Tivoli
TME 10: A New Era in Network Computing Management
Presentation

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Synopsis

This document provides the accompanying script to the TME 10 overview/roadmap presentation.

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TME 10: A New Era in Network Computing Management

Network computing management presents one of the greatest challenges - and one of the greatest opportunities to companies today. Controlling distributed computing resources, from mainframes to desktops, can be a difficult, expensive, time consuming proposition. Businesses need to be business-driven, not technology driven ... they need to get on with business. Organizations cannot waste time and resources managing a computing infrastructure that should be an asset, not a liability. Management vendors have been unable to fully meet the needs of today′s network computing environment until now.

A new era in network computing management dawns with the merger of IBM and Tivoli. By coupling Tivoli′s standard-setting technology in client/server environments with IBM′s industry-leading products for high-end management and global service and support, *Tivoli Systems* now offers customers an unprecedented opportunity to take control of their network computing environments. **TME 10** - the new product line from Tivoli that unifies TME and SystemView - is the *first and only open, global, end-to-end management solution.*

Agenda

This presentation will discuss:

- About Tivoli Systems
- The Network Computing Problem
- TME 10 - The Solution
- Partnerships
- Competitive Positioning

Tivoli′s Mission

Our mission is to provide the **world′s best solutions** for end-to-end management of network computing environments of all types ... regardless of whether you are right sizing or down sizing, trying manage the internet or the intranet, looking to manage a small workgroup client/server environment, a distributed client/server environment or a data center environment with mainframes. Tivoli has the management solutions to meet your needs.

Tivoli Systems: An IBM Company

Tivoli Systems is an IBM Company, we are being managed as an independent business unit with the IBM Software Group. The reason for this is to maintain our independence in developing network computing management solutions for the open, multi-vendor environment.

As an independent company, Tivoli is headed up by a Board of Directors. John Thompson is the Chairman of that Board, as well as the General Manager of the IBM Software Group.

We have merged the executive teams of Tivoli and IBM SystemView together to create the new executive team of Tivoli Systems:

- Frank Moss is the CEO and President of Tivoli
- Bill Bock reports to Frank and is the Executive Vice President and COO.
- Martin Neath is our Vice President in charge of Core Product Development
- Al Zollar is the Senior VP of the Host-based and Channel Products
- Chris Graft is the Senior VP that focuses on Mergers and Acquisitions
- Senior Vice President of Sales is Alex Kuli
- Scott Harmon is Vice President of Marketing & Strategy
- and Glyn Meek is our Vice President who focuses on Technical Services

Tivoli Systems is part of the IBM Software Group and is a peer with the other Software Group members (Lotus, Networking Software, Personal Systems Products, Transaction Systems, Software Solutions, etc.) Tivoli Systems is an independent business in that it is responsible to IBM to make money in the systems management segment of the software business. It has no implied allegiance to other IBM hardware or software products. It′s goal is to increase market share (global domination) and to make money in systems or enterprise management.

What We Are

Tivoli Systems is uniquely positioned to help customers:

- realize the return on their technology investments
- make distributed IT technologies a competitive advantage.

Tivoli will help customers achieve these goals by ensuring reliable, consistent management of their enterprise. Tivoli is committed to making these goals through an open, cross-platform, partnership based approach that supports industry standards and respects customers′ freedom of choice. Together, IBM and Tivoli will deliver to customers the first and only open, unified, end-to-end management solution.

Each party in the merger brings special, highly complementary values to the table. This merger creates **the network computing management division** of IBM. This merger creates:

- the only true cross-platform supplier of management solutions world-wide
- The #1 management company world-wide
- The 5th largest software company in the world
- 1000+ employees dedicated to network computing management world-wide
- provides world-wide distribution, services, and support

Tivoli was born from the realization that managing truly distributed computing required new ways of thinking about our customers, our industry, and ourselves. The resulting *Tivoli Management Environment (TME)* was the first to embrace distributed computing (now network computing) as a way of life and rethink the management disciplines and processes to support it. TME is the acknowledged standard for distributed computing architectures. Tivoli has set the standard in every area of distributed computing, including software distribution, internet management, and applications management. Prior to the merger, they consisted of a 300 person company with $50 million in sales.

IBM is the acknowledged leader in high-end systems management products. It′s SystemView product family is critical technology to many customers using mainframes as the heart and soul of their enterprise. Their NetView network management technology is the most comprehensive in the industry. As well, IBM offers unparalleled levels of global service and support to its customers.

Now, let′s take a look at some of the problems with network computing.

Problems with Network Computing

Information systems are sometimes planned very carefully, sometimes not all, and anything in between. This is largely because today I/S may not be able to control what the various business units within a company are able to choose and install to run their various business applications.

As you look at the challenges with network computing management, you have many different types of technology (both hardware and software) within your environment. These systems are probably physically located in many different parts of the country (or countries). This technology was put in place to help you run your business applications. However, because of the diversity of this information technology and its complexity, most companies are becoming more technology driven rather than business driven. This becomes especially true as you need to share information and data across the organization.

All of this leads to a:

- Loss of control

  with systems geographically dispersed, it is very difficult to establish and enforce your business rules and policies

- Loss of consistency

  one of the greatest causes of system downtime is the lack of consistency or lack of integration between your network computing management solutions (unable to work and share information)

- Scalability

  many management solutions that you might test in your lab environment do not work once you are in a production mode

- Lack of standards and proven models

  many standards organizations are not moving quickly enough to define consistent standards for management solutions; as well it is very difficult to find proven management solutions that work across the wide diversity of client/servers that are in your environment

Lack of a Complete Solution

There is a lack of complete solutions to help you manage the network computing challenge. There are many point solutions that exist today, for example:

- to help you manage a network,
- host management solutions to manage the mainframe environment
- distributed management solutions that are really host management solutions that are in the process of being re-hosted themselves to try and work within a distributed client/server environment,
- storage management solutions to provide backup/recovery specific functions
- etc.

When trying to integrate these various point solutions, the user then becomes the integrator ... trying to share data and application functions between them.

