



# *Managing Technology Tivoli Architecture and Solutions*

*German Unix User Group  
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*IBM Software Group*

**Tivoli.** software

# IBM e-business Infrastructure Software



**WebSphere**

Transformation  
& Integration

Enabling  
Integrated  
e-business



Online  
Transaction  
Systems

**DB2**

Leveraging  
Information

Integrated  
Information  
Infrastructure



Relational  
Database

**Lotus**

Leveraging  
Know-How

Enabling the  
Minds of  
e-business



Messaging  
and  
Collaboration

**Tivoli**

Managing  
Technology

End-to-End  
e-business  
Infrastructure  
Management

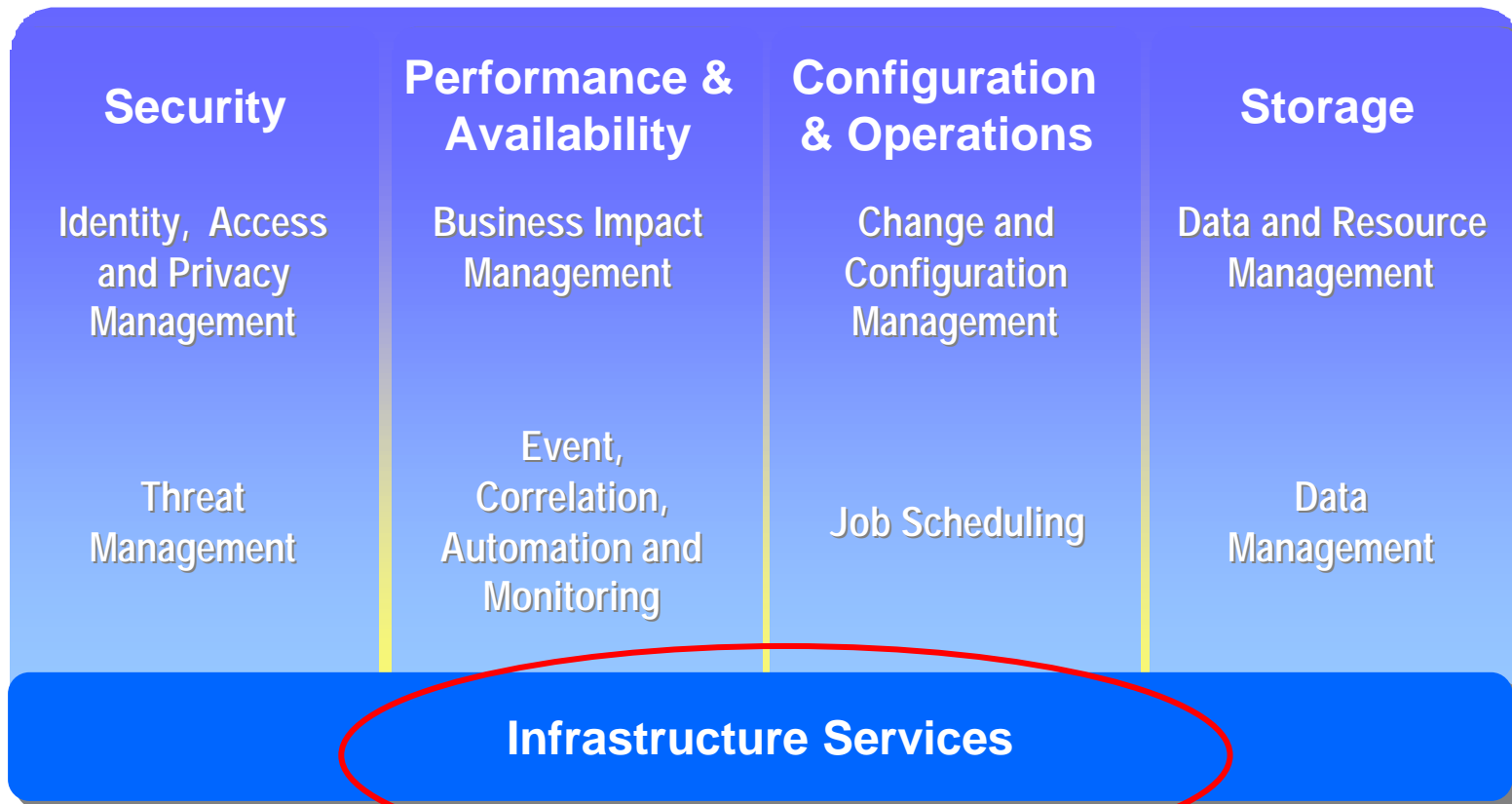


Integrated  
Enterprise  
Management

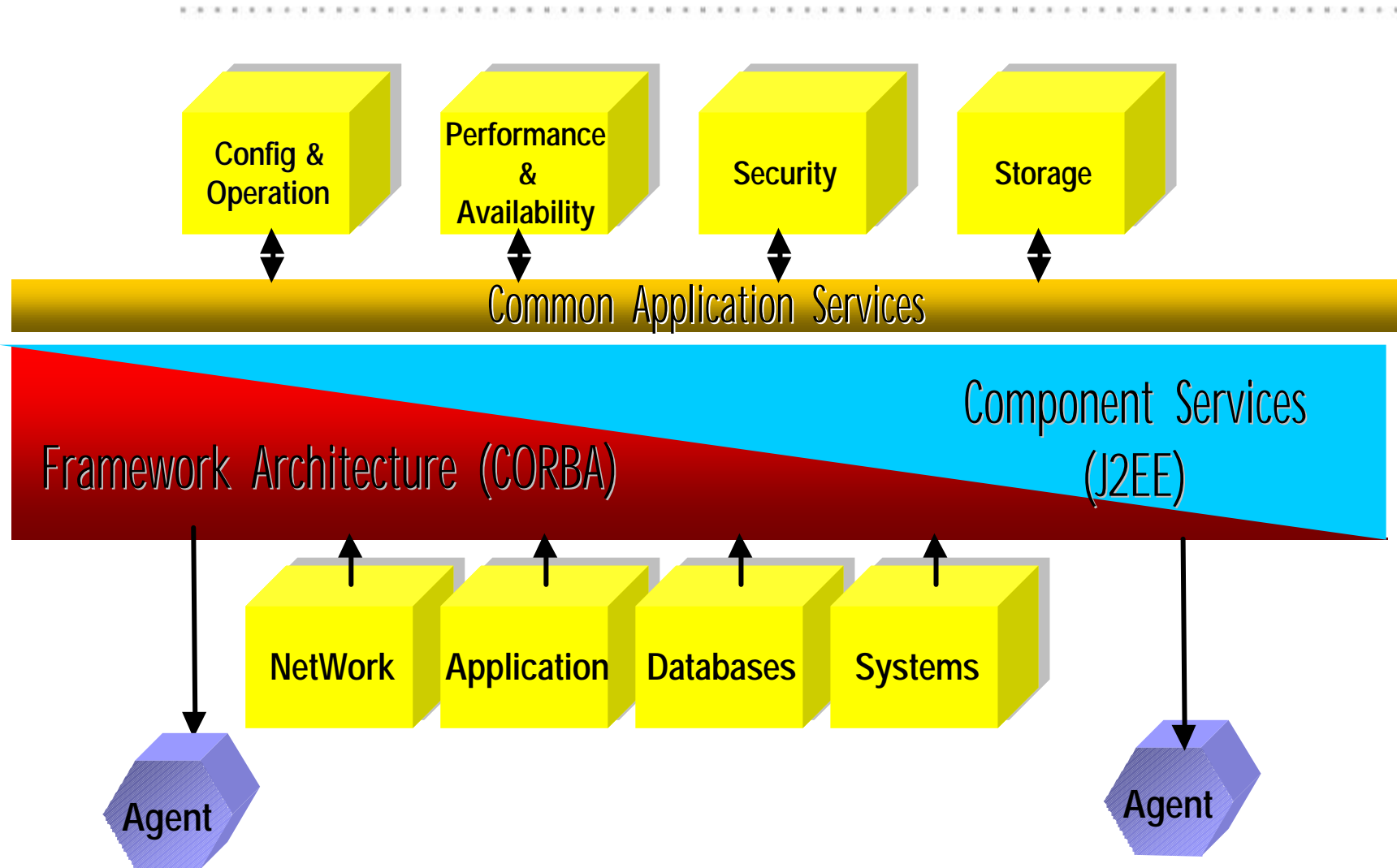
# Tivoli Areas of Focus



## Partner Middleware and Applications



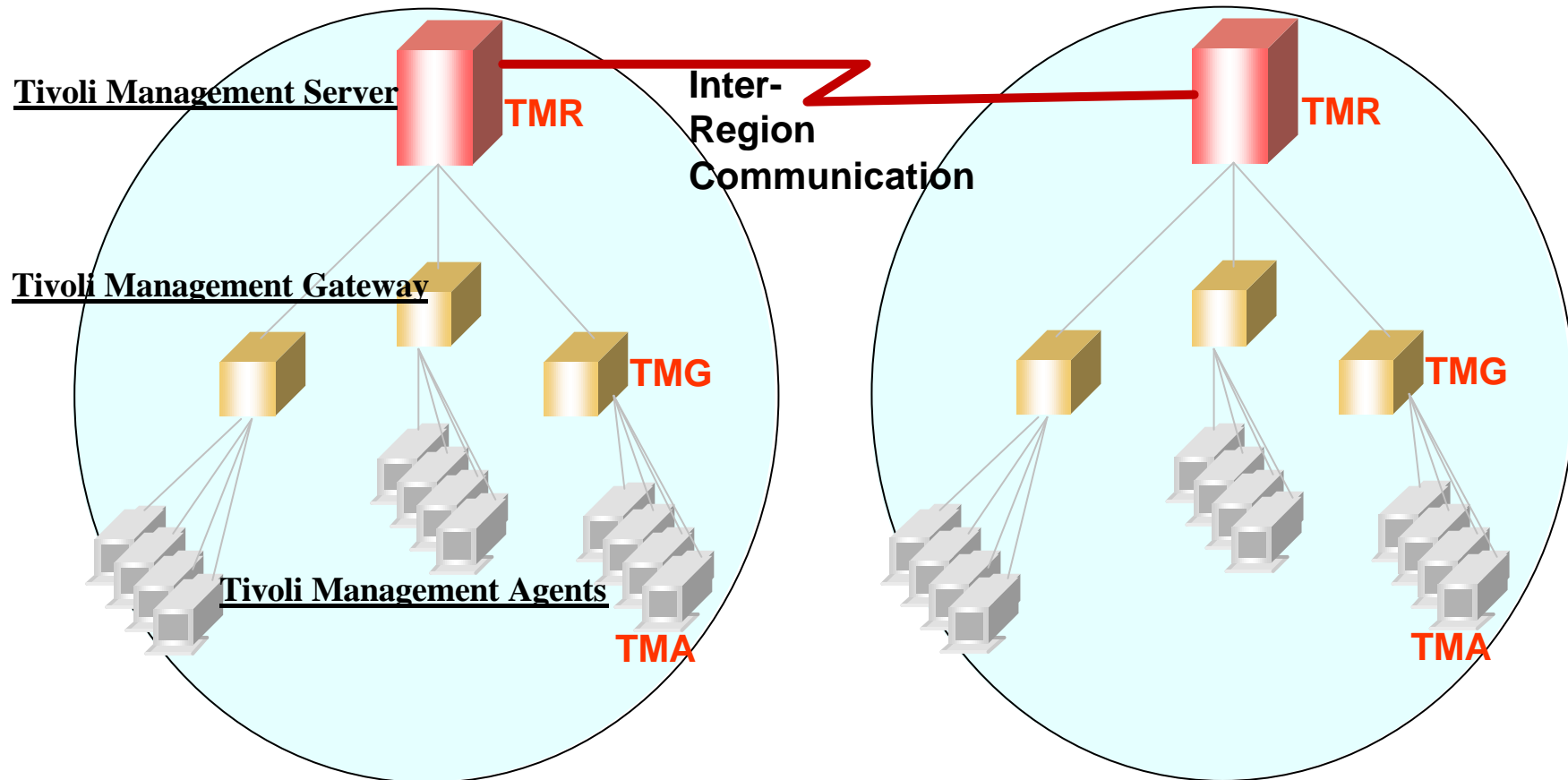
# High Level Architecture



# Physical Architecture



## Tivoli Management Region (TMR)



**Organisation - Scalability - Geography - Security - Networking**  
*Central and/or Distributed Management Design*

# Platform Strategy

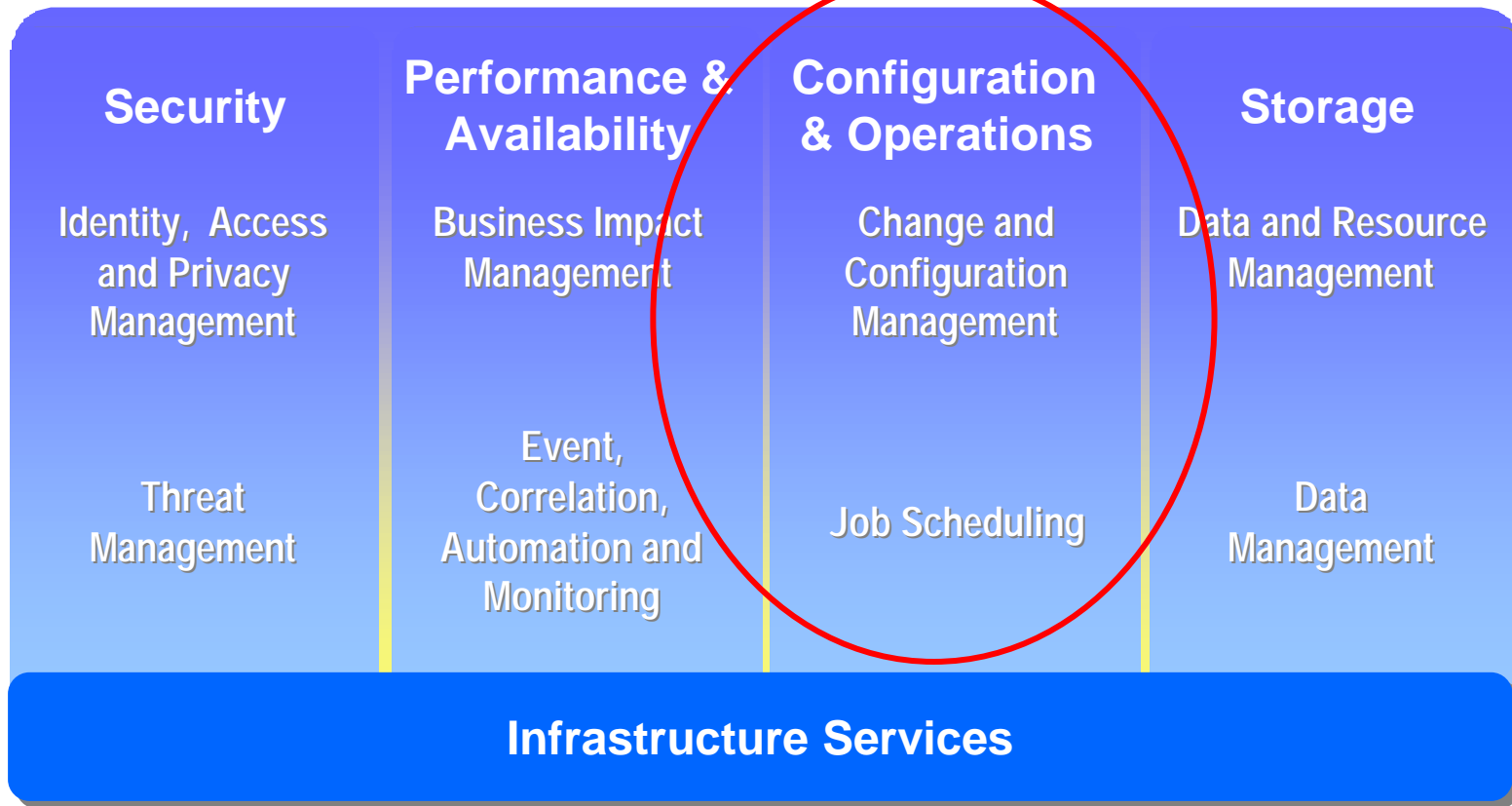


