新, 和 0行已删除。 root svr1-o:8000

小应用程序 com.micromuse.wave.applets.ael.AEL started Local intranet

# 事件相关及自动化的总控台

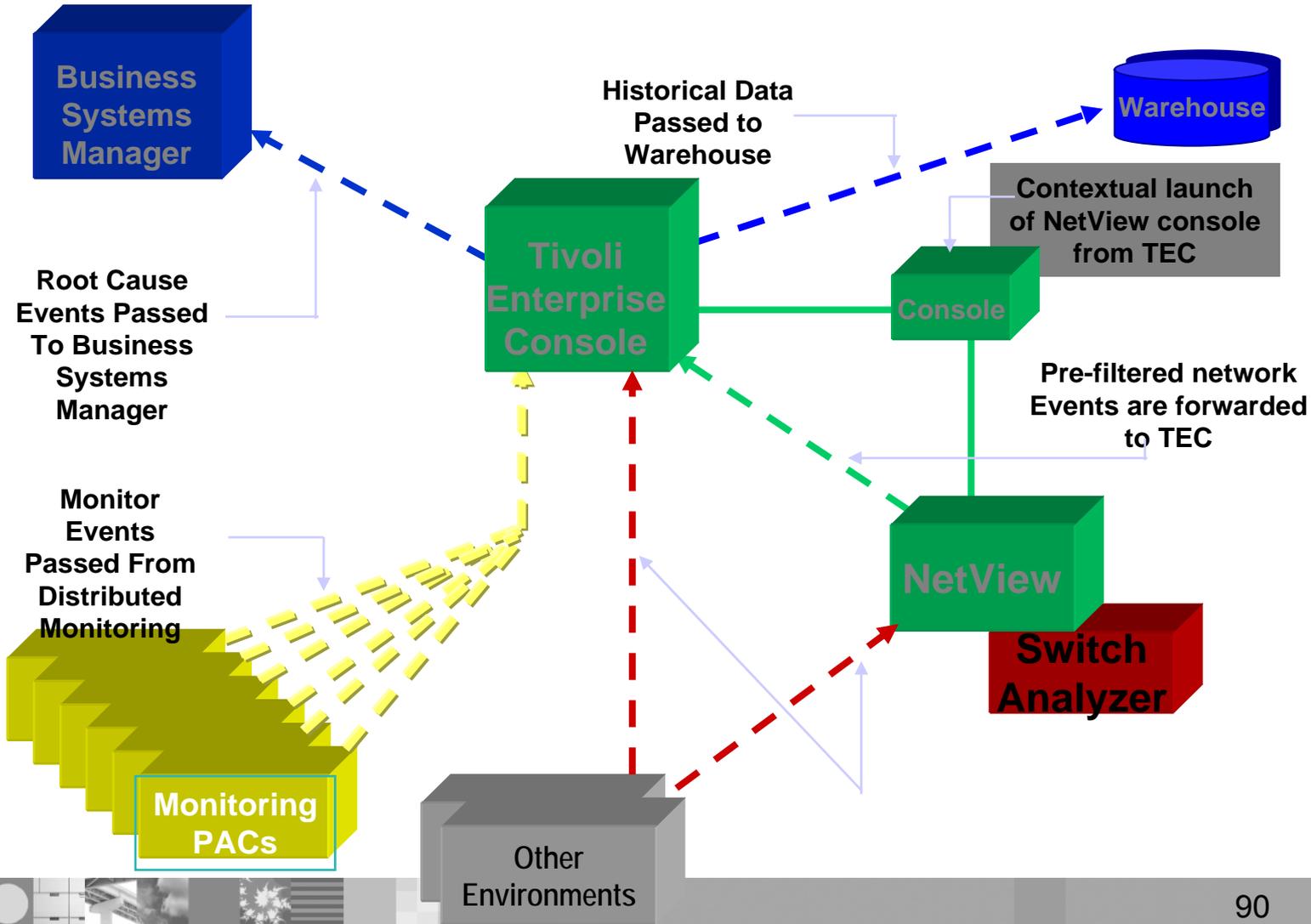
## IBM Tivoli Enterprise Console

- 业界主导的事件处理系统
- 具备综合的事件集成能力和多重的压力抗衡机制
- 提供企业级的事件关联能力
  - ▶ 图形化的简单过滤设定
  - ▶ 基于SQL的过滤条件设定
  - ▶ 复杂的跨多种资源事件管联扩展机制
- 允许进行自动事件告警和自动响应，支持客户自定义的任务
- 预先集成的网络管理和诊断功能
  - ▶ 可加载的网络/系统事件关联分析规则库
  - ▶ 创建单一的系统和网络诊断分析机制



# Tivoli 集成的事件管理

系统和网络的事件关联带来真正的故障根源分析





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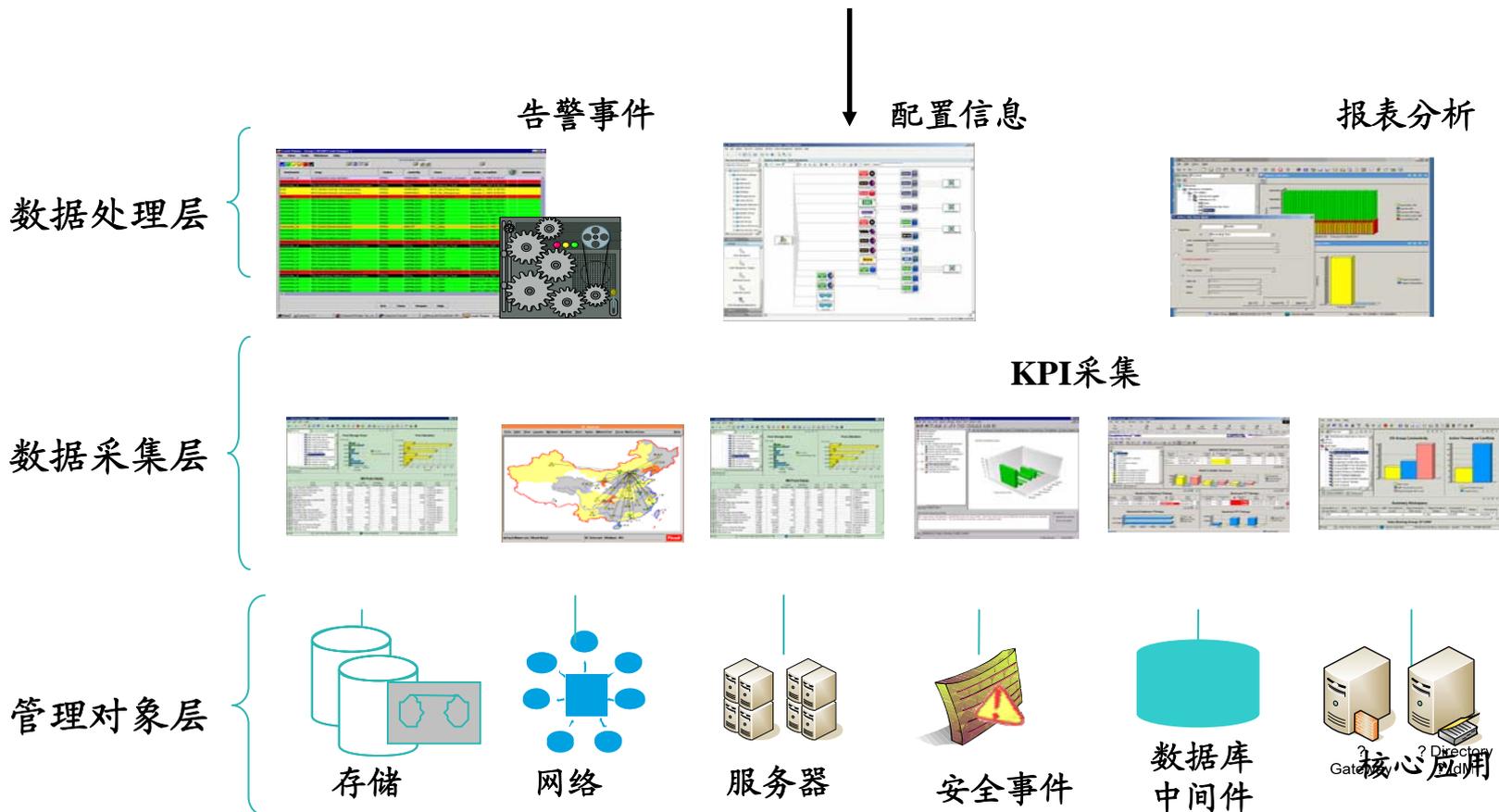
# 配置管理



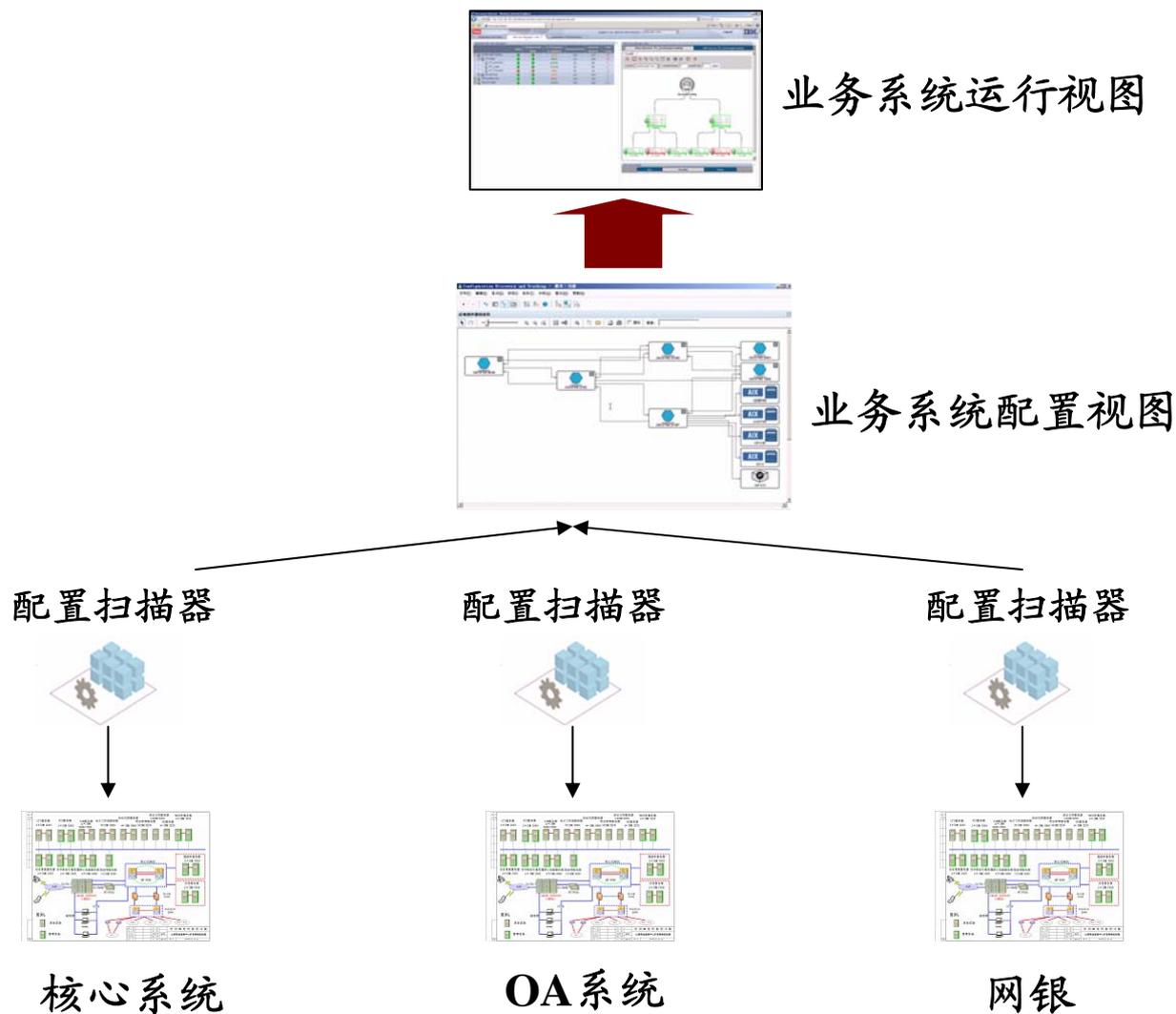
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# IBM Tivoli运维管理总体架构