Many times, the management solutions do not run on the platforms that you need them to run on. So again, the user becomes the integrator and has to work with the existing tools that are available on that system in order to get the cross platform management support that they need.

A complete solution also needs automation and integration. If solutions are integrated together, you can establish policies to automate specific actions and help save user interactions.

You also need services and support for all of the management solutions that you are looking to implement, regardless of the management platform that they run on.

What Doesn′t Work

What doesn′t work is more point solutions ... by throwing additional money and people into implementing and integrating these point solutions you just end up with a mix of solutions that are very difficult to control and are very expensive. Besides the expense of buying all of these various solutions, you end up with more expense trying to integrate and automate these solutions together. These management solutions should be helping you to control the cost of managing your information technology, but can actually end up costing you more.

Point solutions usually have different architecture, again, making it very difficult or next to impossible to integrate and automate your management solutions together.

Many existing management solutions are using an old technique to try and manage a new paradigm ... that paradigm being true distributed systems management.

True Network Computing Management

A true Network Computing Management solution is one that is integrated from end-to-end, regardless of the management server(s) that you are running.

It will provide both multi-platform support (in that it will run on multiple server platforms) but it will **also** provide cross-platform support ... something that no other vendor (other than Tivoli) can provide. By cross-platform, we mean that the same management functions and services are provided on all of the supported platforms. Thus enabling flexibility and scalability of the management environment that you need to support.

It should also be open, building on top of open standards wherever possible, as well as working to define and lead the industry in defining those standards. Open also means giving you the choice of the management platforms where you need to run them.

Thus, a true network computing environment will allow you to manage the distributed client/server environment as well as the internet or intranet.

All Roads Lead to True NCM

With the advent of network computing, most management vendors are working to move to true network computing management. The problem is that most management vendors today have specific (or multiple) point management solutions today. For example, they may have a host management solution (IBM or CA), LAN management solutions (Microsoft, Intel), or network management solutions (IBM′s NetView, HP OpenView). These solutions help you manage from a very small environment up to a very large environment.

The difference with the Tivoli management solution is that it was built upon the network computing management model ...

TME 10 - Our Answer

Thus the answer to the question (who does have a true network computing management solution available today) is **Tivoli Systems - TME 10**.

TME 10 is based on a single architecture and object-oriented framework (the Tivoli Management Framework - TMF) which is based on open standards to enable its common applications and third-party applications to run on a diverse set of management platforms. One of the primary benefits of an object-oriented framework for management is integrating a variety of complimentary management applications without having to re-write the entire application. This strategy allows customers to use management tools created by different organizations together as an integrated whole.

You gain scalability be defining what functions and tasks you want to run where and who is allowed to run those tasks. Platform independence is achieved in that the various differences between the 29 supported management platforms are hidden from the operator or administrator ... and you can pick and choose where you want those functions to reside. The management console integrates systems, network, and applications management together from a single place.

TME 10 is:

- OPEN
  - allow integration of 3rd party applications
  - platform independence (you pick the servers that you want your management solutions to run on)
  - value-add services to help setup/customize your management solution
- END-TO-END
  - everything from desktop to mainframe and in between
  - network, applications and internet management
  - management applications providing full life-cycle support, from deployment, availability, security, and administration and operations
- ALL STYLES OF DISTRIBUTED COMPUTING
  - whether you currently have LAN/workgroup, distributed client/server, internet, mainframe, or re-hosted management solutions, Tivoli can help you manage your environment.

The focus of the new Tivoli Systems is to become the world leader in network computing management by providing an open, unified, end-to-end management solution. Three requirements drive this goal:

- Platform independence

  The new product set will manage truly heterogeneous computing. IBM server and desktop products will play a major part because they occupy a leadership role in the marketplace. All major platforms will continue to be supported. In addition, all of the products in the new product set will be targeted at cross-platform management. All functions in the product set will be independent of any particular operating system.

- A single architecture

  The need for a single, powerful architecture was a driving force behind the merger. Tivoli can now unify TME and SystemView products around a proven distributed management technology, the Tivoli Management Framework (TMF). Existing TME applications will migrate smoothly to this new architecture. In the coming months, many of the existing SystemView products will be integrated into this framework.

- Commitment to 3rd party vendors

  Even though the merged product line will provide very broad support for the management disciplines, it is impossible for a single vendor to solve every management problem customers face. To accommodate customers′ need for choice, Tivoli will launch a series of discipline- and resource-specific initiatives to ensure the management interfaces to Tivoli products are standard. This will allow third party providers to plug their products into Tivoli′s management platform.

Now that we know a little about the new Tivoli Systems, let′s talk about the solution that it is providing today and will rapidly enhance with the addition of the SystemView products!

The Winning Team

TME 10 is the strategic management solution for managing network computing environments (the ″smart way″). With TME 10 you can standardize on a core set of management functions across the enterprise, then pick among the best of breed tools to put together the total solution, and if you need help implementing or planning the solution, we can help you do that as well.

TME 10 is a winning team that consists of Tivoli TME 3.0 solutions, IBM SystemView solutions, and Industry solutions (hardware and software vendors, database and application vendors, and other systems management vendors). Neither TME or SystemView will be ″phased out″. The primary driving force behind this merger is the synergy (the complementary strengths) that exist between companies and their products. Literally all of the popular cross-platform products from both product lines are represented in TME 10. Consolidating the product lines was not a process of choosing one offering over another. Instead, it centered on defining points of integration and selecting the best-of-breed features that existed in each product category.

The original Tivoli brings cross-platform management solutions, a distributed object-oriented architecture, leading applications from deployment through availability, security and operations and administration; industry partnerships; and applications management; ... the only distributed systems management solution.

IBM brings industry leading host-based management functions, network management solutions, and other selected distributed management products, like ADSM (for backup/recovery), as well as world-wide support, consulting and services

TME 10 is at the center of the industry to create an open solution. TME 10 is a safe bet that consists of a unified product line of over 20 management applications that support 29 management platforms and consists of 4 integration toolkits. It will be a focal point for the industry that provides investment protection and migration services as you move from your existing TME or SystemView solutions.

