

M06

IBM Director v4.20

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IBM Director v4.20 – Overview



- “...designed to provide comprehensive hardware manageability resulting in the most manageable systems in the industry and reduced costs throughout the life cycle of your...eServer servers.”
- “...includes self-management features and a portfolio of proactive, predictive tools that enable advanced xSeries server management resulting in higher server availability and reliability.”
- “IBM Director’s industry-standard foundation enables heterogeneous hardware support. It works with a variety of operating systems and network protocols.”

3-Tiered Architecture

Director Server – xSeries

- RedHat Linux
- SuSE Linux
- Windows 2000
- Windows Server 2003

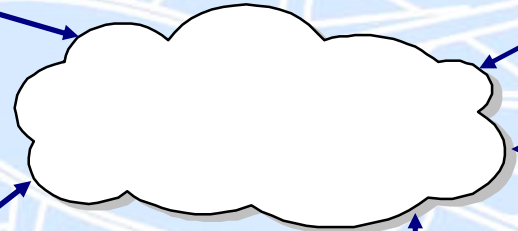
Director Console

- RedHat Linux
- SuSE Linux
- Windows 2000
- Windows Server 2003
- Windows XP Pro



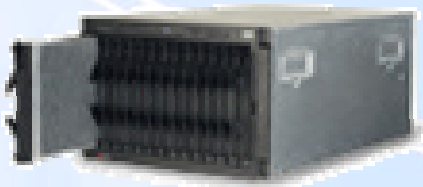
Director Server – iSeries

- i5/OS V5R3



Director Agent – xSeries

- NetWare
- RedHat Linux
- SuSE Linux
- Windows
- VMware ESX



Director Agent – pSeries

- AIX 5L v5.2
- RedHat Linux
- SuSE Linux



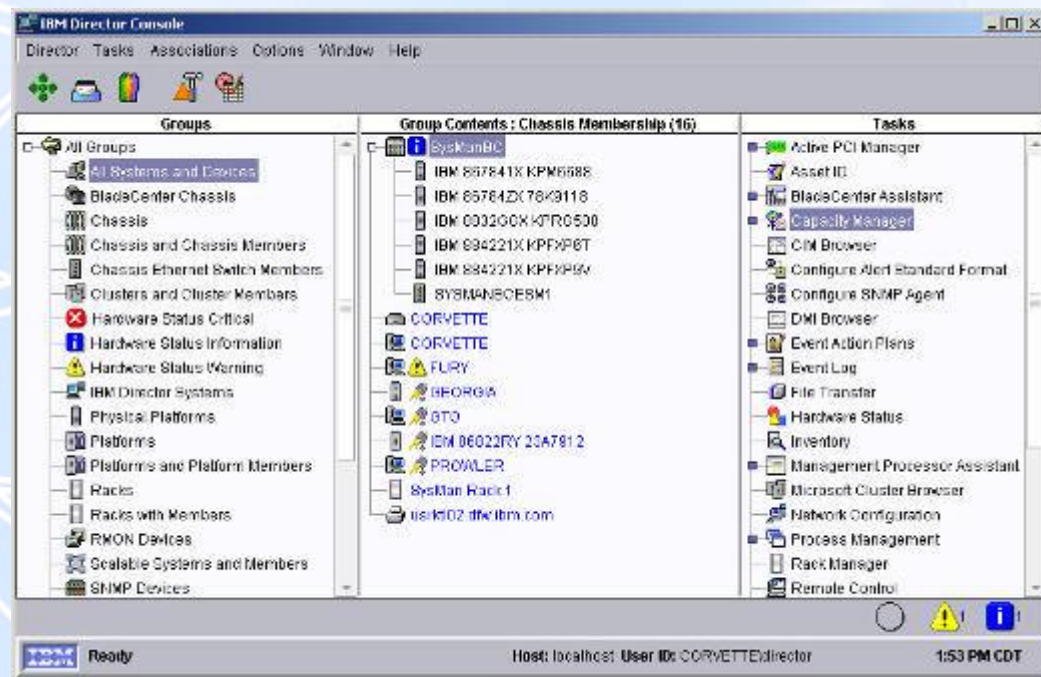
Director Agent – iSeries

- i5/OS V5R3
- RedHat Linux
- SuSE Linux



Centralized Management Console

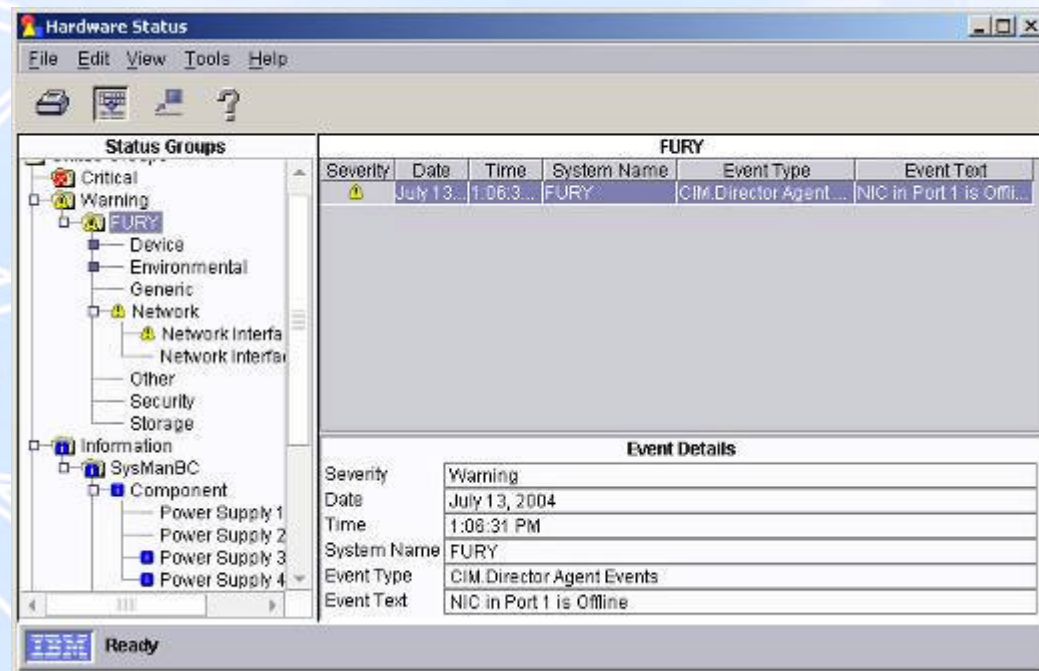
- Allows logical groupings of systems using dynamic or static groups
- System health status indicators easily identify problematic systems
- Uses drag-and-drop to launch tasks on individual systems, multiple systems, or entire groups of systems
- Ability to automatically rename Physical Platforms



Hardware Status Support

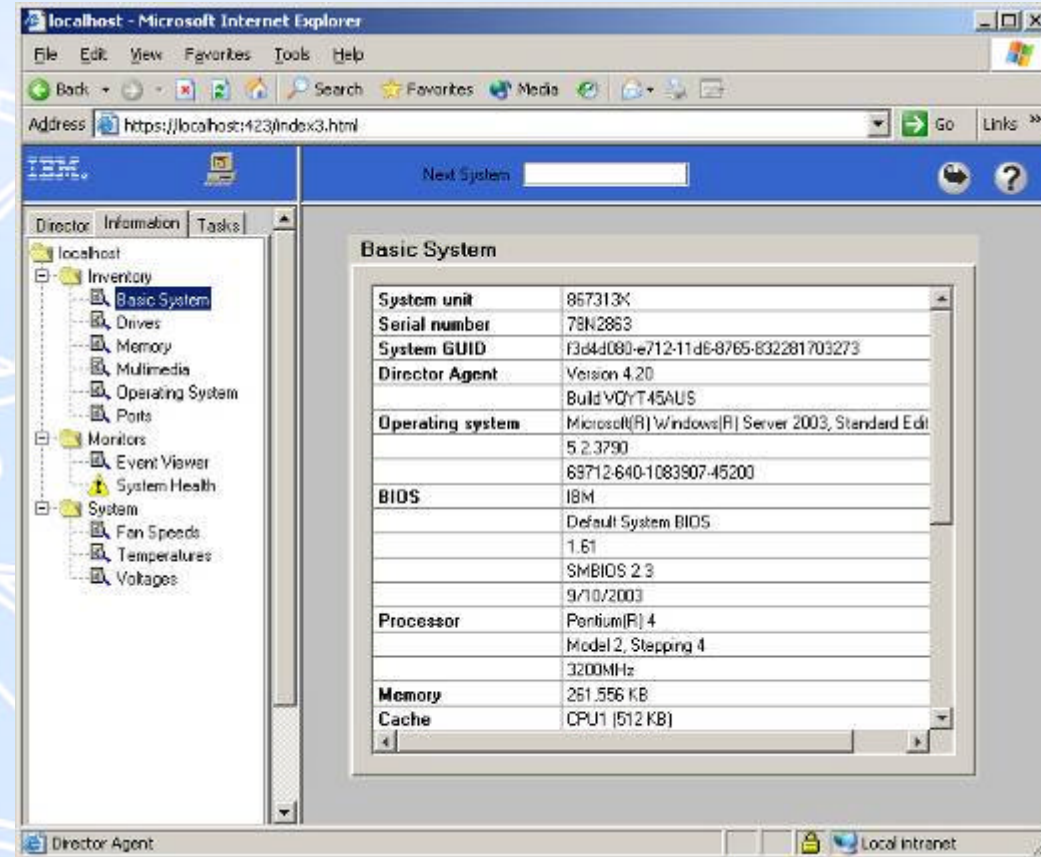
- One stop shop for hardware alerts
 - § CIM alerts and OOB RSA alerts

