



# System z as the Security Hub of your Enterprise

***Joe Anthony***  
***Program Director, Security and  
Compliance Management***



# Agenda

- **Compliance**
- **The IBM Security Framework**
- **Security Governance, Risk and Compliance Management**
  - People and Identity Solutions
  - Data and Information Solutions
  - Application and Process Solutions
  - Network, Server, and End-point Solutions
  - Physical Infrastructure Solutions
- **Security Landscape**

## Compliance Challenges

*Companies face increased pressure to achieve and maintain compliance – all with limited resources, time and budget.*

- **“Through 2010, public companies that do not adopt a compliance management architecture will spend 50 percent more annually than their peers to achieve Sarbanes-Oxley compliance.”**
  - Gartner Group
- **“As companies look to make SOX compliance more efficient and repeatable and improve controls reliability, technology is becoming a key enabler of these efforts...Corporate governance, including Sarbanes-Oxley, remains one of the top five priorities for North American IT organizations in 2006.”**
  - Forrester Research



- **43% of CFOs think that improving governance, controls and risk management is their top challenge.**

64% of CIOs feel that the most significant challenges facing IT organizations are security, compliance and data protection

*CFO Survey: Current state & future direction, IBM Business Consulting Services*

*IBM Service Management Market Needs Study, March 2006*

# How PCI Compliance Works

- Twelve basic requirements supported by more detailed sub requirements

<b>Build and Maintain a Secure Network</b>	
1.	Install and maintain a firewall configuration to protect cardholder data
2.	Do not use vendor-supplied defaults for system passwords and other security parameters
<b>Protect Cardholder Data</b>	
3.	Protect stored cardholder data
4.	Encrypt transmission of cardholder data sent across open, public networks
<b>Maintain a Vulnerability Management Program</b>	
5.	Use and regularly update anti-virus software
6.	Develop and maintain secure systems and applications
<b>Implement Strong Access Control Measures</b>	
7.	Restrict access to cardholder data by business need-to-know
8.	Assign a unique ID to each person with computer access
9.	Restrict physical access to cardholder data
<b>Regularly Monitor and Test Networks</b>	
10.	Track and monitor all access to network resources and cardholder data
11.	Regularly test security systems and processes
<b>Maintain an Information Security Policy</b>	
12.	Maintain a policy that addresses information security – Connected Entities and Contracts

- Audits to achieve certification
- Penalties and incentives can be substantial

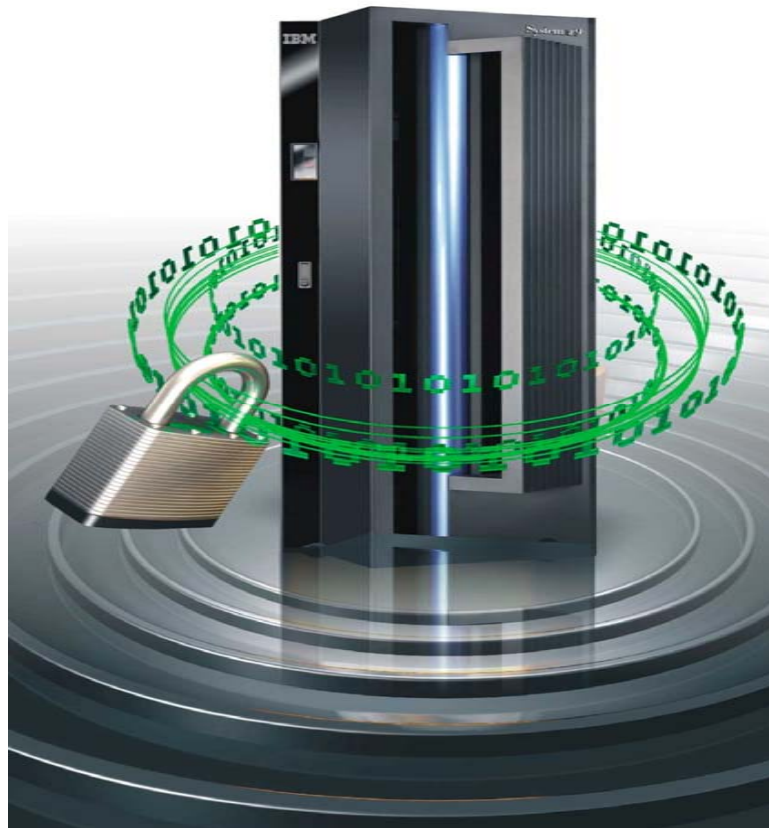
PCI Security Standard Council  
[www.pcisecuritystandards.org](http://www.pcisecuritystandards.org)

# PCI – How System z Can Help

*Mitigating the risk of security breaches*

*Helping to reduce the complexity and cost of enterprise security solutions*

*Robust security to enable consolidation*

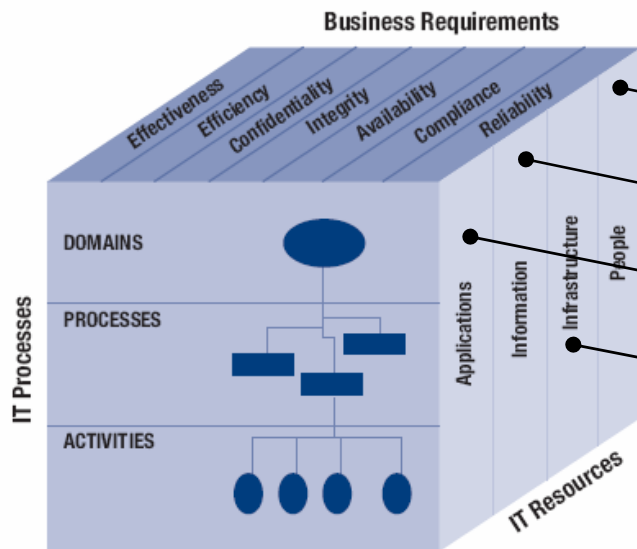


- Security-rich holistic design to help protect system from malware, viruses, and insider threats
- Highly secure network security
- System z as a central repository for sensitive data
- Minimize proliferation of sensitive data throughout enterprise
- Encryption solutions to help secure data from theft or compromise
- Leverage the mainframe security policies and processes that have been developed over many years in your enterprise
- Allowing you to address compliance needs with more confidence

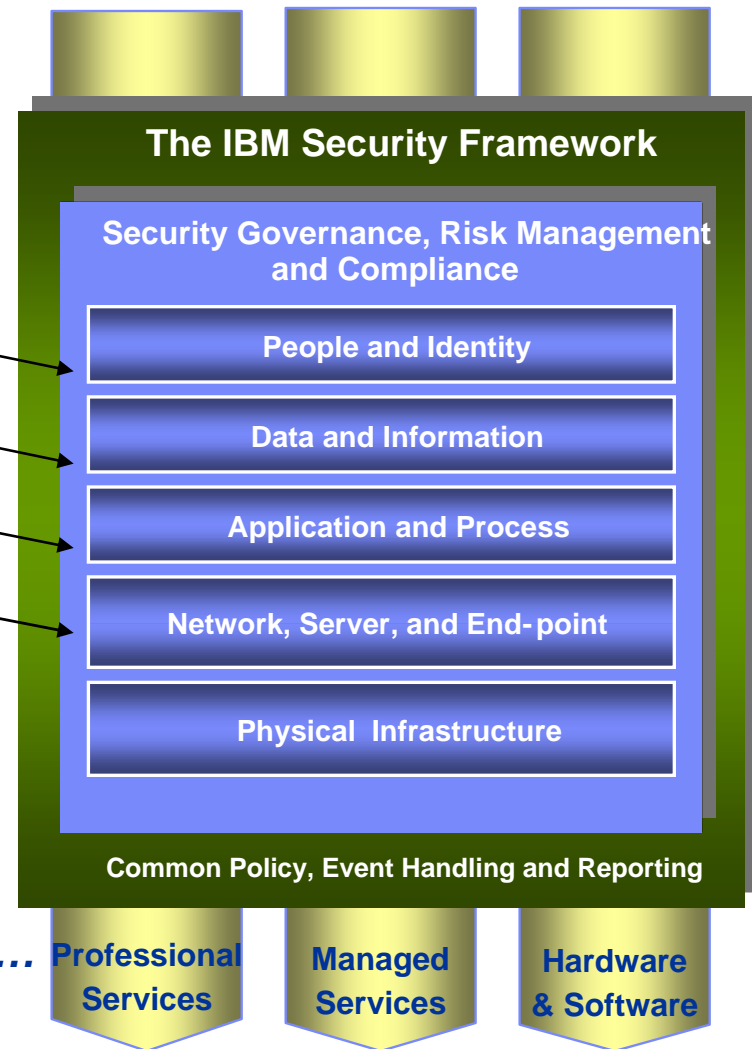
# Security Landscape

## Control Objectives for Information and related Technology (COBIT)

Figure 15—The COBIT Cube



Source: IT Governance Institute, Control Objectives for Information and related Technology (COBIT) 4.0.



Delivered by...