- **Based on Market Direction – Customers / Analysts**
- **Reducing ,Managing Platforms‘ towards**
  - **UNIX (AIX, HP-UX, Solaris)**
  - **LINUX (including /390)**
  - **Windows**
- **Keep Broad Support for ,Managed Platforms‘**
- **Strong IBM Focus on Linux**
- **Tivoli Support**
  - **,Managing & Managed‘ Platform Support**
  - **Strong Demand for Linux on zSeries (/390)**
  - **Red Hat, SuSE, TurboLinux**

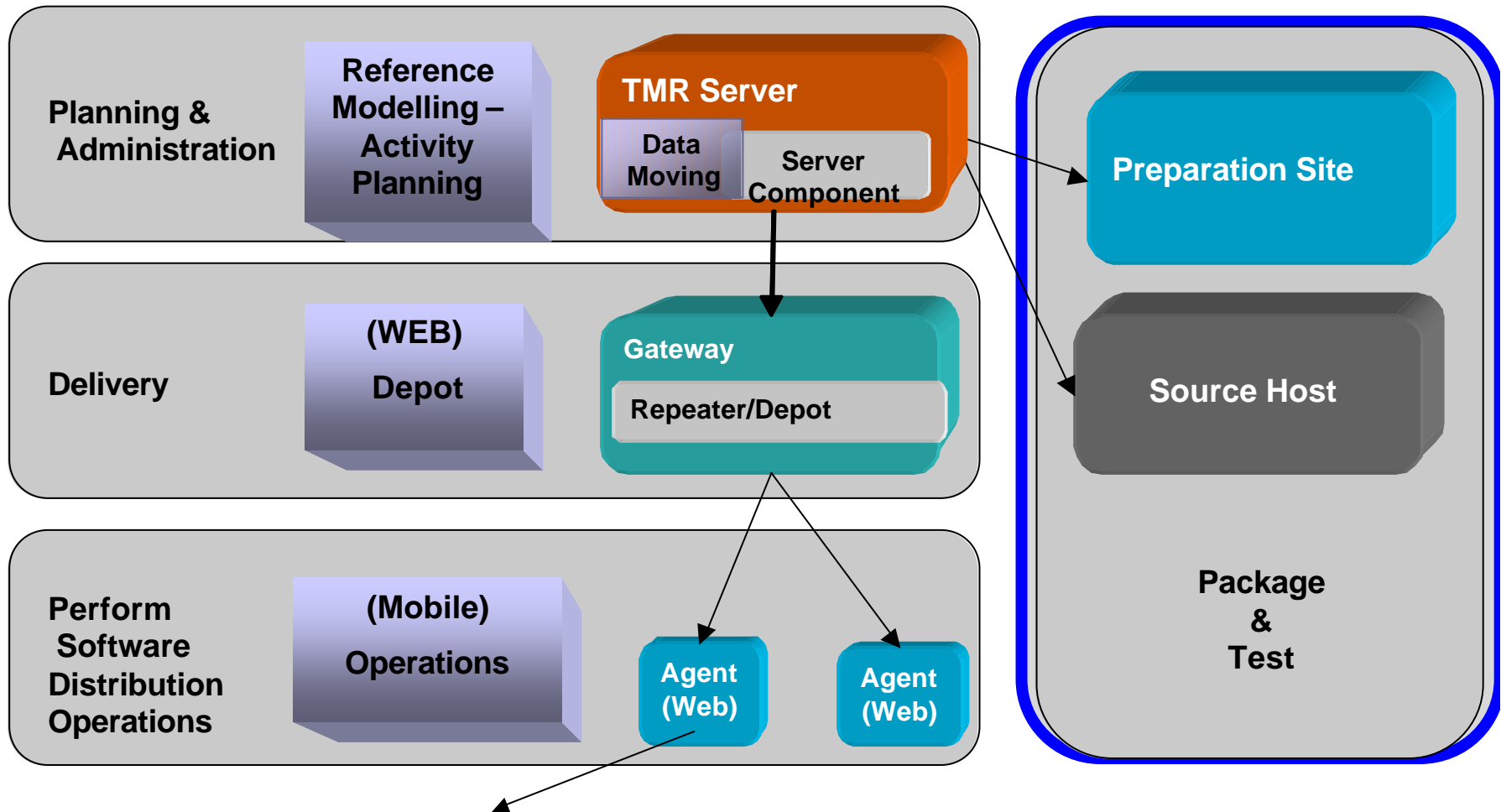
# Configurations & Operations



## Partner Middleware and Applications



# Configurations Management



**Devices** (PalmOs, WinCE, Nokia Communicator, NetVista IAD (Neutrino + Linux OS))



# Configurations Management

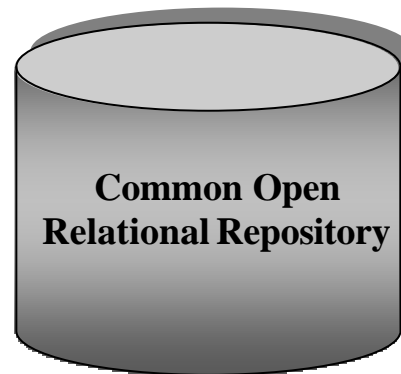


## Integration of Network Data

- Element Manager Device Information
  - Router, Hubs, Switches
  - CISCO Works
  - IBM Nways
  - Nortel Optivity
  - 3Com Transcend
- Leverage NetView
  - Interfaces
  - Segments
  - Nodes

## Cross Platform Scanning Technology

- Server and Desktops (Mobile)
- Hardware and Software
- DMI Scanner
- User Info
- Custom Scanner



## Scalable Collection Service

- Define when to return data
- Staged data transport
- Asynchronous
- Adjust to Bandwidth