- Hardware status for managed object types
 - § BladeCenter Chassis
 - § Physical Platforms
 - § RXE-100
 - § x440 Partitions
 - § IBM Director Systems



Point-to-Point Management

- Director
 - § xSeries Systems
 - ∅ Displays Hardware Status for all Director Agent systems (Server only)
- Information
 - § Inventory
 - ∅ Displays basic system, drive, memory, and operating system information
 - § Monitors
 - ∅ Displays O/S Event Log and System Health information
 - § System
 - ∅ Displays fan speeds, temperature, voltage
- Tasks
 - § Configuration
 - ∅ Asset ID, Date & Time, Alerting, Network, SNMP, and System Accounts
 - § Tools
 - ∅ Enables system shutdown
 - § Web links
 - ∅ Links to product-specific IBM web-site

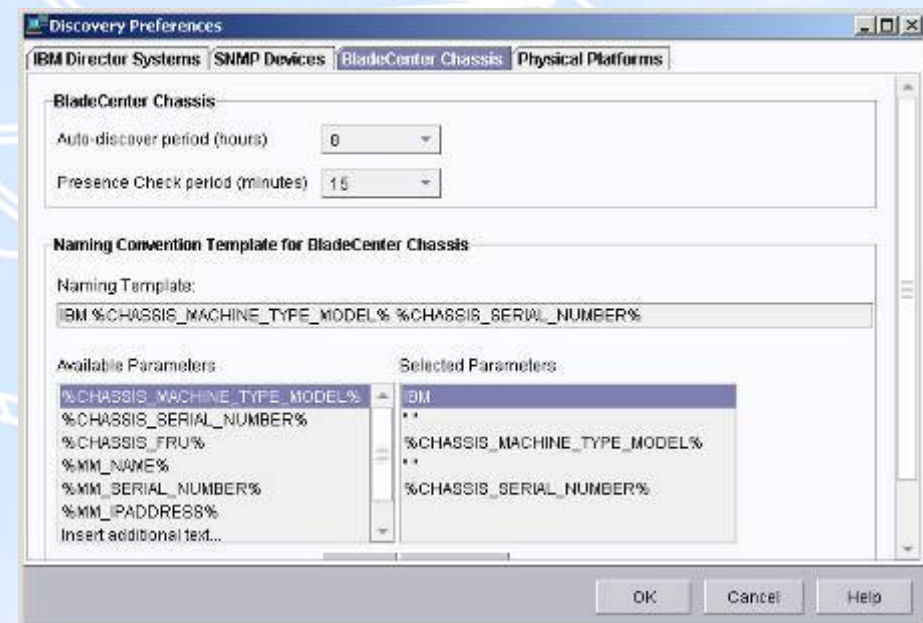
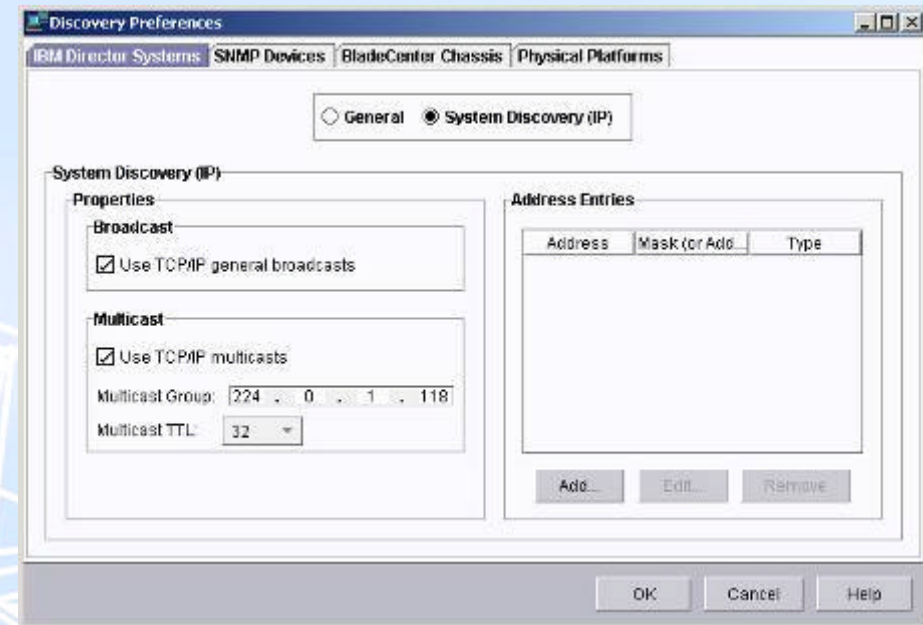


Director v4.20 Server Features

- Discovery
 - § Automatically discovers BladeCenter Chassis, Physical Platforms, Director Agents, SNMP Devices
- Job scheduling
 - § Calendar-based scheduler used to launch non-interactive Director Tasks against managed objects or Groups
- Command-line interface
 - § Configuration of Director Server and execution of non-interactive Director Tasks using command line commands
- Console Security
 - § Authenticate users using O/S accounts, including MS Active Directory accounts thru PDC emulation mode
 - § Support for SSL encryption
 - § Restrict User privileges, Group and Task access
- Server / Agent Security
 - § Uses Digital Signature Algorithm (DSA) to ensure Agents are only managed by trusted Servers that hold a private key which corresponds to the Agent's public key
 - § Support for Digital Encryption Standard (DES) or Triple DES encryption

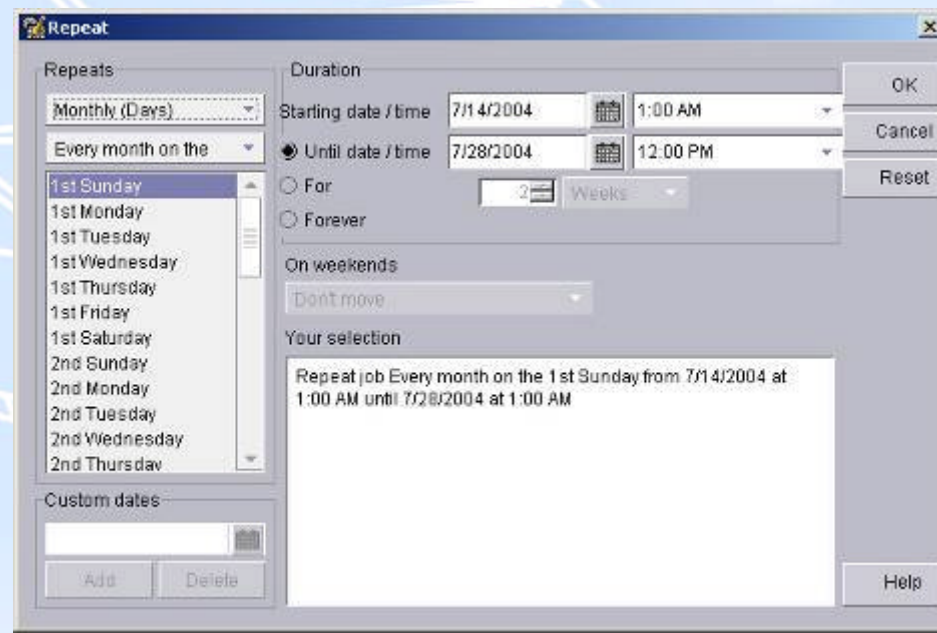
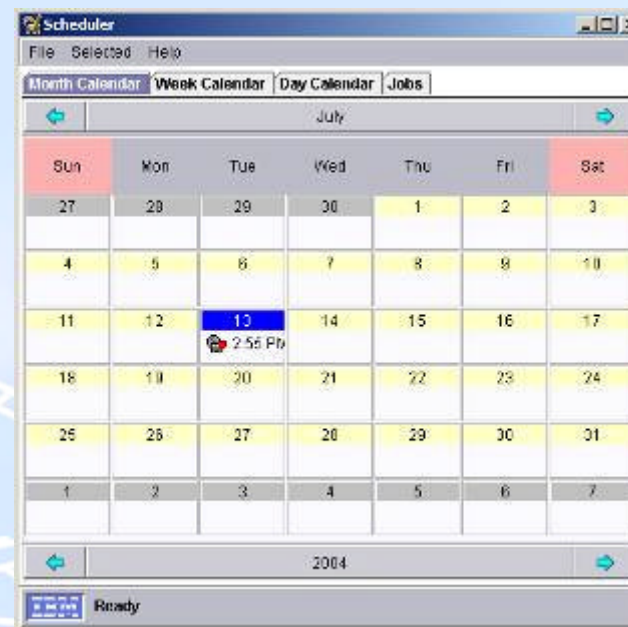
Discovery