## Tivoli Application Dependency Discovery Manager



# 基于业务系统的配置管理建立



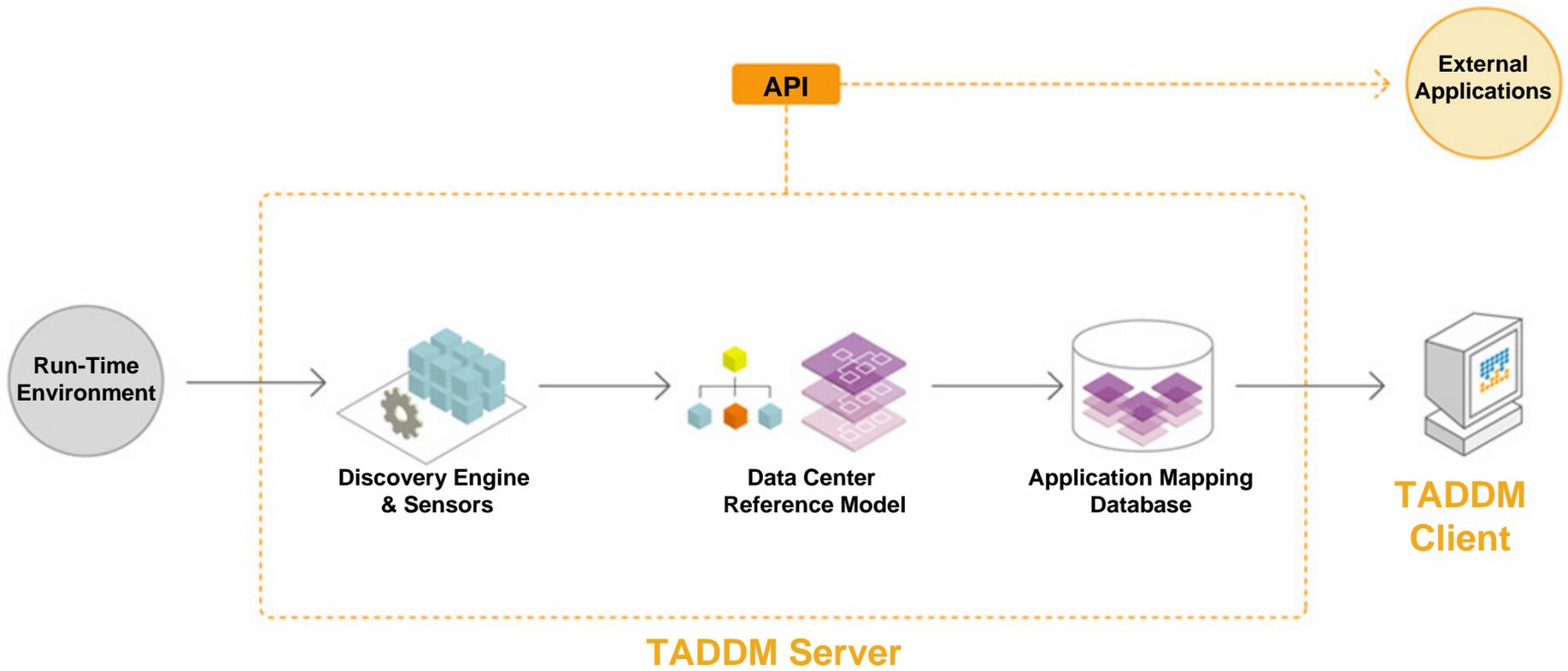
## 配置管理的价值

- ✓了解自己的IT家底
  - 定期自动发现整个IT环境中的IT资源配置信息
- ✓评估IT资源变更对业务的影响
  - 提供IT资源之间的关系和依赖性
- ✓一致地跟踪、管理和审计IT资源配置信息，并创建报表
  - 提供信息集成平台，实现ITIL最佳实践的流程管理核心



# IT服务管理对象的自动发现技术

## Tivoli Application Dependency Discovery Manager



# 应用与业务的配置细节

The screenshot displays two instances of the IBM Tivoli Application Dependency Discovery Manager interface. The top instance shows the 'Change History: Results' for 'Application Infrastructure' with the following table:

Component	Type	Change	Date	Attribute	Old Value	New Value	Id
histrionix.lab.collation.net:3880	Apache	Updated	12/23/2005 17:01 PST				17033
ApacheWebContainer	ApacheWebContainer	Updated	12/23/2005 17:01 PST	maxClients	150	100	17036
conf/httpd.conf	ConfigFile	Updated	12/23/2005 17:01 PST				17035
conf/httpd.conf	ConfigFile	Updated	12/23/2005 17:01 PST	checksum	7k+bXfWfHymZPCLhb6...	ZgqDJYA11uAR221qu...	17035
conf/httpd.conf	ConfigFile	Updated	12/23/2005 17:01 PST	content	#### httpd.conf -- A...	#### httpd.conf -- A...	17035
conf/httpd.conf	ConfigFile	Updated	12/23/2005 17:01 PST	size	36277	36313	17035
conf/httpd.conf	ConfigFile	Updated	12/23/2005 17:01 PST	lastModified	1096390809000	1135383001000	17035
ApacheWebContainer	ApacheWebContainer	Updated	12/23/2005 17:01 PST	keepAliveTimeout	15	5	17036

The bottom instance shows the 'Change History: Results' for 'Windows Operating System' with the following table:

Component	Type	Change	Date	Attribute	Old Value	New Value	Id
adonis.lab.collation.net	Windows Computer System	Updated	12/23/2005 17:45 PST				17901
adonis.lab.collation.net	WindowsOperatingSystem	Updated	12/23/2005 17:45 PST				17902
Windows Management Inst...	WindowsService	Updated	12/23/2005 17:45 PST	processId	3212	6684	30116

Both screenshots include a 'Diff' button and show the user 'smartoperator' with a current view of '01/31/2006 11:16 PST'. The top screenshot also features a network diagram below the table showing connections between various servers and services.

# 支持的发现对象

- **Web Servers**
  - ▶ Apache 1.x, 2.x
  - ▶ iPlanet 4.x
  - ▶ iPlanet/SunOne 6.x
  - ▶ IIS 5.x, 6.x
  - ▶ IBM HTTP Server 6.x
- **Application Servers**
  - ▶ WebSphere 4.x, 5.x
  - ▶ WebLogic 5.x, 6.x, 7.x, 8.x
  - ▶ JBoss 4.x
  - ▶ Apache Tomcat 4.x, 5.x
  - ▶ Lotus Domino 6.0, 6.5
- **Databases**
  - ▶ Oracle 8.x, 9.x, 10g/l
  - ▶ Sybase ASE 12.x
  - ▶ Sybase IQ 12.x
  - ▶ DB2 7.x, 8.x
  - ▶ MS SQL 2000
  - ▶ PostGRES SQL 7.x, 8.x
  - ▶ MySQL 4.x
- **Applications**
  - ▶ PeopleSoft
  - ▶ SAP
  - ▶ Seibel
  - ▶ Netegrity
  - ▶ Remedy
- **Universal Data Sensor for 3rd Party Applications**
  - ▶ CiscoWorks 2000
  - ▶ MS SMS 2003
- **Services**
  - ▶ MS Active Directory 2000, 2003
  - ▶ SunOne Directory Server 5.x
  - ▶ WFS (Samba) 3.x
- **Supported Hosts/OS**
  - ▶ Solaris 2.6, 2.7, 2.8, 2.9
  - ▶ Red Hat Linux, Suse Linux
  - ▶ AIX 4.x, 5.x
  - ▶ HPUX 11.0, 11i
  - ▶ Windows NT 4.0, 2000, 2003
- **Routers and Switches**
  - ▶ Cisco Routers IOS10.3+
  - ▶ Cisco Switches IOS 10.3+, CAT OS
  - ▶ Extreme Switches Summit 48/48i
  - ▶ HP Procurve Switches (SNMP supported)
- **Firewalls**
  - ▶ Cisco PIX 6.x
  - ▶ Netscreen Firewall (All)
  - ▶ Checkpoint Firewall (Nokia and Solaris installs)
- **Load Balancers**
  - ▶ Alteon Load Balancer 3.0+
  - ▶ F5 Big IP Load Balancer
  - ▶ F5 DNS Server
- **Storage Devices**
  - ▶ Emulex HBAs
  - ▶ Brocade Switches (SNMP supported)
  - ▶ EMC Symmetrix and Clarion series (EMC solution enabler 5.5 and 6.0)



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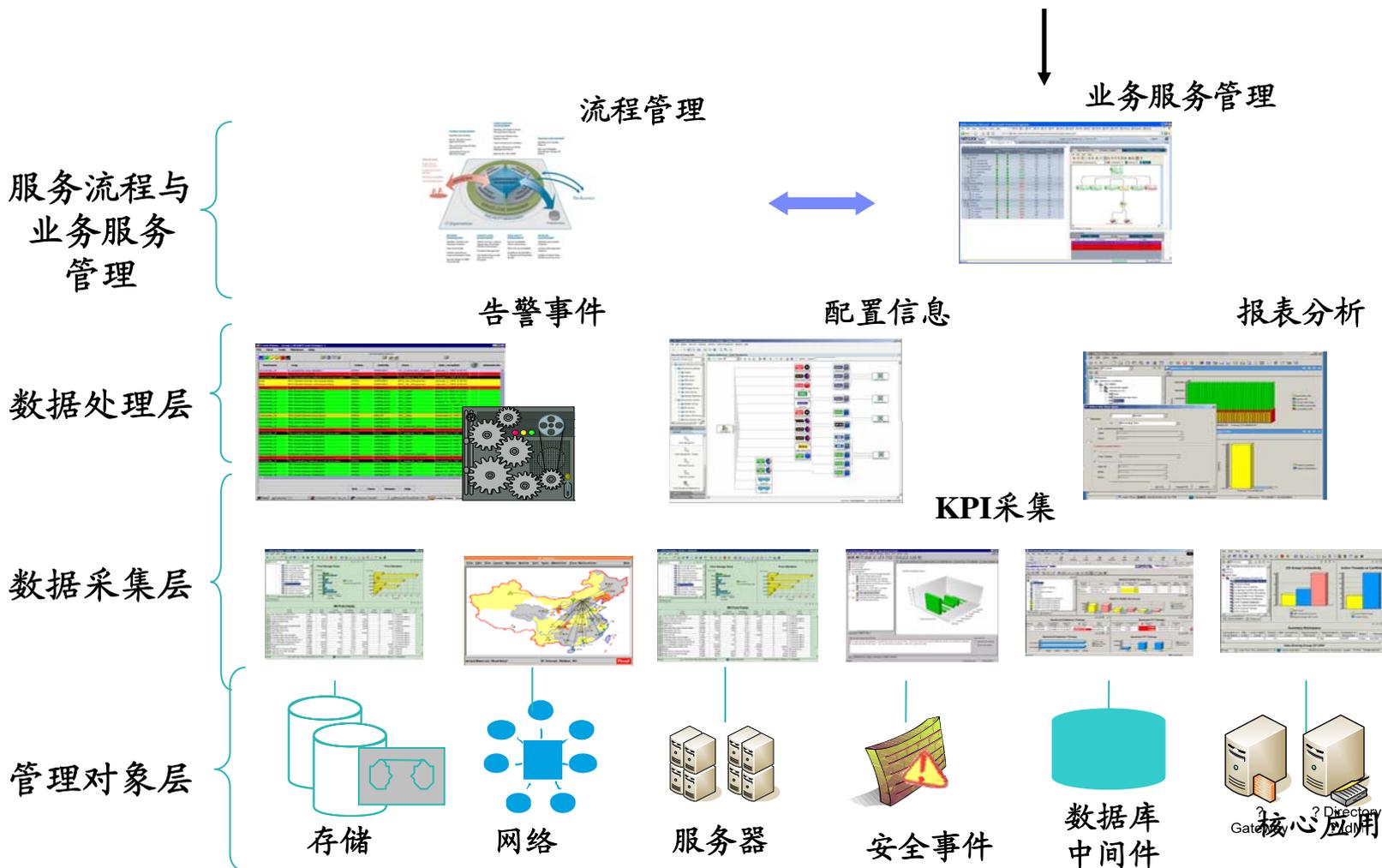
# 业务服务管理



