IBM Tivoli solutions for zEnterprise

Integrated Service Management solutions for end-to-end business applications

Introduction

Businesses today are requiring new levels of agility and the ability to quickly deploy new applications and business services. In addition, customers are battling growing IT infrastructure complexity with many tiers and nodes of independent resources, such as smart phones and iPads, spread over the enterprise. Businesses have realized that system management information currently available does not typically offer the end-to-end business and IT view they require.

Enterprises see this today in many parts of their IT infrastructure:

• Automation policies that are limited to tier and node boundaries
• "Islands" of resources, each speaking a different language with a different protocol
• Server and data redundancy pervasive as they all create copies of data
• Security concerns and overhead needed to manage all the heterogeneous silos

And while other vendors are focused on homogeneous virtualization to address expanding environments, IBM® is taking a leadership role by focusing on embracing heterogeneous architectures that take part in the execution of the end-to-end transactions.

Imagine having tighter integration between the database and the applications that need access to IBM System z® data but run on a distributed platform. Imagine a new IT infrastructure that is a mix of heterogeneous processors with the ability to have many virtualized servers that can be managed as one. Welcome to a new dimension in computing with IBM zEnterprise™ system.

Moving to zEnterprise will require expanding the IT Service Management capabilities. IBM has developed an end-to-end business and IT Service Management approach called Integrated Service Management Integrated Service Management to expand the concept of IT Service Management beyond the datacenter. An integrated approach to service management allows the interconnection of datacenters with overall design and delivery across the enterprise operations and lines of business. It includes specific support targeted at industries. Integrated Service Management for zEnteprise focuses on support for the heterogeneous platform environment across IBM System z, IBM System p® and IBM System x®.

Integrated Service Management

Integrated Service Management looks at the entire IT and business infrastructure, people and business processes to provide:

• Visibility to see your business, so you can monitor your services and measure service delivery against key performance indicators
• Control of your business services, so you can effectively manage change, security and compliance of Smarter Services, while minimizing risks to the business
• Automation to improve your business, by automating your business and IT processes and procedures so you can speed delivery of innovative services and change the economics of service delivery

For clients deploying fit-for-purpose business services to a zEnterprise infrastructure and throughout the datacenter, IBM's Integrated Service Management approach extends the capabilities of the zEnterprise Unified Resource Manager with the visibility, control and automation required to manage in the context of overall business service objectives. IBM service management ensures service quality and integrity from the next generation of data centers with:

• Visibility across smart assets and information technology infrastructures
• Change, security and storage management for improved control
• Automated delivery and management of technology across virtualization and clouds
• Workload optimized systems with integrated energy, systems and service management
• Flexible delivery models

Within a shared context of the integrated service models and service objectives, businesses can realize the maximum potential of improved operational advantages, optimized business advantages, and realized organizational advantages required for competitive excellence.

The IBM Tivoli® portfolio for Integrated Service Management extends the new dimension of technology introduced by the zEnterprise hardware and contextually has launched four new Tivoli solutions in order to address the main areas of services management: performance availability management, automation management, security and compliance management and asset and financial management.

The new IBM zEnterprise represents the logical extension of the Integrated Service Management approach to the hardware. In fact, the Integrated Service Management objective is to simplify IT complexity, whether on a zEnterprise system or a hybrid datacenter made up of physical and virtual servers.
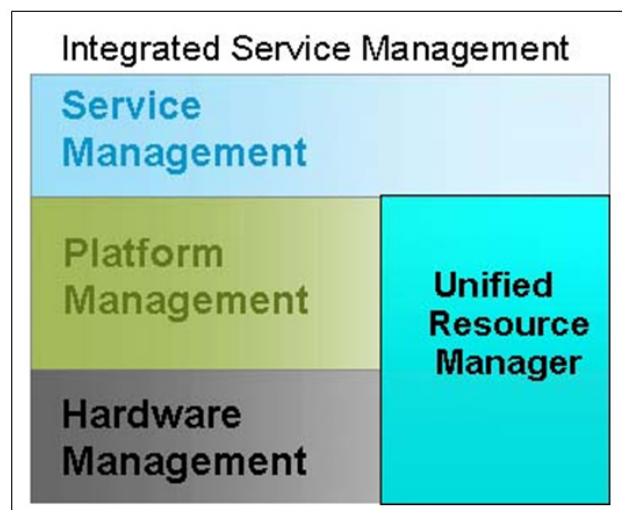
A key component of the new zEnterprise is the Unified
Resource Manager, which is an integrated System z
management facility responsible for zEnterprise platform
management. The Unified Resource Manager enables clients
to install, monitor, manage, optimize, diagnose, and service
resources and workloads for System z, IBM POWER® and
System x from a single point of control while extending
System z qualities of service throughout the entire
infrastructure. The Unified Resource Manager is a key new
platform and hardware management component of Integrated
Service Management on zEnteprise.