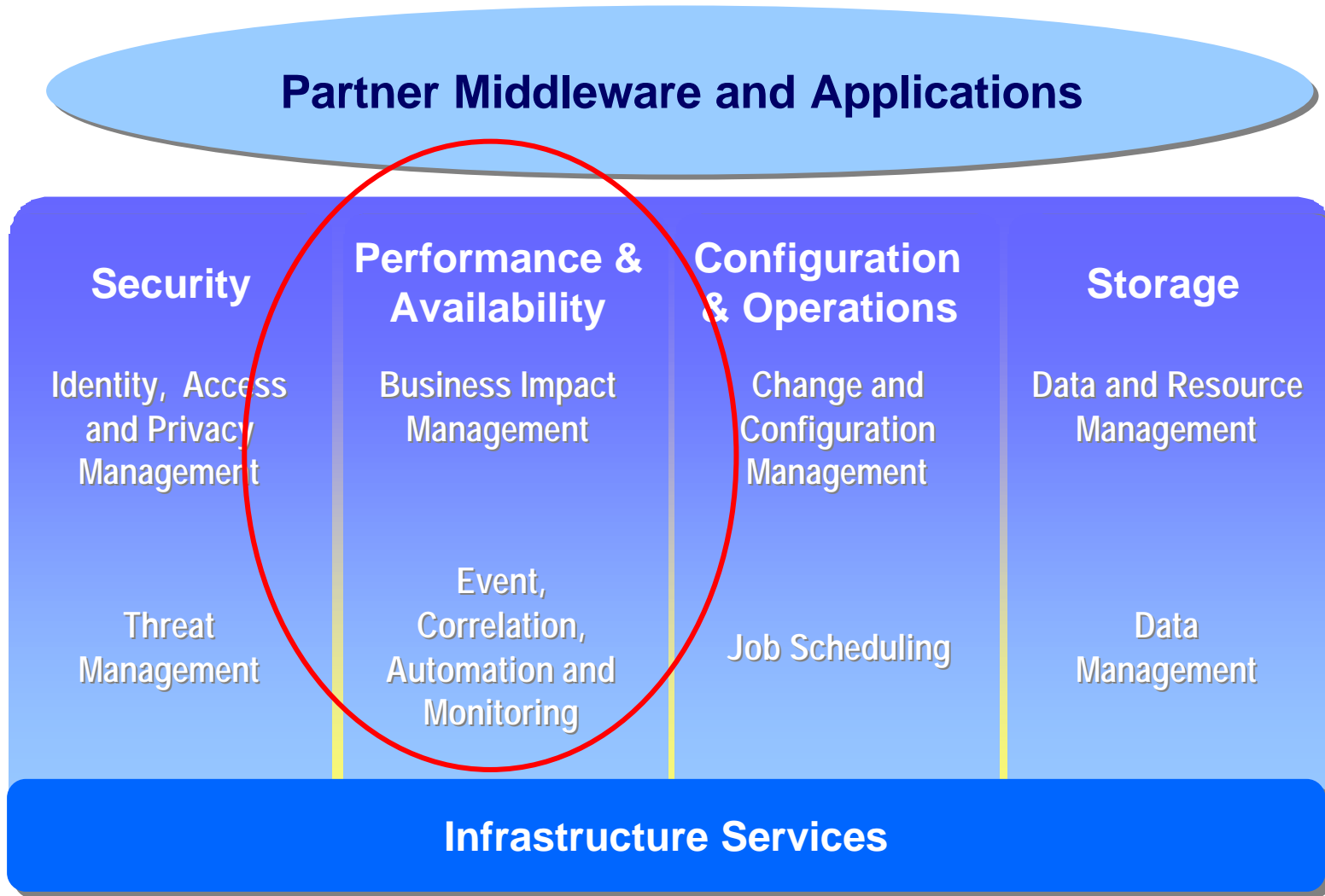
## Integration with other Disciplines

- Software Management
- Change, Asset, Problem

## Data Analysis & Reporting

- Predefined Queries & Reports

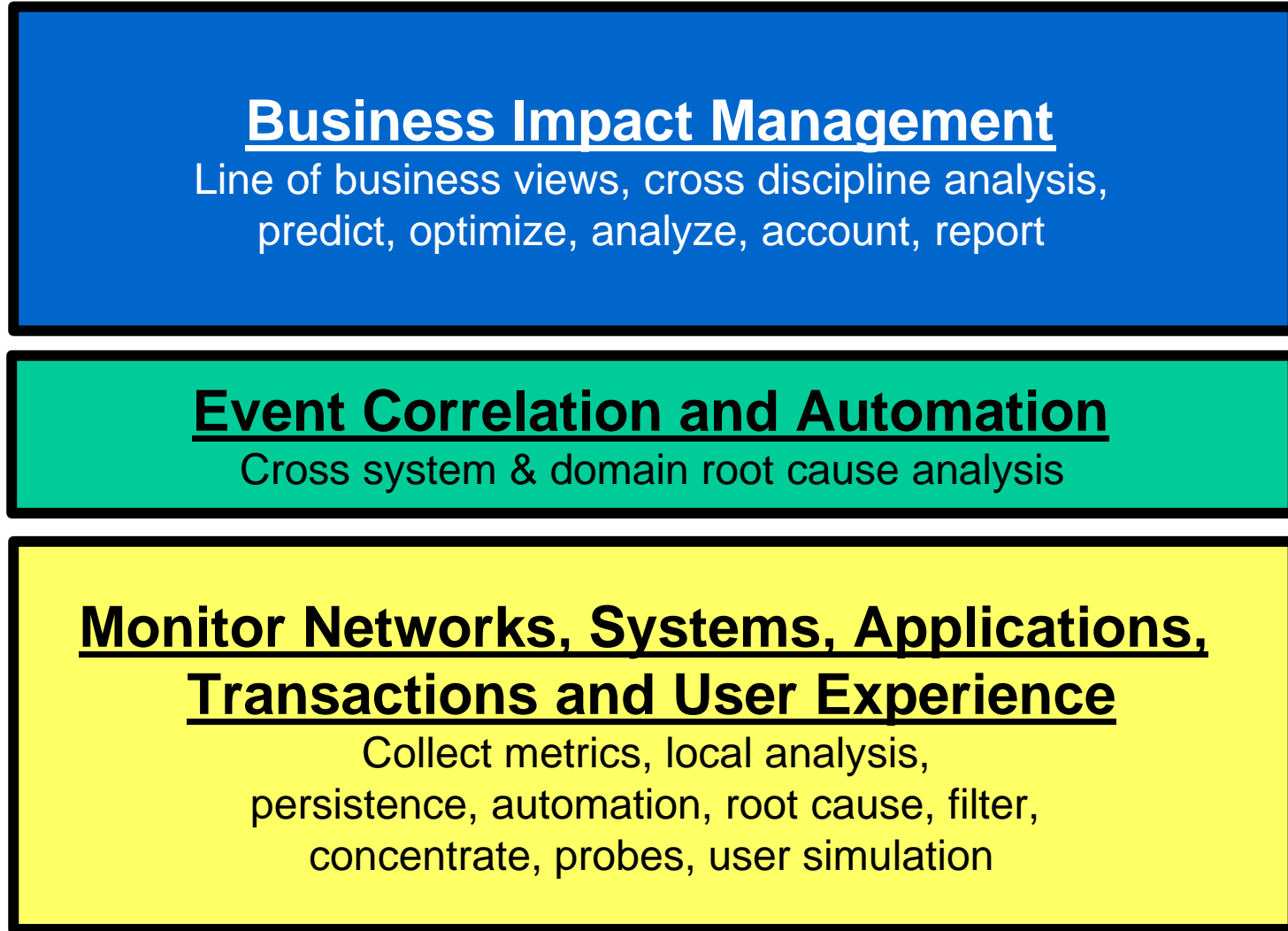
# Performance & Availability



# Performance & Availability



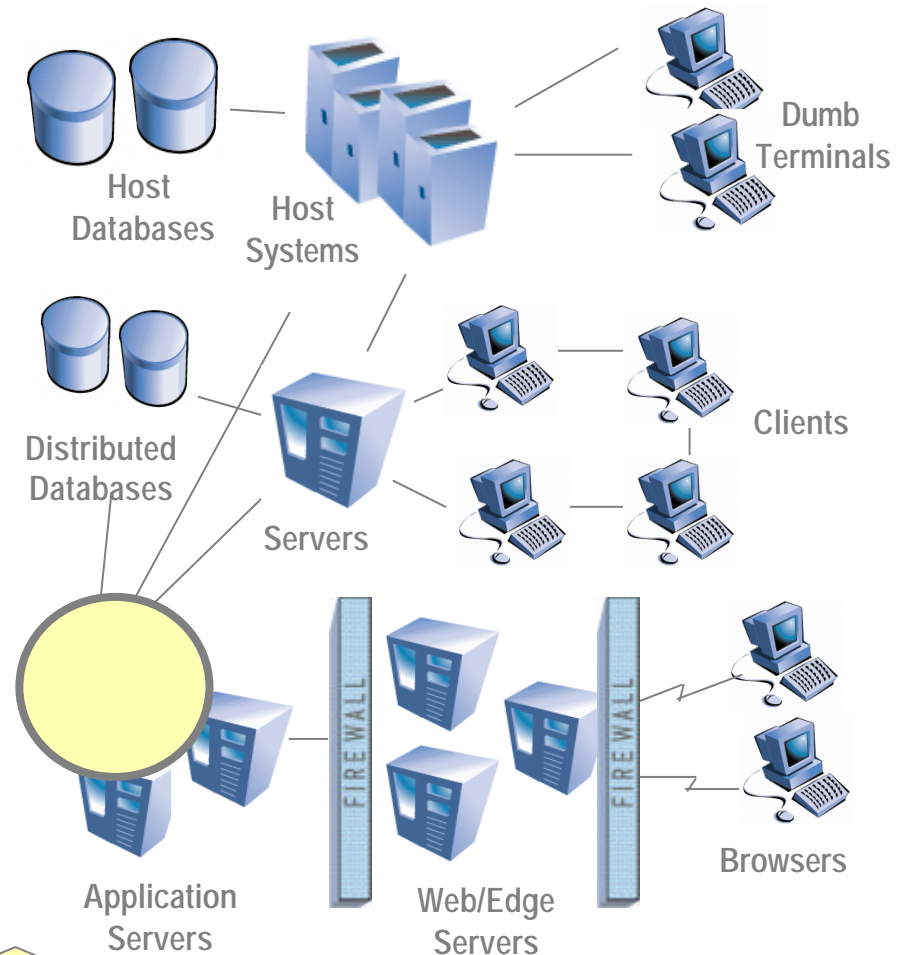
Rapid time-to-value through a tightly integrated management system



# Monitoring Focuses on One Server at a Time

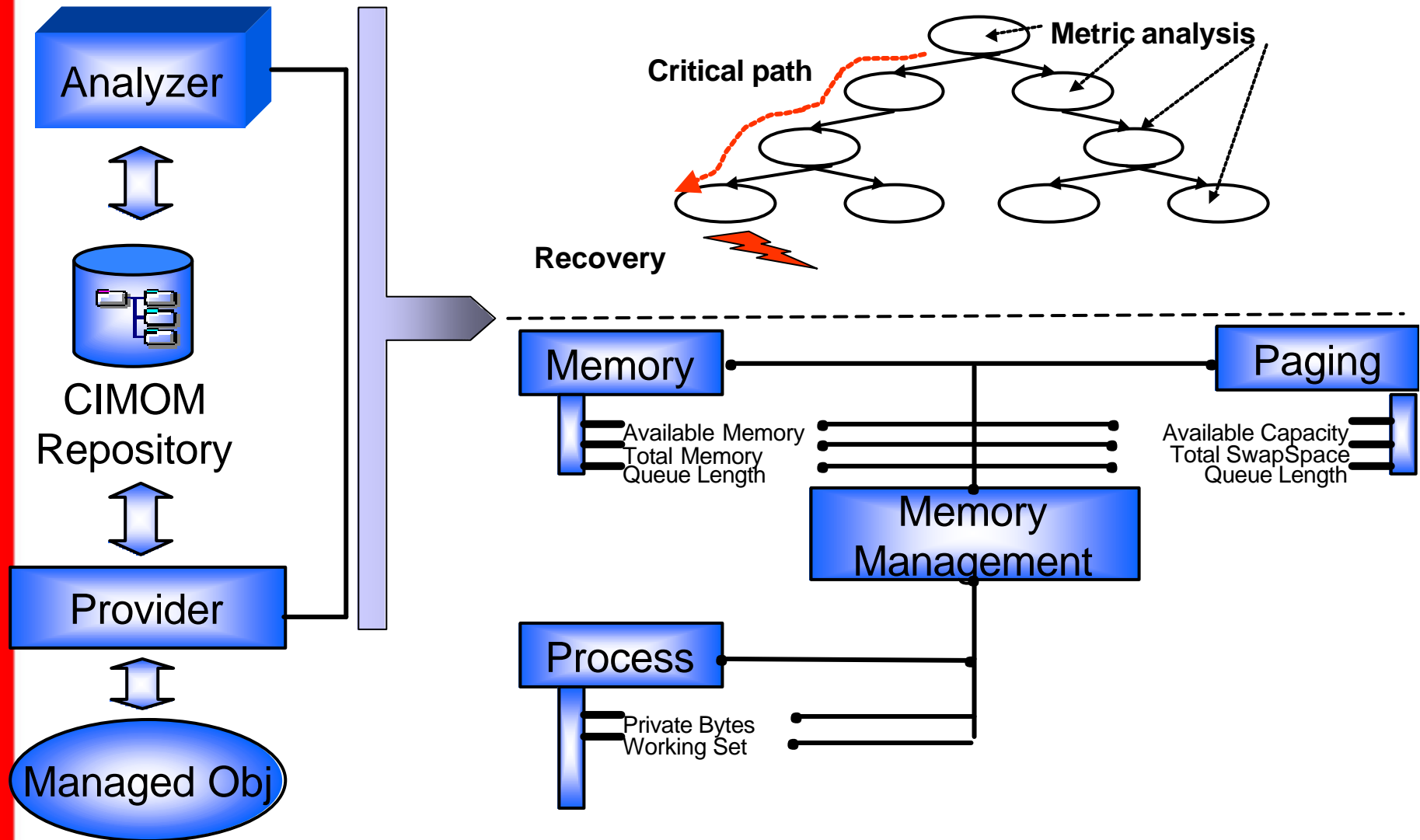


- **Combined monitoring of:**
  - Hardware
  - Operating System
  - Middleware
  - Applications
- **Local correlation and diagnosis at the server level**
- **Take action to cure problems when possible**
- **Notify other systems or administrators**