Professional Services

Managed Services

Hardware & Software

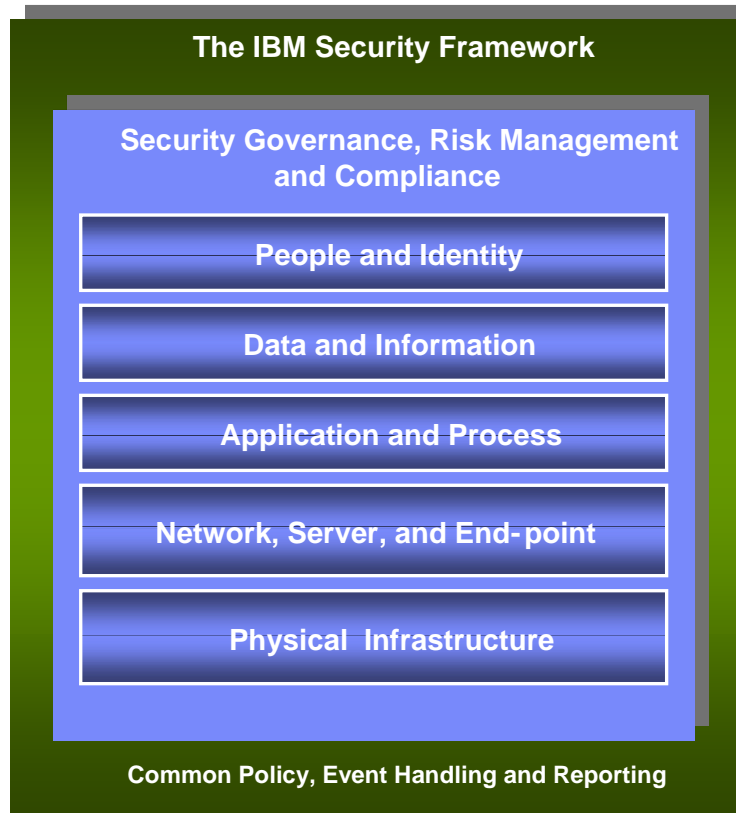


# Security, Risk and Compliance Management

*Enabling collaboration while mitigating risk*

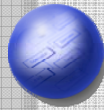
## ■ IBM delivers:

- Timely **visibility** into business continuity risks and compliance posture
- More effective **control** over utilization of sensitive business assets
- Efficient **automation** of the identification and remediation of vulnerabilities and the addressing of compliance mandates



### • SECURITY COMPLIANCE

- Demonstrable policy enforcement aligned to regulations, standards, laws, agreements (PCI, FISMA, etc..)



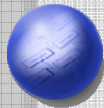
### • IDENTITY & ACCESS

- Enable secure collaboration with internal and external users with controlled and secure access to information, applications and assets



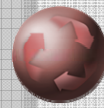
### • DATA SECURITY

- Protect and secure your data and information assets



### • APPLICATION SECURITY

- Continuously manage, monitor and audit application security



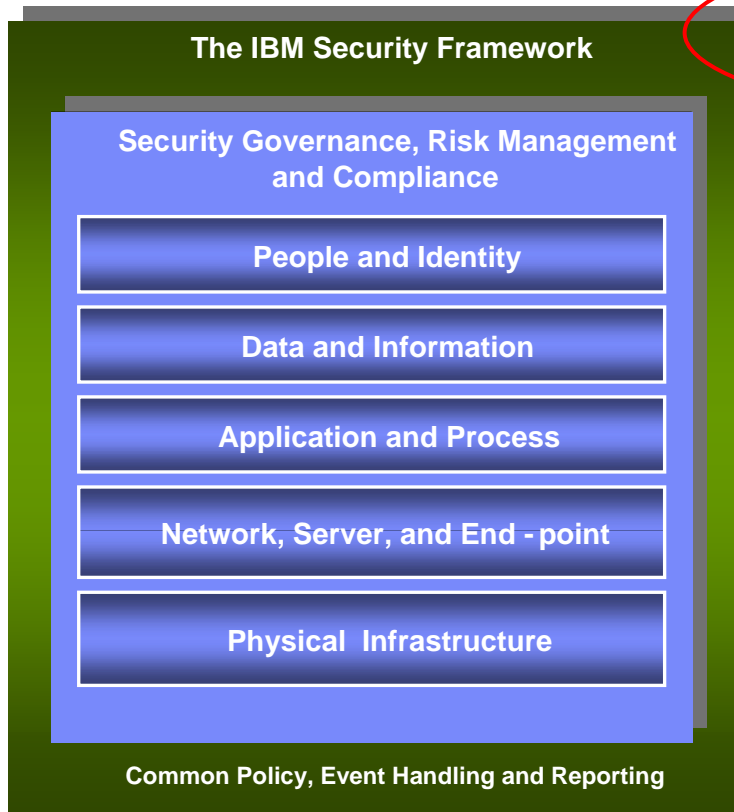
### • INFRASTRUCTURE SECURITY

- Comprehensive threat and vulnerability management across networks, servers and end-points

# Security, Risk and Compliance Management

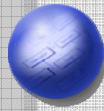
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## IBM Security Solutions



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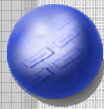
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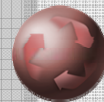
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# Tivoli Compliance Insight Manager

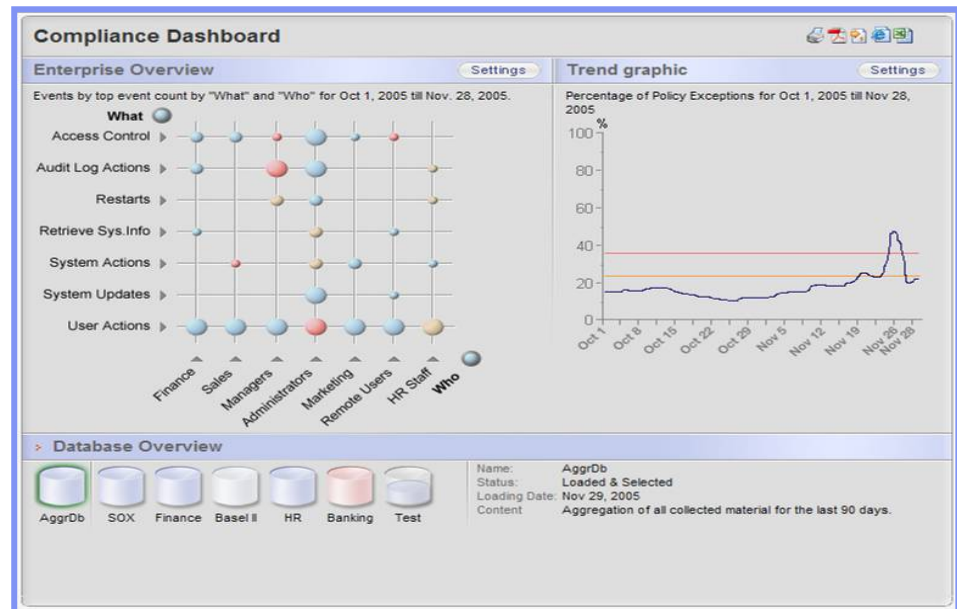
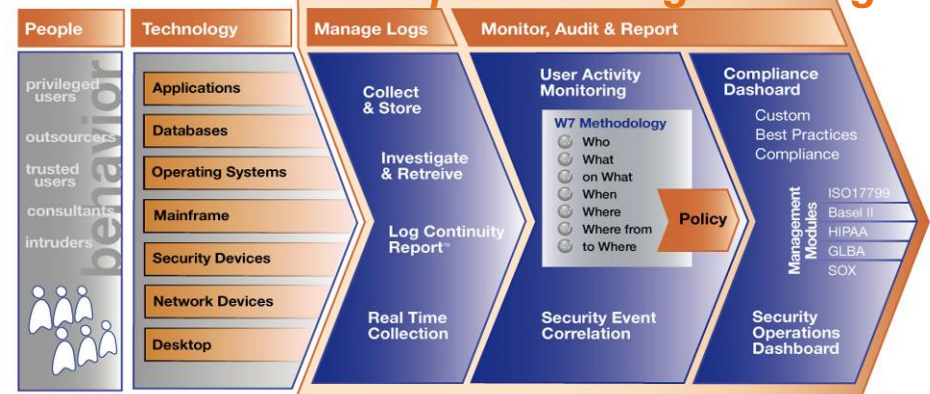
## Monitoring and Assessing Compliance:

Tivoli Compliance Insight Manager provides an enterprise security compliance dashboard with in-depth privileged user **monitoring** capabilities, all powered by a comprehensive log and audit trail collection capability

### Key Features

- Compliance management modules and regulation-specific reports
- Unique ability to monitor user behavior, including PUMA (Privileged User Monitoring and Audit) reporting
- Broadest, most complete log and audit trail capture capability
- W7 log normalization translates your logs into business terms
- Easy ability to compare behavior to regulatory and company policies – auditors no longer need RACF expertise to monitor activities
- Enabler event source integrates the OS and mainframe database events into TCIM's enterprise compliance dashboard

### Tivoli Compliance Insight Manager





Regulation specific modules with tailored reports to jumpstart your compliance efforts – saving you staff time and reducing audit costs

Dashboard Trends Reports Regulations Policy Groups Distribution Settings

EPRORADB » SOX » Regulations Resource Center » Sarbanes Oxley	
Sarbanes Oxley (9.6.2) Sensitive system isolation	Exceptions and failures ag
Sarbanes Oxley (9.7.2.3) Logging and reviewing events	Exceptions and failures recorded by the Tivoli Compliance Insight Manager system.
Sarbanes Oxley (9.8.1) Mobile worker	Exceptions and failures for mobile workers.
Sarbanes Oxley (9.8.2) Teleworker	Exceptions and failures for teleworkers.
Sarbanes Oxley (10.4.1) Control of operational software	Exceptions and failures caused by updating or changing of critical system components.
Sarbanes Oxley (10.4.2) System test data	Controlled access to System test data.
Sarbanes Oxley (10.4.3) Source code access	Exceptions and failures caused by accessing source code.
Sarbanes Oxley (10.5.4) Covert channels and trojan code	Exceptions found from anti-virus software
Sarbanes Oxley (12.1.3) Human Resource data access	Exceptions and failures against Human Resources data
Sarbanes Oxley (12.1.4) Data access	Exceptions and failures against HR, Sensitive and Proprietary data.
Sarbanes Oxley (12.1.5) Prevention of misuse of information processing facilities	Misuse of information processing facilities for non-business purposes
Sarbanes Oxley (12.1.7.1) Rules for evidence	Tivoli Compliance Insight Manager self audit report. Evidence collected conforms to the rules laid down in the relevant law
Sarbanes Oxley (12.2.1) Compliance with security policy	Tivoli Compliance Insight Manager self audit report. Monitors changes to Tivoli Compliance Insight Manager settings.
Sarbanes Oxley (12.2.2) Technical compliance checking	Show that the systems have been checked for compliance with security implementation standards
Sarbanes Oxley (12.3.2) Changes to the Tivoli Compliance Insight Manager auditing system	Tivoli Compliance Insight Manager self audit report.
Sarbanes Oxley (FFIEC 1.1.1.4) null	
Sarbanes Oxley (FFIEC 1.3.1.1) null	
Sarbanes Oxley (FFIEC 1.4.1.1) System utilities usage summary	Exceptions and Events for use of System Utilities.
Sarbanes Oxley (FFIEC 1.6.1) Remote Access	Events and exceptions caused by users and administrators accessing the systems remotely.
Sarbanes Oxley (FFIEC 8.1.3) Self Audit	Events caused by the Tivoli Compliance Insight Manager monitoring system
Sarbanes Oxley (II.1) Summary	Event Summary for the selected database.