IT organizations recognize that they must move toward true
end-to-end service management that allows them to support
their business needs, and move away from the managed silos
that can't provide a single end-to-end view with a unified
point of control.

Tivoli has a number of solutions available for Integrated
Service Management for zEnterprise, including:

• Application Management
• Application Automation and Resiliency
• Asset and Financial Management
• Security and Compliance

The rest of this white paper will detail how these Integrated
Service Management for zEnterprise solutions can provide
customer value and the ability to take advantage of all the new
capability available with the zEnterprise.

## Tivoli Application Management for zEnterprise

Customers who deploy critical application workloads on
zEnterprise will continue to need rapid problem isolation
and resolution to maintain business service levels. Tivoli
Application Management for zEnterprise solution provides
true end-to-end transaction detail for operating environments
with industry leading integration to problem resolution tools.
These consistent views for transactions and services in a
meaningful context facilitate the identification, isolation,
accurate diagnosis and repair needed to sustain application
performance, regardless of the source of a bottleneck.

The Tivoli Application Management for zEnterprise solution
provides the ability to:

• Create agent-less discovery and mapping of
  interdependencies between applications, middleware, servers
  and network components
• Enhance end-to-end application transaction tracking and
  deep dive analysis capability feeding up to a business view
  console
• Provide visibility to the status of your applications and
 alerting when performance doesn't meet expectations

The solution includes Tivoli Business Service Manager, IBM
Tivoli Composite Application Manager and OMEGAMON®.

The following picture shows an example of application topology automatically provided by IBM Tivoli Composite Application Manager for Transactions in a heterogeneous environment.
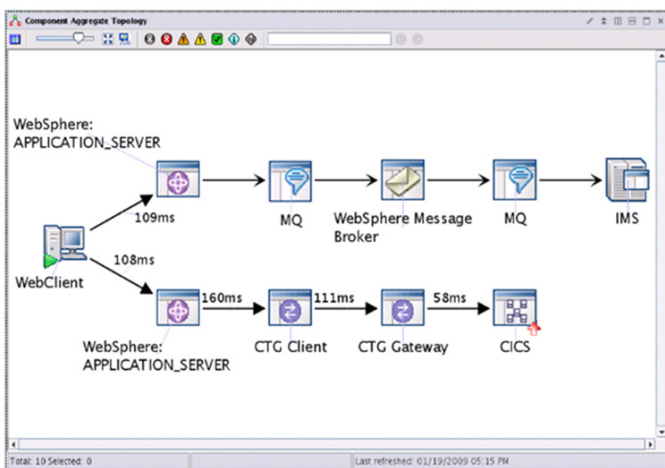
The transaction tracking capabilities of IBM Tivoli Composite Application Manager for Transactions provide a true end-to-end view of response times across multiple production systems to help you more quickly isolate the cause of response time and availability problems and hand the problem off to the appropriate specialist. This powerful topology lets you follow the path of a user transaction through the many domains of your business infrastructure, making it easier for you to evaluate a transaction in its entirety in a process that is transparent to end users.

IBM Tivoli Composite Application Manager for Transactions provides an easy-to-use, role-based interface, IBM Tivoli Enterprise Portal, to deliver user-friendly navigation of response time views. This portal can help you manage your environment from a single tool, helping you break down silos while avoiding the complexity of deploying, integrating and learning multiple management tools.
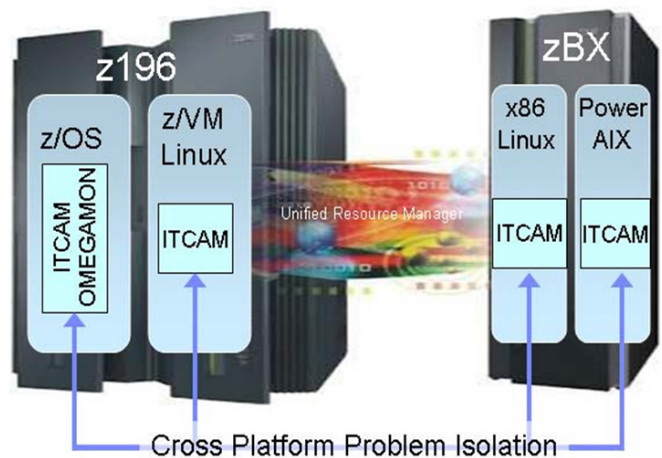
Along with IBM Tivoli Composite Application Manager for Transactions for monitoring the IBM z/OS® on zEnterprise, there is the IBM OMEGAMON family of products. OMEGAMON provides the ability to diagnose IT problems in applications, middleware and systems for z/OS