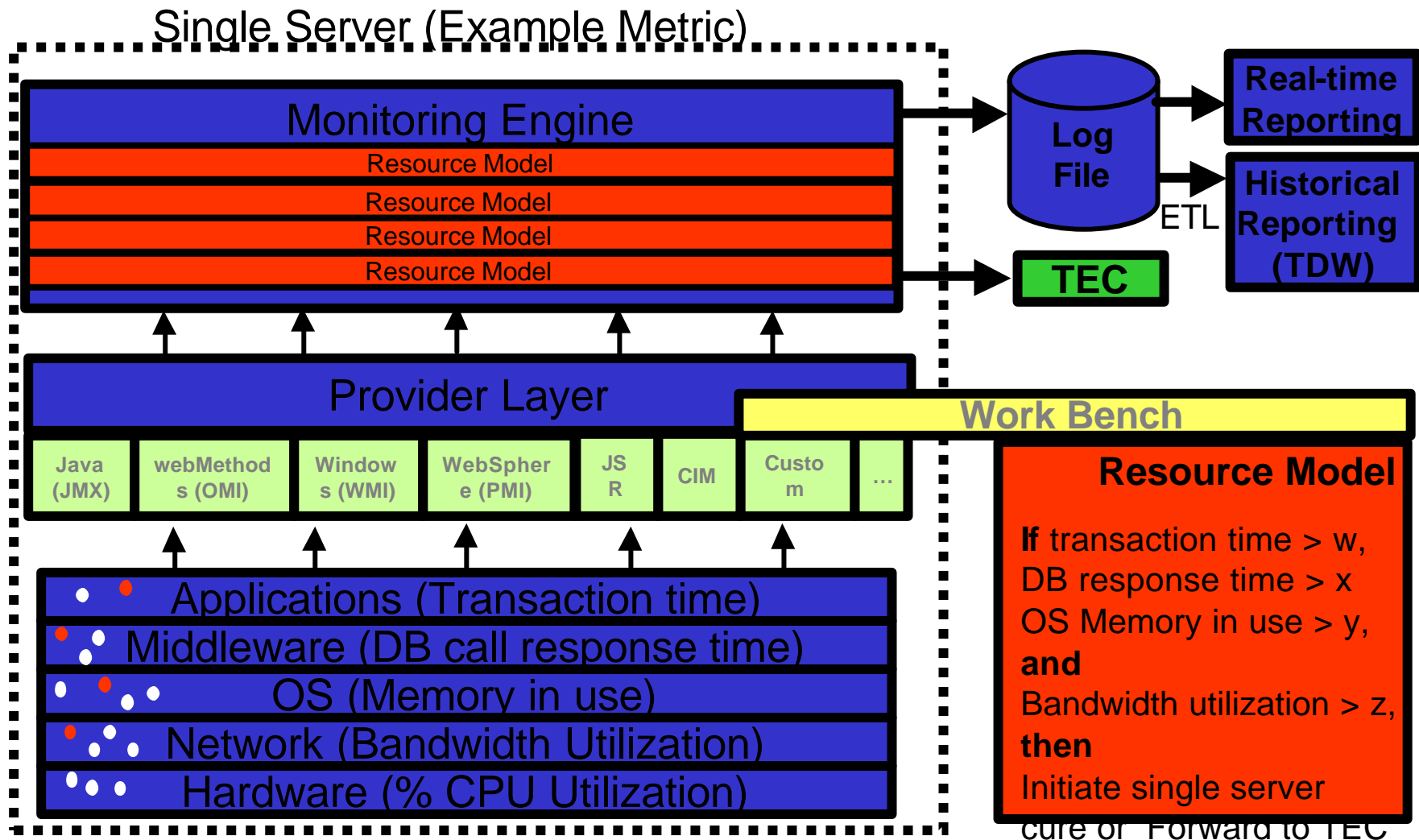


Business Impact Management
Event Correlation and Automation
Monitor Systems and Applications

# Monitoring Architecture



# Monitoring Architecture



# Transaction Monitoring



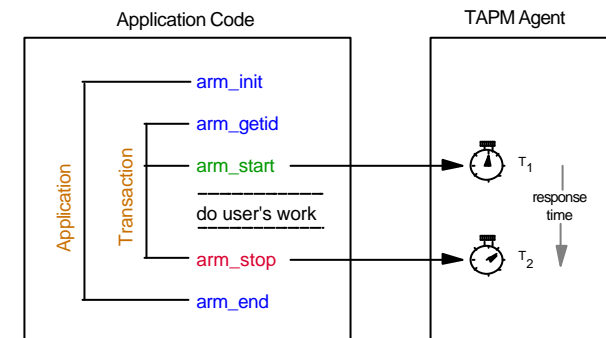
- **Problems to be solved**

- Transaction Measurement in Web and Enterprise Applications
- Focus on the Enduser Experience
- What is my customers response time?
- Are my key transactions available?
- What is my backend service time?
- How long did the page take to render?
- How fast is my site traffic growing?

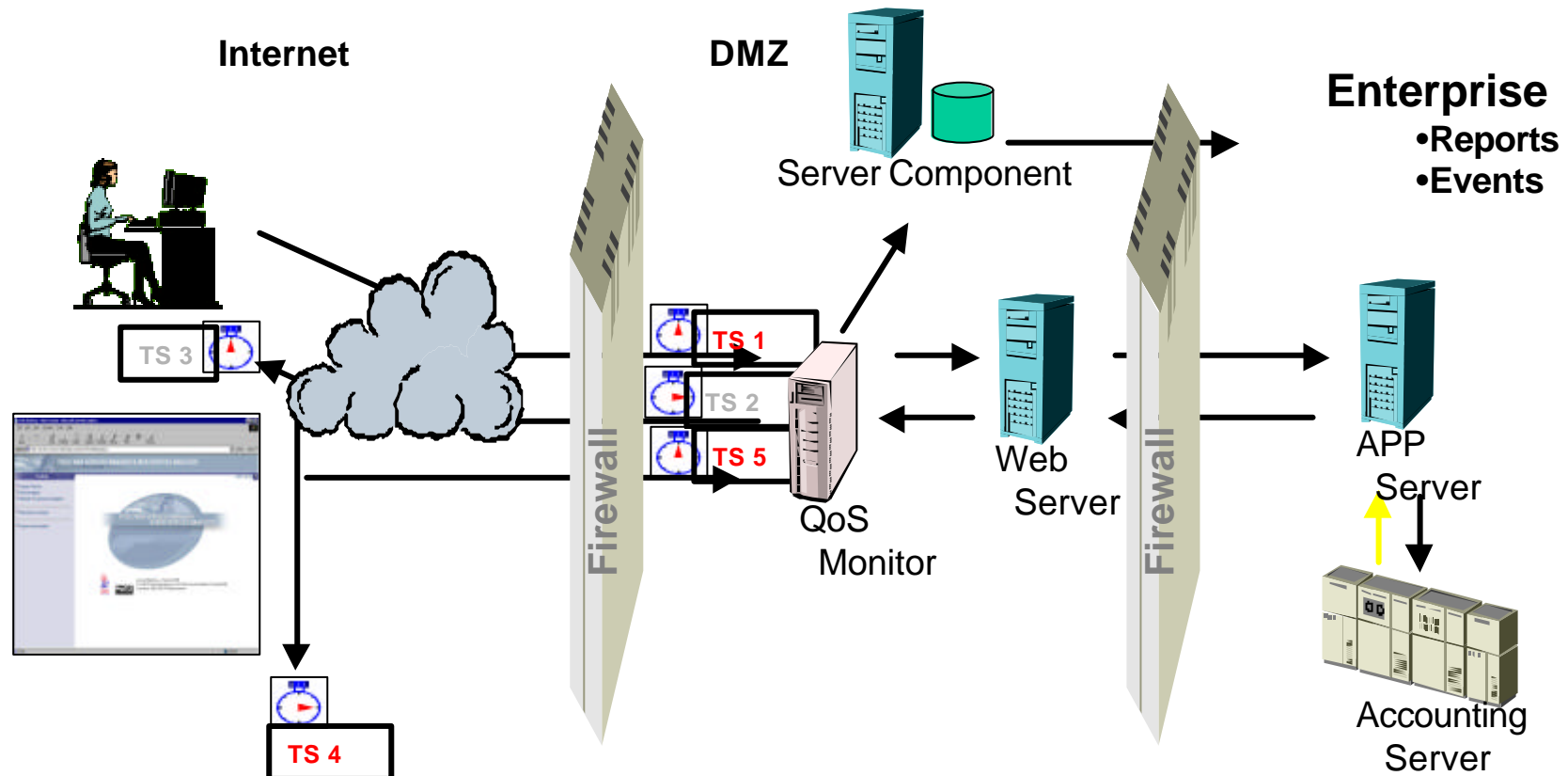
- **Monitoring for Transaction Performance**

- *Enterprise Application Performance Monitor*
- Quality of Service Monitor
- Synthetic Transaction Investigator (Simulation)