End-to-End Management

End-to-end management means looking at tasks, resources, and platforms.

From a task perspective, an end-to-end solution must provide management functions for the full product life-cycle. Beginning with deployment (change and configuration management functions), to availability (dealing with all of the rapidly changing elements and their status (network and performance management)), security (managing your user access and authorizations), to administration and operations (all of those other tasks, like problem administration or help desk, backup/recovery or job scheduling).

End-to-end management must provide management for any of the resources that exist in your environment. Regardless of whether you need to manage a network (SNA, TCP/IP, IPX, NetBios, etc.), systems (intel, UNIX, etc.), databases, client/server applications, or internet servers (http, ftp, proxy, etc.).

And last, an end-to-end management solution must mange the platforms that you need it to manage ... from a mobile or desktop client, to a distributed or central server on up to the mainframe.

Providing TME 10 Function

TME 10 is the new product line that integrates the best of TME and SystemView together. It is based on three requirements: platform independence, a single architecture, and a commitment to 3rd party vendors.

Tivoli Systems will focus on the open network computing management market, with responsibility for all of the cross-platform products. All of these products must satisfy a simple test: they must be able to aid in the management of multiple devices and platforms. Products that add value to the use of a specific operating system will be grouped with that particular operating system (and may be transferred to other IBM divisions).

The reason for this distinction is simple. For Tivoli Systems to function in the market as a truly independent and vendor-neutral organization, the focus must be on automating the management processes of customers, independent of any one particular operating system. This partitioning is also consistent with the market for operating systems and other infrastructure software.

Those products that have platform affinity will still integrate into the new network computing management platform. Tivoli will work with these other organizations as 3rd party developers, just as we will do with other vendors. This group will have access to public integration interfaces and technologies, and we will expect them to provide integration to the new platform as base features of their products. This approach assures customers of the platform neutrality so important to their management strategies and ensures that IBM products will be the most manageable in the market.

TME 10 Architecture

The TME 10 architecture consists of the management desktop or graphical user interface, management applications, and the extended Tivoli Management Framework. The combined solution enables you to manage from end-to-end, regardless of whether you are managing systems, networks, databases, applications, or the internet/intranet.

Extended Tivoli Management Framework

TME 10 consists of a single architecture that is based on an object-oriented architecture or framework. The Tivoli Management Framework (TMF) serves as the core for TME 10. The principles that the TME 10 Architecture are based on include:

- a secure, centralized, hierarchical and scaleable framework (both human and physical scalability)
- seamless support for heterogeneous servers and clients
- replicated services and servers for availability
- scaleable systems management use paradigm
- transaction services to coordinated operations (to ensure that tasks finish in the order that they are supposed to)
- high flexibility, configurability, and customization
- open set of APIs and services based on key standards

The TMF provides support for platform independence so that the TME 10 applications can manage any object, regardless of type, without the user having to be aware of it. Not only is the user unaware of whether they are managing a UNIX, NT, or OS/2 system, they can also can manage a DB or application in the same fashion. The TMF worries about these differences, the user doesn't have to!

The TMF currently includes services for transactions, security, events and alerts, configuration, and automation). The TMF will be expanded by migrating many common services from the distributed SystemView product families. In the TME architecture, a service is encapsulated and exposed via integration APIs as a common service if it is of general use to other management applications. Key services to be migrated into TMF include:

- NetView for AIX services, including discovery, topology, and mapping
- Systems Monitor services, including the SNMP mid-level manager services
- SystemView Performance Monitoring (instrumentation and collection) services
- NetFinity services for inventory scanning and remote control
- Common agent technology for DMI/SNMP abstraction

With TME 10 you have both distributed applications and distributed users. This can be achieved with both physical scalablity and human scalability.

Physical Scalability

This architecture is very flexible and scalable in that the physical environment can be partitioned into multiple logical management regions. Each region can have its own management server and set of replicated services. You can leverage the network by distributing the operations that you want to be performed to the local servers. The regional boundaries are invisible to the operators that are performing the systems management functions that have been assigned to them. In addition, a single operation can be directed at multiple resources.

Human Scalability

You can gain human scalability by a concept that Tivoli invented called **management by subscription** This is a new systems management paradigm that allows you to manage large numbers of resources with fewer steps. With it you can efficiently apply changes to a large number of resources.

It consists of three components:

- a configuration profile for the specification of ″what″
- a profile manager that is a collection of configuration profiles
- and profile endpoints that subscribe to the profile managers

Management by subscription allows you to encapsulate the differences in the architecture and the mechanism. Your MIS staff can establish the rules and policies and then efficiently (with a click of one button) perform the systems management actions required.

Tivoli Management Applications

The TME 10 management applications provide support for:

- Full-cycle deployment: enterprise-wide configuration and change management
- Distributed availability: collecting and routing information for proactive management
- Security: proper user access while controlling corporate assets
- Administration and Operations: automation of activities ensuring integrity and reliability

Let′s take a look at the different types of applications within the TME 10 environment.

TME 10 Products

Extended Tivoli Management Framework

As described in the previous slide, the base component is the Tivoli Management Framework (TMF). It consists of the current core Tivoli framework services and is being extended with specific SystemView services.

Core (Level 1) Management Applications

Core (level 1) management applications are organized into the 4 management processes (deployment, availability, security, and operations and administration) and have the following set of characteristics:

- strategic functions that are so basic that customers should standardize on them across the distributed environments
- support for the entire spectrum of TME 10 managed systems (both managing and managed system architectures)
- framework-based applications built on TMF
- critical third party interfaces that will be exploited by level 2 (or extended) products

As you look at setting up your management environment, this basic set of function (TMF and core applications) resides on every Tivoli management server. You would designate which management servers you want as the focal points for specific management functions (i.e. enterprise server, a mid-level manager, or a fan-out server). The management server would have a few more files and act as the focal point for that set of function or functions.