- Configure discovery settings for IBM Director Agents, SNMP devices, BladeCenter Chassis, and Physical Platforms
- Automatically secure newly discovered Agents
- Automatically “discover” Agents which contact the Director Server
- Support for SNMPv1, SNMPv2c, and SNMP v3 devices
- Enables renaming of BladeCenter Chassis and Physical Platforms based on available parameters



Job Scheduler

- Scheduled jobs viewable in monthly, weekly, or daily calendar
- Jobs can be ran daily, weekly, monthly, or on a custom basis
- Alerts send based on system and job success or failure
- View execution history of previously scheduled jobs
- Re-execute previously scheduled jobs



Command Line Interface

- Uses the syntax

```
§ dircmd -s <server_address> -u <user_id> -p <password> bundle command  
command_arguments
```

- Available bundles

```
§ bladecenterchassis
```

```
§ chassis
```

```
§ monitor
```

```
§ native
```

```
§ server
```

```
§ bladecenterconfiguration
```

```
§ event
```

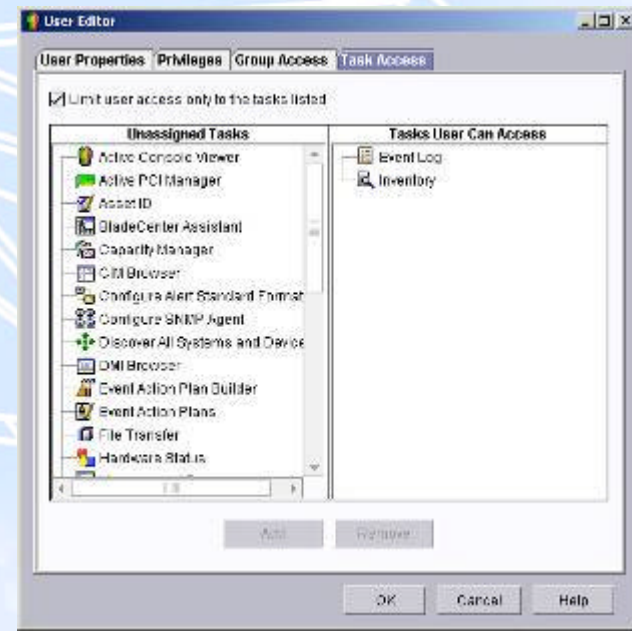
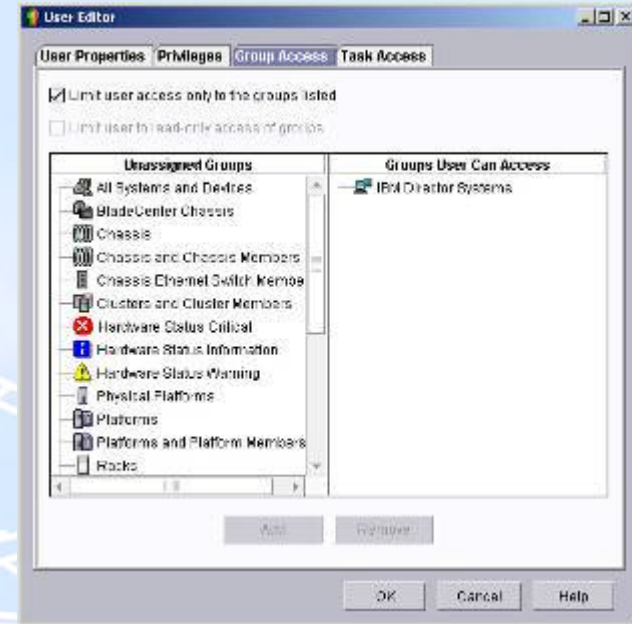
```
§ mpa
```

```
§ procmon
```

```
§ snmp
```

User Administration

- Define User Properties including user name, email address, and pager number
- Restrict User authorization of Privileges, Groups, and Tasks
- Can restrict Group access to read only
- Define User Defaults to apply to members of the DirAdmin group
 - § Cannot restrict access to members of the DirSuper group



Hardware Management Functions

- BladeCenter Assistant
 - § A collection of tasks to configure and manage BladeCenter
 - § Includes a wizard for configuring the BC MM, BC SM, and assigning O/S deployment Tasks to each individual Blade
 - § Switch management launch pad ensures correct UI is launched based on type of switch
- Management Processor Assistant
 - § A collection of tasks to configure and manage Management Processors, including RSA, ASMP, and ISMP
- Configure Alert Standard Format
- ServeRAID Manager
 - § Enables the configuration and management of the RAID subsystem of systems using an integrated or optional SCSI RAID adapter
 - § Includes viewing physical drive, array, and logical drive configuration, as well as the creation and deletion of logical drives and arrays
- Director Update Assistant
 - § Provides a convenient method to updated system firmware and device drivers on remote Agent systems

BladeCenter Support

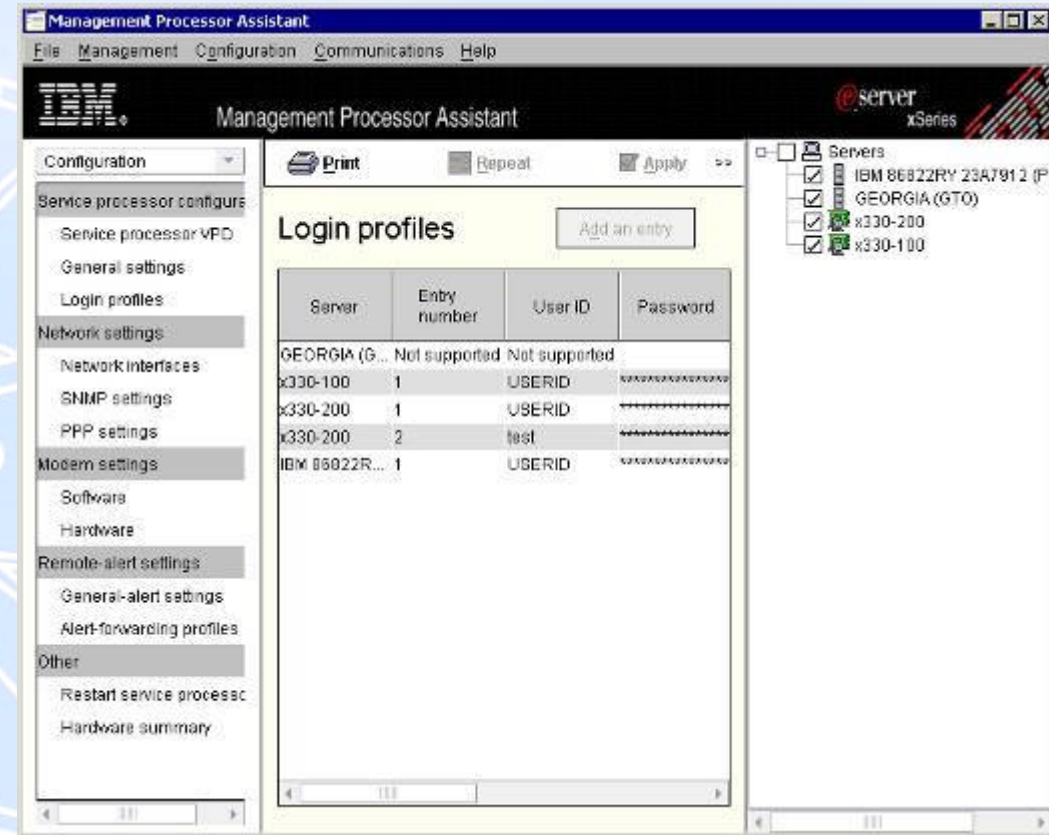
- Uses Management Module to discover BladeCenter chassis object, processor blade objects, and switch objects
- VPD information about the chassis is collected, including number of processor blades, their slots, and number of switch blades
- Wizard-based configuration of Management Module, chassis, and switches
- Using RDM, deploy operating system and Director Agent to processor blades

The screenshot shows the Management Processor Assistant (MPA) interface. The title bar reads 'Management Processor Assistant' and the menu bar includes 'File', 'BladeCenter Management', 'BladeCenter Configuration', and 'Help'. The main window displays the 'Event log' for 'SysManBC'. The event log table contains the following data:

Chassis	Message	Date and time
SysManBC	Remote Login Successful. Login ID:'USERID' from CMD...	7/13/04 3:16 PM
SysManBC	Remote Login Successful. Login ID:'USERID' from CMD...	7/13/04 1:19 PM
SysManBC	Remote Login Successful. Login ID:'USERID' from CMD...	7/13/04 1:11 PM
SysManBC	Remote Login Successful. Login ID:'USERID' from CMD...	7/13/04 12:46 PM
SysManBC	Remote Login Successful. Login ID:'USERID' from CMD...	7/13/04 12:43 PM
SysManBC	Remote Login Successful. Login ID:'USERID' from CMD...	7/13/04 12:42 PM
SysManBC	Remote Login Successful. Login ID:'USERID' from WEB...	7/13/04 12:42 PM
SysManBC	Remote Login Successful. Login ID:'USERID' from WEB...	7/13/04 12:42 PM
SysManBC	Ethernet[1] Link Established at 100Mb, Full Duplex...	7/13/04 12:41 PM
SysManBC	Ethernet[1] configured to do 100Mb/Full Duplex...	7/13/04 12:41 PM
SysManBC	Ethernet[1] MAC Address currently being used: 0x00-08-...	7/13/04 12:41 PM
SysManBC	Ethernet[0] Link Established at 100Mb, Full Duplex...	7/13/04 12:41 PM
SysManBC	Ethernet[0] configured to do Auto Speed/Auto Duplex...	7/13/04 12:41 PM
SysManBC	Ethernet[0] MAC Address currently being used: 0x00-08-...	7/13/04 12:41 PM
SysManBC	Management Module Network Initialization Complete...	7/13/04 12:41 PM
SysManBC	ENET[1] IP-Cfg:HostName=MM00096BCAA4A7, IP=@192...	7/13/04 12:41 PM
SysManBC	ENET[0] IP-Cfg:HostName=SYSMANMM, IP=@192.168.5...	7/13/04 12:41 PM

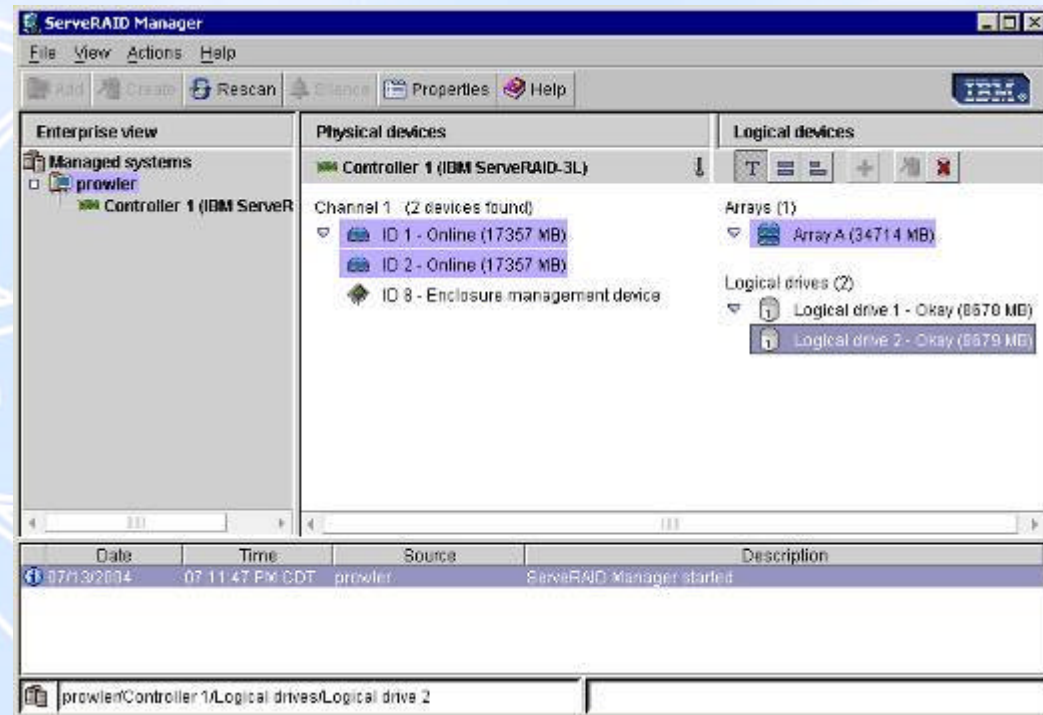
Service Processor Management

- Used to view / modify the configuration of Service Processors including network configuration, login profiles, and alert settings
- Provides the ability to monitor and control server hardware including viewing environmental information, viewing hardware error logs, and performing remote power control
- Supports both in-band and out-of-band connections
- Mass-configuration capabilities using the Repeat function
- Support for ASMP, ASMA, ISMP, RSA-I, RSA-II, and IPMI BMC



ServeRAID Management

- Configures, monitors, and manages the embedded and optional SCSI RAID controller through a graphical display
- Management information to be included in IBM Director's upward integration into higher-level management products

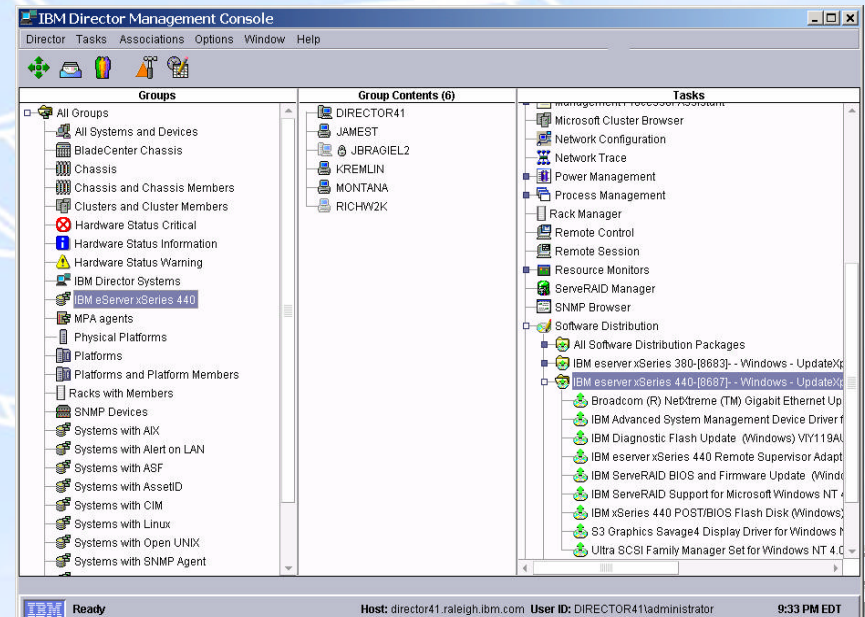
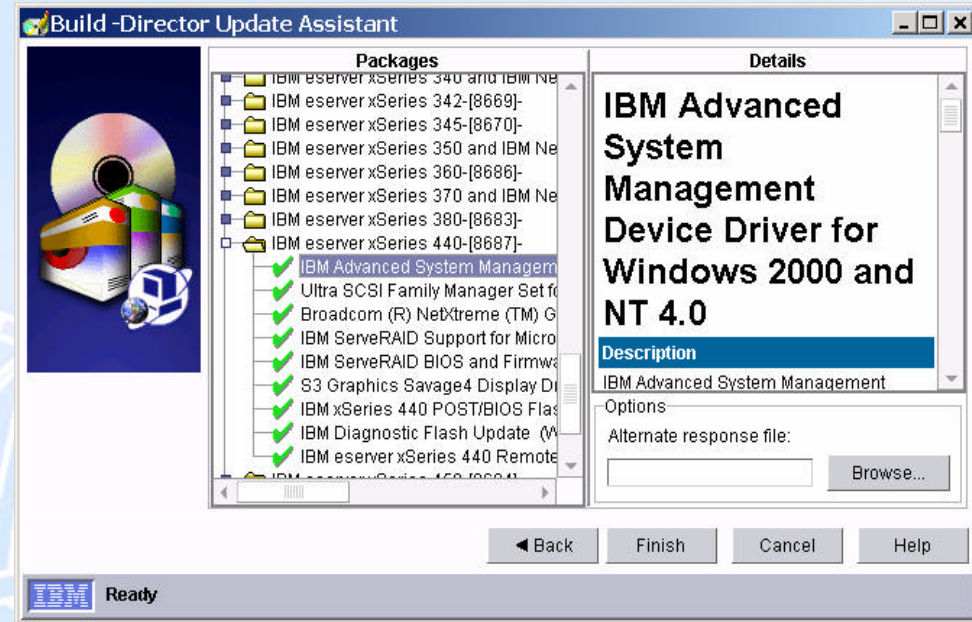


Configure Alert Standard Format



Update Assistant

- Remotely update system firmware, and drivers on individual systems or groups of systems
- Content obtained locally, from UpdateXpress CD or from IBM Support site
- Remotely deploy upgrades to Director Agent, Server Plus Pack, Service Packs