## ARM API



# Transaction Monitoring – Quality of Service in Web Environments



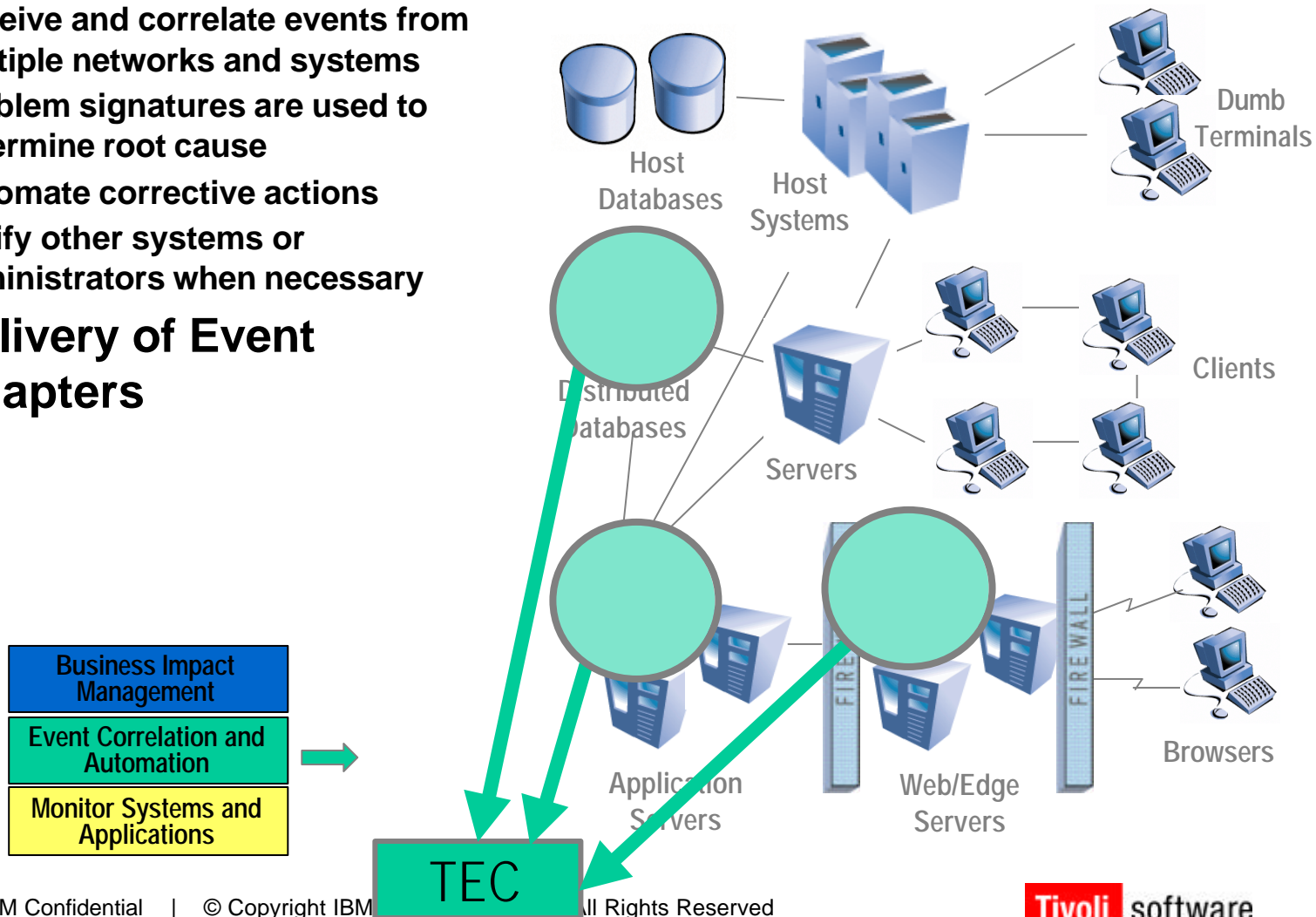
1. User initiates a transaction from a browser
2. Transaction flows through backend (TS2 – TS1)
3. Client time measured via Javascript (TS4 – TS3)
4. Results sent to QoS/Server Component where T5 is observed :  
 $TS5 - TS1 = \text{Round Trip Time}$



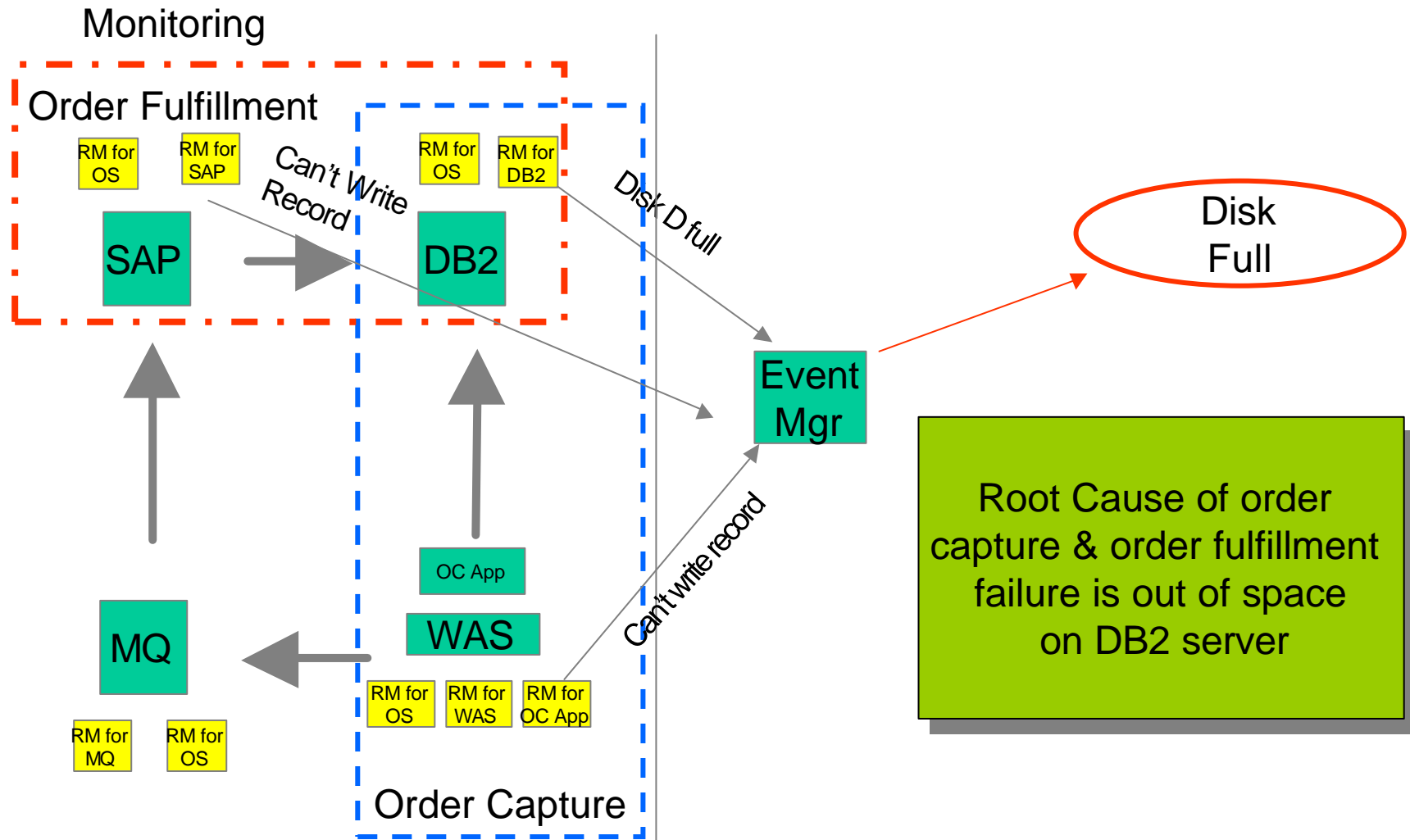
# Event Correlation Focuses on Multiple Resources



- Receive and correlate events from multiple networks and systems
- Problem signatures are used to determine root cause
- Automate corrective actions
- Notify other systems or administrators when necessary
- **Delivery of Event Adapters**



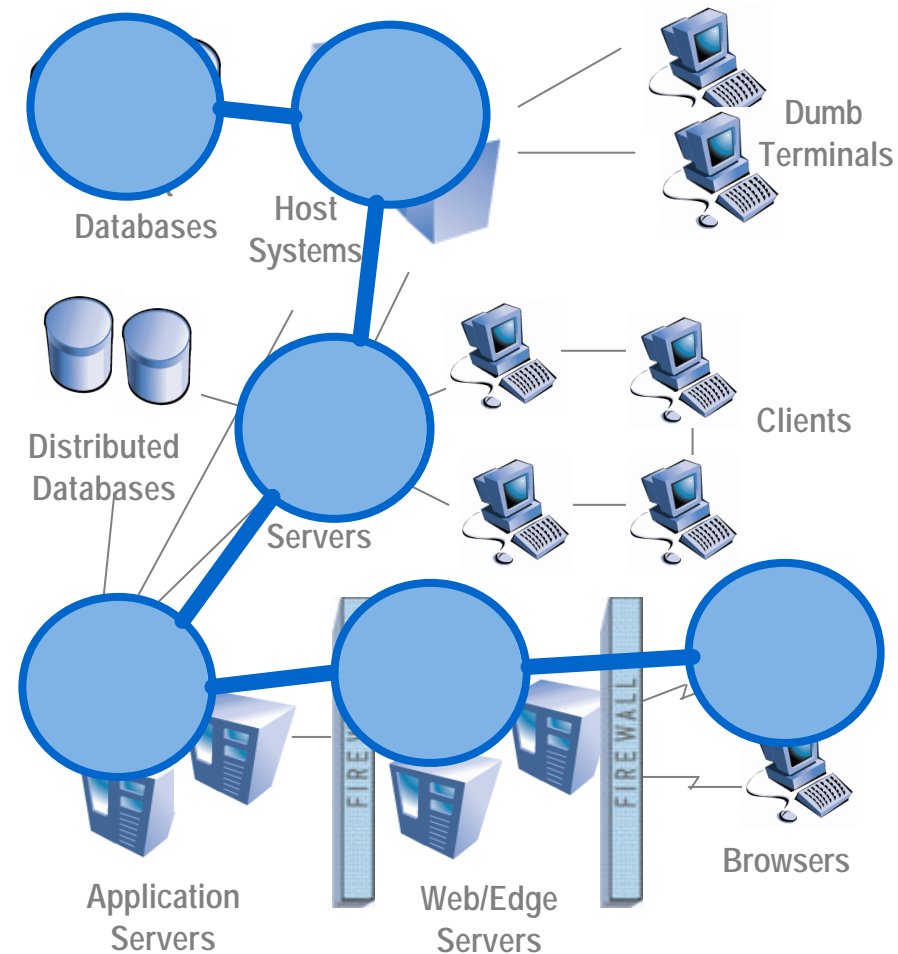
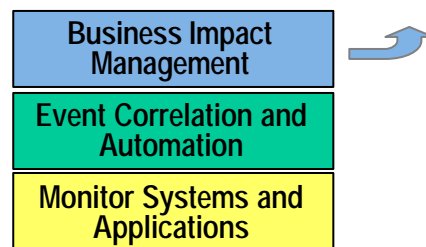
# Event Correlation Example