Using Tivoli Application Management for zEnterprise, you can:

- Improve productivity with single point of control
- Use analytics to manage heterogeneous platforms
- Simplify and speed up problem resolution
- Discover, isolate, diagnose and take action
- Reduce mean time to repair, reduce risk and lower costs.

Tivoli Application Automation and Resilience for zEnterprise

Critical business service applications, such as SAP ERP or Internet banking, need the highest level of availability and quality of service assurance possible. The Tivoli Application Automation and Resilience solution provides end-to-end automation to reduce manual effort and the risk of error. Customers can create business service policies and automate the execution of the steps required for a successful and automated failover for applications, processes, tasks, alerts and notifications where grouped resources, both within and external to the zEnterprise, are treated as one logical resource. Using Tivoli Application Resilience for zEnterprise, tasks are executed as planned with critical path management and resource awareness scheduling, dynamically adapting to unplanned changes.

Capabilities included in this solution are:

- Single point of control for resource automation throughout the zEnterprise platform
- High availability for business critical infrastructures
- Best of breed resource automation
- One central view and management of critical business processes for service continuity
- Automated high availability and disaster recovery to meet business service level requirements

Tivoli Workload Scheduler products can help you prepare jobs for execution, resolve interdependencies, and launch and track each job. Because your jobs can begin as soon as their dependencies are satisfied, you can reduce idle time and improve throughput. Jobs are unlikely to process out of sequence; and if a job fails, Tivoli Workload Scheduler can handle the recovery process, often with little or no operator intervention.

Tivoli Workload Scheduler can help automate, monitor and control the flow of work through your enterprise. From a single point of control the suite can analyze the status of the production work and drive the processing of the workload according to installation business policies.

The following diagram shows how all the components within Tivoli Workload Scheduler work with all the heterogeneous platforms on the zEnteprise.
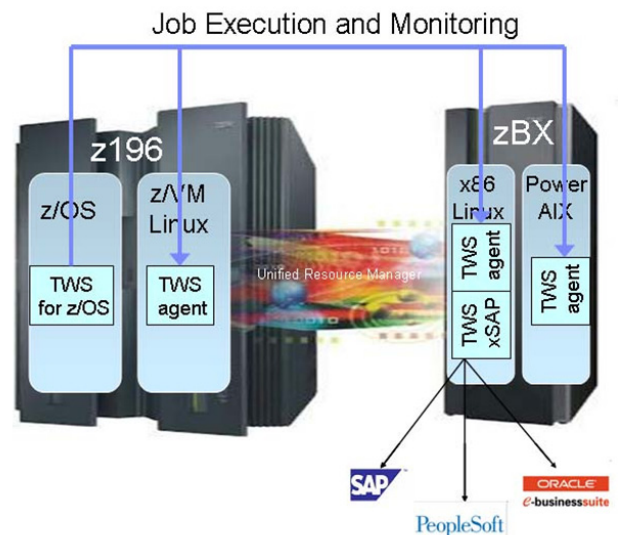
More and more companies seek ways to improve business resilience and achieve high availability for business-critical applications. Failures, outages and even slowdowns can result in direct business loss of revenue, customers and partners and could seriously damage your company's credibility.

As multi-tiered heterogeneous applications have grown, the task of finding IT systems management solutions that help you minimize complexity and cost has grown more crucial.

Tivoli Workload Automation family of products is a production automation solution for managing workloads in mission-critical computing environments automatically, across the enterprise.

Tivoli System Automation family offers unsurpassed capabilities designed to help meet high levels of availability for mission-critical composite business applications, reduce unplanned downtime, improve business flexibility, and meet strict service level guarantees within complex heterogeneous environments. The suite offers:

• Automation engine for z/OS and for multiplatform
• A component to manage the end-to-end automation in a heterogeneous environment (Tivoli System Automation Application Manager)
• Capability to define automation policy end to end
• Automation module plug and play for SAP, IBM WebSphere® software, IBM DB2®, Tivoli Storage Manager, Tivoli Application Dependency Discovery Manager, Tivoli Workload Scheduler and many others

You can see in the following picture how the Tivoli System Automation suite effectively addresses the zEnterprise hybrid environment.