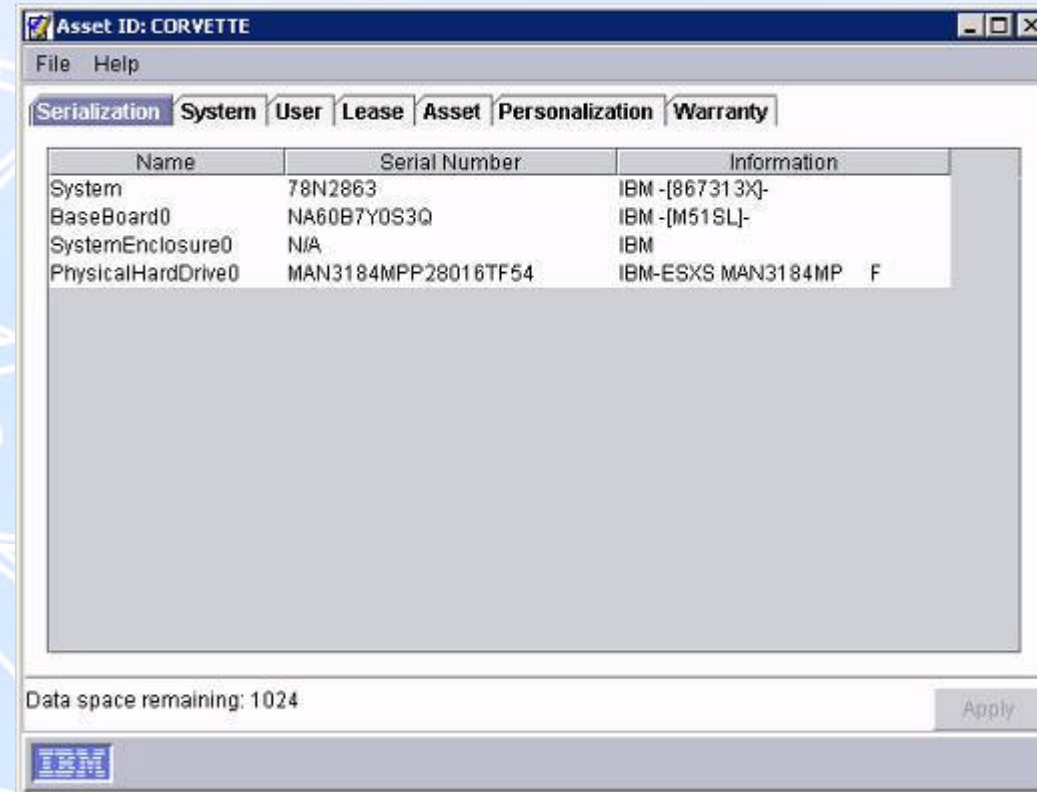


Asset Tracking Functions

- Asset ID
 - § Makes it possible to track lease, warranty, user, and system information, as well as serial numbers for major system components
- CIM Browser
 - § Enables you to view information for a system or group of systems that support CIM classes
- DMI Browser
 - § Displays a tree view of DMI components and group classes
- Inventory
 - § Collects hardware and software information, including FRU numbers, serial numbers, system firmware versions, and device driver versions from managed objects

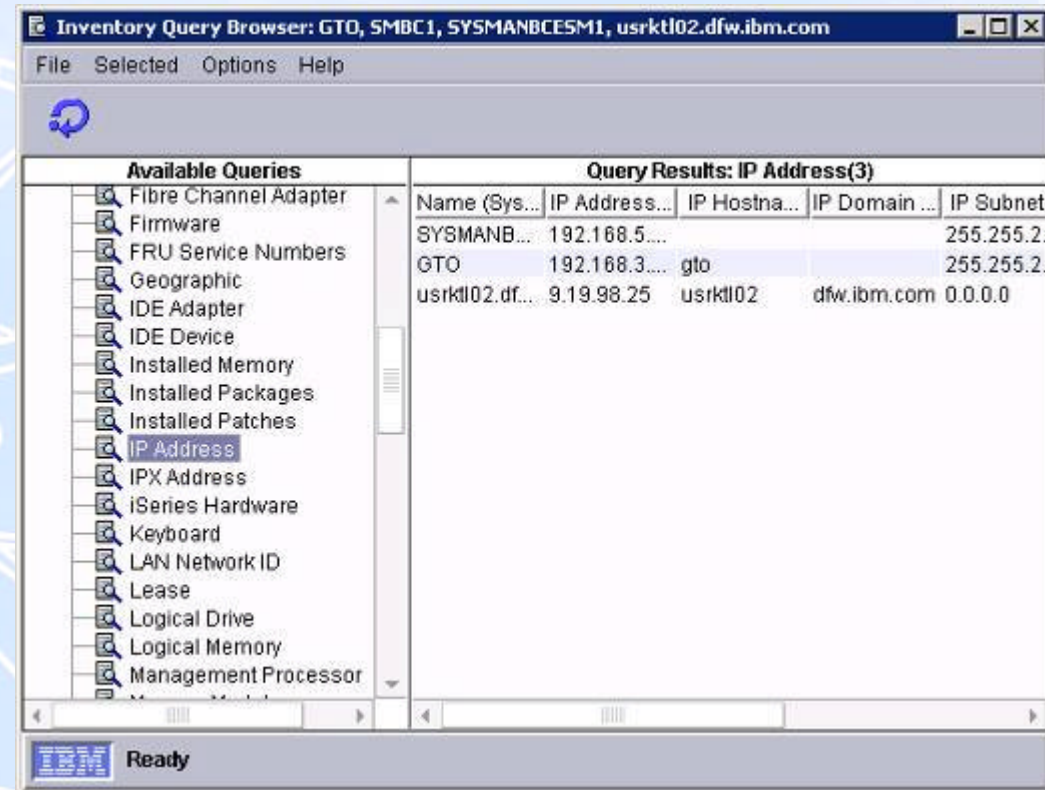
Asset ID

- Retrieves serial number information from Enhanced Asset Information Area enabled systems
- Records personalization information in the EAIA EEPROM or in CIM
- Alerts generated based on Warranty and Lease expiration dates
- Includes 5 user-definable fields
- Information stored in inventory database



Inventory

- Collects detailed hardware and software information
- Requires GetFRU.EXE to import FRU information
- Query tool allows the creation of database queries
- Query results can be exported to HTML, XML, CSV files
- Software Dictionary can be customized with user-defined applications

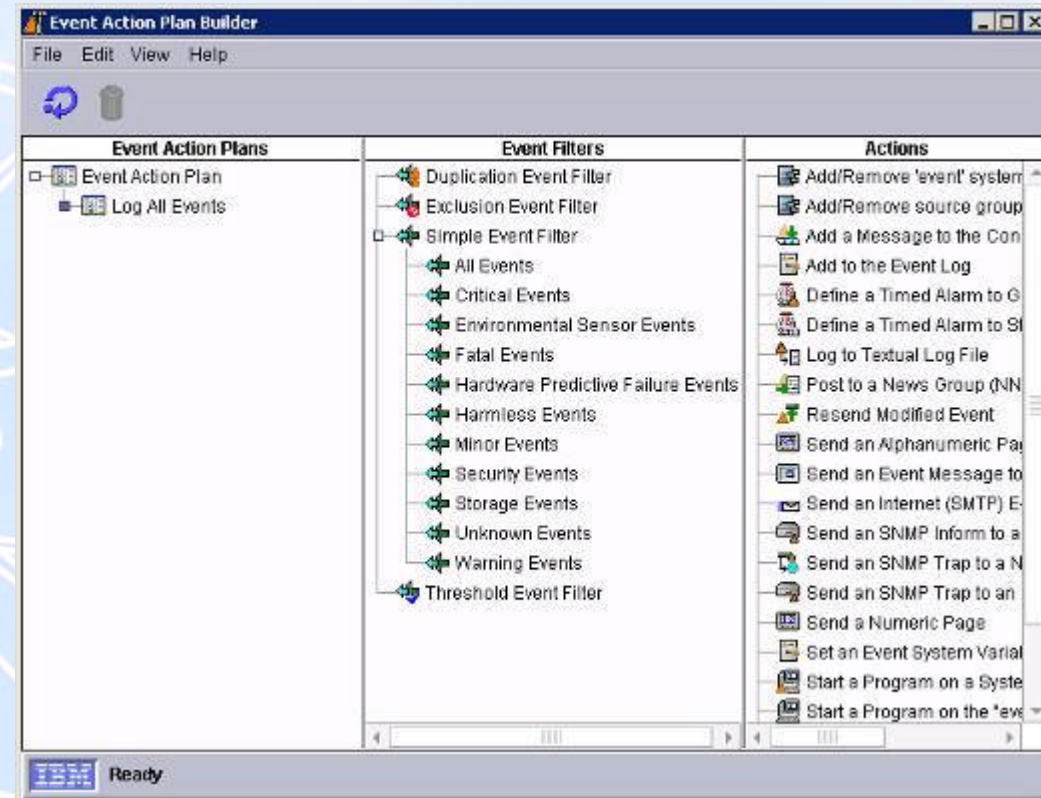


Monitoring Functions

- Event Action Plans
 - § Defines Actions to take based on receiving a specific Event
- Process Management
 - § Monitors Applications (processes), Win32 Services, and Win32 Devices
- Resource Monitors
 - § Monitors performance counters using user-defined thresholds
- SNMP Management
 - § Receive and process SNMP Traps from any SNMP device
 - § Browse MIBs using MIB Browser

Event Action Plan Builder

- Event Action Plans consist of Actions to take based on receiving specific Events
- Can specify a single Event, or an entire Event 'family'
- Events can be filtered based on time of day, severity, etc.
- Actions include sending pages or emails, running scripts, visual notification
- Can specify multiple Actions per Event, and multiple Events per Event Action Plan



Process Management

- View active Applications (processes), including memory usage and CPU time
- Remotely start / stop processes, and notify when their status changes
- Remotely start / pause / stop Win32 services and notify when their status changes
- Remotely start / stop Win32 devices and notify when their status changes

The screenshot shows the 'Process Management: GTO' window with the 'Applications' tab selected. The window displays a table of active processes with columns for Name, Process ID, User, Thread Count, Priority, and Memo.