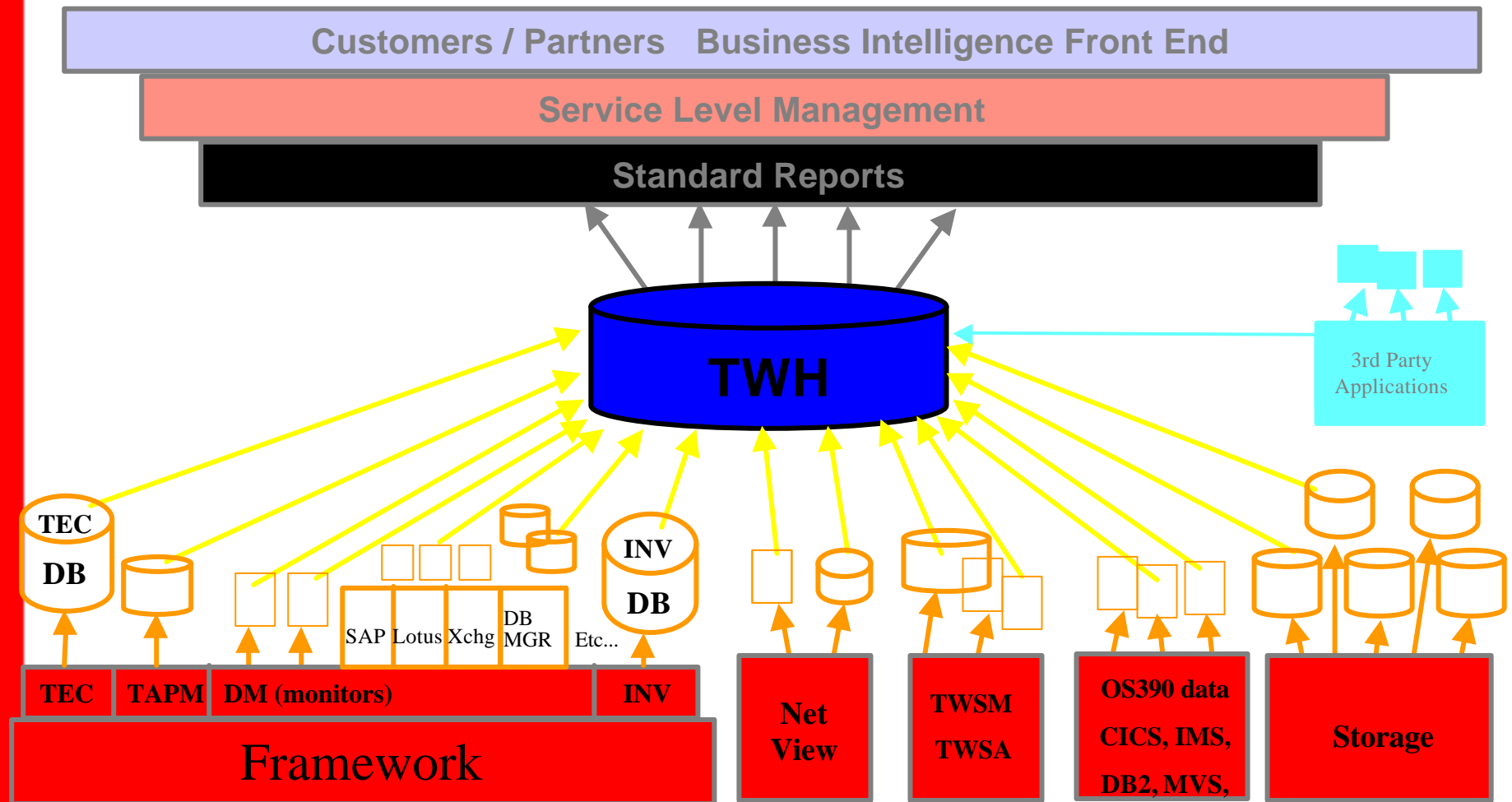
# Business Impact Management



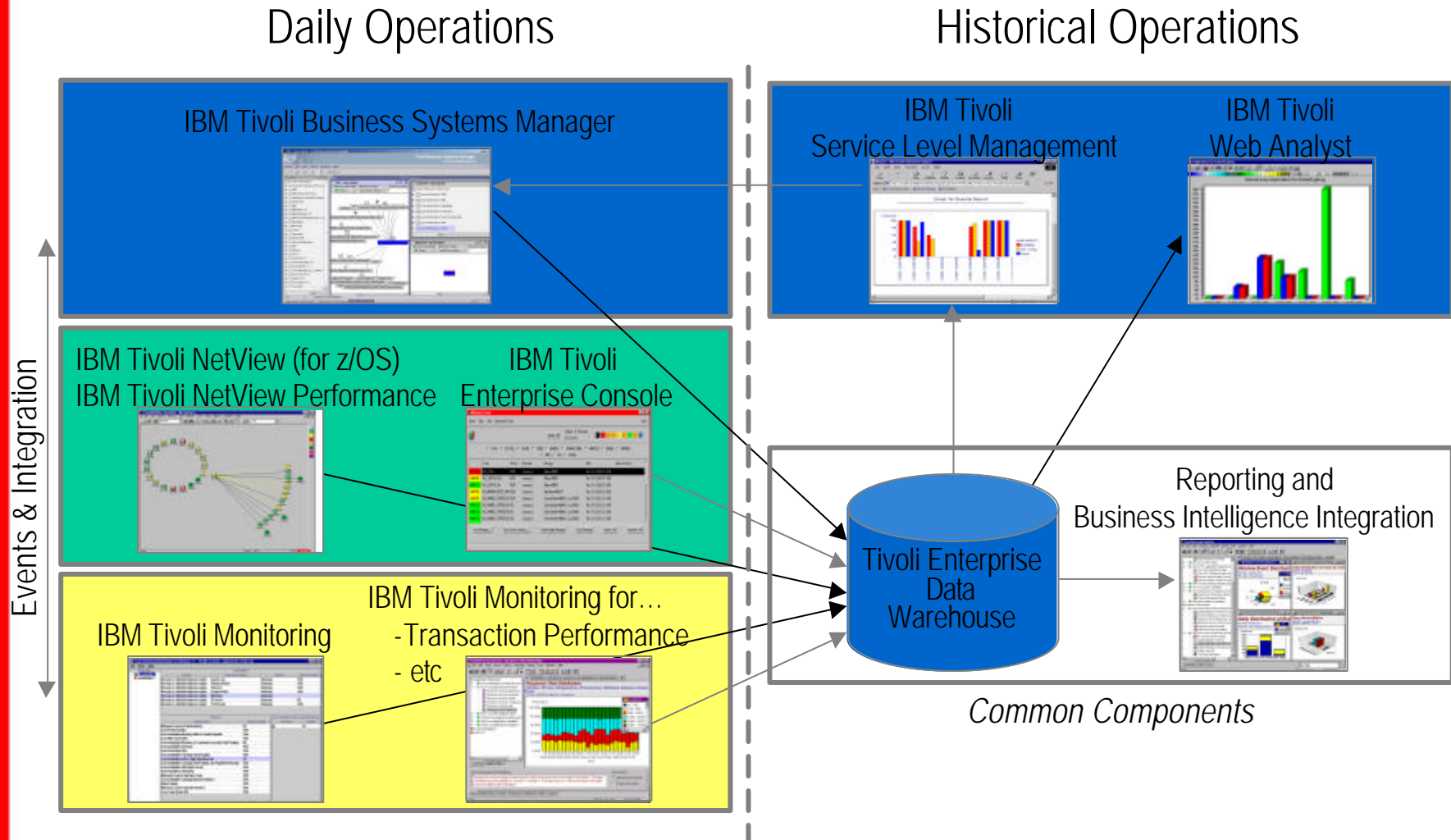
- Proactively determine the impact of events on the business
- View how business processes span the physical environment
- Verify end user service levels
- Analyze historical data and predict future service levels



# Reporting - Tivoli Warehouse



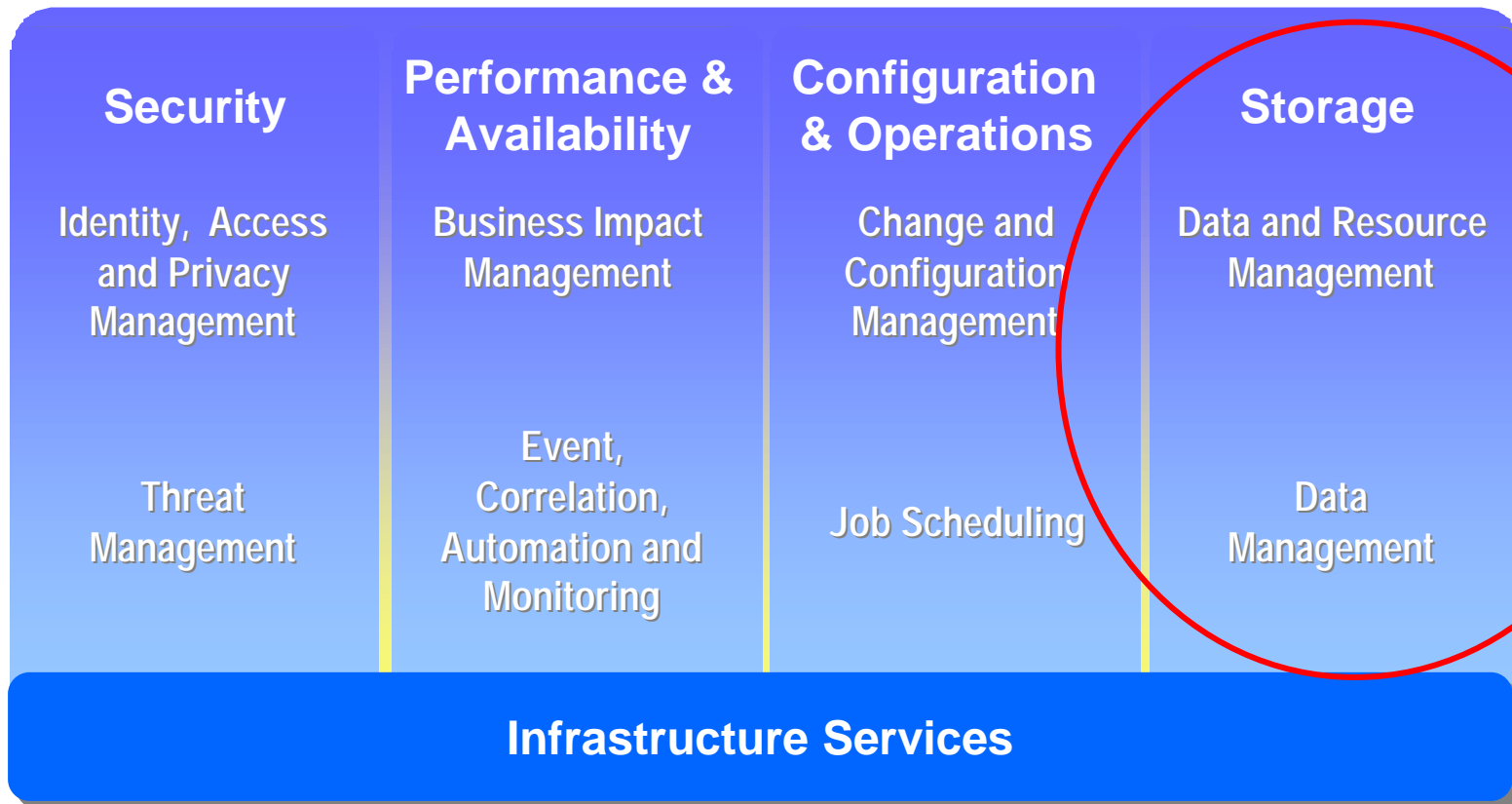
# Performance & Availability – Getting the ‘Big Picture’