Now, what about other applications functions and how do 3rd party applications

Extended Level 2 and Resource Management Applications

Extended (or level 2) management applications are integrated into the four primary core application areas, but are either domain- or resource-specific or perform a particular management function that may vary across different parts of the enterprise, but need to plug into the strategic backbone. Extended Level 2 applications have the following characteristics:

- use supported integration APIs to integrate with Level 1 applications and/or the TMF
- can be selected as an optional ″local″ manager ... do not need to be standardized across the environment
- may be based on a particular platform for management (such as MVS or OS/400)

Note: Tivoli will offer a branded version of some of the identified Level 2 functions (for example TME 10 ADSM for backup and recovery functions).

Tivoli will publish open interfaces and encourage 3rd party offerings for all Level 2 functions.

Resource Management Applications

Resource management applications are implementations of management logic specific to a particular management resource. They extend the reach of TME beyond the network and system layer to include higher level services and applications. TME 10 includes resource management applications in the following categories:

- Internet services management
- Database management
- Application management

Tivoli/Plus

Tivoli/Plus is a powerful suite of ready-to-use software modules that seamlessly link your preferred product control applications with TME 10. This suite consists of dozens of different plug and play software modules. Many modules are already available and more are on the way. Each is designed to work in concert with a specific, best-of-breed production control application. All work to extend the power and reach and range of TME 10. Simply choose the Tivoli/Plus module that is designed for your particular application, rely on TME 10′s user interface for point and click control and enjoy the automated management of critical tasks ranging from job scheduling and backup/restore to security, help desk and output management.

3rd Party Applications

In some cases, 3rd party vendors have decided to write object-oriented applications directly on the TMF. In exercising this option, they gain the advantages of portability of their application to the many operating systems that the TMF runs on. Examples of this 3rd party exploitation of the TMF are applications that manage Oracle and Sybase data bases.

TME 10 Rollout

The complete rollout of TME 10 will occur in three general phases, summarized in the following table:

- Phase 1

  Timeframe: April - May

  During this timeframe, we will consolidate product offerings in each functional area of TME 10. We will create single, orderable products where several alternatives exist. We will also clearly identify those cases where a particular product will be phased out and a migration path to the preferred TME 10 product.

  This will help customers in that we will remove any ambiguity or confusion about which product to buy from the two formerly separate TME and SystemView product lines.

- Phase 2

  Timeframe: 3-9 months

  Phase 2 will involve creating a single, integrated product offering in each functional area. Previously separate products will be integrated to form a single, cooperative management product.

  The customer benefit here is that we will be removing all product overlaps from a management function point of view and offer true, best-of-breed distributed systems management offering.

- Phase 3

  Timeframe: 6-15 months

  Phase 3 will be when we migrate all underlying services onto a common framework, and eliminate any overlapping management console interfaces.

  Most Phase 3 features will not be visible to end users, except in the cases of new or merged management interfaces. Streamlined packaging, release, and installation process for all products will be available.

All of the above steps do not apply to all product areas. In particular, Phase 3 only applies to products that depend upon significant underlying management services that are to be made part of the public framework. Many others require significant framework-based services, and thus will be completely unified into TME 10 after completing Phase 2.

TME 10 (distributed) Products

Note: These are the new announced product names ... our initial focus was on the Tivoli products that manage within the distributed environment. Future enhancements would include renaming of management functions within the MVS or OS/400 environment.

Note: You can use this chart to describe our roadmap directions (future enhancements may add additional slides to specifically discuss those directions) if you like.

Our focus in Phase 1 was to consolidate product offerings in each functional area of TME 10 by creating a single set of orderable products where several alternatives exist. With the announcement of these products, we have completed Phase 1.

Deployment

In the area of software distribution, customers can now purchase TME 10 Software Distribution which includes: Software Distribution for AIX, NetView DM for OS/2, NetView DM for NetWare, and Tivoli/Courier. Over time, these products will be integrated together into a single product that consists of the best functions of these products. It will allow customers to automate software packaging, distribution, and installation across all of the devices in the network computing environment. The TME 10 software distribution application will be integrated with the inventory application and be based upon the common underlying configuration repository, leading toward a completely integrated view of configuration information across the enterprise.

TME 10 Inventory Manager is based on Tivoli/Inventory and also includes TME 10 NetFinity. The goal is to provide a robust set of underlying framework services and applications for discovering, maintaining, and reporting on hardware and software configurations from all layers of the environment, including network elements, desktops, servers, and application components. Over time, the existing Tivoli/Inventory application will be extended with discovery (a.k.a. ″extractor″) technology from the NetFinity product. In addition, the data model of the underlying configuration repository will be extended to include additional resource types such as routers, hubs, and SNA devices. The network discovery capability of the NetView product will be augmented to update the configuration repository.

Availability

The TME 10 Event Console includes the Tivoli/Enterprise Console (T/EC) and NetView. They perform real-time event and automation management of the operational environment. These servers are the control points for all major alerts, alarms, critical-status messages from other domains and sub-systems throughout the distributed environment. They include an intelligent event correlation engine for reducing and making decisions on real-time data, as well as being the point for distributed automated operations.

Over time, event/automation servers and consoles will be available in both host and distributed environments. These servers will be capable of processing events and controlling actions on all TME 10 managed systems.

TME 10 Distributed Monitoring includes Tivoli/Sentry and Systems Monitor. They help distribute intelligence throughout the system (close to the user) in order to provide effective and efficient management of distributed computing environments. They can either take management action locally or inform a high-tiered management system of pertinent activity.

Currently, most customers can monitor a specific type of resource by choosing a specific protocol such as SNMP. Over time, this product will combine the object-based monitoring technology of the current Tivoli/Sentry product, the new TME automation engine/framework, and System Monitor′s SNMP concentrator and mid-level manager capability. This enhanced TME 10 product will provide a comprehensive, scalable, and bi-directional mid-level management system.

It will be capable of processing events from a very broad range of sources, including SNMP (NetView), OS events, and all AMS-enabled sources. Configuration will be centralized and based on the current TME management by subscription technology.