# IBM Health Checker for z/OS

*Identifies potential configuration problems*

*Identifies changes in configuration values that occur over the life of an IPL before they can cause damage*

- **Health checker consists of:**
  - A framework to manage registration, scheduling, processing, reporting of health checks
  - Checking mechanism that evaluates settings
  - Extensible - authored by IBM, ISVs, or users.
- **Health Checker Framework improvements:**
  - Support for defining new checks in Parmlib
- **More health checks:**
  - GRS
  - Communications Server
  - DFSMS
- **z/OS Communications Server GUI improvements:**
  - Support for QoS and IDS policy configuration
  - Configure IPsec, AT - TLS, QoS, and IDS policy via a consistent user interface

# Security, Risk and Compliance Management

*Enabling collaboration while mitigating risk*

## IBM Security Solutions



### • SECURITY COMPLIANCE

- Demonstrable policy enforcement aligned to regulations, standards, laws, agreements (PCI, FISMA, etc..)

### • IDENTITY & ACCESS

- Enable secure collaboration with internal and external users with controlled and secure access to information, applications and assets

### • DATA SECURITY

- Protect and secure your data and information assets

### • APPLICATION SECURITY

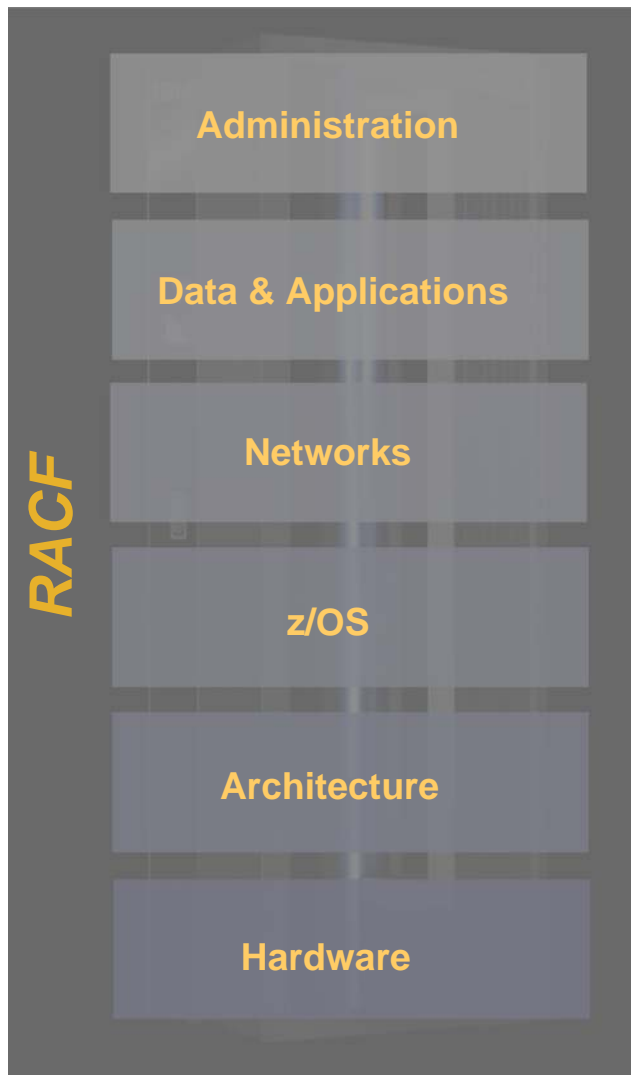
- Continuously manage, monitor and audit application security

### • INFRASTRUCTURE SECURITY

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# Resource Access Control Facility (RACF)

*The backbone of mainframe security*



Authentication  
Authorization  
Administration  
Auditing

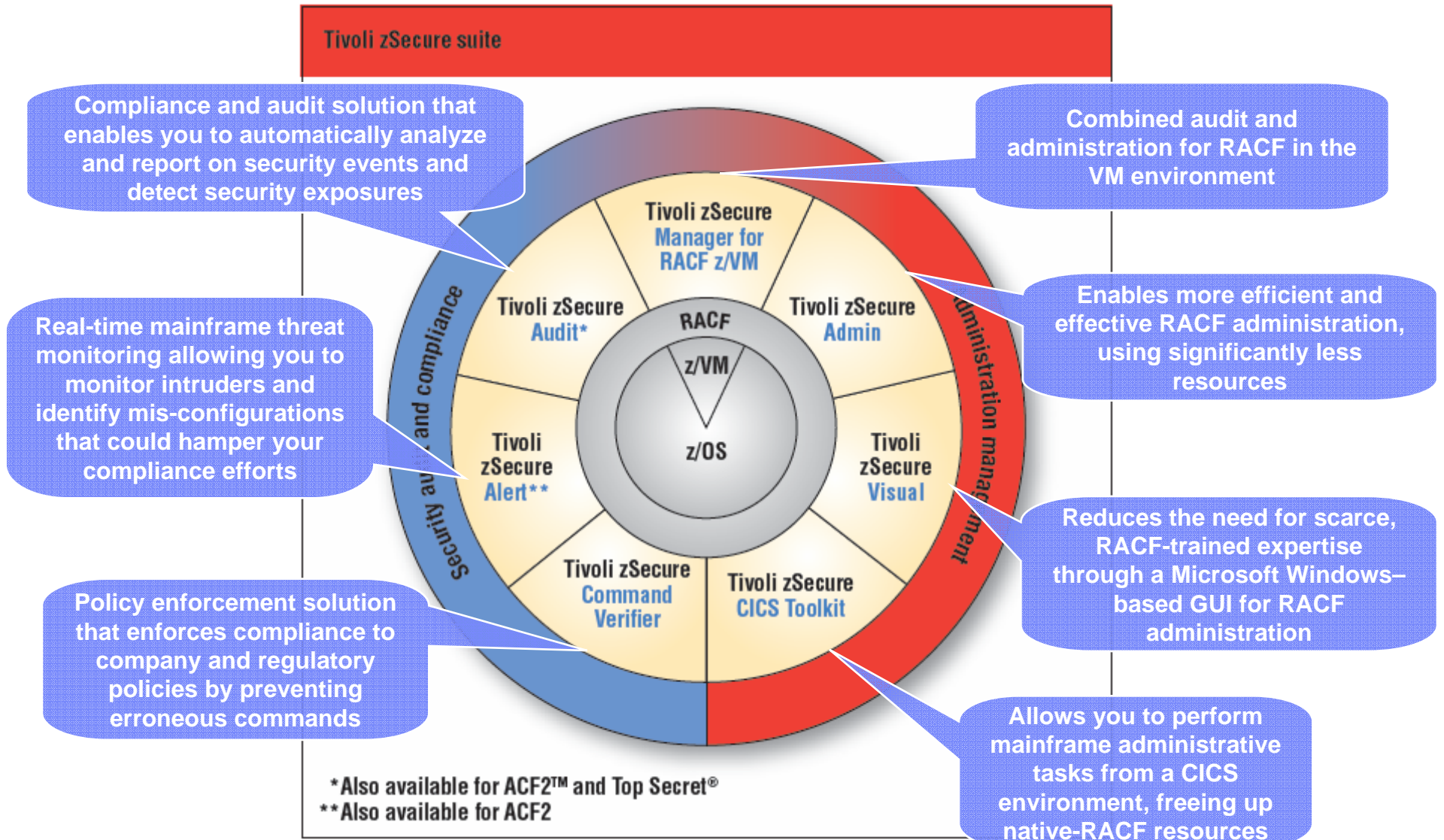
**Enables application and database security without modifying applications**

**Can reduce security complexity and expense:**

- **Central security process that is easy to apply to new workloads or as user base increases**
- **Tracks activity to address audit and compliance requirements**



# IBM Tivoli zSecure Suite



**Note:** ACF2 and Top Secret are either registered trademarks or trademarks of CA, Inc. or one of its subsidiaries.



# Tivoli Identity Manager for z/OS

## *Policy Based Identity Management*



Provision users across the enterprise

### Value of Tivoli Identity Manager

- Automated, policy-based identity management
- Provides workflow for automating the approval process
- Allows for self service enrollment and password management
- Keeps an audit of user management operations
- **Reports on out-of-policy changes**