# Storage



## Partner Middleware and Applications



# *Storage Management Solutions*



## •Storage Management

- Backup, Archive, Space Management, Disaster Recovery

## •Storage Resource Management

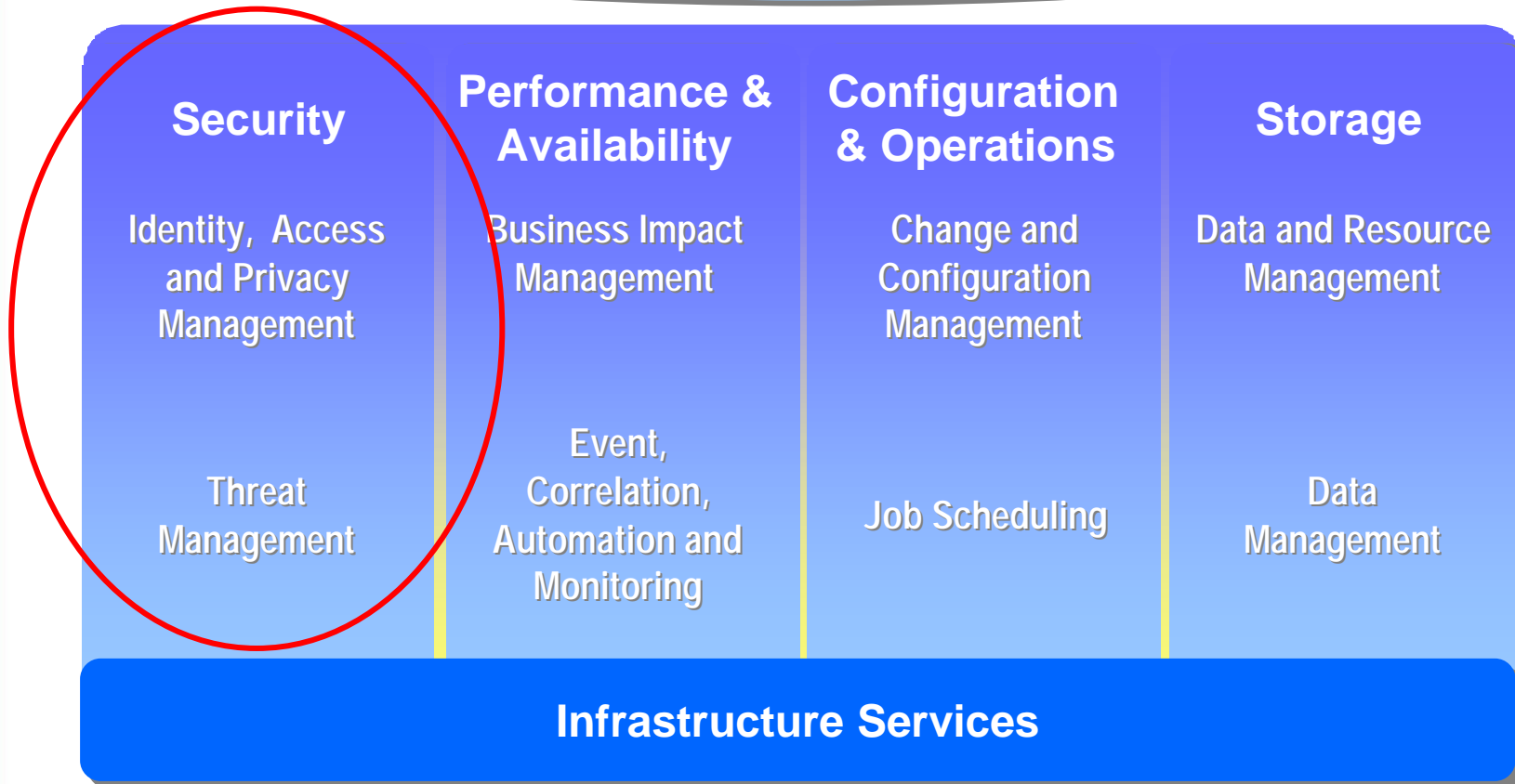
- Systems Management of Storage Networks
- Capacity, Asset, Availability, Event, Performance Management
  - Network Discovery
  - LUN Management (Host to LUN Mapping)
  - Policy Based File System Automation

## •SAN File Sharing

- Moving Big Files Fast over the SAN
- Sharing SAN Storage Devices in SAN Environments



## Partner Middleware and Applications

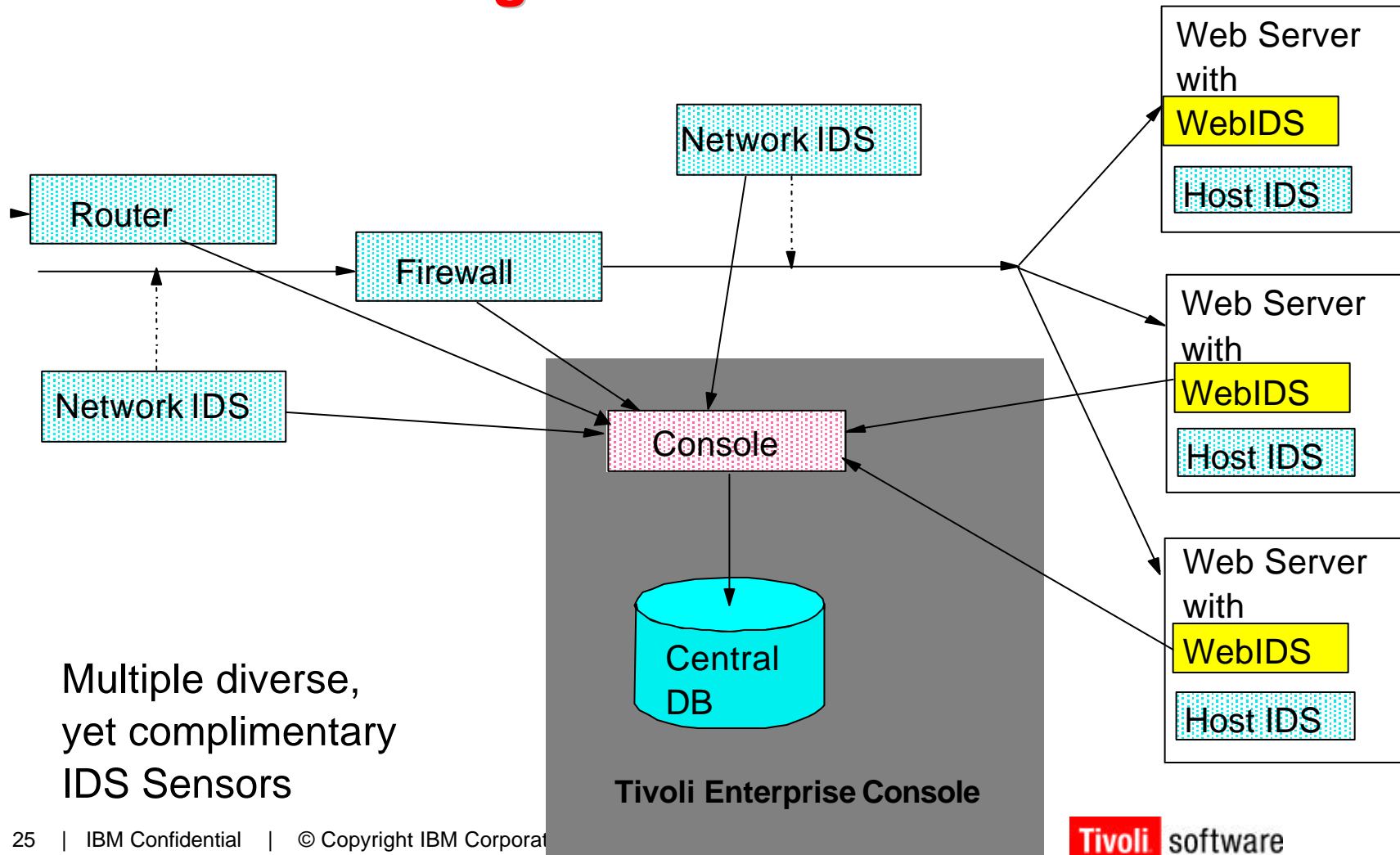




# Threat Management



## Tivoli Risk Manager



Multiple diverse,  
yet complimentary  
IDS Sensors

# Threat Management in Action



The screenshot shows a Microsoft Internet Explorer window displaying the Tivoli TEC Console. The browser address bar shows the URL: E:\tivoli\TEC Console\tivoli\tec\_temp0.html. The main content area displays a table of event details for a 'Web Attack' event.

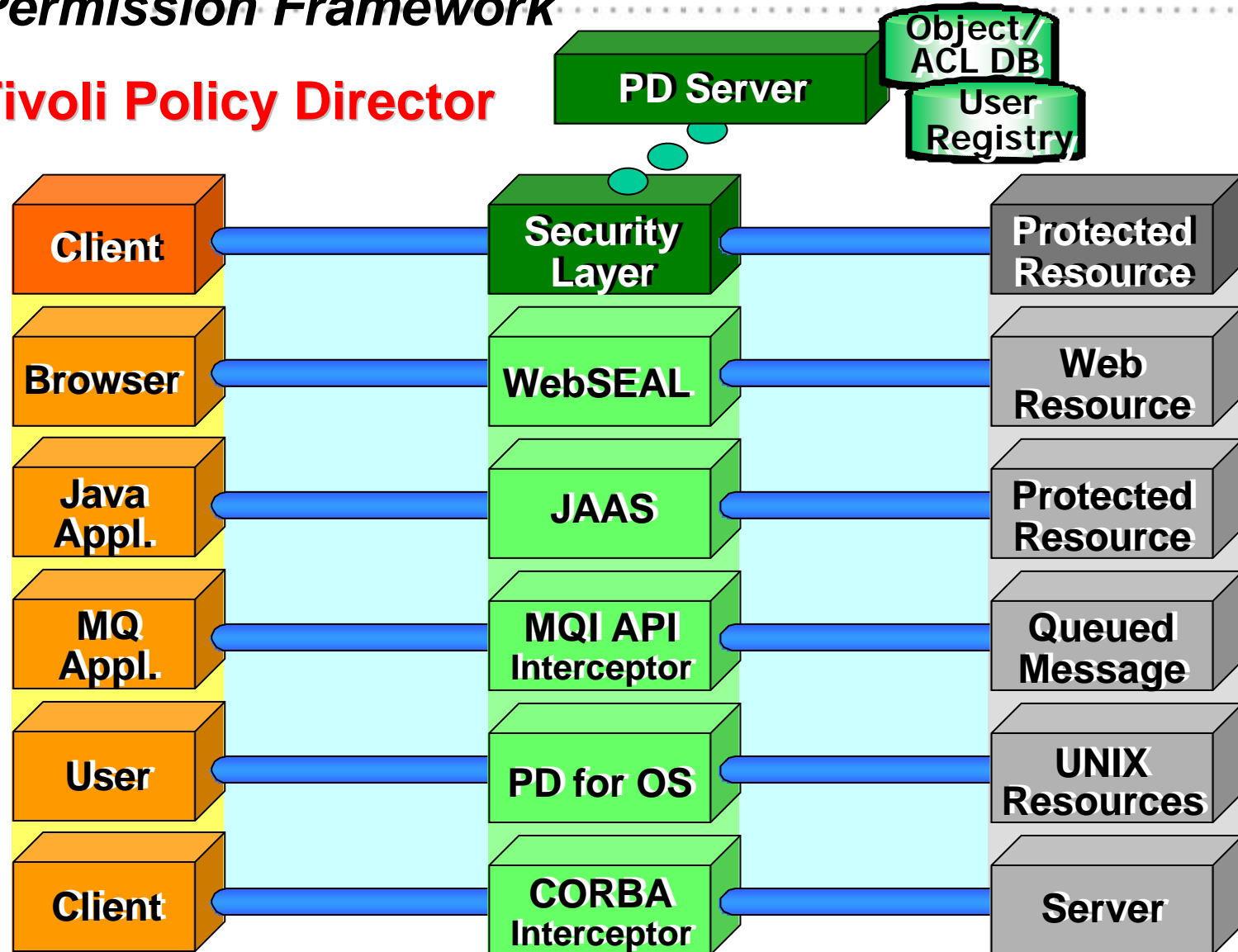
rm_Key1	categ_00001
rm_Key1Str	'Web Attack'
rm_Key2	9.143.5.53
rm_Key2Str	tntw0
rm_Key3	9.143.62.214
rm_Key3Str	9.143.62.214
rm_Level	5.206212e+000
rm_LevelMax	4.200000e+001
rm_LevelMaxSev	MINOR
rm_LevelMaxTime	'Wed Oct 17 11:00:00 2001'
rm_SensorList	[ webids_9.143.5.53]
rm_SignatureList	[ 'Insecure cgi pfdisplay.cgi', 'Insecure cgi pfdispaly.cgi', 'Insecure cgi aglimpse', 'Insecure cgi infogate', 'Insecure cgi info2www', 'Insecure cgi htmscript', 'Insecure cgi faxsurvey', 'Insecure cgi bash', 'Insecure cgi ksh', 'Insecure cgi tcsh', 'Insecure cgi csh', 'Insecure cgi sh', 'Insecure cgi tcl', 'Insecure cgi perl', 'Insecure cgi displayopenedfile.cfm', 'Insecure cgi openfile.cfm', 'Insecure cgi exprcalc.cfm', 'Insecure cgi winmsdp.exe', 'Insecure cgi codebrws.asp', 'Insecure cgi viewcode.asp']
rm_Timestamp	'Wed Oct 17 17:01:27 2001'

The left sidebar of the console shows a tree view with categories like RM Trustee, RM Situation, RM Sensor, RM Sensor Event, and RM Exception. A list of events is visible under RM Situation, all dated 17 octobre 2001 22:59:2.