TME 10 NetView will continue to be the single network management platform. Some of the core capabilities from the various NetView platforms will be incorporated into the TMF as core services. The strategy will include tight integration with not only TME 10 NetView, but with other third party network management products as well.

TME 10 Products (continued)

Availability

TME 10 Performance Monitoring provides a base for all performance-oriented management applications within TME 10. It includes resource independent services such as collection, policy setting, and real-time monitoring. It will provide information to extended TME 10 performance management applications. Initially, it consists of two products, Performance Monitoring of SNA Network and Performance Monitoring of Applications.

TME 10 Performance Reporter is based on Performance Reporter for AIX and provides performance analysis and report added-value to the availability management products. This provides resource-specific analysis and reporting, focusing on complex history/trend information and capacity planning.

Security

TME 10 User Administration includes Tivoli/Admin and Extended Systems Administration (XSA). It will provide a single TME 10 Administration product that offers an integrated view of users across all resources in the enterprise. The result will be a user registry that holds access privilege information for all users in the distributed environment and a user console that displays this information in tabular format. The power of this approach will be fully realized as third party developers provide endpoints that interface TME 10 Administration with a particular directory/name service.

In addition, TME 10 will include the administration of other 3rd party directory/name services. These functions provide a single administrative interface for managing all key directory/name services in heterogeneous enterprises, including operating systems, middleware, database, and application services. It will also provide consistent, enterprise-wide definition of users and their access privileges.

TME 10 will enable the wide scale deployment and execution of auditing products in the distributed environment. It will also enable the analysis of information collected from all the systems in the enterprise.

Administration and Operations

TME 10 ADSM (ADSTAR Distributed Storage Manager) is a level 2 application that provides policy-based backup/recovery functions to MVS, OS/400, AIX, HP-UX, Solaris, and OS/2 (soon NT) servers. It can backup many different client systems, including MVS, OS/400, UNIX, Windows (NT, 95, 3.1), OS/2, NetWare, and MacOS to name a few.

TME 10 Remote Control is based on DCAF (Distributed Console Access Facility). It will be integrated with other TME 10 functions and will support all popular client operating system environments.

TME 10 Job Scheduler is based on Job Scheduler for AIX. It will produce a single job scheduler that works across multiple operating system platforms and that incorporates a sophisticated calendering system. The TME 10 Job Scheduler will manage the scheduling of jobs throughout the distributed environment, supporting all the heterogeneous platforms in the distributed system. The product will be tightly integrated with the domain-specific scheduling products listed in Level 2. Because of unique capabilities expected by domain-specific administrators, Level 2 of TME 10 will also include domain-specific scheduling.

TME 10 Products (continued)

The only required product to TME 10 in the TME 10 Framework. You purchase the framework and then pick and choose the applications that you need to manager your environment.

There are 3 sets of tools sets that are available to help you tie into TME 10:

- Advanced Development Environment (ADE): helps you tie into the TMF by allowing access to all the object services and API′s
- Application Extension Facility (AEF): helps extend core application functions through extending data fields, creating additional pull-downs, etc.
- Event Integration Facility (EIF): provides interfaces into the Tivoli/Enterprise Console for consolidating events from multiple management applications.

AMS and Plus Modules

The Application Management Specification (AMS) allows management of your business critical applications. A toolkit is available to help you to enable your applications to be managed. In addition, Tivoli and other companies may provide AMS modules to help manage applications (like SAP R/2).

This is the current list of Tivoli/Plus modules.

Systems Management Across Platforms

Within the TME 10 architecture, there are 3 framework components:

- Management Server

  Choosing the right management server is simple. The complexity, scale, and location of the management activities determine the management server requirements. For example, customers managing 50,000 users often need combinations of UNIX and MVS as management servers. Smaller groups may choose UNIX, Windows NT, or OS/2 based management servers.

  Whether managed centrally at the corporate data center level or managed in a distributed fashion, TME 10 offers the widest array of integrated management server choices. Users can implement any combination of the TME 10 management servers on Windows NT, OS/2, UNIX, OS/400 or MVS to provide the integrated, end-to-end management coverage needed in today′s heterogeneous I/T world (A subset of the TMF will be provided on both MVS and AS/400).

  These management servers will include the TMF (which includes services for transactions, automation, and network management for example) and an integrated set of management applications.

  In addition to the current support of TCP/IP and IPX, future support for NetBios and SNA will also be provided.

  Note: Today, both MVS and OS/400 provide management functions and these functions will continue. Whether the entire TMF is ported to either operating system or exactly what the connections will be to other TME 10 servers which run the object-oriented Tivoli Management Framework (TMF) is being worked on. The message is, DO NOT commit to the customer any level of TMF function on MVS and/or OS/400 until it has been decided and formally announced.

- Management Desktop

  The ultimate systems management console provides administrators and operators with task-oriented management views to make systems management jobs easier. These views should hide the various complexities of the underlying operating system or hardware platform where the actual functions may be performed. (look and feel neutral). The TME 10 management desktop will allow the data center support team to globally manage the network and local branch office resources while still allowing each branch office administrator to monitor and manage their own resources ... such as a local LAN server and critical client server applications. You can manage anything from anywhere and yet have the security that only the users that you have authorized to perform specific functions are allowed to perform those functions (authenticated principle).

  The TME 10 management desktop is supported on UNIX and Windows 32 today and also includes a command line interface. Future support will be added for OS/2.

- Managed Client

  A managed client is the target of management operations. Managed clients will include: MVS, OS/400, UNIX, NT, NetWare, Windows systems, and OS/2.

A Safe, Mature Partner

Tivoli Systems is a safe, mature partner who can help you effectively and efficiently manage your network computing environment.

TME 10 is a unified product line with over 24 management applications that run on a variety of management servers and help you manage 29 different platforms. As well, 4 integration toolkits are available to help integrate other management applications or functions.