Automate end-to-end Systems and Applications
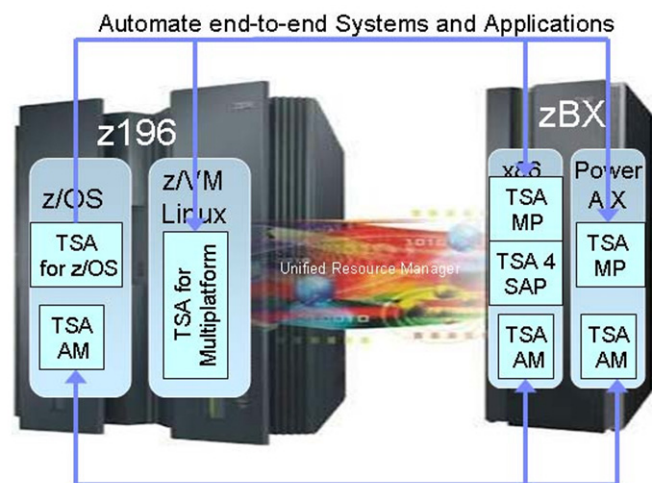
Tivoli System Automation Application Management helps coordinate and manage application availability in cluster technologies, so you can better control your enterprise business services. Tivoli System Automation for Multiplatform provides high availability and automation for enterprise-wide applications and IT services.

With Tivoli Automation and Resilience Management for zEnterprise, your business can:

• Maximize financial benefit and positive business reputation by maintaining the availability of customer facing applications
• Provide automation and application high availability regardless of platform or environment
• Reduce budgetary pressure while accepting additional workload by providing consistent actions and building organizational knowledge

Tivoli Asset and Financial Management for zEnterprise

zEnterprise introduces resource sharing in a new dimension of heterogeneous computing. The Tivoli Asset and Financial Management for zEnterprise solution enables customers to measure the costs of business services, including resource usage and software and vendor contracts throughout all IT resources.

Tivoli Asset and Financial Management provides the visibility into consumption by resource type and transforms that data into clear, fair and auditable reports for cost recovery or client billing and prepares clients for software license audits. Asset tracking, especially software license usage, is a valuable tool in support of compliance and audit requirements.

This solution includes Tivoli Asset Discovery, both the distributed and z/OS products, for the software asset management and Tivoli Usage Accounting Manager for activities related to accounting and chargeback.

With this solution, you can achieve:

* Visibility into software usage and compliance across heterogeneous resources
* Greater efficiency of resource usage
* Central view and management of requirements and costs for profitability and planning
* Availability of audit-ready data
* Alignment of IT costs with business objectives
* Enhanced IT financial controls end to end

As datacenters to take on new workloads and other key business applications, identifying what software you have and who is using it can be challenging. If you don't have the resources to properly identify your software and usage you might have unanticipated software overage charges or you could be wasting precious budget dollars on software that no one is using. In order to get the most of your software budget you need to inspect z/OS and distributed products use trends by automating the software discovery process. Tivoli Asset Discovery provides discovery, monitoring and reporting to understand z/OS product and application usage.

Tivoli Asset Discovery helps you contain costs and plan effectively for the future by automatically detecting software running on your zEnterprise system. Detailed user reports can then provide the insight that helps you eliminate redundant or unused applications for immediate cost savings. And when you avoid large, unexpected fees, you can redirect those funds to new software initiatives that deliver substantial value to business units and other customers. The information provided by Tivoli Asset Discovery is automatically acquired by Tivoli Asset Management for IT and reconciled with the license data to enhance the cost effectiveness of your IT spending through improved visibility and control of IT assets — including contracts, procurement, vendor information and licenses.
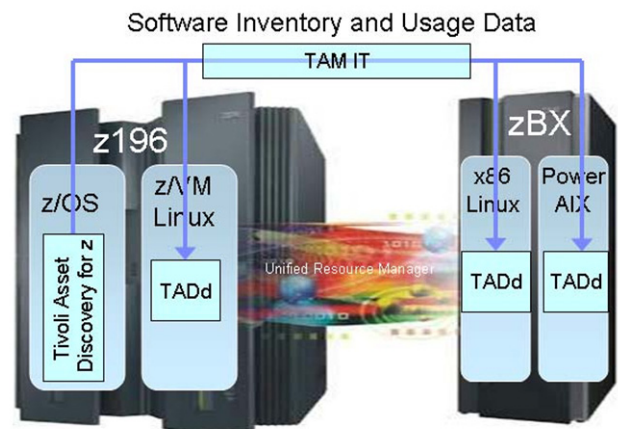
IT departments face unparalleled pressure to operate as businesses. Accomplishing this successfully requires aligning IT costs with company priorities and charging individual departments for use of key applications, servers and other IT resources.