### Identity information and management are mission-critical

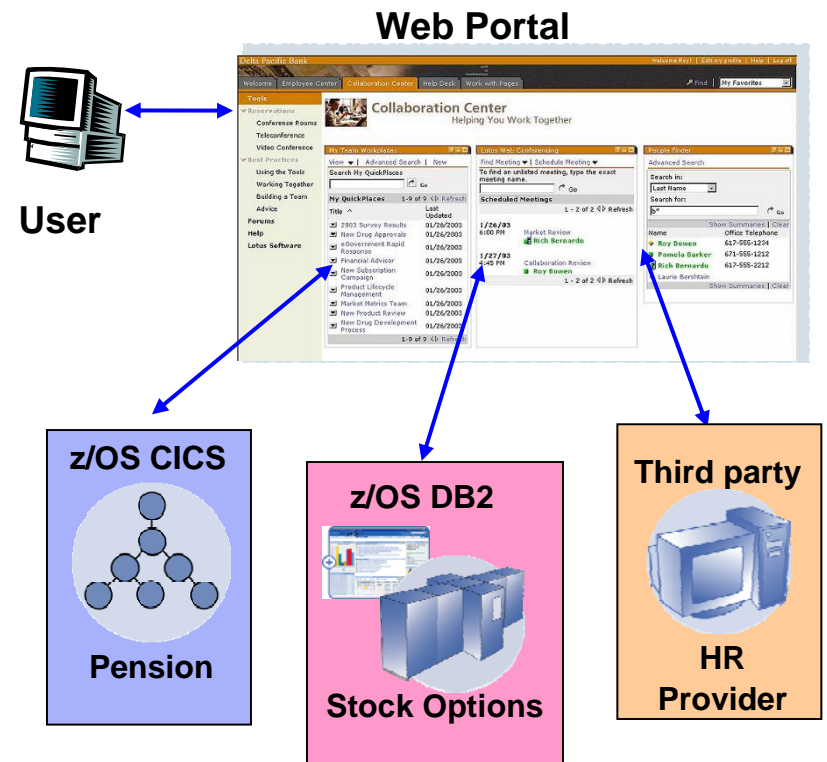
#### Advantages of TIM on z/OS

- Highly available and resilient
- Highly secure
- Scalable
- Integrates with z/OS RACF
- Complements Tivoli zSecure

***A single hub for provisioning users***

# Tivoli Federated Identity Manager for z/OS

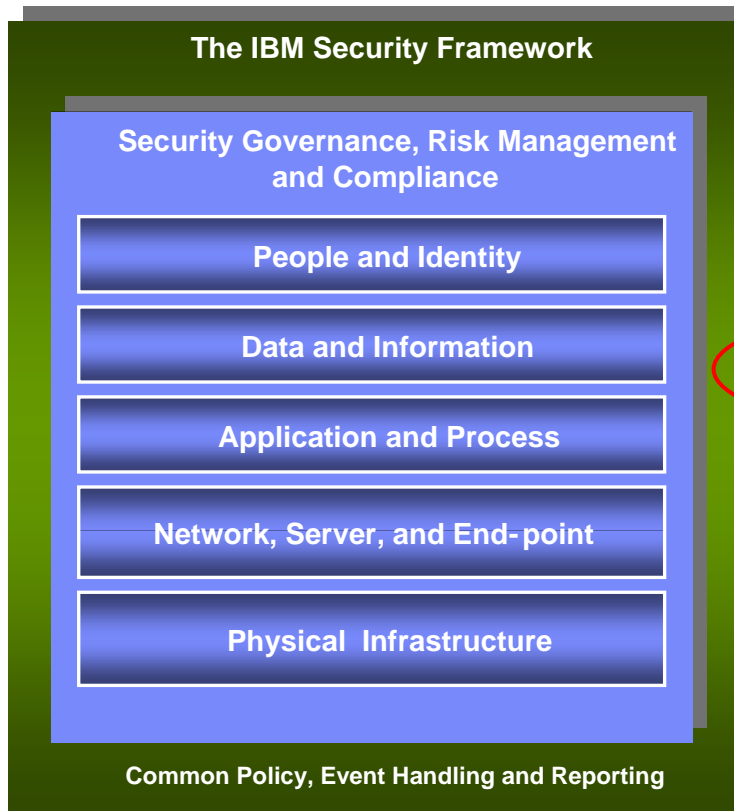
- Security integration for web services that use z/OS CICS or other z/OS subsystems
- Protect z/OS-hosted web services using z/OS security services
- Preserve identity of the requesting user for access control and audits
- Use z/OS auditing to assist regulatory compliance
- Improve integration and simplify the user experience



# Security, Risk and Compliance Management

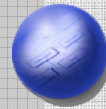
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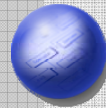
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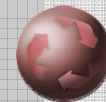
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# DB2, IMS and IBM Data Encryption on System z

## *Protecting sensitive and confidential data*

### Key Database Capabilities

- **Provides access control to DB2/IMS resources via DB2/IMS / RACF Interface including:**
  - Resource (plan/package/table) authorization
  - Role based security (with DB2 v9, IMS v9/10 and RACF 1.8)
    - Network Trusted Context
    - Database Roles
  - MLS - Row Level Security (with DB2 v8, IMS v9/10 and RACF 1.7)
- **Provides encryption support via SQL in V8**
- **Provides trace facility performance and functionality improvements**

### Key Encryption Capabilities

- **Provides a single tool for encrypting both IMS and DB2 data**
- **Can be customized at the IMS segment level and at the row level for DB2.**
- **Uses hardware encryption for the fastest possible encryption**
- **Runs as an EDITPROC**
- **Supports either clear key or secure key**
- **Exploits zSeries and S/390 Crypto Hardware features, which results in low overhead encryption/decryption**
- **Data is protected using encryption algorithms approved by the U.S. National Institute of Science and Technology**



## DB2 Audit Management Expert / IMS Audit Management Expert

### Value

- Helps maintain data compliance required by government and industry regulations.
- Frees up valuable IT staff resources by allowing auditors to participate in data auditing activities with less DBA involvement.
- Does not require auditors to be privileged users on the system they are auditing so database security is preserved,
- Eliminates the manual auditing processes that can be time consuming and error prone.
- Does not require auditors to log into DB2/IMS and does not permit them to directly manipulate any DB2/IMS resource
- Where a significant auditing exposure is suspected, DB2 Audit Management Expert allows an authorized auditor to investigate the exposure by reviewing what data has been changed in the system.

### Key Capabilities

- Selectively audits inserts, updates, deletes, and reads of DB2 and IMS systems
- Provides views of all reported activity on specific DB2 objects (such as read and change)
- Collects trace data in an audit repository, and then views, analyzes and generates reports on the data
- Supports an easy to use interface for both auditors, DBAs, and security administrators to work together to deliver accurate data for use in audit activity
- Offers a user-friendly administration interface that enables AME administrators to easily define AME entities such as users, groups and collection criteria.

# Optim Data Solution

*Software solution for application-aware database archiving, test data management and data masking critical to an organization's Enterprise Data Governance strategy.*

## Value

- Reduce risk associated with security breaches and protect the privacy of client & employee information
- Reduces operating costs related to Data Governance
- Secures and protects sensitive information
- Cost effectively manages storage costs related to data retention requirement

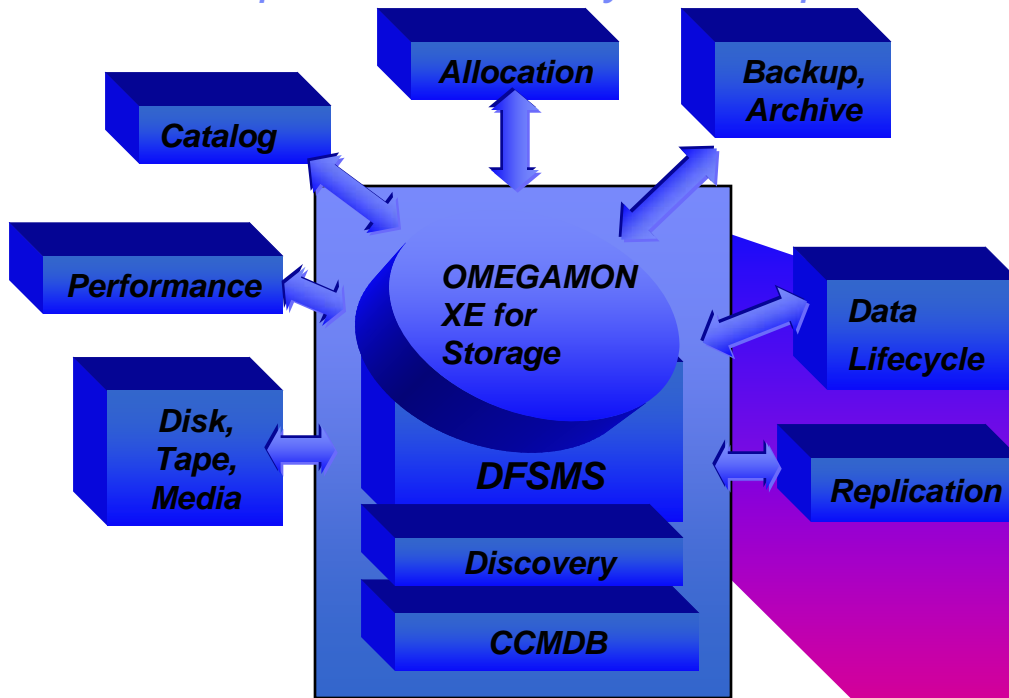
## Key Capabilities

- **Database archiving** - manage and maintain application aware archives of business data for both packaged and custom database applications.
  - Provide fine grained control over which data is archived by applying user defined business rules
  - Help analysts assess how archives should be tiered to ensure decision makers can access the right business data objects at the right time.
- **Test data management** - Streamline total application testing and hardening processes with comprehensive capabilities for creating referentially-intact, right-sized test databases, quickly refreshing test environments and automating comparison of test results against baseline data
- **Data privacy** – Contextual, application-aware data masking capabilities enable organizations to substitute sensitive data with realistic and fully functional masked data, thereby protecting confidentiality, safeguarding customer loyalty and supporting compliance with privacy initiatives.