TME 10 is in the marketplace today ... with the new announced pricing, you can buy today. And your investments are protected, whether you have existing SystemView or TME products. Over time, as we integrate the 2 product lines together (phases 2 and 3) migration services will be available to help you move to this enhanced functionality.

Tivoli and TME 10 will be a focal point for the industy by helping to define open management specifications which will be built upon management working groups and participation with the 10/Plus Association.

Open Systems Management

Perhaps the most important aspect of Tivoli′s strategy for establishing TME 10 as a strategic management platform is to foster the development and growth of an industry that extends and surrounds the TME 10 platform. There are a wide variety of management products that excel in a particular area: managing a resource; utilities for a particular hardware platform; or performing a specific management activity. In order for TME 10 to become a truly strategic network computing management platform for our customers, Tivoli must leverage management components of other vendors, rather than work against them.

The 10/Plus Association will consist of partners, developers, service providers and users who are interested in working with TME 10. All existing SystemView and TME partnering activities will be unified under the 10/Plus Association.

Allowing customers to choose between TME 10 product offerings and integrated solutions from other systems management vendors requires a formal and disciplined effort to define and maintain a ″level playing field″ for all TME 10 integrators. This involves working actively with partners to define interfaces and establishing a formal review process for enhancing the capabilities of the interfaces over time. Finally, such interface specification efforts are of more value to independent vendors if they are open and other management platform vendors are free to implement them.

Tivoli′s approach will be based on the concept of a **Management Working Group (MWG)** A MWG is a small group of vendors and users that focus on defining the management interface issues for a very specific management function or resource. The results of the work of a MWG is captured in a formal specification. These specifications are not unique to TME 10, which allows other systems management vendors to support them. Lastly, these specifications will be published to the industry.

There will initially be 9 working groups:

1. Applications Management
2. Database Management
3. Internet Management
4. Network Management
5. Help Desk
6. Scheduling
7. Security
8. Performance
9. Storage Management

Tivoli Value-Add Alliances

When you look at the various types of alliances that are out there today, you need to look at 2 things: the tightness of integration and the variety of partners.

The first type of alliance is the ″acquisition model″ which is a well known model that is practiced by CA and Platinum. Integration here is mostly at the user interface level.

The second type is ″proprietary″ which features low integration very few integration partners. The best example here is Microsoft with their SMS product.

Next is ″integration without cooperation″ which feature many different partners; however, are not very tightly integrated together. HP and Cabletron are good examples here.

The last type is ″cooperative integration″ where you want to have a large amount of partners who can tightly integrate together. Tivoli not only allows integration from a user interface perspective, but encourages the use of their other interfaces so that management applications can be deployed, inventory tracked, functions monitored, and user access controlled. Applications can also take advantage of TMF services as well.

The 10/Plus Association

The 10/Plus Association will consist of partners, developers, service providers and users who are interested in working with TME 10. All existing SystemView and TME partnering activities will be unified under the 10/Plus Association.

Tivoli will invite the participation of industry standards organizations focused on systems management issues, most notably the Desktop Management Task Force (DMTF), and the Open Group (X/Open). These two organizations are currently involved with the AMS and IMS respectively.

Participants in the Tivoli/Plus program, the Tivoli Partner′s Program, the SystemView Advance Team, the NetView Association, and the NetFinity Developer′s program are all invited to participate.

The TME 10 Challenge

This chart is an optional chart that can be used to position Tivoli against other competitors like CA or HP. Our challenge is that we feel that management solutions must provide end-to-end management, with industry-leading technology, and must be working to create an industry.

Within each of these areas, we focus on 3 areas or principles that must be met.

(this chart will be filled in with examples for CA and HP in the near future).

Fundamental Management Processes

This is a summary chart that can be used to redefine the 4 application functions:

- **Deployment Management:** the automation of enterprise-wide configuration and change management activities for all of the frequently changing components of the network computing system.
- **Availability Management:** gathering, collecting, and routing information regarding the status of all aspects of the network computing environment for proactive management action.
- **Security Management:** ensuring users have access to the applications and data they need to do their job, and ensuring the security of corporate information assets.
- **Operations and Administration:** the automation of activities that ensure the integrity and reliability of the network computing environments.

TME 10 Advantages

There are many advantages that the new Tivoli Systems with TME 10 brings to the table:

- TME 10 provides end-to-end management of the entire enterprise ... from the smallest desktop to the largest mainframe and covers all of the systems management processes.
- In addition to a robust management solution for systems and networks, TME 10 also allows for the integrated management of databases, applications, and the internet.
- It has a fully distributed architecture that is very flexible (you determine where you want the functions to reside) and scalable (both physical and human). This architecture is based on the existing Tivoli Management Framework (TMF) and will add some of the existing SystemView functions as well (like NetView′s discovery, mapping and topology services).
- Highly integrated solution that tightly integrates the management of your systems, networks, applications and resources. You deal with any of these objects in the same way regardless of the management functions you want to perform. Tivoli also realizes that no one vendor can do it all ... so they also tightly integrate other vendor management solutions as well ... it′s all a matter of freedom of choice. In addition, where there were overlapping solutions, TME 10 is going to merger the best of these functions together ... we aren′t going to just pick one over the other.
- TME 10 is built on open standards and as well publishes many of it′s own interfaces for other vendors to integrate with. Tivoli is fully committed to 3rd parties allowing them to tie in their management solutions by integrating at the console, by using framework services and by use of some of the TME management functions. We can work with other management solutions (like other network management solutions or backup & recovery) and will also work closely with 3rd parties to help define industry standard interfaces for the management of resources and functions (through our management working groups).
- Platform independence is driven home by the fact that TME today supports. over 29 platforms and will be supporting the IBM platforms. True end-to-end management.
- Policy-based automation is built on the services that are offered from the TMF. A key function is ″management by subscription″ which helps simplify the work of an administrator or operator by letting them define configuration profiles (that specify the ″what″) with systems (the ″who″) who you might perform these operations against.
- True manager to manager communications and sharing of information is possible with TME 10. This is possible because of the consistent, shared framework and core applications that are offered on every supported management platform.
- With TME 10, you have a solution you can grow with. If you are trying to solve some initial problems first (like inventory management, software distribution, and monitoring and control), you can start with these functions and then add other management functions as you need them (like integrated network management, backup and recovery, etc.).