Name	Process ID	User	Thread Count	Priority	Memo
Idle	0		2	Idle	
System	4	SYSTEM	56	Normal	
C:\WINDOWS\system32\logon.scr	184	Administrator	1	Low	
C:\WINDOWS\system32\dfs.exe	220	SYSTEM	9	Normal	
C:\Program Files\IBM\Director\bin\bgmoni...	232	SYSTEM	4	Normal	
C:\WINDOWS\system32\wbem\wmiprvse...	348	SYSTEM	8	Normal	
C:\WINDOWS\system32\smss.exe	396	SYSTEM	3	Normal	
C:\WINDOWS\system32\csrss.exe	444	SYSTEM	12	Normal	
C:\WINDOWS\system32\winlogon.exe	468	SYSTEM	18	High	
C:\WINDOWS\system32\services.exe	512	SYSTEM	22	Normal	
C:\WINDOWS\system32\lsass.exe	524	SYSTEM	24	Normal	
C:\WINDOWS\system32\wbem\wmiprvse...	648	NETWORK SERVICE	11	Normal	
C:\WINDOWS\system32\svchost.exe	676	SYSTEM	10	Normal	
C:\WINDOWS\system32\svchost.exe	752	SYSTEM	17	Normal	
C:\WINDOWS\system32\svchost.exe	888	NETWORK SERVICE	6	Normal	
C:\WINDOWS\system32\svchost.exe	956	LOCAL SERVICE	5	Normal	
C:\WINDOWS\system32\svchost.exe	968	SYSTEM	42	Normal	
C:\Program Files\IBM\Director\bin\ombinP...	1016	SYSTEM	8	Normal	
C:\Program Files\IBM\Director\bin\bgagen...	1024	SYSTEM	25	Normal	
C:\WINDOWS\system32\spoolsv.exe	1148	SYSTEM	9	Normal	
C:\WINDOWS\system32\msdtc.exe	1176	NETWORK SERVICE	21	Normal	
C:\Program Files\NavNT\defwatch.exe	1380	SYSTEM	3	Normal	
C:\Program Files\IBM\Director\websv\dirw...	1404	SYSTEM	3	Normal	

Resource Monitors

- Alerts based on user-defined System or Group thresholds
- Data can be recorded and graphed at a later time / date
- Supports both Director Agents and RMON compliant devices
- Ability to monitor files / directories for changes

The screenshot shows the 'Resource Monitors' application window. The title bar reads 'Resource Monitors: CORVETTE, GTO, usrktl02.dfw.ibm.com'. The window is divided into two main sections: 'Available Resources' on the left and 'Selected Resources' on the right.

Available Resources: A tree view showing a hierarchy of resources. The 'iso.org.dod.internet' folder is expanded, showing sub-folders like 'host', 'hrDevice', 'hrStorage', 'hrSWInstalled', 'hrSWRun', 'hrSWRunPerf', 'hrSystem', and 'icmp'. 'hrStorage' is currently selected.

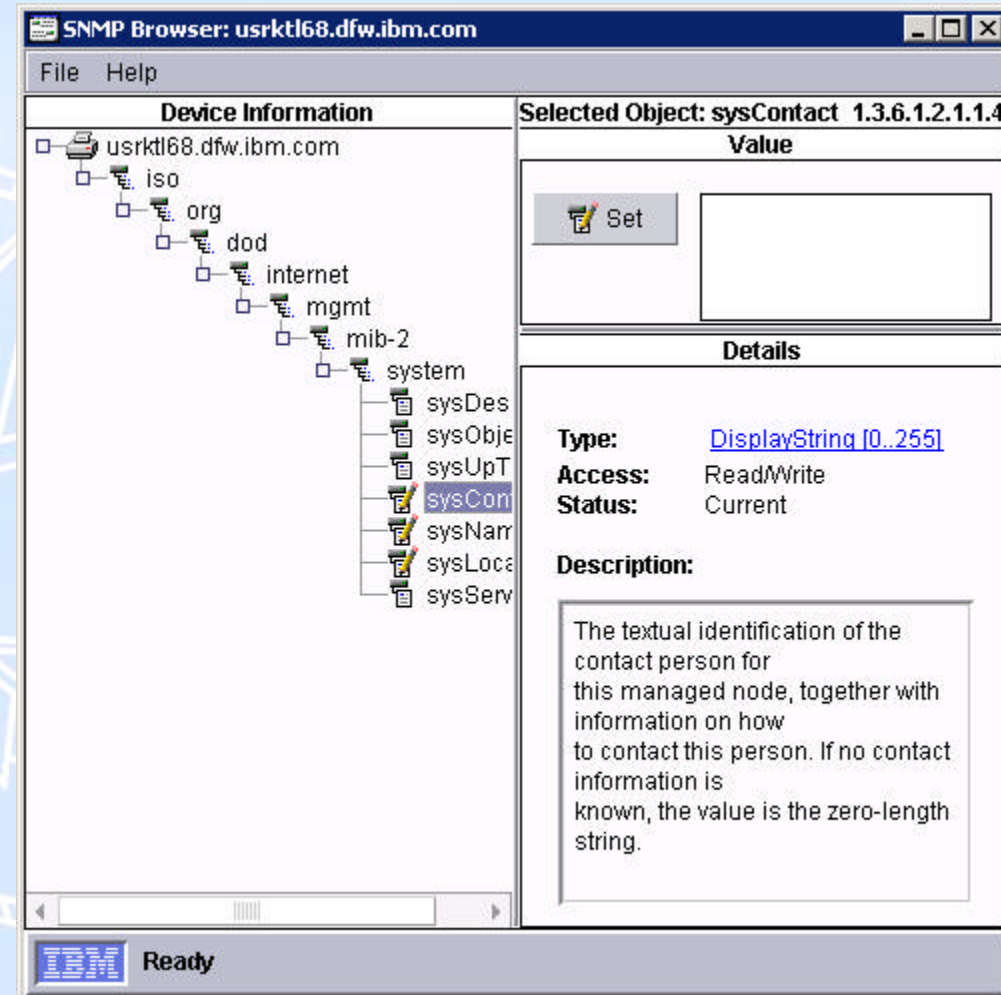
Selected Resources: A table displaying data for three selected resources: '[CPU Utilization]', '[Locked Memory]', and '[hrMemorySize]'. The table has columns for the resource name and three hosts: CORVETTE, GTO, and usrktl02.dfw...

Selected Resources	CORVETTE	GTO	usrktl02.dfw...
[CPU Utilization]	no data...	11%	no data...
[Locked Memory]	no data...	9.2	no data...
[hrMemorySize]	261556	no data...	40960

The status bar at the bottom shows 'Ready' and 'Last updated: 11:46:27 AM'.