# IBM Storage Management Portfolio for System z Capabilities

*Ensure rapid data recovery for compliance and auditability!*



- ✓ **Automation, Visibility, and Control of backup & recovery processes**
- ✓ **Control use of storage devices more efficiently while governing data migration to tape, and catalog management**
- ✓ **Audit and report on archiving – status, problems, take corrective action to ensure compliance with retention policy**
- ✓ **Visibility to backup & recovery of both key data and key infrastructure files (e.g. ICF and Tape Catalogs)**

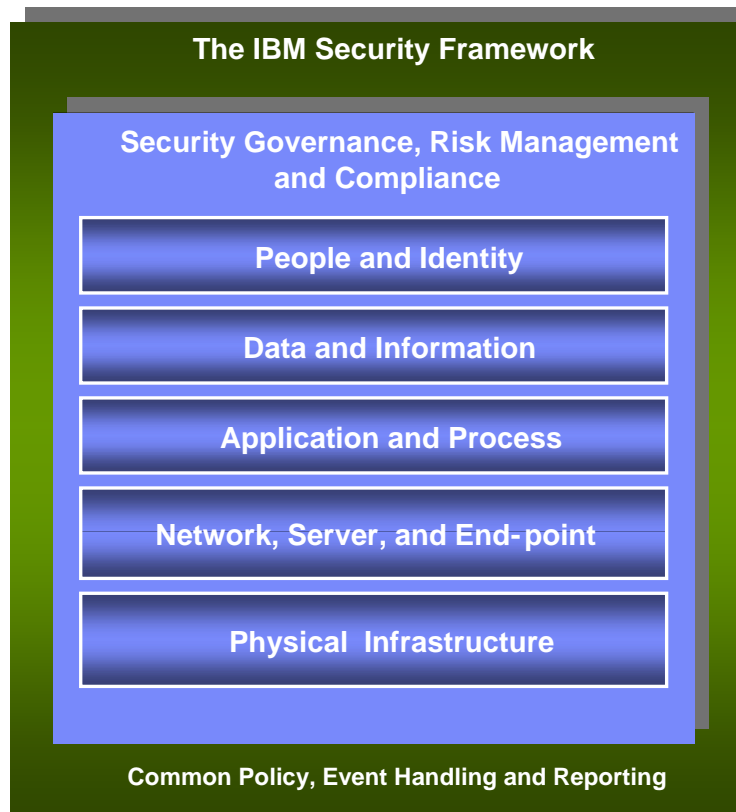
Infrastructure Management			
IBM Tivoli OMEGAMON XE for Storage on z/OS	IBM Tivoli Advanced Catalog Management for z/OS	IBM Data Facility Product (DFSMSdftp)	IBM Tivoli Tape Optimizer on z/OS
IBM Removable Media Managers (DFSMSmm, IRMM)	Softtek Transparent Data Migration Facilities (TDMF, LDMF)	IBM Transactional VSAM (DFSMSStvs)	IBM Tivoli Allocation Optimizer for z/OS
Allows administrators to manage data and a broad range of devices, such as switches, tape, removable media and storage servers			
Business Continuity			
IBM Data Set Services (DFSMSdsss)	IBM z/OS Global Mirror	IBM Backup and Restore Manager for z/VM	IBM Tivoli Advanced Backup and Recovery for z/OS
			IBM TotalStorage Productivity Center for Replication for System z
Minimizes operational risk by ensuring business data meets backup and recovery objectives			
Lifecycle and Retention			IBM Tivoli Automated Tape Allocation Manager for z/OS
IBM Hierarchical Storage Manager (DFSMSHsm)	IBM Tivoli Advanced Reporting for DFSMSHsm		
IBM Archive Manager for z/VM	IBM Tape Manager for z/VM	IBM Tivoli Advanced Audit for DFSMSHsm	
Helps control storage growth and control costs for data requiring long retention periods.			

Legend: Solution focus includes audit and compliance

# Security, Risk and Compliance Management

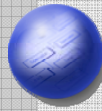
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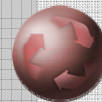
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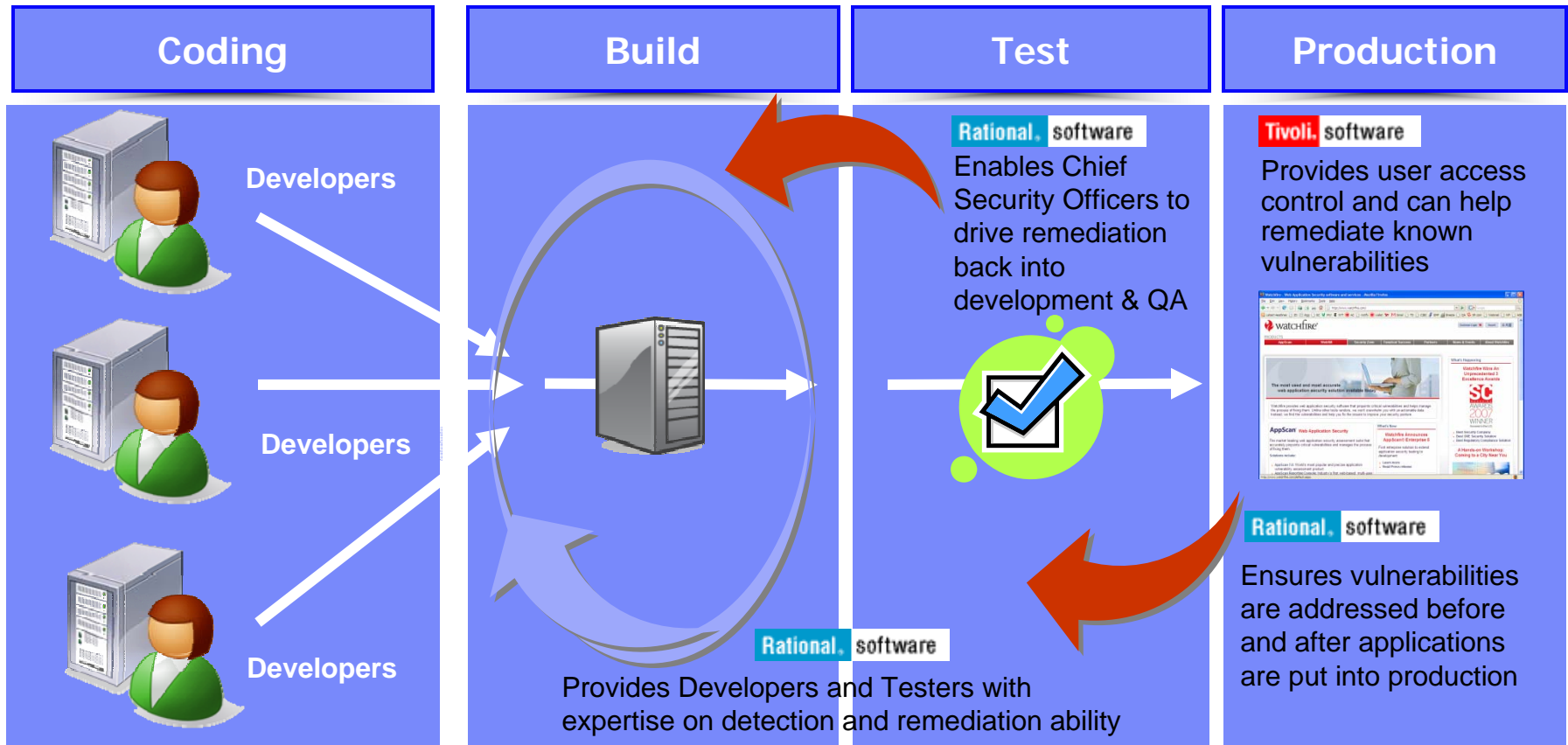
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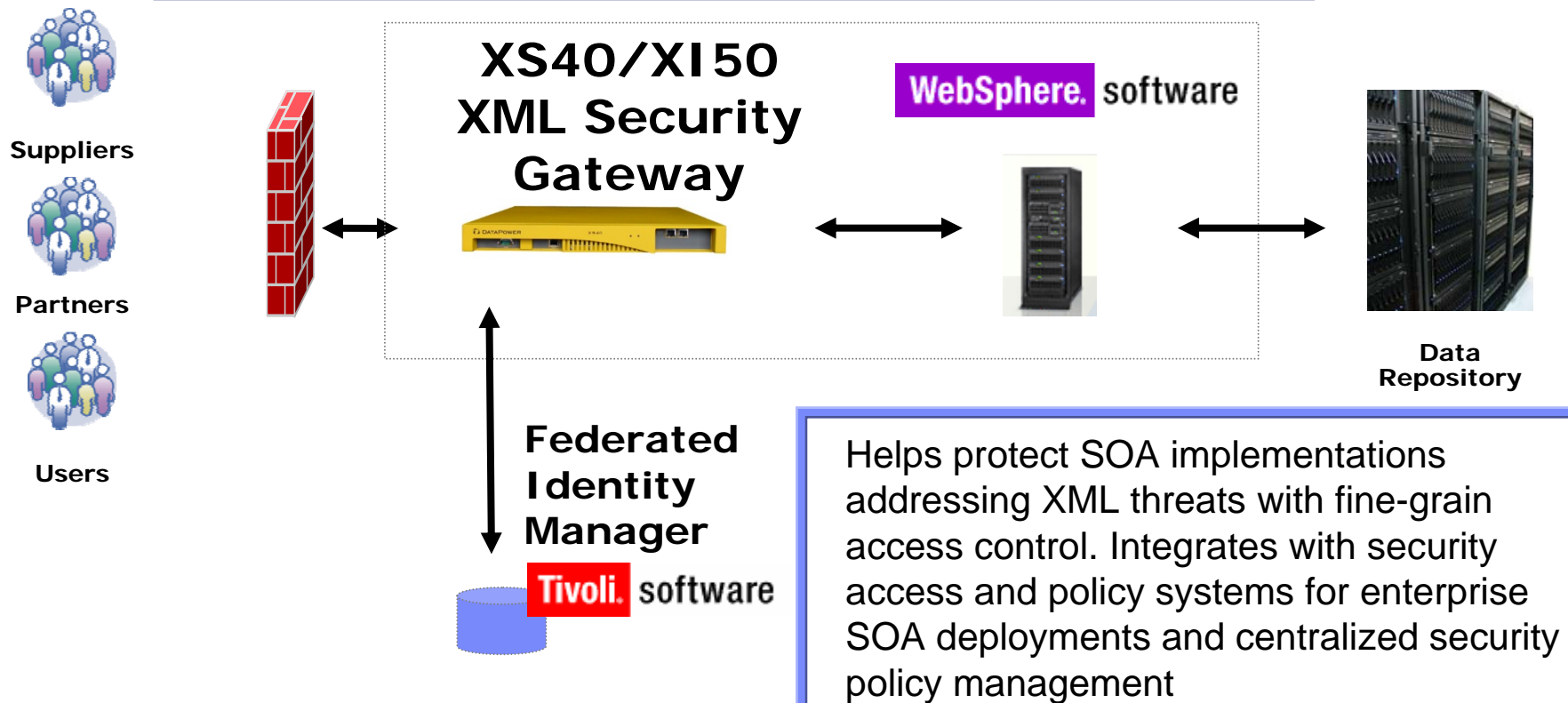
# Rational AppScan & IBM Tivoli provide security that spans the application lifecycle