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# IBM Tivoli运维管理总体架构

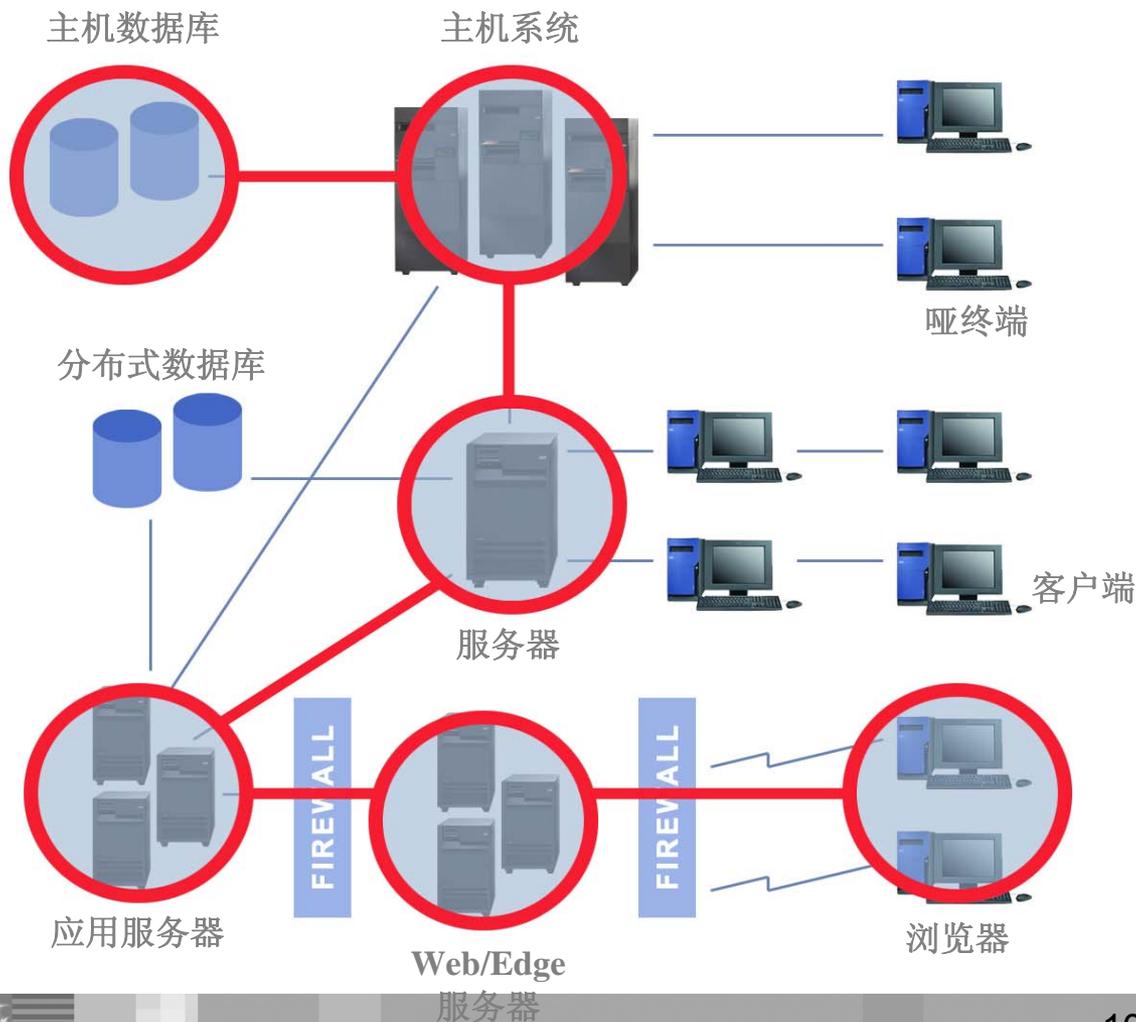
## Tivoli Business Service Manager



# 业务影响管理 --生成业务流程视图

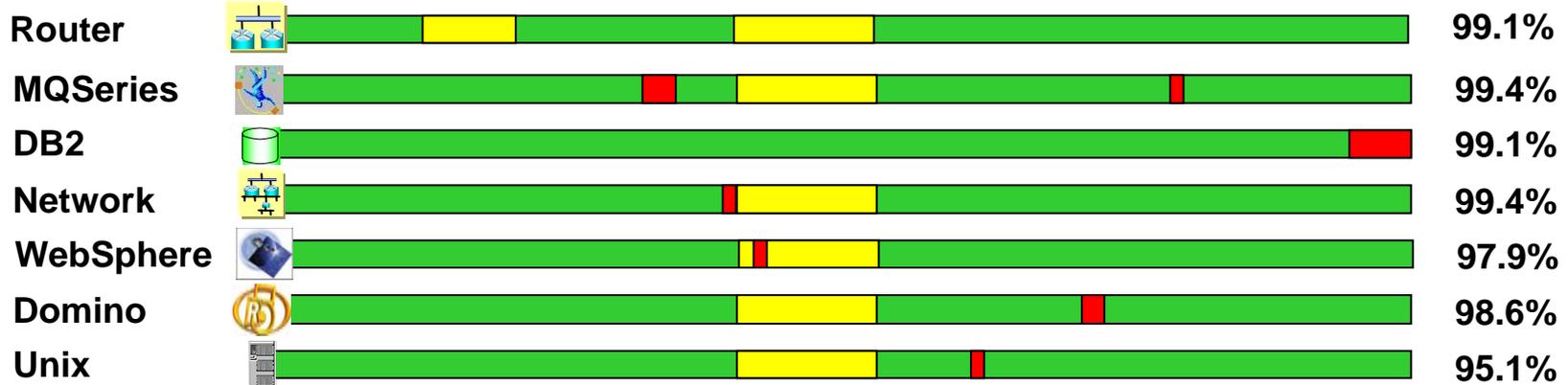
- 评估IT对业务的影响
  - ▶ 可用性
  - ▶ 响应时间
  - ▶ 管理用户期望的服务水平
- 签约, 评估, 和管理服务水平
- 分析历史数据并预测未来服务水平

通过前瞻式的确定IT对业务的影响, 最大化投资回报



# 从业务的角度看待问题...

## IT View



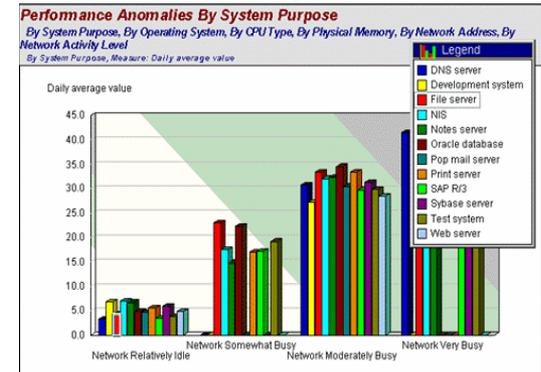
## Customer's Application



## Service Management Needs

- Setting Priorities
- Knowing What to Automate
- Impact Analysis
- Capacity Planning
- Measuring Service Levels

Delivering Value



# IBM Tivoli Business Service Manager

多视图导航

动态服务展现

基于角色的用户视图

The screenshot displays the IBM Tivoli Business Service Manager interface. On the left, the 'Equities Service Navigator' table lists various services and their performance metrics. On the right, the 'Service Canvas View' shows a hierarchical diagram of the 'yTrader\_London' service. Below the canvas, the 'Service Details' table provides further information on events and rules.

Service	State	Infrastructure State	% Throughput vs. Baseline	ResponseTime	Historical Baseline	Total Tickets
OnlineTrader	Green	Green	93%	463	432	125
London	Green	Green	92%	545	505	30
ET_CancelOrder	Red	Red	50%	122	61	0
ET_ChangeOrder	Green	Green	113%	125	141	0
ET_ExecuteBuyOrder	Yellow	Yellow	77%	127	98	0
ET_ExecuteSellOrder	Green	Green	122%	69	84	18
ET_GetQuote	Green	Green	150%	12	18	12
ET_Login	Green	Green	114%	90	102	0
New York	Green	Green	100%	373	374	38
Tokyo	Green	Green	88%	472	418	57
ExchangeTrading	Green	Green	62%	615	381	107
Chicago	Yellow	Yellow	54%	933	510	107
HongKong	Yellow	Yellow	85%	297	252	0
ET_Convert	Red	Red	46%	99	46	0
ET_Login	Green	Green	156%	101	157	0
ET_Transfer	Red	Red	50%	97	49	0
OnlineBanking	Green	Green	82%	424	349	4
Chicago	Green	Green	90%	299	271	0
HongKong	Green	Green	77%	550	428	14
ET_CheckAccountBalance	Green	Green	100%	81	81	0
ET_Deposit	Yellow	Yellow	69%	162	112	0
ET_Login	Yellow	Yellow	76%	307	235	0
ET_Transfer	Green	Green	0%	0	0	14

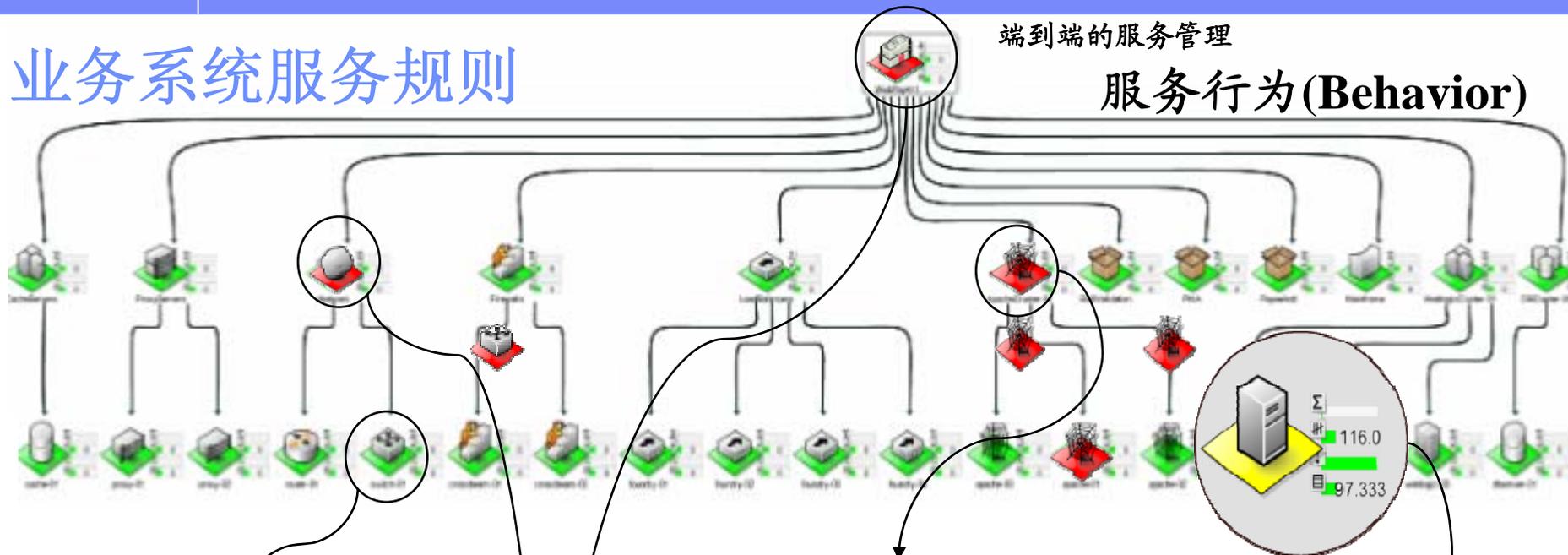
关键性能指标 (KPIs)

动态状态过滤

# 业务系统服务规则

端到端的服务管理

## 服务行为(Behavior)



### 基于状态事件的规则 (Event Based Status Rule)

状态的生成来自于:

- 进入的状态事件
- 外部业务数据

### 基于依赖性的规则一 (Dependency Rule % of children)

- 状态生成取决于子对象状况的百分比

### 基于子对象的规则一 (Dependency Rule Any child)

状态生成取决于子对象的状况

### 数学规则(Numerical Rules)

- 用于获得一个量化的数据来进行输出
- 响应时间、故障单数量等
- 数学聚合规则(Numerical Aggregation Rules)
  - 数据基于子对象的量化数据来进行计算后得到
  - 平局、总和、最大、最小、或者加权平均