Tivoli Usage and Accounting Manager solves the problem by providing an extremely flexible, end-to-end tool that helps you improve IT cost management. With it, you can truly understand your costs. Plus, you can track, allocate and invoice based on actual resource use by department, user and many additional criteria covering all the aspects of the IT Financial Management, including:

- Budgeting
- Accounting
- Chargeback and billing

Usage and Accounting Data
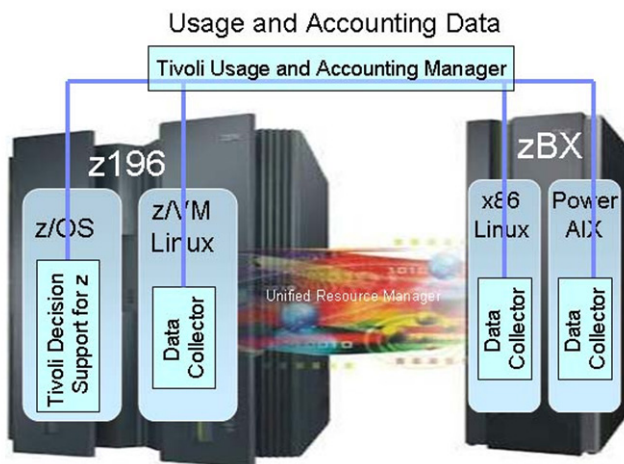
The Usage and Accounting Manager uses data collectors that scan log files and collect actual usage data related to physical IT resources. The product offers data collectors for a wide range of server and storage platforms, operating environments, subsystems, Internet infrastructure components, network and printer environment components, email systems, applications (including databases and ERP), output and human resource processes, and third party systems.

The data collector for the IBM zEnterprise 196 side is provided by Tivoli Decision Support for z/OS.

After gathering usage information, clients can associate "per unit" costs with collected data and then determine specific costs associated with IT services. The Usage and Accounting Manager's Internet-enabled interface allows users to create secure, user-friendly web-based reports and drill down for areas including budget analysis, monthly invoice, and use and spending trends.

Tivoli Asset and Financial Management for zEnterprise solution can help your business to:

- Provide visibility of costs to determine profitability for lines of business, products and services
- Present an understanding of costs to help justify expenses and future investments
- Enable IT organizations to align costs with business objectives

Tivoli Security and Compliance for zEnterprise

The new zEnterprise extends the security level of the mainframe platform to the IBM BladeCenter® platform.

In relation to the IBM zEnterprise 196 side, even though System z is "security-rich by design," IBM offers the zSecure suite that is a leader in the security administration and auditing activities for the System z platform. This is complemented by Tivoli Security Information Event Manager for centralized management of the security compliance at enterprise level.

Tivoli Security and Compliance for zEnteprise solution provides you with the ability to:

- Administer your mainframe security while helping reduce administration time, effort, and costs
- Monitor for threats by auditing security changes that affect z/OS, IBM RACF®, and DB2
- Increase capabilities in analyzing data from the mainframe for z/OS, RACF and DB2
- Provide auditing results in an efficient, streamlined manner for full enterprise-wide audit and compliance reporting
- Enforce security policy compliance from a central source

The zSecure suite consists of:

zSecure Admin and Visual

zSecure Admin and zSecure Visual provide administrative, provisioning, and management components that can significantly reduce administration time, effort, and costs by contributing to improved productivity, faster response time, and reduced training time for new administrators.

zSecure Audit

zSecure Audit delivers a mainframe compliance management and audit solution that enables you to quickly analyze and report on mainframe events, and automatically detect security exposures through extensive status auditing. zSecure provides extended and independent monitoring to track and assess the consistency of security relevant changes to z/OS across systems and the compliance of those changes in comparison to a best practice knowledge base.

zSecure Alert

zSecure Alert offers a real-time mainframe threat monitoring solution that allows you to efficiently monitor intruders and identify misconfigurations that could hamper your compliance efforts. It goes beyond conventional intrusion detection solutions to support intrusion prevention by taking countermeasures by means of automatically generated commands.