**AppScan tests the application and RACF/Tivoli Access Manager secures access to them**

# DataPower: Defending SOA-based Environments

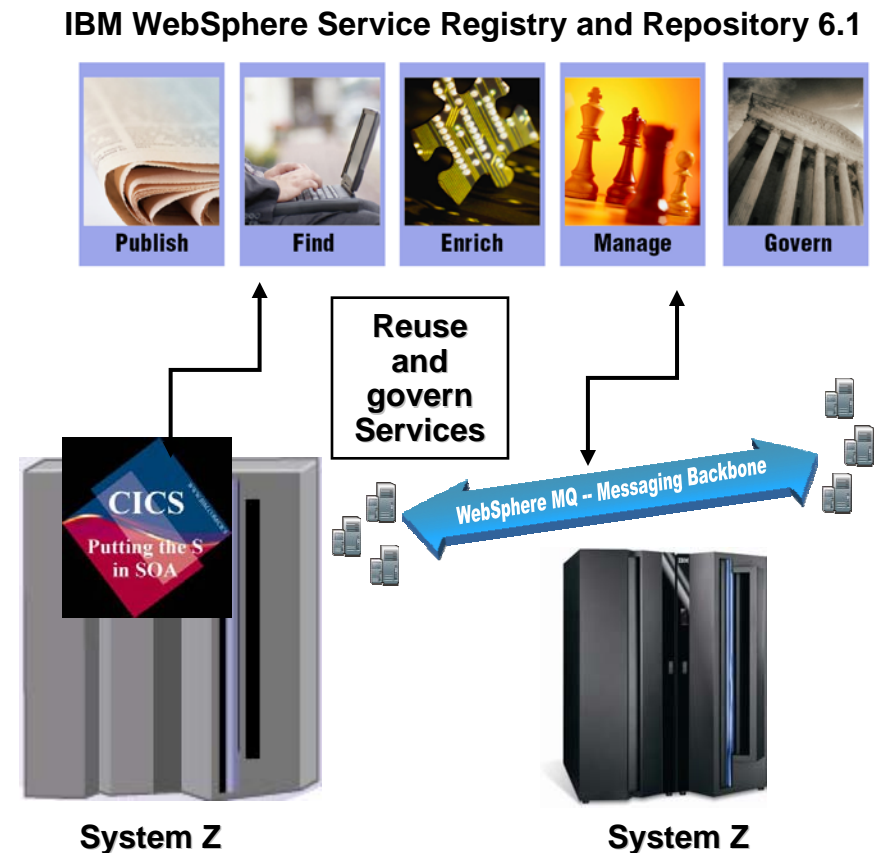
First line of defense to securely implement external web services. Secure once for many applications and aggregate user interactions.



# IBM WebSphere Service Registry and Repository (WSRR)

*Enable governance of service-enabled CICS & MQ applications*

- Raise the visibility of service-enabled CICS or MQ application by publishing it to WSRR
- Classify, describe, govern CICS or MQ service just like any other service in your SOA
- Manage the lifecycle of CICS or MQ services with versioning, approval, promotion, retirement, etc.
- Facilitate selection, invocation and monitoring of CICS or MQ services by other SOA applications
- It runs natively on zOS and zLinux

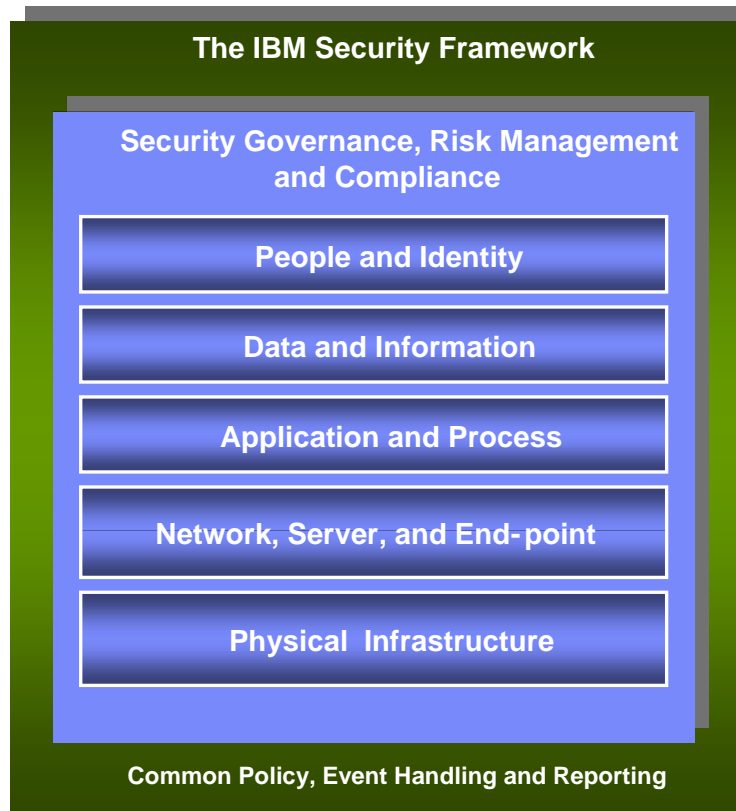




# Security, Risk and Compliance Management

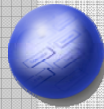
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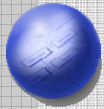
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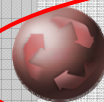
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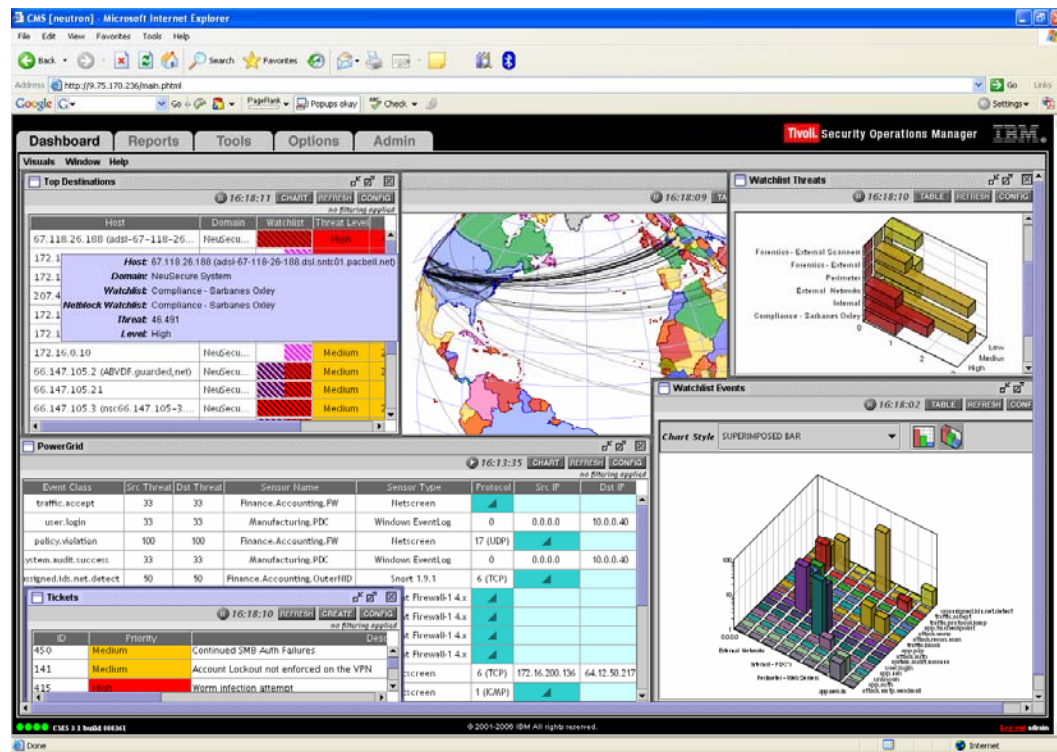
# ISS Delivers Preemptive Security Products

- **IBM Proventia Management**
  - Manage | Monitor | Measure
- **IBM Proventia Network**
  - Intrusion Prevention
  - Vulnerability Management
  - Multi-Function Security
  - Behavioral Analysis
  - Mail Security
- **IBM Proventia Host**
  - Endpoint Protection
  - Server Protection
- **IBM Site Protector**



# Tivoli Security Operations Manager

- **Advanced security information management (SIM) software platform and appliances designed to improve the effectiveness, efficiency, and visibility of enterprise security operations.**
- **Unifies policy management, incident handling, and risk mitigation functions of security operations across an enterprise through**
  - Log/event aggregation, normalization, archiving and reporting
  - Support for regulatory compliance reporting (Sarbanes Oxley, GLBA, HIPAA, FISMA, Basil II )
  - Comprehensive incident recognition and management
  - Proactive Policy monitoring and enforcement



# Intrusion Detection for z/OS

## Communication Server for z/OS

- Offers mainframe network security
- Enables SNA and TCP/IP applications to communicate with partner applications and users on the same or different systems.
- **Protects sensitive data and the operation of the TCP/IP stack on z/OS. It Provides the following services:**
  - IPSEC/ VPN
  - Intrusion Detection Services
  - TLS/SSL enablement for key applications
    - FTP client and server
    - TN3270 server
  - Kerberos5 and GSSAPI support is provided for the following applications
    - FTP client and server
    - Unix rshd server
    - Unix System Services telnet server (supports only Kerberos5)