## 例子： 服务状态 – Web Farm

一个Web仓库是由多个Web服务器构建。

Each Web server generates events. One such event is a WebServerStatus event—the event's *severity* indicates the Web server's status:

if Severity  $\geq$  5, Status = **Bad**

if Severity  $\geq$  3, Status = **Marginal**

...otherwise, Status = **Good**

A Web Farm's status aggregates the status of its Web servers

if  $>$  70% Web Servers Bad or Marginal (3 of 4), Status = **Bad**

if  $>$  30% Web Servers Bad or Marginal (2 of 4), Status = **Marginal**

...otherwise, Status = **Good**

实现：为Web服务器和Web Farm创建一个服务模板，

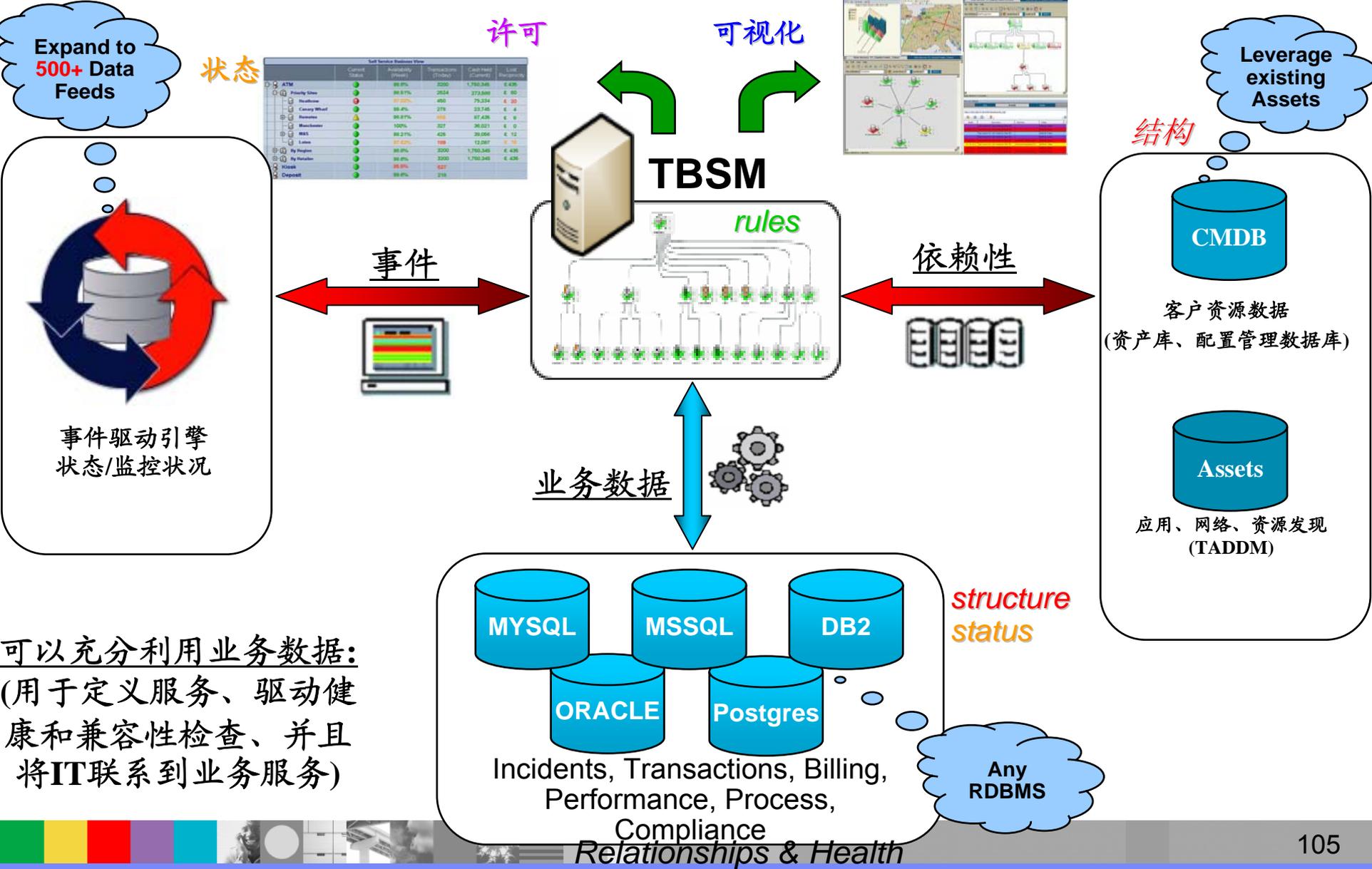
然后创建响应的服务实例



**Web Servers**  
**#1, #2, #3, and #4**

Node	AlertKey	AlertGroup	Severity	Class
WebServer1	:8080	WebServerStatus	5	0

# 业务管理IBM技术实现的技术架构



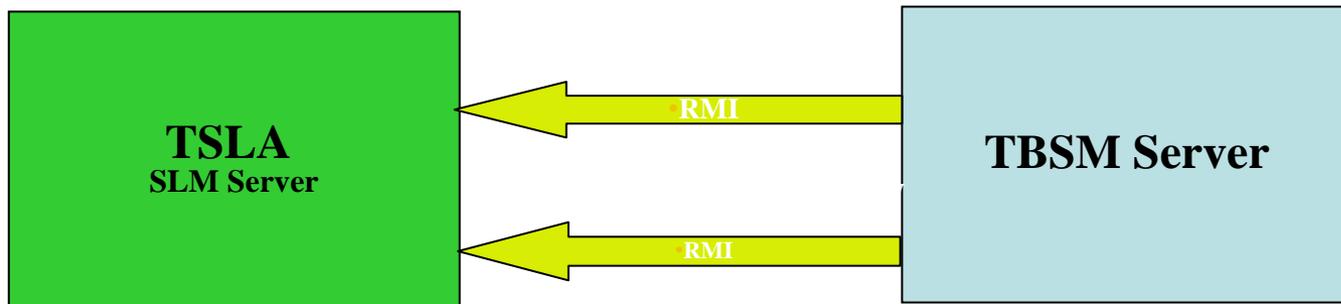
可以充分利用业务数据:  
(用于定义服务、驱动健康和兼容性检查、并且将IT联系到业务服务)

# TBSM和SLA管理的集成

- Tivoli Service Level Advisor
  - ▶ 提供SLA所需要历史报表和趋势分析
    - 定义、可视化、基于优先级的SLA管理
  - ▶ TBSM和SLA之间的双向状态传递

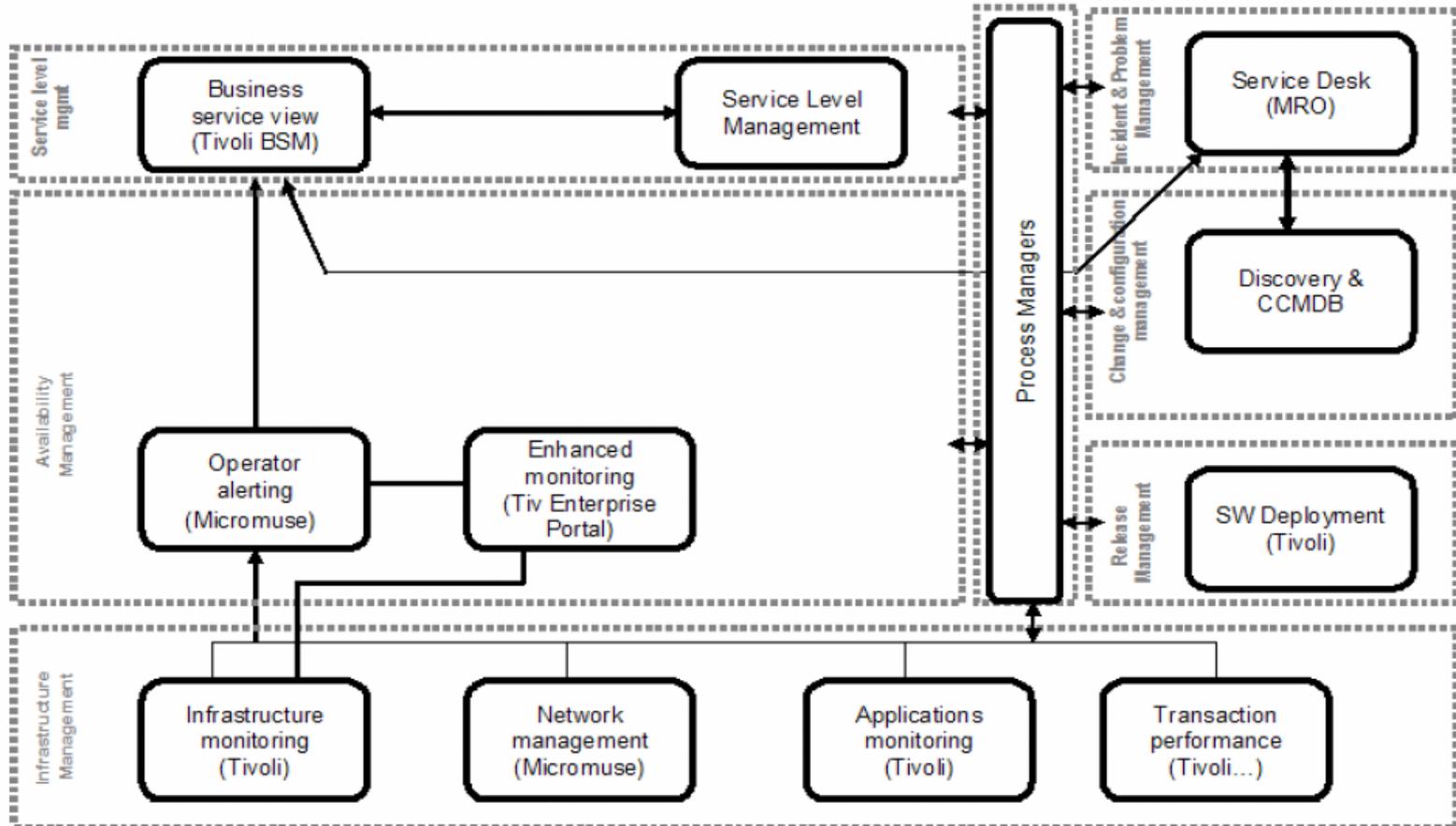
The image shows two screenshots of Tivoli software interfaces. The top screenshot is the 'Create Order' page in the Tivoli Service Level Advisor (TBSM) console, showing a 'Select Customer' section with a table of current customers and options to create a new customer or use an existing one. The bottom screenshot is a 'Report' page in the Tivoli Business Service Manager (TBSM) console, displaying a table of service level metrics for various applications and services.

Service	SLA						
First Month Building	0.00	0.00	0.00	0.00	0.00	0.00	0.00
First Month Financial	0.00	0.00	0.00	0.00	0.00	0.00	0.00
First Month Marketing	0.00	0.00	0.00	0.00	0.00	0.00	0.00
First Month Mortgage	0.00	0.00	0.00	0.00	0.00	0.00	0.00
First Month Trading	0.00	0.00	0.00	0.00	0.00	0.00	0.00