SNMP Management

- Discover and manage SNMP devices
- Receive and process SNMP Traps using Event Action Plans, including resending SNMP Traps
- Support for SNMP Printers
- Get / Set SNMP MIB values

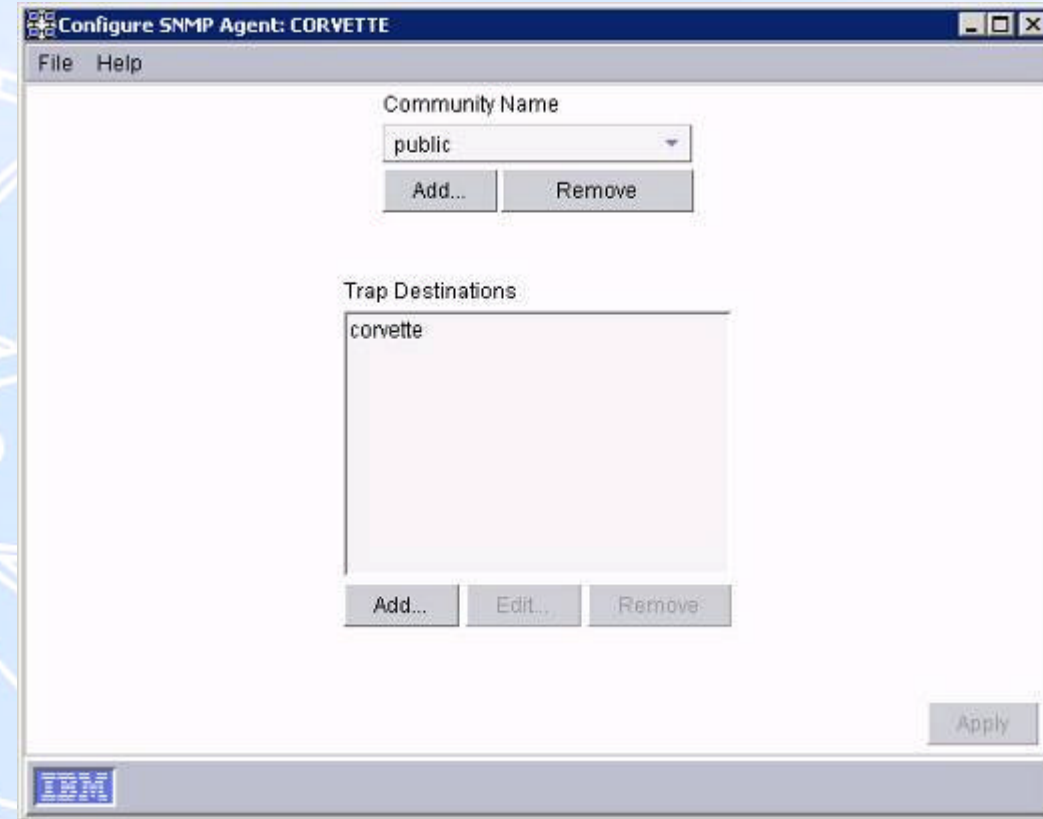


Help Desk Functions

- **Configure SNMP Agent**
 - § Configures the O/S SNMP Agent
- **File Transfer**
 - § Transfer files / directories between Director Console / Server, Console / Agent, Server / Agent
- **Network Configuration**
 - § Configures the network settings
- **Remote Control**
 - § Graphical, in-band remote control
- **Remote Session**
 - § Text-based, in-band remote control
- **System Accounts**
 - § Add / Change / Delete local O/S users and groups

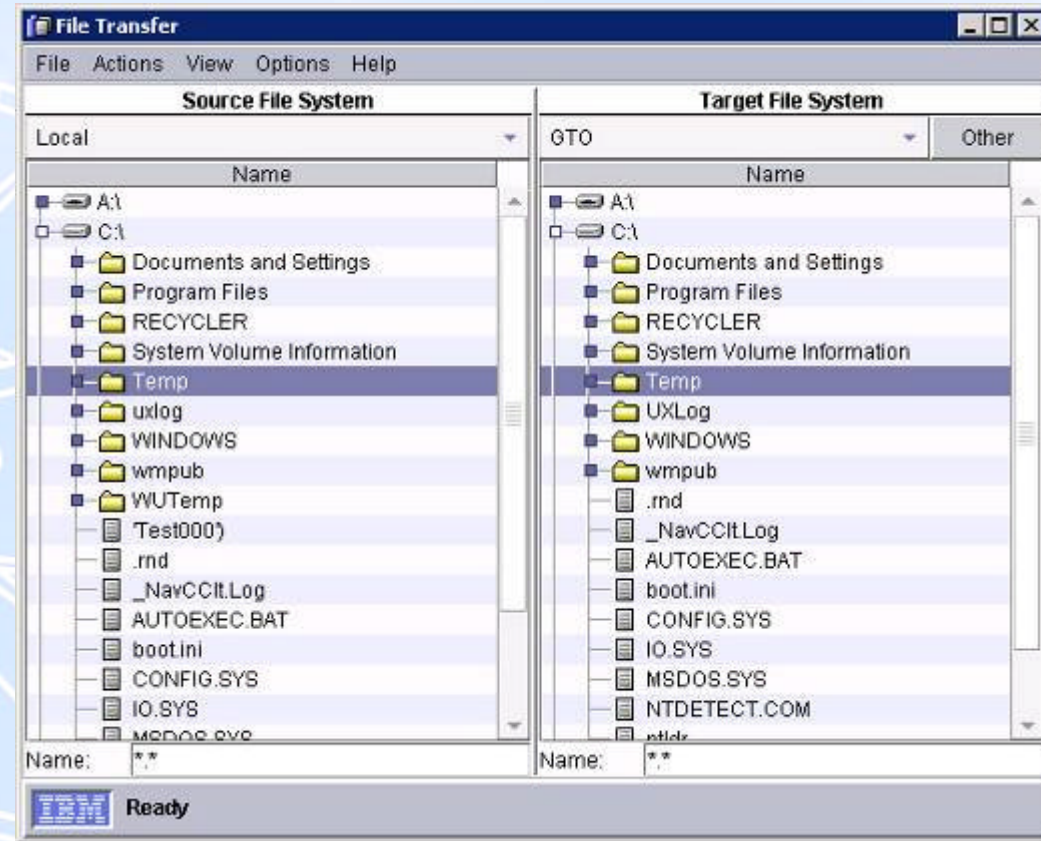
Configure SNMP Agent

- Configures the O/S SNMP Service
- Add / Remove Community Names
- Add / Edit / Remove Trap Destinations



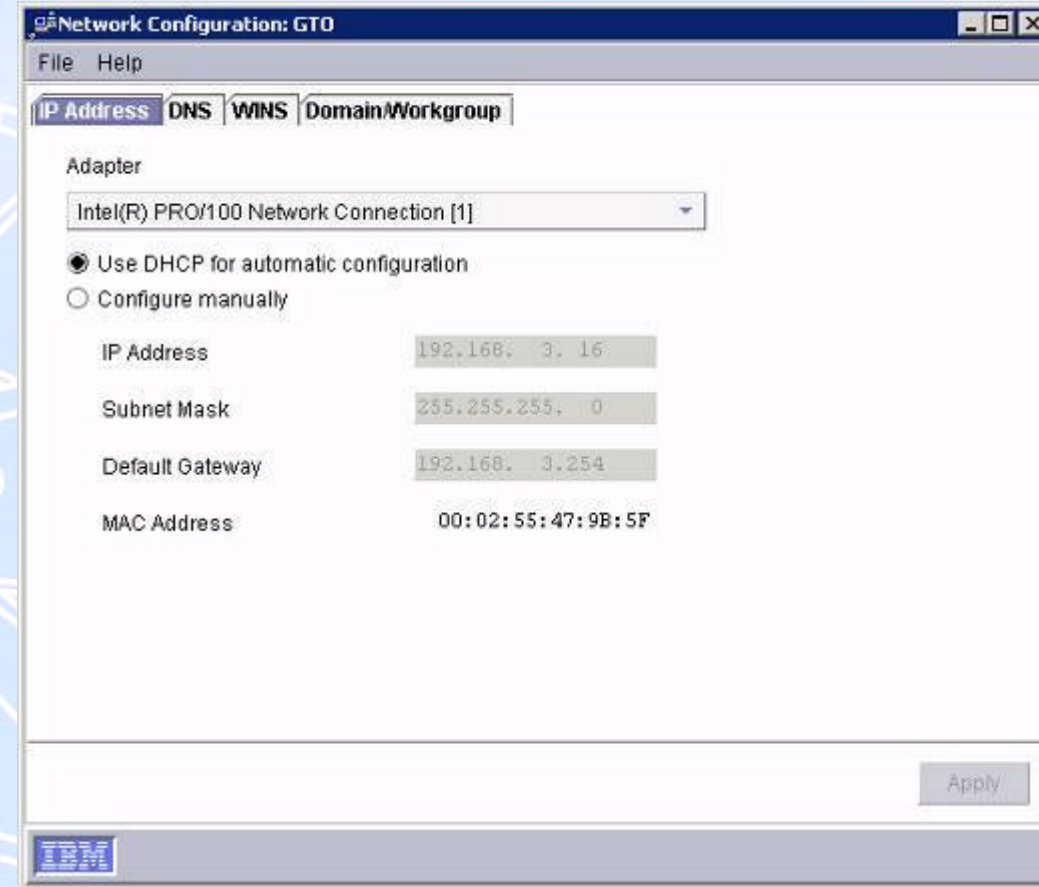
File Transfer

- Send / Receives files / directories between Console & Server, Server & Agent, or Console & Agent
- Supports file compression during transfer
- Provides the ability to create new directories
- Can synchronize directories, specifying either local or remote as the 'master'