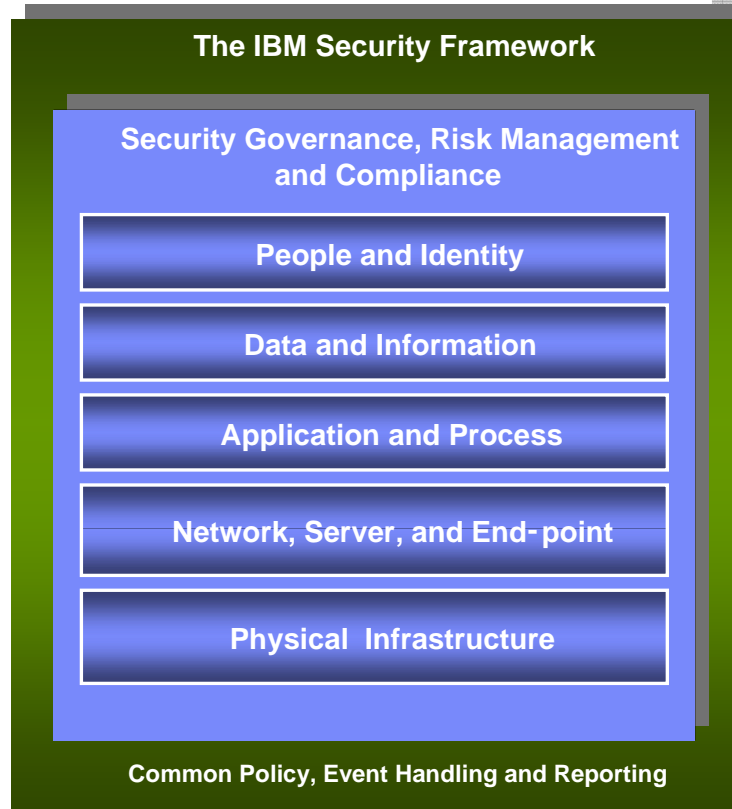
## Netview for z/OS

- **Automated response to intrusion:**
  - Scans
  - Attacks
  - Traffic regulation for TCP connections and UDP receive queues
- **Send an e-mail, issue a message, generate an alert or Tivoli Enterprise Console event**
- **Issue UNIX, NetView, or z/OS commands**
  - Gather more data
  - Take action, such as close the port
- **Generate a report in response to an intrusion.**

# Security, Risk and Compliance Management

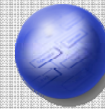
*Enabling collaboration while mitigating risk*

## Example IBM Security Solutions



### SECURITY COMPLIANCE

- GBS Assessment Consulting
- Tivoli Compliance Insight Manager
- ISS Assessment and Managed Services
- IBM Health Checker for z/OS



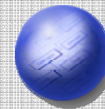
### IDENTITY & ACCESS

- RACF
- Tivoli zSecure Suite
- Tivoli Identity, Federated and Access Management Suite



### DATA SECURITY

- DB2, IMS and IBM Data Encryption on System z
- DB2 Audit Mgmt. Expert and IMS Audit Mgmt. Expert
- Optim Data Solution Suite
- IBM zStorage Solutions



### APPLICATION SECURITY

- Rational AppScan
- WebSphere DataPower
- WebSphere Service Registry and Repository

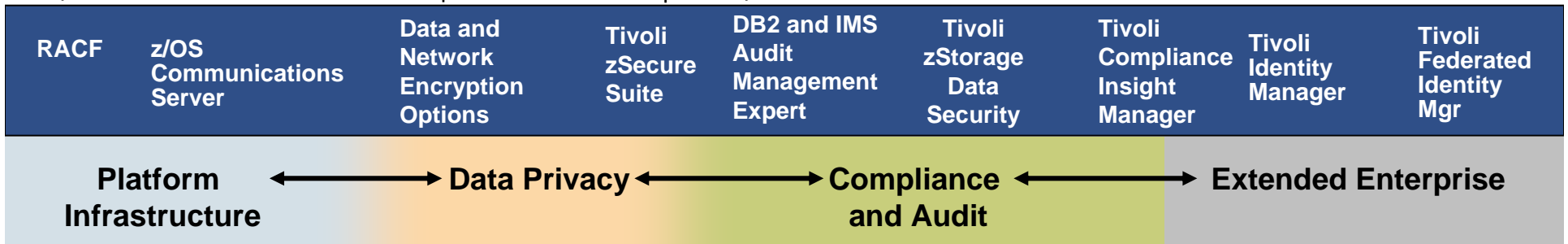
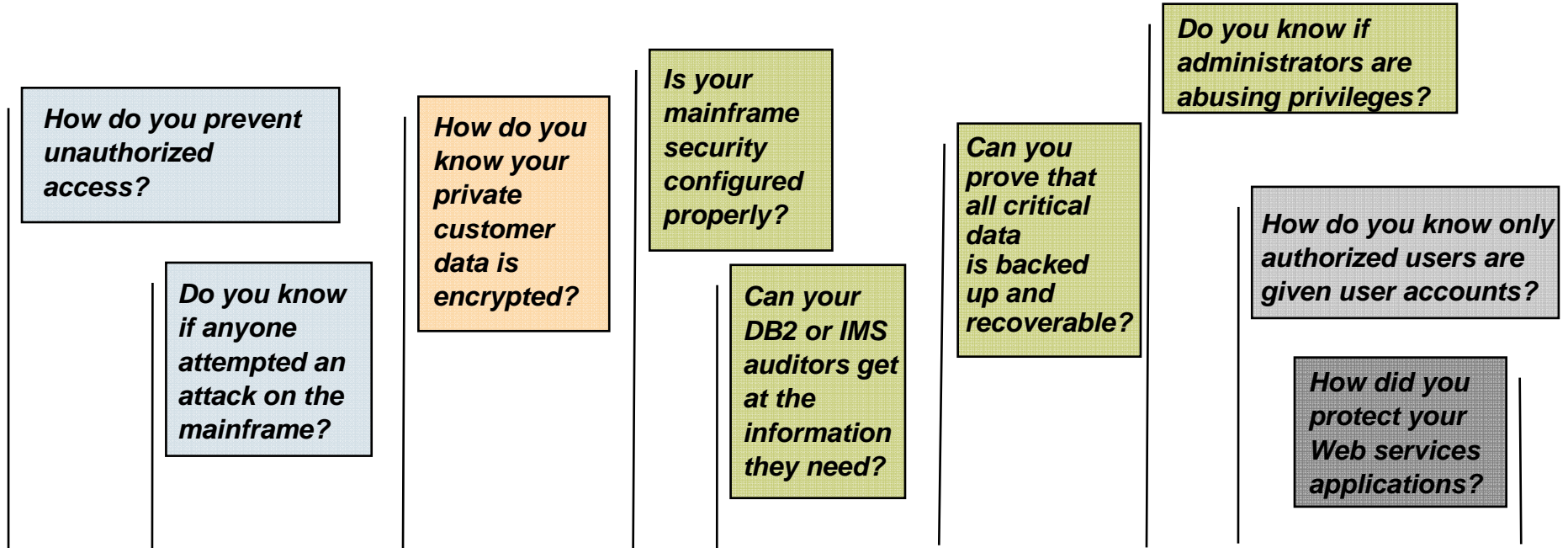


### INFRASTRUCTURE SECURITY

- ISS Preemptive Security Solutions
- Tivoli Security Information and Event Management
- Intrusion Detection for z/OS

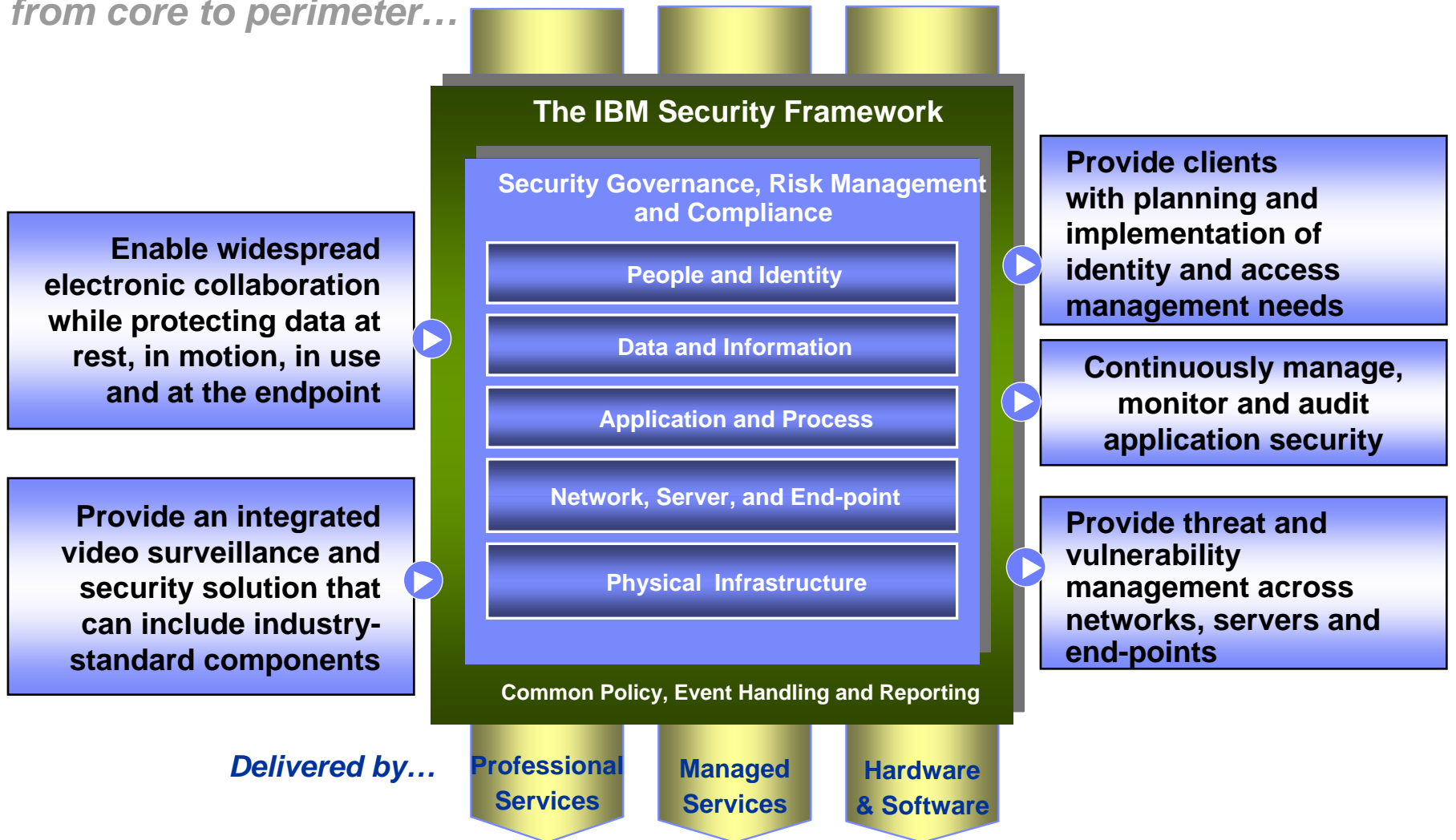


# Questions auditors might ask:



# While many security companies can help you with the crisis of the day, IBM offers security solutions that address the full range of security challenges