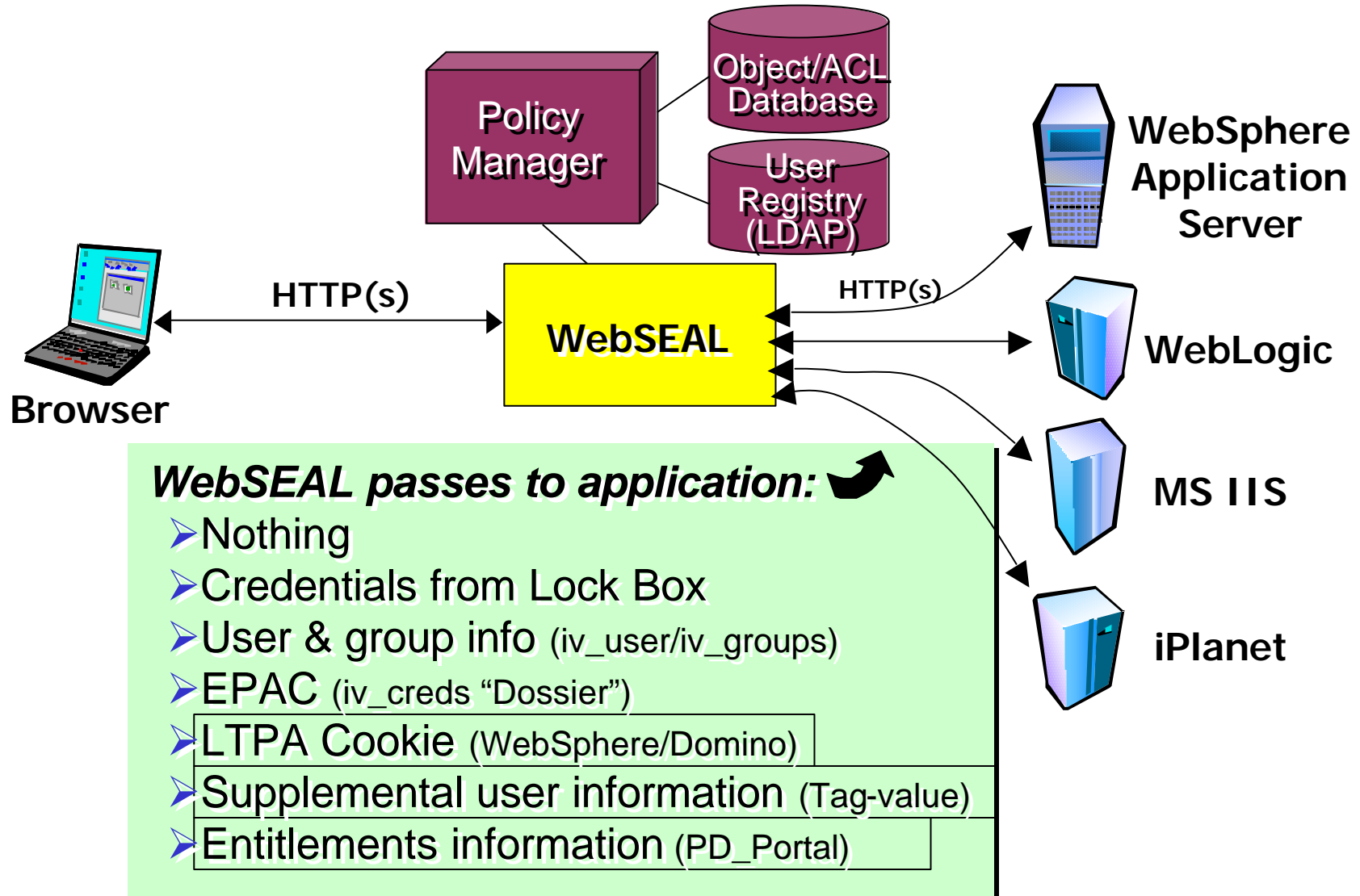
# Access Management - Common Permission Framework



## Tivoli Policy Director



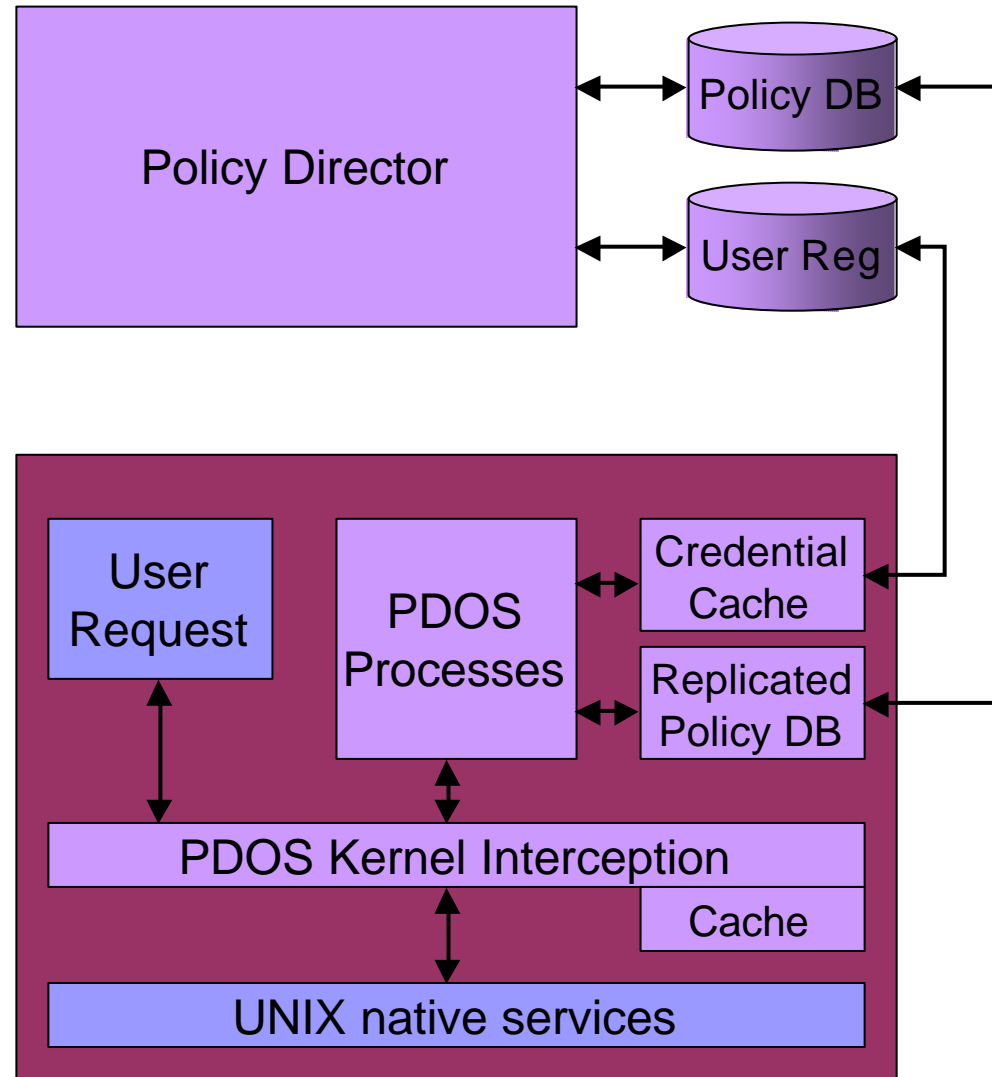
# Tivoli Policy Director – Secure Web Access



# Securing UNIX Operating Systems



## Tivoli Policy Director for Operating Systems

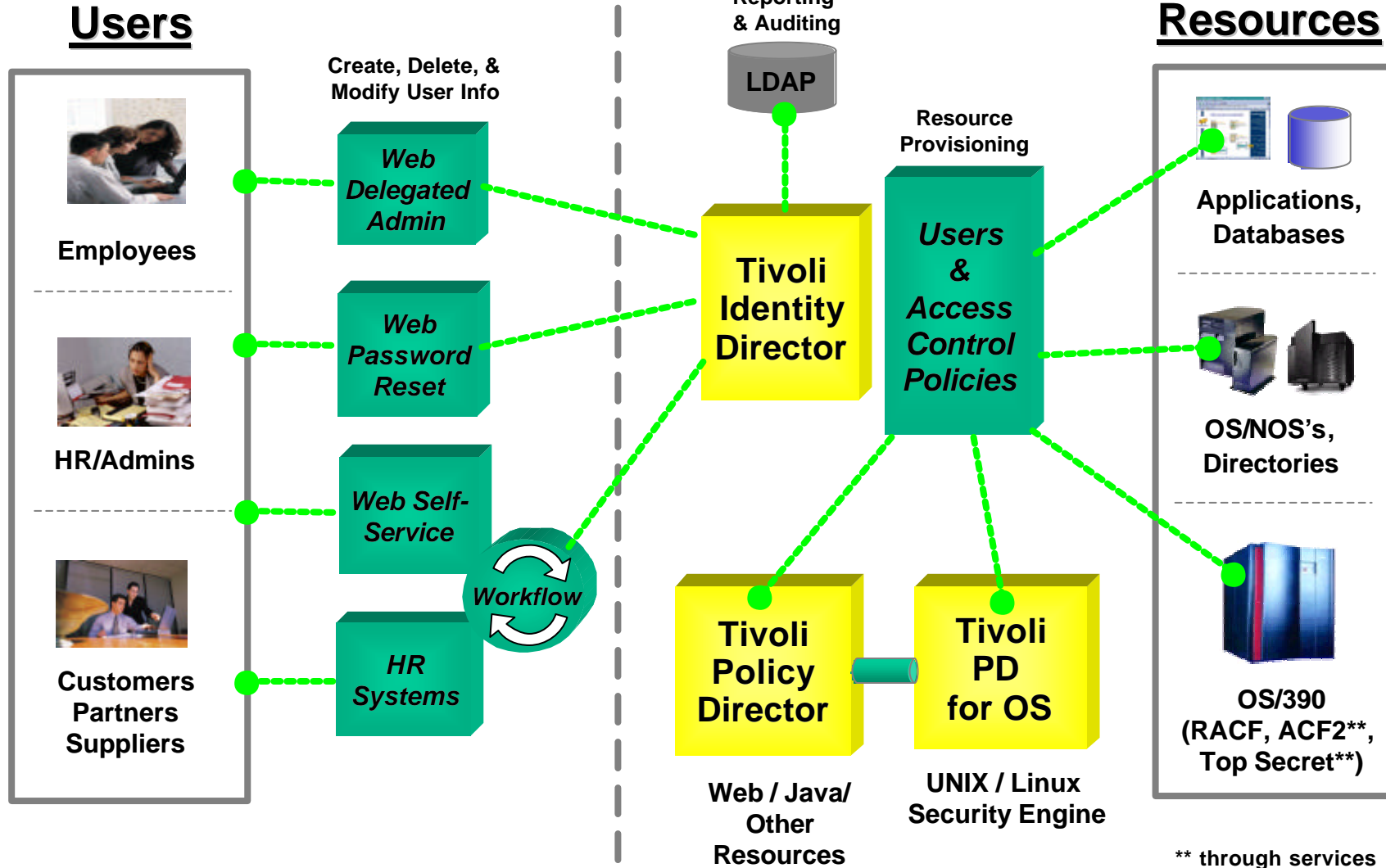


# Identity Management



Business Logic

System/Application Definitions



# Summary



- **Tivoli** is  **Systems Management Software**
- **Config & Operations / Performance & Availability / Security / Storage**
- **Highly Integrated but Modular Approach**
  - **Enterprise Customers (Market Leader)**
  - **Small-and-Medium Business**
- **Cross-Platform vs. Multi-Platform Approach**
- **Proven Scalability**