zSecure Command Verifier

zSecure Command Verifier is a robust policy enforcement solution that can help enforce mainframe compliance to company policies by preventing erroneous commands. As a result, it helps increase control and decrease security risks and cleanup costs. Running in the background, Security zSecure Command Verifier verifies RACF commands against your company's policies and procedures. When commands are entered, it verifies whether the commands comply with security policies — and blocks or, optionally, adjusts the ones that do not comply.

zSecure CICS Toolkit

zSecure CICS Toolkit adds mainframe administration capabilities to the IBM CICS® environment, such as password resets and authorization management. Its easy-to-use menu enables users to stay within the CICS application to issue security commands to the mainframe, rather than forcing them into another environment. Your field administrators can quickly issue commands through a user-friendly menu for functions such as password resets for failed user logins and user additions.

zSecure Manager for RACF zVM

Tivoli zSecure Manager for RACF z/VM provides administrators with tools to help unleash the potential of your mainframe system, enabling efficient and effective RACF administration. By automating many recurring system administration functions, Tivoli zSecure Manager for RACF z/VM can help you maximize IT resources, reduce errors, improve quality of services, and demonstrate compliance. This component is particularly important when IBM z/VM® is used to virtualize the Linux on System z environment.

Security Compliance Dashboard
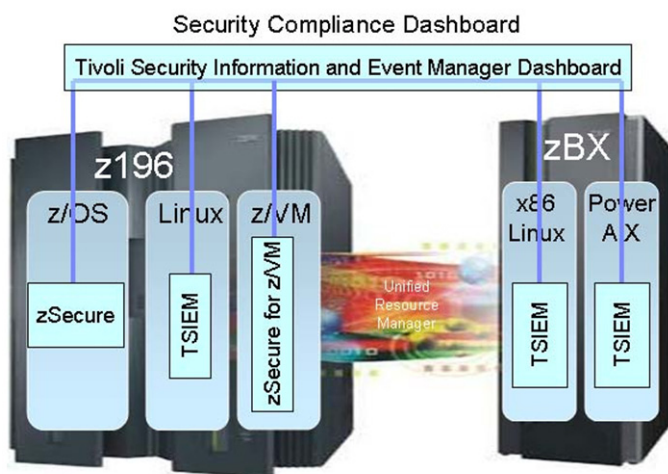
Every organization has a core set of mission-critical data that requires protection. Security lapses and failures are not simply disruptions; they can be catastrophic events with consequences felt throughout the enterprise. The inadvertent mistakes of privileged users alone can result in millions of dollars in damages through unintentional configuration errors and careless security commands. Malicious users with authorized access can cause even greater damage. As a result, security management faces a serious challenge to adequately protect a company's sensitive data. Likewise, IT staff is challenged to provide detailed audit and controls documentation in the face of increasing demands on their time. Automation and simplification of security and compliance processes can help you meet these challenges and establish effective, sustainable user administration and audit solutions.

Because of the need for this protection, the new zEnterprise hybrid system zSecure can be complemented by Tivoli Security Information Event Manager to obtain the centralized log management for the entire environment.

Tivoli Security Information Event Manager is an automated solution for insider threat, audit, and compliance management across the enterprise, providing continuous, non-intrusive compliance management and documentary evidence that your data and systems are being managed in accordance with company policies. It also alerts you to insider threats.

The Tivoli Security for zEnterprise solution can be extended beyond the zSecure portfolio of products to include the Tivoli Identity Manager for Linux on System z, IBM Tivoli Identity and Access Assurance solution bundle and Tivoli Access Manager on Linux for System z.

The business value of the Tivoli Security for zEnterprise is to enable you to:

- Simplify and automate routine security administrative tasks and decentralize administration control
- Require less training and free up administrators for more important tasks.
- Reduce costs and improve service with identity and access controls
- Reduce turn-on time for new users from 10 days to less than 24 hours
- Support compliance efforts.

Conclusion

IBM zEnterprise extends the value of System z over multiple platforms to allow a fit-for-purpose approach to optimize workloads and achieve the overall lowest-cost approach for an enterprise total business environment. With the ability of the zEnterprise to support multiple operating systems and hardware platforms, customers can now have one environment across which Integrated Service Management provides visibility, control and automation. With these platforms as part of a single system, Integrated Service Management provides one unified view of all of them and the flexibility to automatically and securely monitor and manage workloads between them to address business requirements.

With Integrated Service Management for zEnterprise, customers will be able to achieve the promise of value of a heterogeneous zEnterprise.

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