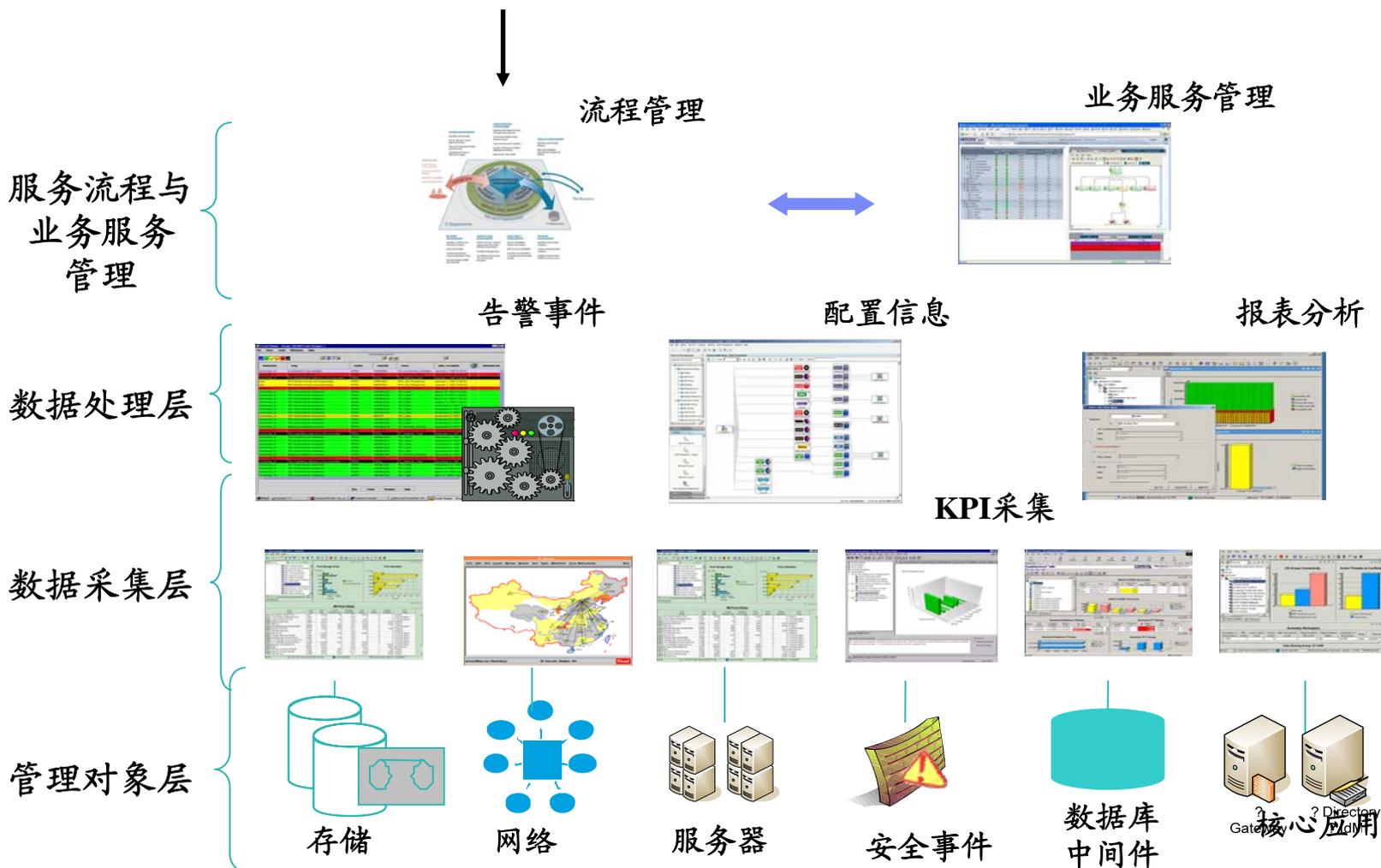
# TBSM和服务Desk流程管理系统的集成

- TBSM提供了业务层的告警信息到流程系统的集成

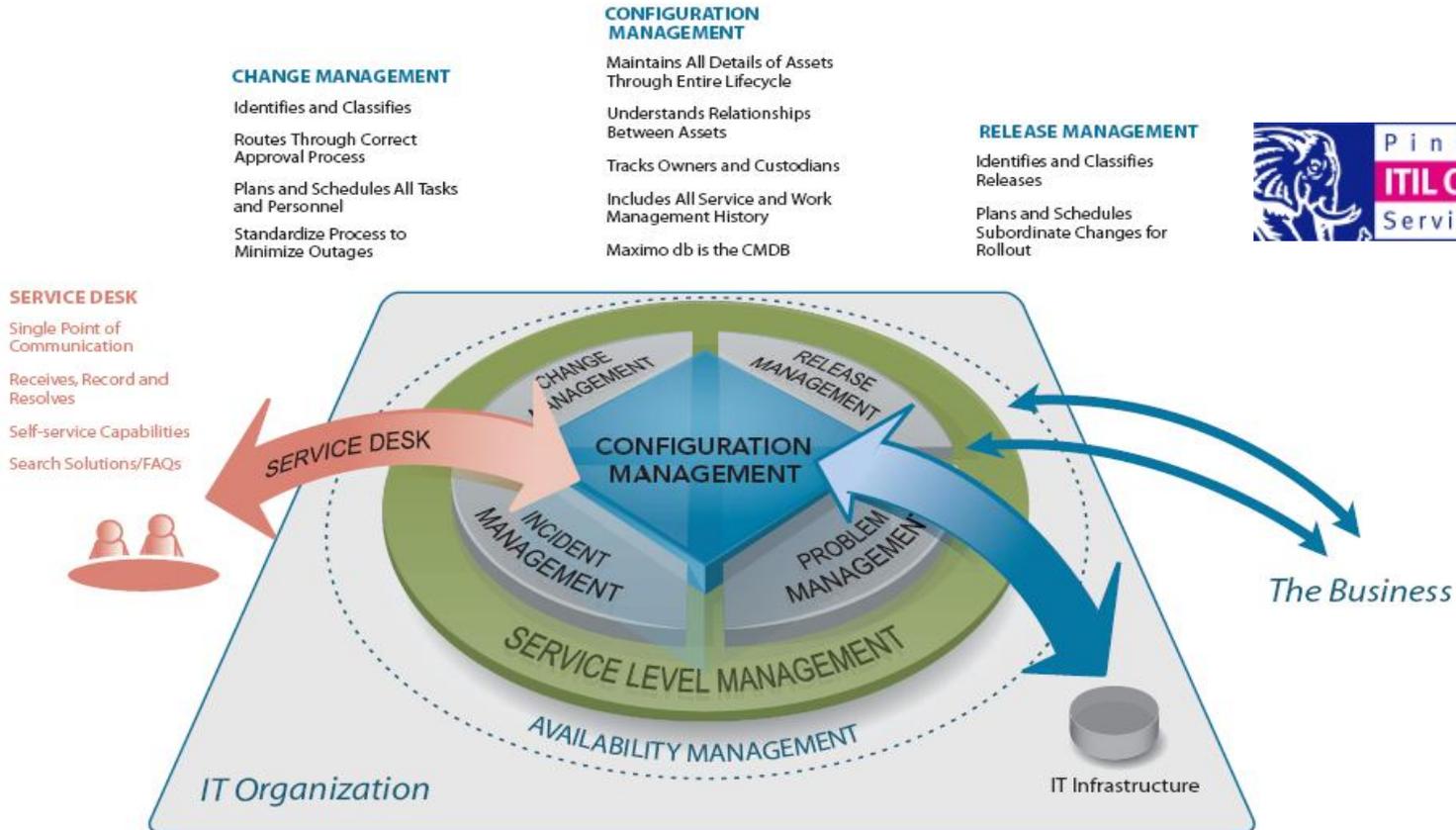


# IBM Tivoli运维管理总体架构

## Tivoli Service Desk

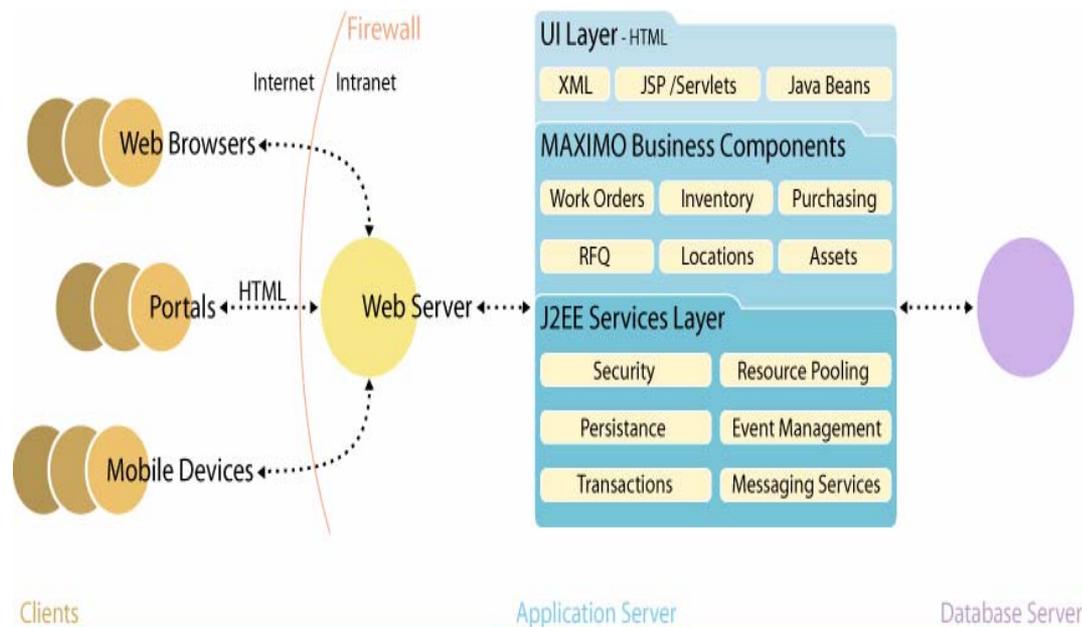


# Tivoli Service Desk支持 ITIL流程



# 先进的技术架构

- 纯J2EE架构系统，可方便跨平台
- 客户端全Web架构，方便系统维护与升级
- 采用Weblogic/WebSphere标准中间件
- 支持XML、Web Service
- 支持全面信息集成
- 图形化流程设计工具



# 灵活的用户个人门户定制

欢迎, ou shen | 转到 | 报表 | 启动中心 | 个人设置 | 退出 | 帮助

更改内容/布局 | 显示设置 | 更新“启动中心”

### Favorite Applications

- 员工汇报
- 快速汇报
- 工单跟踪

### Quick Insert

- Add Labor
- Insert Work Order
- Report Labor

### KPI List

Last run: 06-11-19 15:3:24 [更新](#)

状态	关键性能指标	实际情况	目标	差额
■	Work Orders Overdue	231	150	81
■	Actual Costs As A Percentage Of Estimated Costs (%)	0	90	-90
■	Actual Labour Hours As A Percentage Of Estimated Costs (%)	0	90	-90
■	Open Work Orders Waiting Approval	115	25	90
■	Actual to Plan Variance - 03 (%)	0	3	-3

### KPI Graph

上次运行: 06-11-19 15:3:23 [更新](#)

状态	上次读数	实际情况	目标	差额
■	401.26	401.26	80	321.26

Average Age of non-PM Work Order (xxy)

### Bulletin Board (0) 当前没有可供查看的公告栏信息。

### All open work where I am the owner

表类型: [BAR](#) 查看人: [Status](#)

Status	值	百分比 (%)
WAPPR	1	100

[列表视图](#)

### All Open Work Orders

表类型: [PIE](#) 查看人: [Work Type](#)

Work Type	值	百分比 (%)
未定义	130	76.02
EV	1	0.58
EM	8	4.68
PM	20	11.7
CM	12	7.02

[列表视图](#)



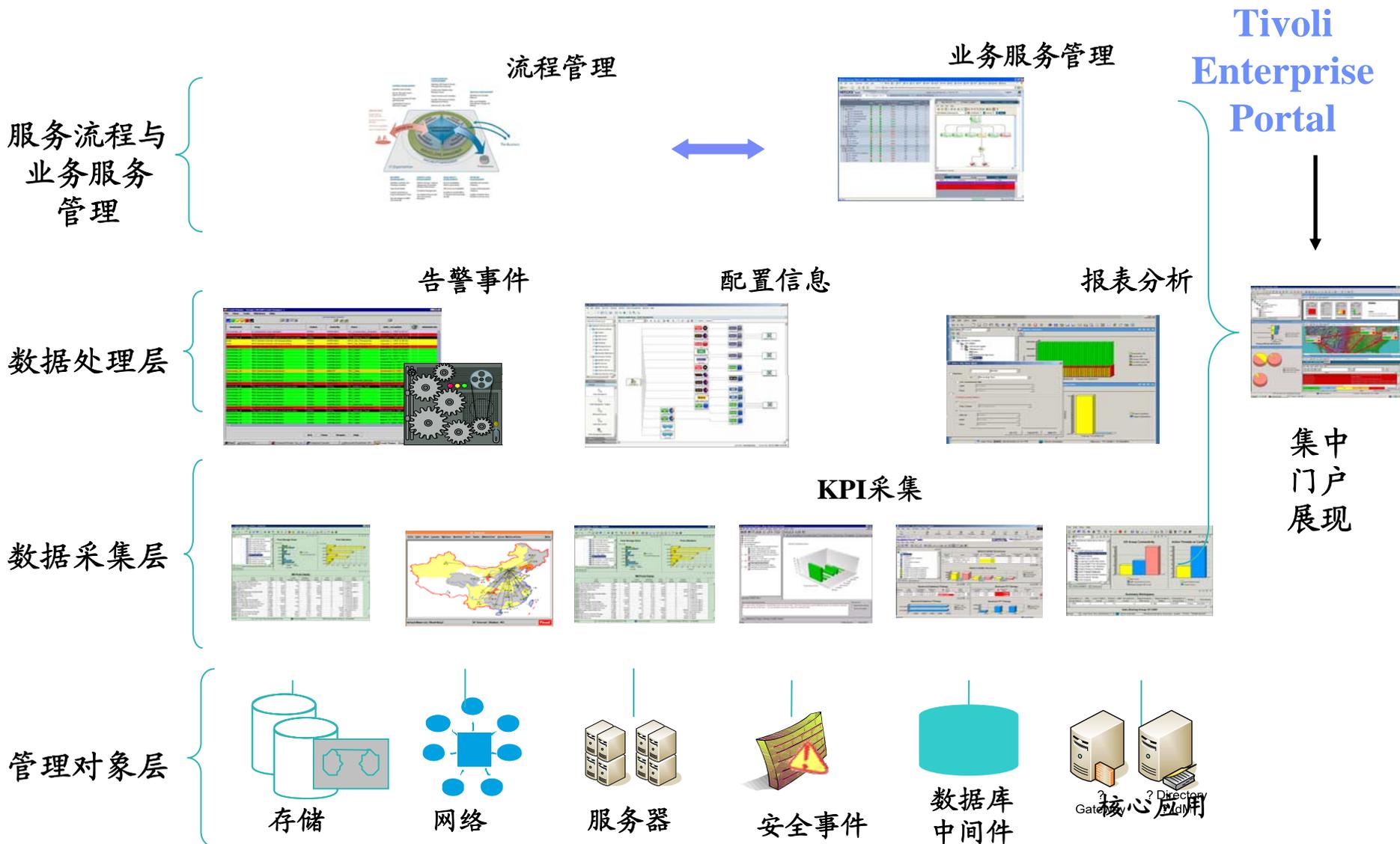
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# 集中展现