Value of TME 10

You can tie the advantages that we just discussed with some real customer value:

- Ease of Use
  - End-to-end management
  - Consistent management interface
  - Policy-based automation
- Increased Productivity
  - End-to-end management
  - Consistent management interfaces
- Simplicity
  - Platform independence
  - Highly integrated solutions
  - Policy-based automation
- Freedom of Choice
  - Fully distributed architecture
  - Platform independence
  - Commitment to 3rd parties
- Investment Protection
  - Built on existing TMF
  - Merging best of both solutions together
  - End-to-end solution
  - Commitment to 3rd parties
- Reduced Cost
  - We can solve your distributed systems management problems in the only fully, integrated, automated way possible ... by designing a management solution built around the client/server paradigm, we are the only vendor who can bring real value to your network computing management problems
- Reduced Risk
  - Fully distributed architecture
  - Open interfaces

TME 10 ... The Solution

TME 10 managing network computing: the smart way!!!!!!!

Backup Charts

Product Roadmap - TME 10 Summary

Note: All three phases of the TME 10 plans are summarized in the next 3 charts. These charts group the TME10 functions by the 4 management processes. These foils are simply trying to summarize the table information that is provided in the roadmap. For additional information, please see the detailed section of the roadmap appendix.

Deployment Management

TME 10 Software Distribution

TME 10 will include a single, integrated (end-to-end) software distribution and configuration/change management application. It will combine many of the key features from the NetView/DM family of products with Tivoli/Courier. It will allow customers to automate software packaging, distribution, and installation across all of the devices in the network computing environment. The TME 10 software distribution application will be integrated with the inventory application and be based upon the common underlying configuration repository, leading toward a completely integrated view of configuration information across the enterprise.

TME 10 Inventory Manager

TME 10 will include a robust set of underlying framework services and applications for discovering, maintaining, and reporting on hardware and software configurations from all layers of the environment, including network elements, desktops, servers, and application components. The existing Tivoli/Inventory application will be extended with discovery (a.k.a. ″extractor″) technology from the NetFinity product. In addition, the data model of the underlying configuration repository will be extended to include additional resource types such as routers, hubs, and SNA devices. The network discovery capability of the NetView product will be augmented to update the configuration repository.

Level 2 - Asset Management (additional discovery agents)

This support will provide added-value function to the Level 1 deployment management products. Asset management products use the inventory repository to analyze and track business issues related to hardware and software resources. There are numerous specialized inventory discovery agents available from 3rd parties and product manufacturers. Because the inventory application is extensible, it will collect the data generated by 3rd party inventory discovery agents for a single global repository.

Availability Management

TME 10 Event/Automation Server

The Tivoli/Enterprise Console (T/EC) and NetView are the primary servers for performing real-time event and automation management of the operational environment. These servers are the control points for all major alerts, alarms, critical-status messages from other domains and sub-systems throughout the distributed environment. They include an intelligent event correlation engine for reducing and making decisions on real-time data, as well as being the point for distributed automated operations.

As described above, event/automation servers and consoles will be available in both host and distributed environments. These servers will be capable of processing events and controlling actions on all TME 10 managed systems.

TME 10 Mid-Level Manager (MLM)

Effective and efficient management of distributed computing environments requires distributing management intelligence throughout the system, close to the user. These "mid-level managers" can either take management action locally or inform a high-tiered management system of pertinent activity.

Currently, most customers can monitor a specific type of resource by choosing a specific protocol such as SNMP. The TME 10 MLM product will combine the object-based monitoring technology of the current Tivoli/Sentry product, the new TME automation engine/framework, and System Monitor's SNMP concentrator and mid-level manager capability. This enhanced TME 10 product will provide a comprehensive, scalable, and bi-directional mid-level management system.

The TME 10 MLM will be capable of processing events from a very broad range of sources, including SNMP (NetView), OS events, and all AMS-enabled sources. Configuration of MLMs will be centralized and based on the current TME management by subscription technology.

TME 10 NetView

NetView will continue to be the single network management platform. Some of the core capabilities from the various NetView platforms will be incorporated into the TMF as core services. The strategy will include tight TME 10 integration with NetView as well as other third party network management products.

Product Roadmap - TME 10 Summary

Availability Management, continued

TME 10 Performance Monitoring

These functions will provide a base for all performance-oriented management applications within TME 10. It includes resource independent services such as collection, policy setting, and real-time monitoring. It will provide information to extended TME 10 performance management applications.

Level 2 - Performance Analysis and Reporting

These functions will provide performance analysis and report added-value functions to the Level 1 availability management products. The Level 2 performance products provide resource-specific analysis and reporting, focusing on complex history/trend information and capacity planning.

Security Management

TME 10 User Administration

This product will provide a single TME 10 Administration product that offers an integrated view of users across all resources in the enterprise. The result will be a user registry that holds access privilege information for all users in the distributed environment and a user console that displays this information in tabular format. The power of this approach will be fully realized as third party developers provide endpoints that interface TME 10 Administration with a particular directory/name service.

Level 2 - Administration of 3rd party directory/name services

(security audit/analysis)

These functions provide a single administrative interface for managing all key directory/name services in heterogeneous enterprises, including operating systems, middleware, database, and application services. It will also provide consistent, enterprise-wide definition of users and their access privileges.

TME 10 will enable the wide scale deployment and execution of auditing products in the distributed environment. It will also enable the analysis of information collected from all the systems in the enterprise.

Product Roadmap - TME 10 Summary

Operations and Administration

TME 10 Remote Control

This product will produce a single version of the remote control product integrated with TME 10 and will support all popular client operating system environments. It is based on the current Distributed Console Access Facility (DCAF) function.