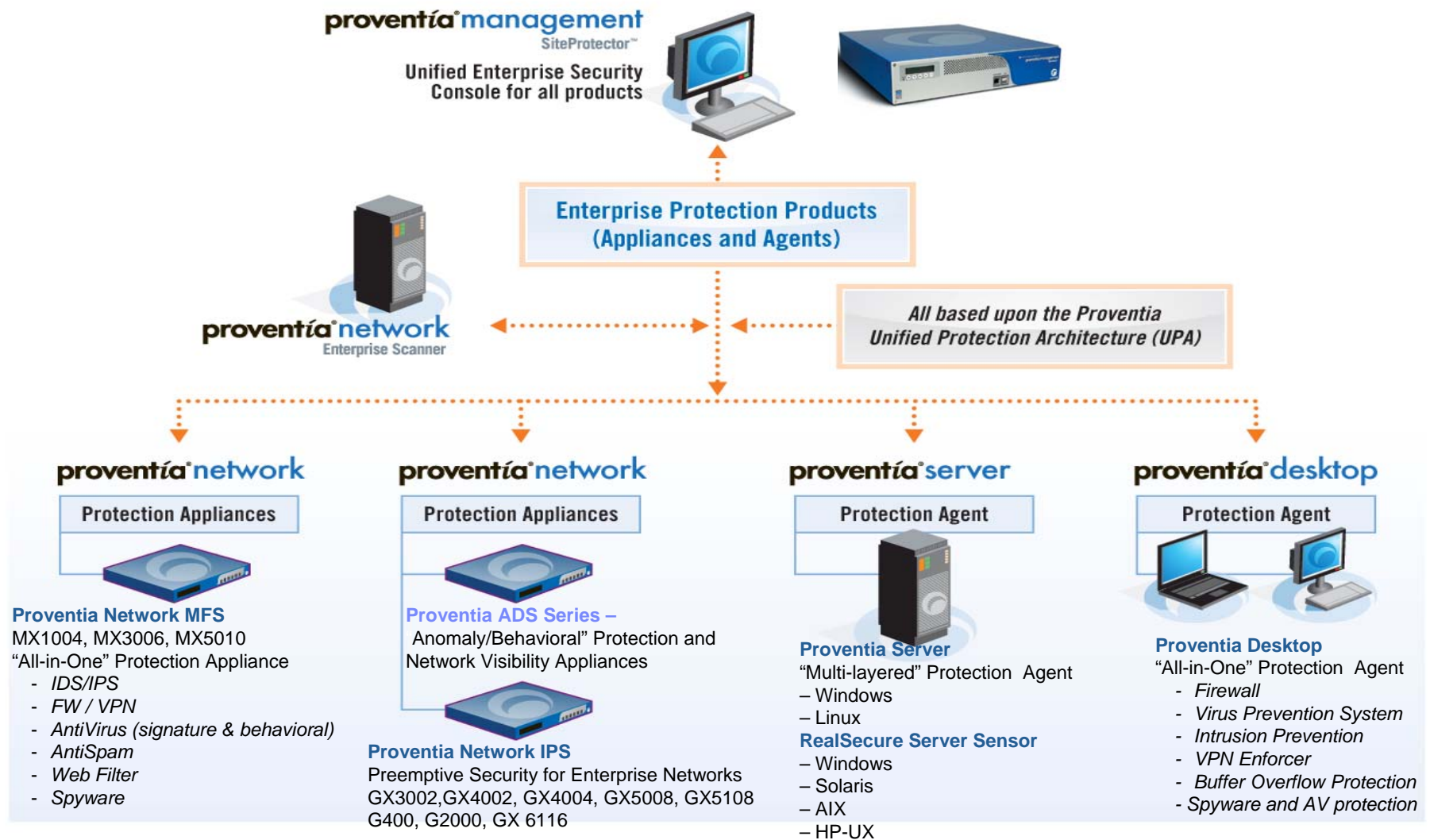
*from core to perimeter...*





# Backup

# IBM ISS Enterprise Security Platform



# IBM ISS Professional Security Services

## *Assessment Services*

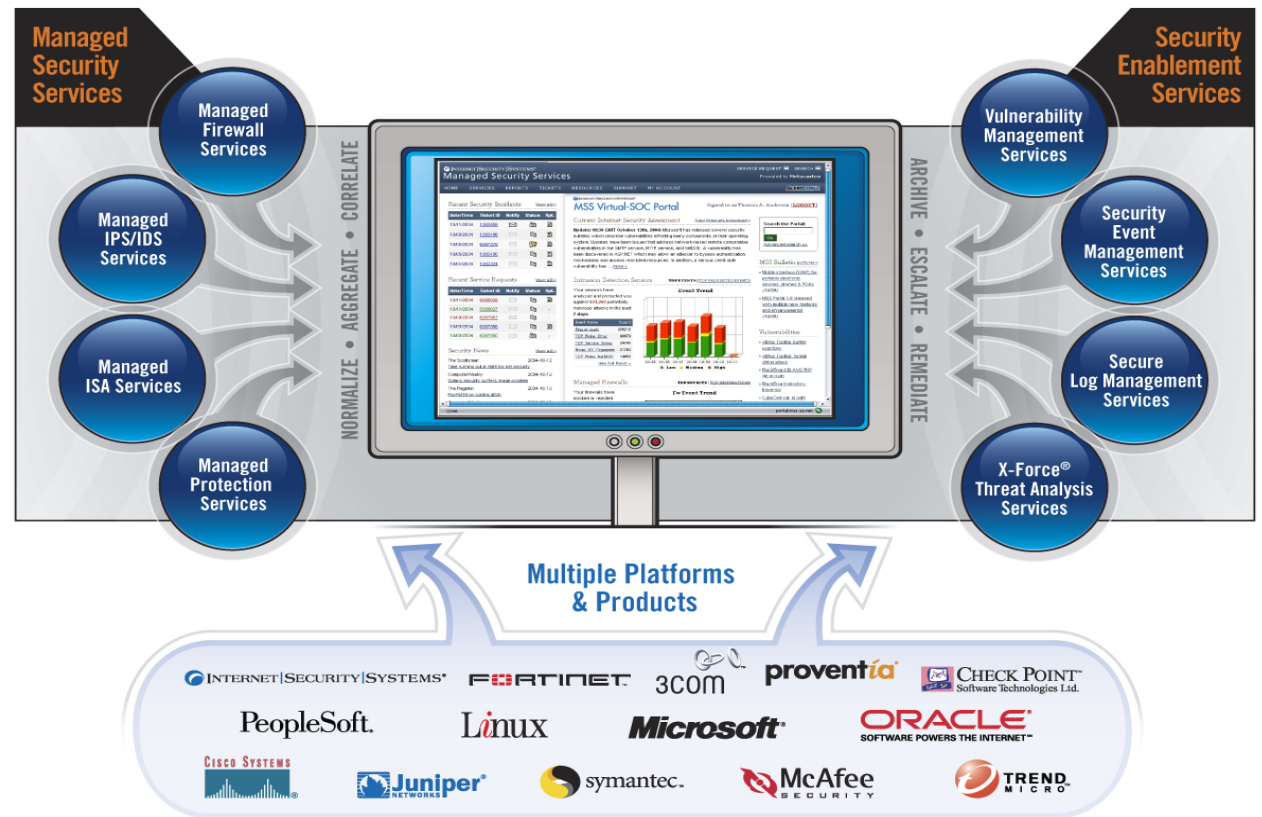
- **Application Security Assessment**
- **Information Security Assessment**
- **Penetration Testing**
- **Wireless Network Security Assessment**
- **Security Testing Program**
- **ISO 17799 Gap Analysis**
- **Policy Gap Assessment**
- **Business Risk Assessment**
- **PCI Assessments**
  - Qualified Data Security Company
- **Vertical Market Gap Assessments**
  - HIPAA
  - Gramm-Leach-Bliley
  - Sarbanes-Oxley
  - California Senate Bill No. 1386
  - SCADA
- **Emergency Response Service**
  - Subscription
  - On Demand
- **Forensic Analysis**
  - Subscription
  - On Demand
- **X-Force Threat Analysis Service**



# IBM ISS Managed Security Services

## Breadth and depth for multiple markets

- ✓ Fully Managed Services deliver turn key protection to the customer premise or the cloud.
- ✓ Security Enablement Services provide on-demand protection and security to the masses.
- ✓ Multiple service levels ensure organizations of all sizes present opportunity.
- ✓ A centralized multi-tenant web based portal provides real-time, integrated access to all services.
- ✓ IBM ISS Remains the **ONLY** provider of true, **GUARANTEED** protection.



## Payment Card Industry Compliance– How System z can help