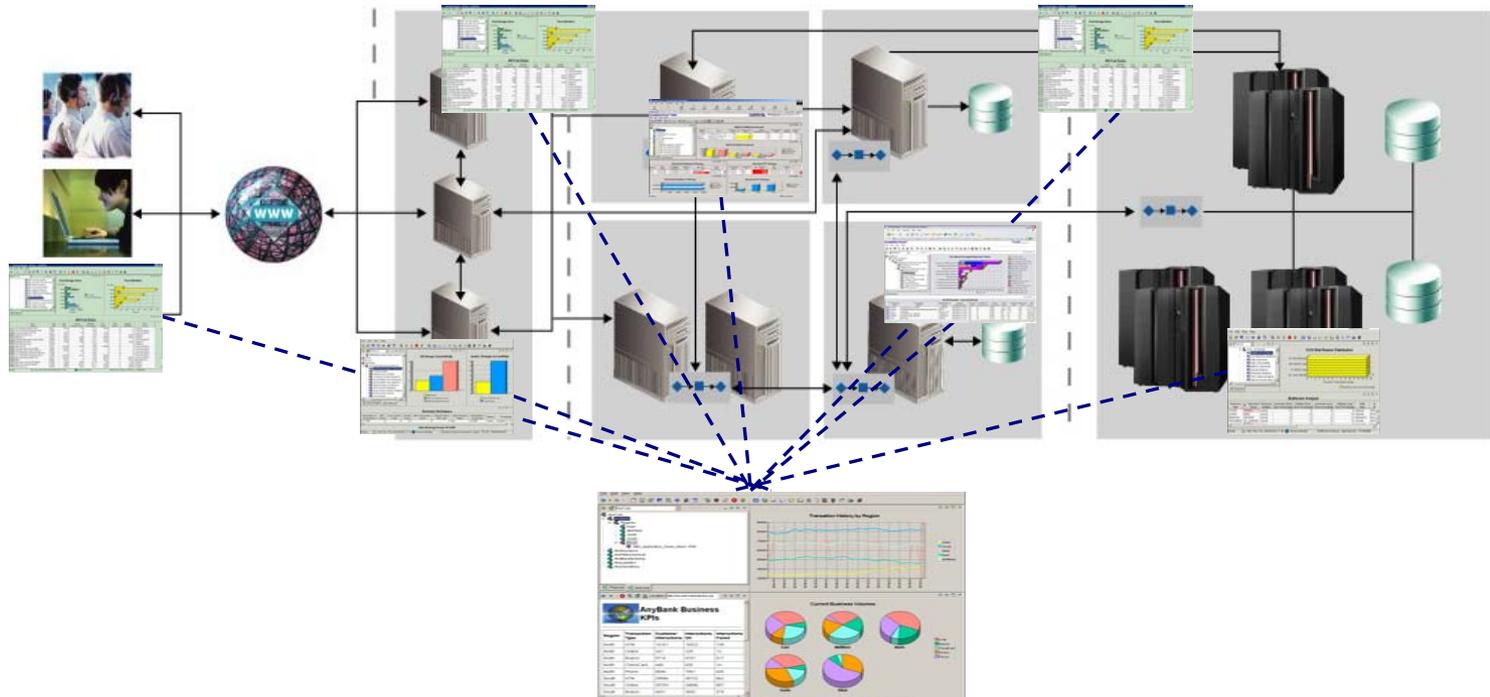
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# IBM Tivoli运维管理总体架构



# Tivoli Enterprise Portal

- TEP是Tivoli Enterprise产品的集中展现平台
- TEP提供了可定制性的个性化展现
- TEP可以同时展现实时数据和历史数据
- TEP提供了和第三方产品Web管理界面的集成



# 管理门户(Tivoli Enterprise Portal)

- 主要的用户界面用于
  - ▶ 最终用户
  - ▶ 管理员
- 基于浏览器或者Java Console
- 灵活的格式
  - ▶ 每个工作面(Workspace)支持多个视图
  - ▶ 每个视图提供不同的监控内容
  - ▶ 多种方式来表达数据



# 基于浏览器的管理界面

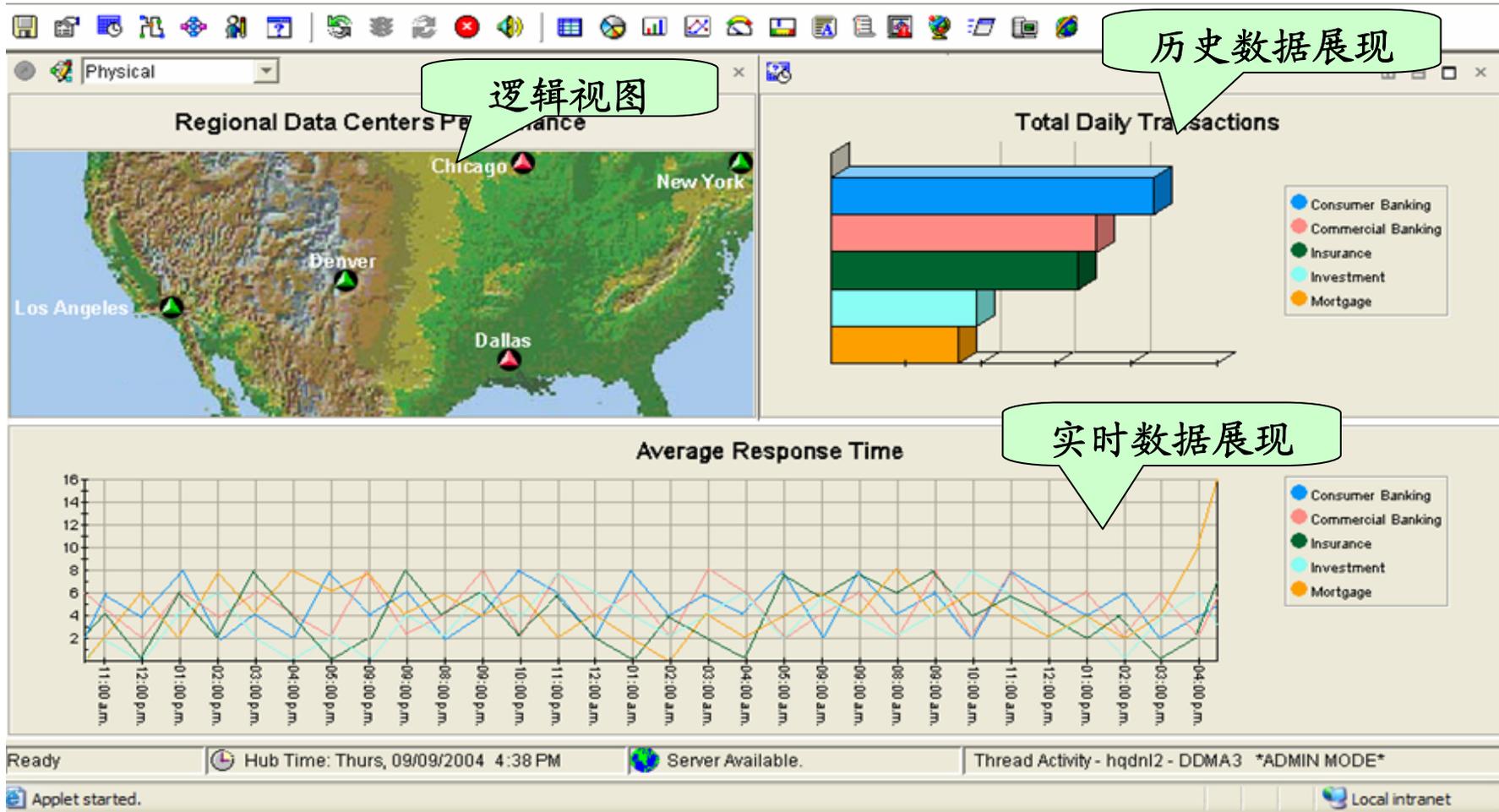
The screenshot displays the Tivoli Enterprise Portal web interface within a Microsoft Internet Explorer browser window. The interface is divided into several sections:

- Navigation and Search:** Includes a menu bar (File, Edit, View, Favorites, Tools, Help) and a search bar.
- Tree View:** A left-hand pane shows a hierarchical tree structure under '企业' (Enterprise), including 'Windows 系统' (Windows Systems) with sub-items like VM-ITM611, VM-WIN2003, DB2 - DB2: VM-WIN2003:UD, Universal Agent, and Windows OS.
- Windows 系统摘要 (Windows System Summary):** A table listing system details for 'Primary:VM-WIN2003:NT'.
 

服务器名称	用户名	操作系统类型	操作系统版本	处理器数量	处理器类型	处理器队列长度 (线程)
Primary:VM-WIN2003:NT	SYSTEM	Windows_Svr_2003	5.2	1	586	5 10...
- 联机的 Windows 系统 (Online Windows Systems):** A table showing the status of online systems.
 

状态	名称	版本
*联机	Primary:VM-WIN2003:NT	06.10.01
- Summary Charts:** Three charts at the bottom provide visual data for 'Primary:VM-WIN2003:NT':
  - 内存使用情况摘要 (Memory Usage Summary):** A 3D bar chart showing memory usage in kilobytes (KB). The x-axis ranges from 0 to 2,000,000 KB. The legend includes: 可用 KB 数 (Available KB), 高速缓存 KB 数 (Cache KB), 提交限制 (KB) (Commit Limit), and 已提交的 KB 数 (Committed KB).
  - 磁盘使用情况摘要 (Disk Usage Summary):** A 3D bar chart showing disk usage percentage. The x-axis ranges from 0 to 100%. The legend includes: 使用百分比 (Usage %) and 空闲百分比 (Free %).
  - 处理器使用情况摘要 (Processor Usage Summary):** A 3D bar chart showing processor usage percentage. The x-axis ranges from 0 to 40%. The legend includes: 特许时间百分比 (Privileged Time %) and 用户时间百分比 (User Time %).
- Status Bar:** At the bottom, it shows '中部时间: 不可用' (Midnight: Unavailable), '服务器可用' (Server Available), and the user 'Windows 系统 - localhost - SYSADMIN'.