TME 10 Job Scheduler

This product will produce a single job scheduler that works across multiple operating system platforms and that incorporates a sophisticated calendering system. The TME 10 Job Scheduler will manage the scheduling of jobs throughout the distributed environment, supporting all the heterogeneous platforms in the distributed system. The product will be tightly integrated with the domain-specific scheduling products listed in Level 2. Because of unique capabilities expected by domain-specific administrators, Level 2 of TME 10 will also include domain-specific scheduling.

Level 2 - Help Desk/Backup & Restore/Output Management/Job Scheduling

This support will provide tight integration of several key operations and administration products with the TME 10 platform so that customers can select the best-of-breed solutions of their choice. Many of the tools in this category are unique to particular workgroup environments. These products are often chosen for tactical reasons because there is no need for a single centralized enterprise-scale solution.

In the help desk area, we will continue to work closely with partners and tightly integrate their products ... via the interface described in the roadmap detail ... as a component of the TME 10 extended platform. TME 10 service partners will provide services offerings for complex, large-scale environments. The Trouble Ticket/6000 product will not be included as a standard offering in TME 10. We will work with all current users to migrate them to one of the partner products or the service offerings.

IBM AIX Product Roadmap Summary

This foil just summarizes the current products in SystemView for AIX and their status according to the roadmap.

Note: A product that has a product direction of ″**connected**″ is a product that is being transferred to another IBM product division and that product division will be responsible for connecting it to the TME 10 platform. A product with a direction of ″**migrated**″ will be migrated to some new TME 10 function.

IBM MVS Product Roadmap Summary

This foil just summarizes the current products in SystemView for MVS and their status according to the roadmap.

IBM MVS Product Roadmap Summary

This foil is a second one used to describe SystemView for MVS product status.

IBM OS/2 Product Roadmap Summary

This foil summarizes the current products in SystemView for OS/2 and their status according to the roadmap.

IBM OS/400 Product Roadmap Summary

This foil summarizes the current products in SystemView for OS/400 and their status according to the roadmap.

Progression of IBM′s Systems Management Strategy

Note: This chart can be used as an optional foil to bridge from what we′ve been presenting as the IBM Systems Management (or SystemView) strategy to the new TME 10 strategy.

At the top, we show the problem or industry today ... with many different user interfaces for the various management applications; many different management applications (that may be the same or different) on many different management servers; multiple management data stores that probably have duplicate definitions of management data that is stored within them; lots and lots of agents to work with the various management applications; and last, many different types and ways of delivering these functions to you.

In the middle is what we were presenting as the SystemView direction. The SystemView direction consisted of:

- an integrated, object-oriented, task-oriented user interface that could be tailored to meet the needs of your systems management user
- an object-oriented framework with object-oriented applications (that you could pick and choose among); these functions would be available on all of the platforms (both IBM and non-IBM) that we chose to put a SystemView ″managing″ platform on ... as well, it would continue to support many of the current APIs provided by the existing SystemView products
- a single, logical data store that would be based on a consistent data model, to allow you to efficiently share data and information among the various SystemView applications
- a single agent with selectable functions that would be based on the Desktop Management Interface (DMI) and include a set of common agent services to help reduce the size of the agents out on your managed systems
- a single integrated delivery vehicle that would contain all of the products to select from, all of the technical publications, demos and/or marketing deliverables associated with the product set

The SystemView strategy was mostly a lot of vision ... some of it was becoming reality (like the SystemView launch window, the SystemView Agent, and some object-oriented infrastructure and applications (NetView or SystemView Performance Monitoring for example) ... but to a large extent it was still a lot of vision. SystemView provided lots and lots of functions (over 160 products) and was looking for a framework. Another reason why this merger is such a good reason!!! TME provides an incredible architecture and framework as well as integrated application functions that run on many heterogeneous platforms.

Thus, TME 10 provides us:

- the integrated user interface via the console integration of the TME 10 management desktop ... giving us a task-oriented, tailorable user interface
- a single architecture, object-oriented architecture and application set that is consistent across supported management platforms/servers that will integrate applications from Tivoli TME and IBM SystemView, and also support vendor applications
- a single logical database with a consistent data model to manage the various data required by the systems management applications
- a single agent that will be light and scalable based upon the management functions that are needed by the management applications; this agent will integrate the DMI Service Layer (and optionally mapping to SNMP if required) with the Tivoli lightweight client framework

  Bottom line...one aspect of the IBM/Tivoli merger is that when IBM reached a ′Build or Buy?′ decision point in providing an object-oriented framework with which to provide systems and network management function, it opted for ′Buy′ to accelerate its implementation schedule.

SystemView Discipline Mapping

Note: This is another optional foil that shows how the 6 SystemView disciplines map to the 4 Tivoli application management functions. Other than this ′intuitive, high-level′ mapping no concentrated work has been done to provide a comprehensive mapping of all SystemView sub-tasks into the Tivoli management functions. If there is a customer requirement for this detailed level mapping, the authors would be interested in understanding it.

Within SystemView we have been talking about 6 SystemView disciplines: Business, Change, Configuration, Performance, Problem, and Operations Management. While these may not map exactly to a customers′ set of systems management processes and tasks, they can be mapped into those specific environments.

With Tivoli and TME 10, we have organized the architecture around 4 systems management functions or applications:

- **Deployment Management:** the automation of enterprise-wide configuration and change management activities for all of the frequently changing components of the network computing system.
- **Availability Management:** gathering, collecting, and routing information regarding the status of all aspects of the network computing environment for proactive management action.
- **Security Management:** ensuring users have access to the applications and data they need to do their job, and ensuring the security of corporate information assets.
- **Operations and Administration:** the automation of activities that ensure the integrity and reliability of the network computing environments.

Now, how do the 6 SystemView disciplines relate to the 4 Tivoli management processes?

Tivoli Function	SystemView Discipline
Deployment	Change
	Configuration
Availability	Performance
	Operations
Security	Business
	Configuration
Operations & Administration	Operations
	Problem

The multiple arrows indicate that for some disciplines the SystemView sub-tasks under each discipline might map into more than one Tivoli management function.