# 实时和历史数据并列展现



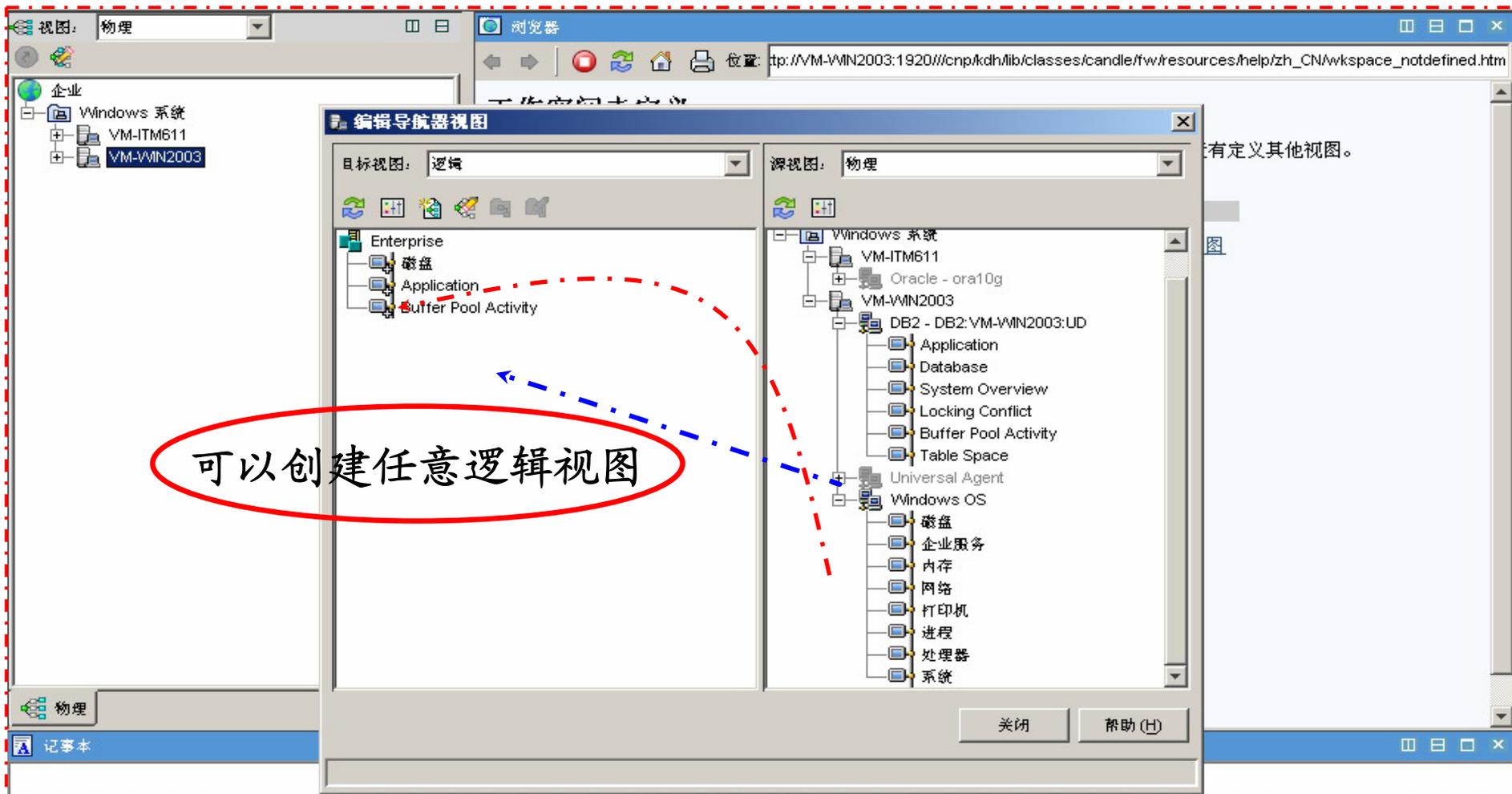
# 工作区域(workspace)可以定制

The screenshot displays the IBM Tivoli Enterprise Console interface. On the left, a tree view shows the hierarchy: 企业 (Enterprise) > Windows 系统 (Windows System) > VM-ITM611 > VM-WIN2003. The main content area is a web browser window displaying the URL: [http://VM-WIN2003:1920//cnp/kdh/lib/classes/candle/fw/resources/help/zh\\_CN/wkspce\\_notdefined.htm](http://VM-WIN2003:1920//cnp/kdh/lib/classes/candle/fw/resources/help/zh_CN/wkspce_notdefined.htm). The page title is "工作空间未定义" (Workspace Not Defined). The text explains: "这是该导航器项的缺省工作空间。该工作空间除了此浏览器视图和记事本视图之外没有定义其他视图。您可以定制工作空间以显示其他视图。" (This is the default workspace for this navigation item. This workspace does not define any other views besides this browser view and the Notepad view. You can customize the workspace to display other views.)

The page is divided into two columns of links:

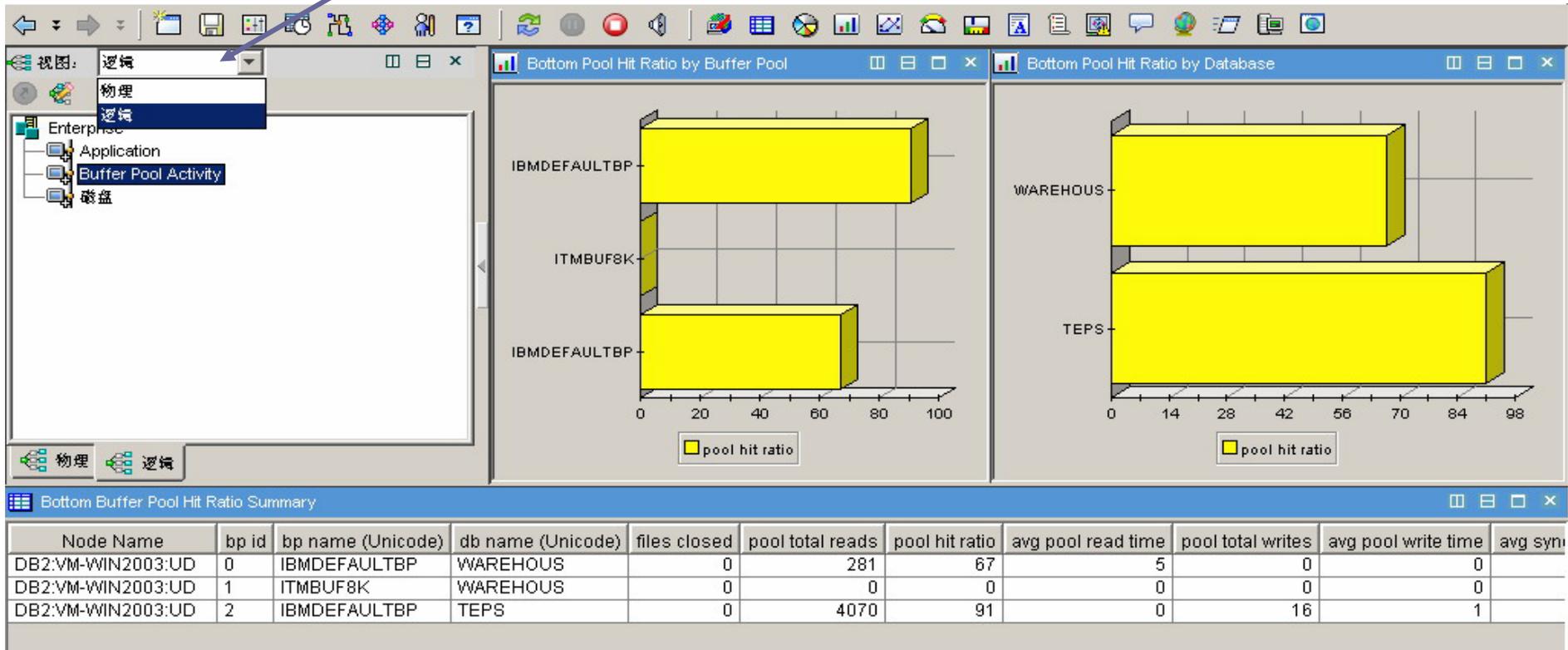
- 容易的实践和概述** (Easy Practices and Overview):
  - [定义工作空间课程](#) (Define Workspace Course)
  - [工作空间概述](#) (Workspace Overview)
  - [定制工作空间](#) (Customize Workspace)
- 视图选项** (View Options):
  - [Tivoli Event Console 视图](#) (Tivoli Event Console View)
  - [表视图](#) (Table View)
  - [图表视图](#) (Chart View)
  - [记事本视图](#) (Notepad View)
  - [消息日志视图](#) (Message Log View)
  - [情境事件控制台视图](#) (Context Event Console View)
  - [通用消息控制台视图](#) (General Message Console View)
  - [图形视图](#) (Graphic View)
  - [执行操作视图](#) (Execute Operation View)
  - [终端视图](#) (Terminal View)
  - [浏览器视图](#) (Browser View)

# TEP的逻辑视图



## TEP的逻辑视图

查看物理视图和者逻辑视图



# 单一有效的业务视图

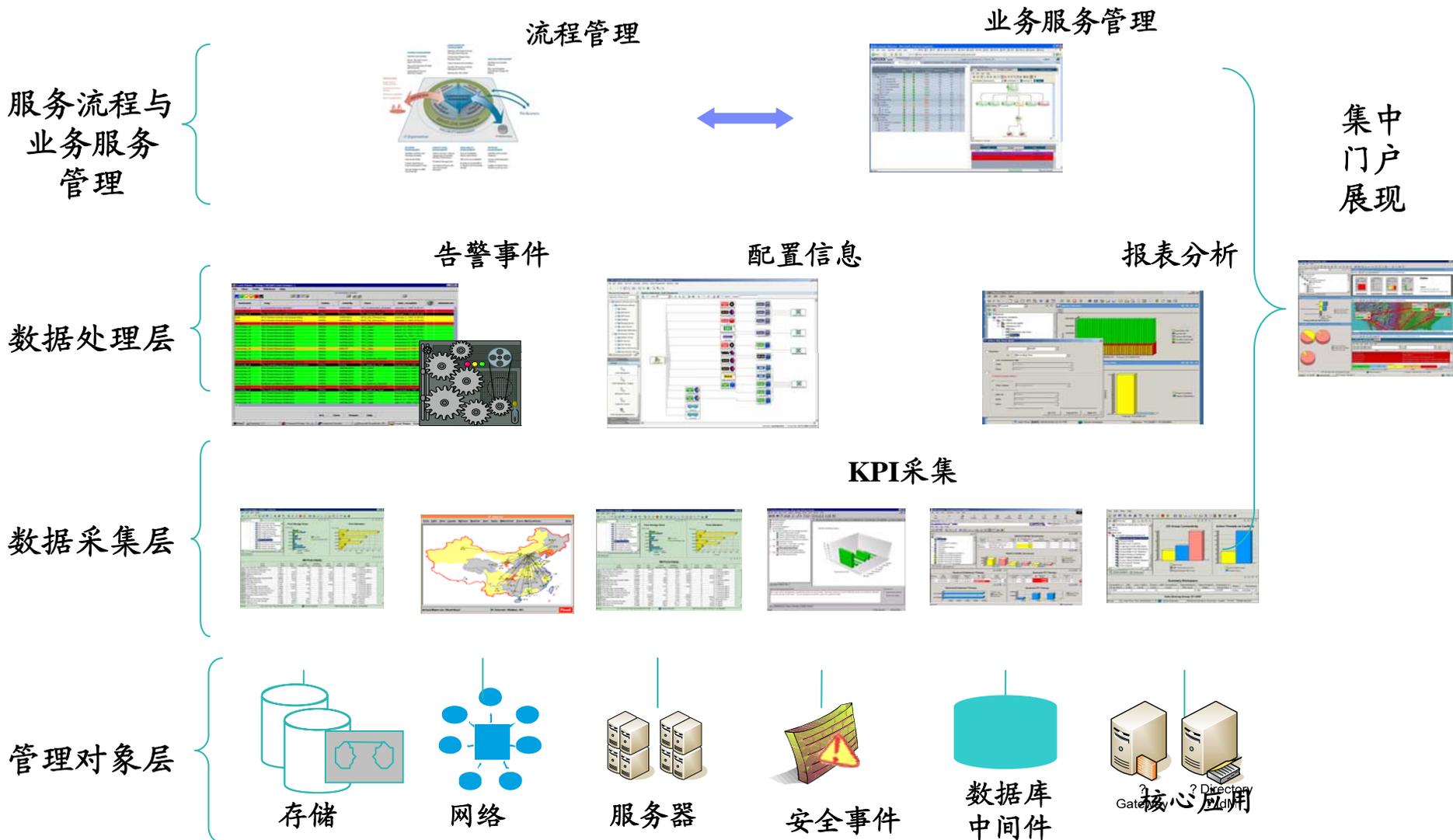
The screenshot displays the IBM Tivoli Monitoring (ITM) interface with several key components:

- Top Panel:** Overview of system health with four summary cards:
  - Critical:** Total: 59, Metric: 6609758
  - Unassigned:** Total: 0, Metric: 0
  - Live Events:** Total: 171, Metric: 51327084
  - Last Day:** Total: 475, Metric: 21206...
- Map View:** A geographical map showing business building status for Dallas, Chicago, San Francisco, and New York. Each location has a small bar chart and a total count (e.g., Chicago: 481).
- Job Object Time Distribution:** A 3D bar chart showing time distribution for WmiProviderSubSystemHostJob and Winlogon Job 0-37ccb2. Legend includes Total ms Kernel Mode, Total ms Processor, and Total ms User Mode.
- Pie Chart:** Three pie charts representing process counts. Legend includes Process Count Active, Process Count Terminated, and Process Count Total.
- Table View:** A table showing active events with columns for Node, Description, and Status. It includes a summary bar at the bottom with values: 254, 50, 35, 78, 81.

Four callout boxes highlight specific features:

- 业务状态指示 (Business Status Indication):** Points to the summary cards at the top.
- 实时与历史报表 (Real-time and Historical Reports):** Points to the Job Object Time Distribution chart.
- 业务组建状态 (Business Building Status):** Points to the geographical map.
- 第三方数据 (Third-party Data):** Points to the table view at the bottom.

# IBM Tivoli运维管理总体架构



# Tivoli变更与配置管理数据库

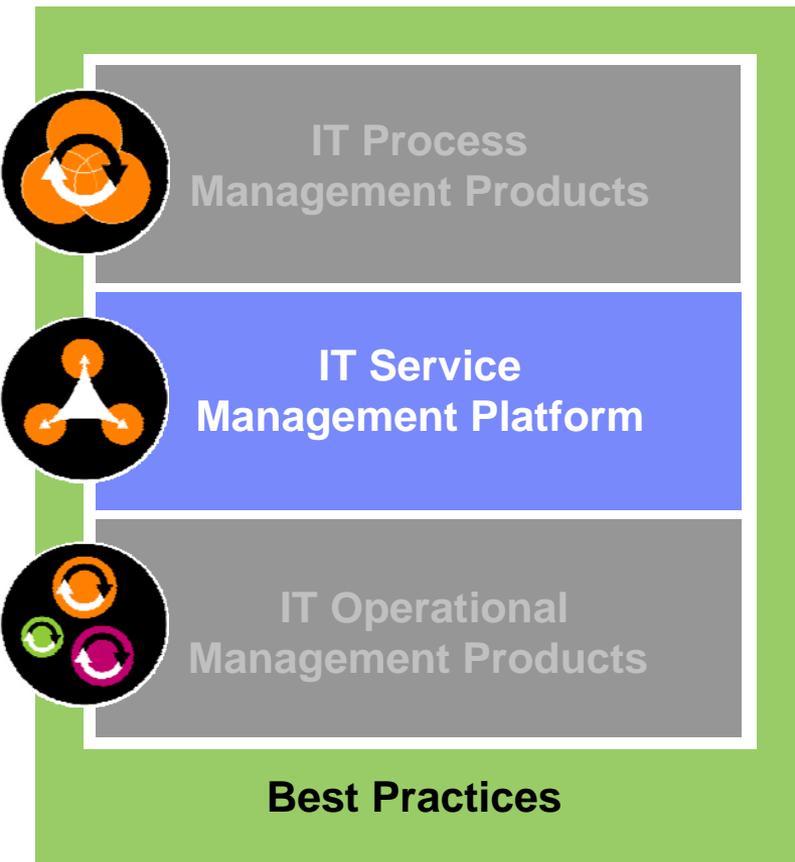
## IBM IT Service Management



- *自动发现: 自动的设备与应用发现, 统一的CI视图*
- *审计与控制: 管理变更流程, 保存变更记录*
- *集成: IT服务管理流程和管理数据的集成*

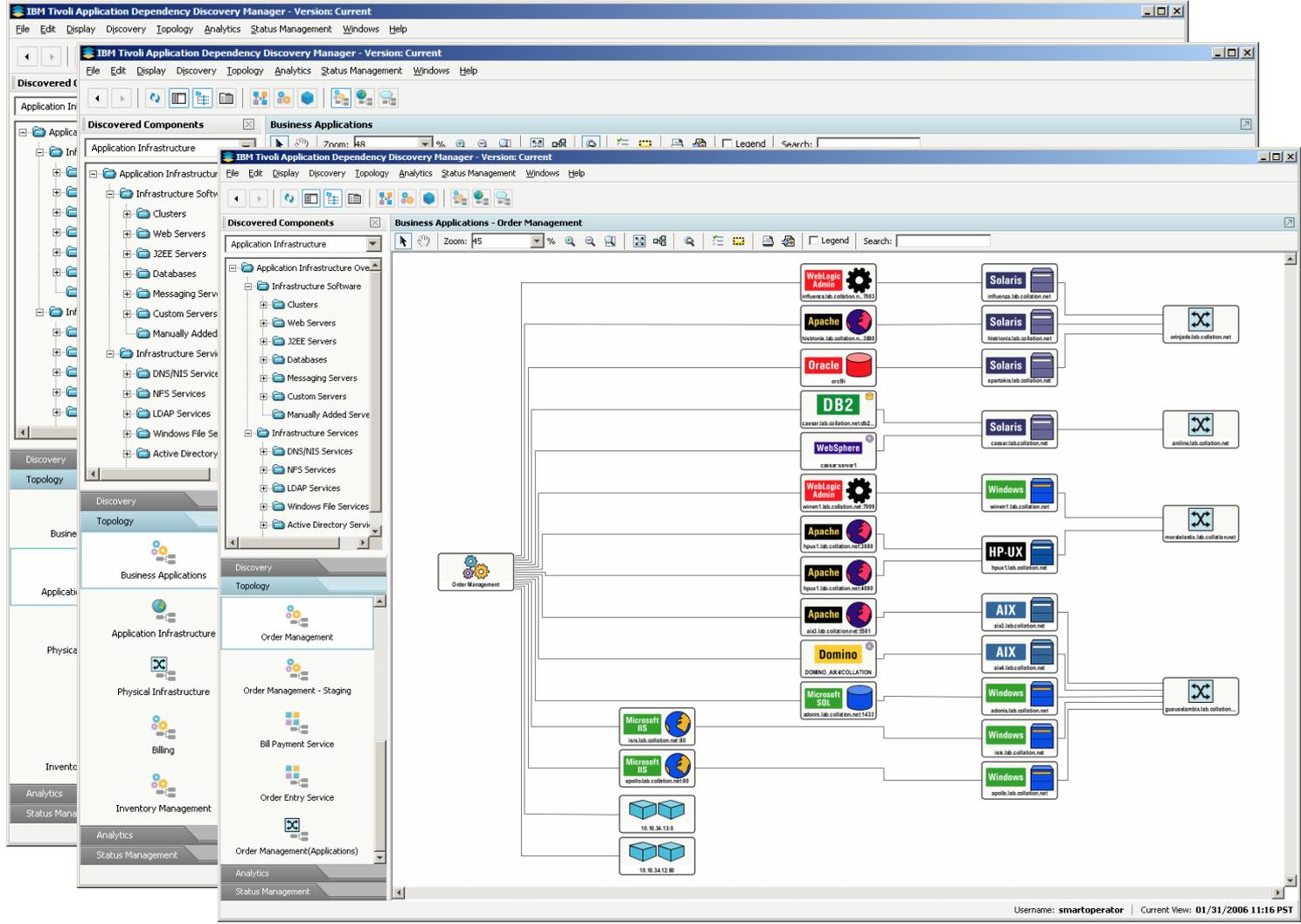
# Tivoli变更与配置管理数据库

## IBM IT Service Management



- **CMDB – 数据层:**
  - ▶ 开放、联邦模式
  - ▶ 自动发现CI及其相互关系
  - ▶ 高度的扩展性
  - ▶ 提供API
- **自动化 workflow**
  - ▶ 变更与配置管理
- **workflow引擎**
  - ▶ 自动化流程执行
  - ▶ 实时任务配置与执行
  - ▶ 实时监控和报告

# 应用与业务的自动发现



# 配置变更与报表

IBM Tivoli Application Dependency Discovery Manager - Version: Current

File Edit Display Discovery Topology Analytics Status Management Windows Help

Discovered Components

Application Infrastructure

Application Infrastructure Overview

Infrastructure Software

Clusters

Web Servers

Discovery

Topology

Analytics

Inventory

Change History

Dormant Components

Component Comparison

Data Center Drift

Application Drift

Switch Topology

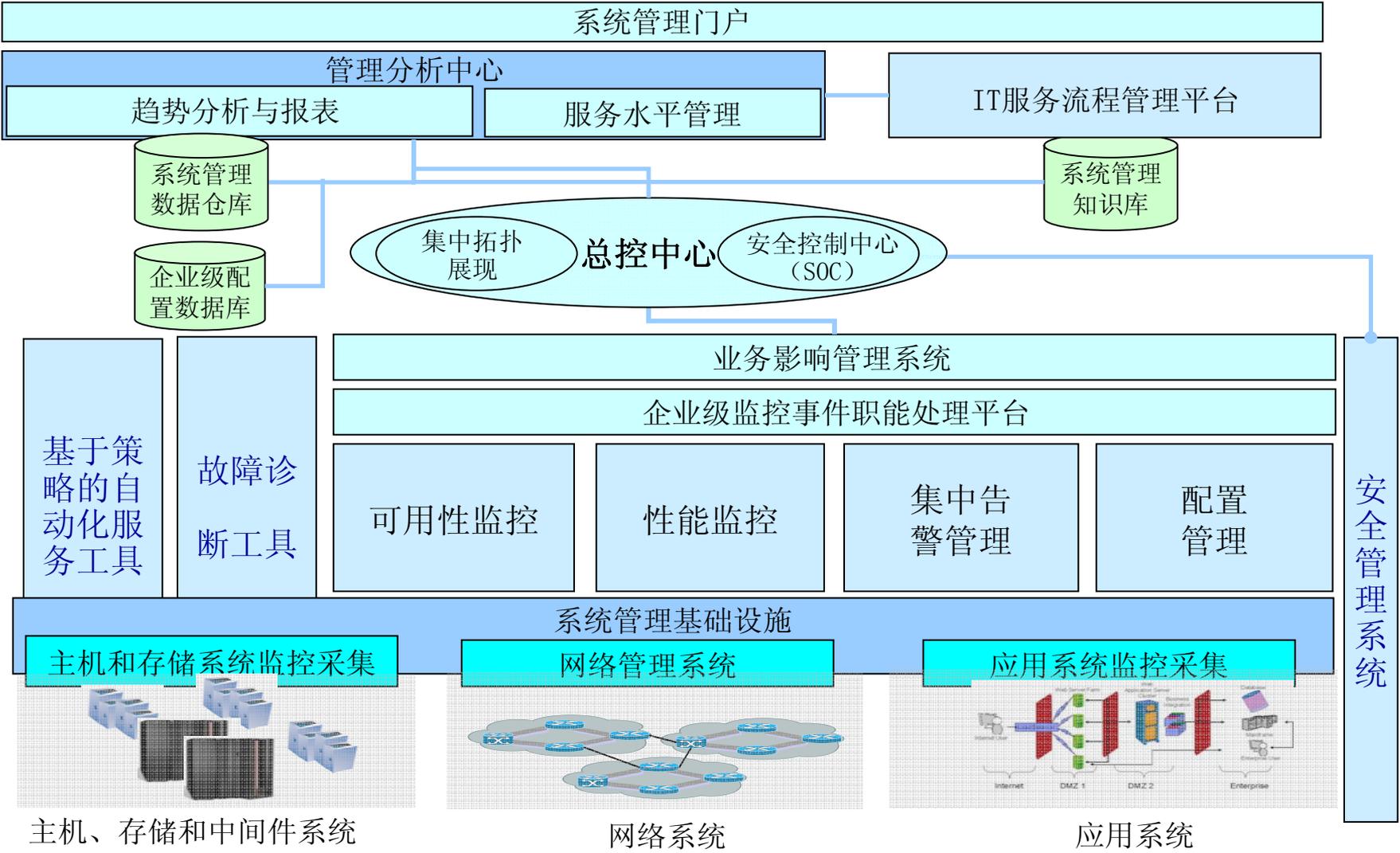
Status Management

Component Comparison: Results

	hpux1.lab.collation.net:3880 - Version:Current	hpux1.lab.collation.net:4880 - Version:Current	histrionix.lab.collation.net:3880 - Version:Current
Primary SAP			
Port Number	3880	4880	
App Descriptors			
/usr/local/apache/appdescriptors/apache-des	/usr/local/apache/appdescriptors/apache-des	[Not Set]	[Not Set]
/opt/apache13/appdescriptors/apache-des.xml	[Not Set]	/opt/apache13/appdescriptors/apache-des.xml	
Process Pools			
Hpx1.lab.collation.net:3880			
Arguments	/usr/local/apache/bin/httpd -d /usr/local/apache -R /usr/l...	/opt/apache13/bin/httpd -d /opt/apache13 -R /opt/apach...	/usr/local/apache/bin/httpd -d /usr/local/apache/ -R /usr...
Containers			
Apache Web Container			
Keep Alive Timeout	15		5
Max Spare Servers	10	20	
Virtual Hosts			
Hpx1.lab.collation.net:4880	[Not Set]	hpux1.lab.collation.net:4880	
Hpx1.lab.collation.net:3880	hpux1.lab.collation.net:3880	[Not Set]	[Not Set]
Histrionix.lab.collation.net:3880	[Not Set]		histrionix.lab.collation.net:3880
Max Clients	150		100
Server Root	/usr/local/apache	/opt/apache13	/usr/local/apache/
Score Board File	/usr/local/apache/logs/httpd.scoreboard	/opt/apache13/logs/httpd.scoreboard	
PID file	/usr/local/apache/logs/httpd.pid	/opt/apache13/logs/httpd.pid	
Config Contents			
Conf/httpd.conf			
Content			
Permissions	-rwxr-----		-rwxr-xr-x
Last Modified	[Not Set]		12/23/2005 16:10 PST
Size	37464	37426	36313
Checksum	aA72w53evOgcipj++fzdaq==	VZpNHLCCp78TzKhHqW5q==	ZqpDIYAIUJAR221qun8WQ==
Name	hpux1.lab.collation.net		histrionix.lab.collation.net
Modules			
Libexec/libproxy.so			
Connections			
Hpx1.lab.collation.net:3880/	hpux1.lab.collation.net:3880/	[Not Set]	[Not Set]
Hpx1.lab.collation.net:4880/	[Not Set]	hpux1.lab.collation.net:4880/	

Username: smartoperator | Current View: 01/31/2006 11:16 PST

# 管理系统总体架构



Thank  
YOU