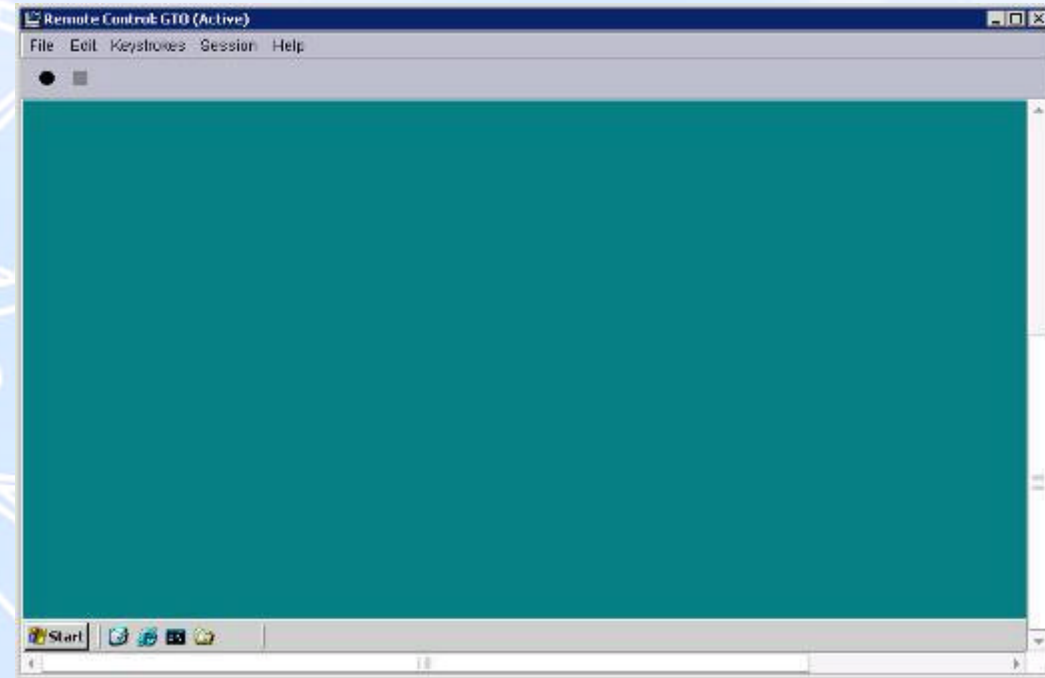
Network Configuration

- Allows changing of the network configuration of a remote system including
 - § IP Address
 - § DNS addresses
 - § WINS addresses
 - § Domain membership



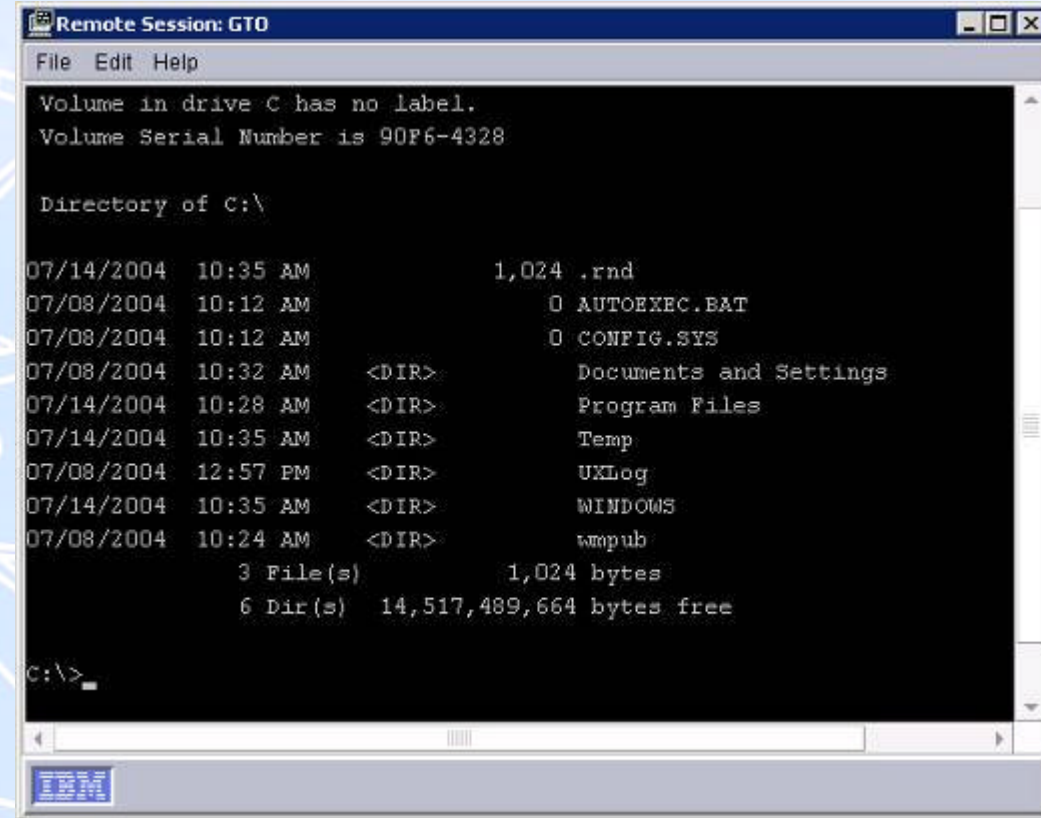
Remote Control

- Graphical in-band remote control of remote Agent system
- Keystroke support for system key sequences
- Active, Monitor, and Suspend session states
- Ability to adjust video refresh rate
- Record activity with session logging
- Record / Play-back Remote Control session



Remote Session

- Text-based in-band remote control
- Copy / Paste support
- Support for TELNET and SSH



```
Remote Session: GTO
File Edit Help
Volume in drive C has no label.
Volume Serial Number is 90F6-4328

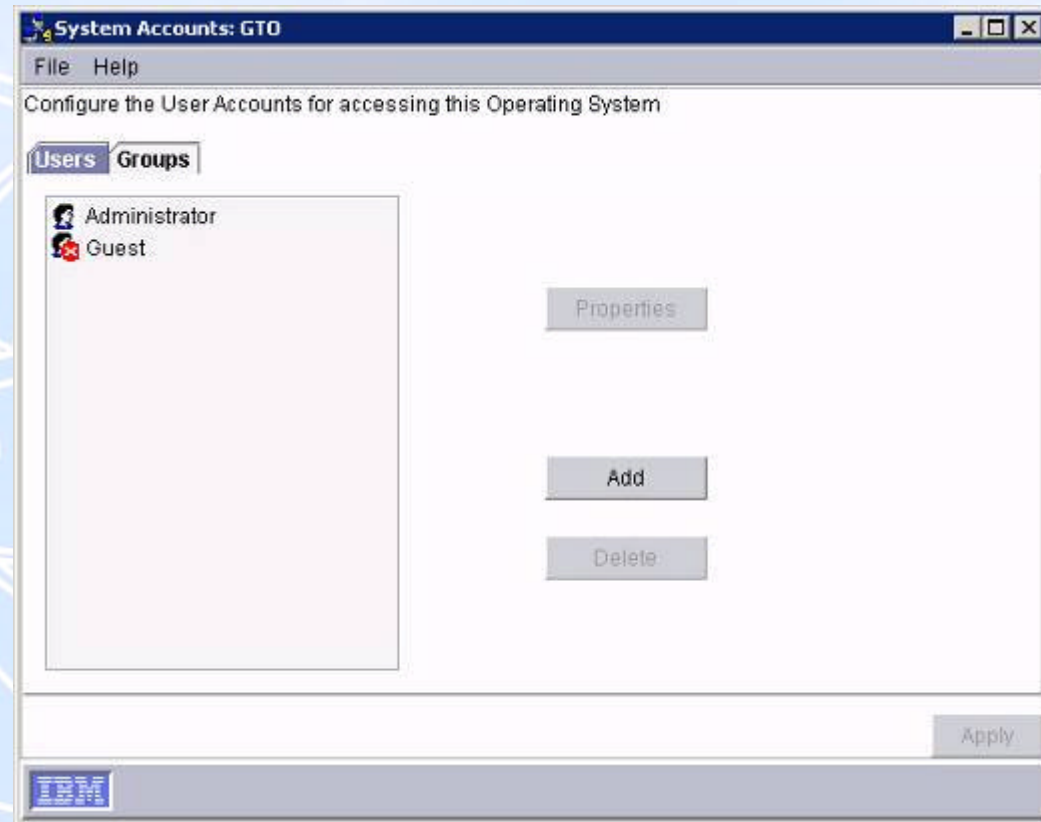
Directory of C:\

07/14/2004  10:35 AM                1,024 .rnd
07/08/2004  10:12 AM                    0 AUTOEXEC.BAT
07/08/2004  10:12 AM                    0 CONFIG.SYS
07/08/2004  10:32 AM                <DIR>    Documents and Settings
07/14/2004  10:28 AM                <DIR>    Program Files
07/14/2004  10:35 AM                <DIR>    Temp
07/08/2004  12:57 PM                <DIR>    UKLog
07/14/2004  10:35 AM                <DIR>    WINDOWS
07/08/2004  10:24 AM                <DIR>    wmpub
               3 File(s)                1,024 bytes
               6 Dir(s)   14,517,489,664 bytes free

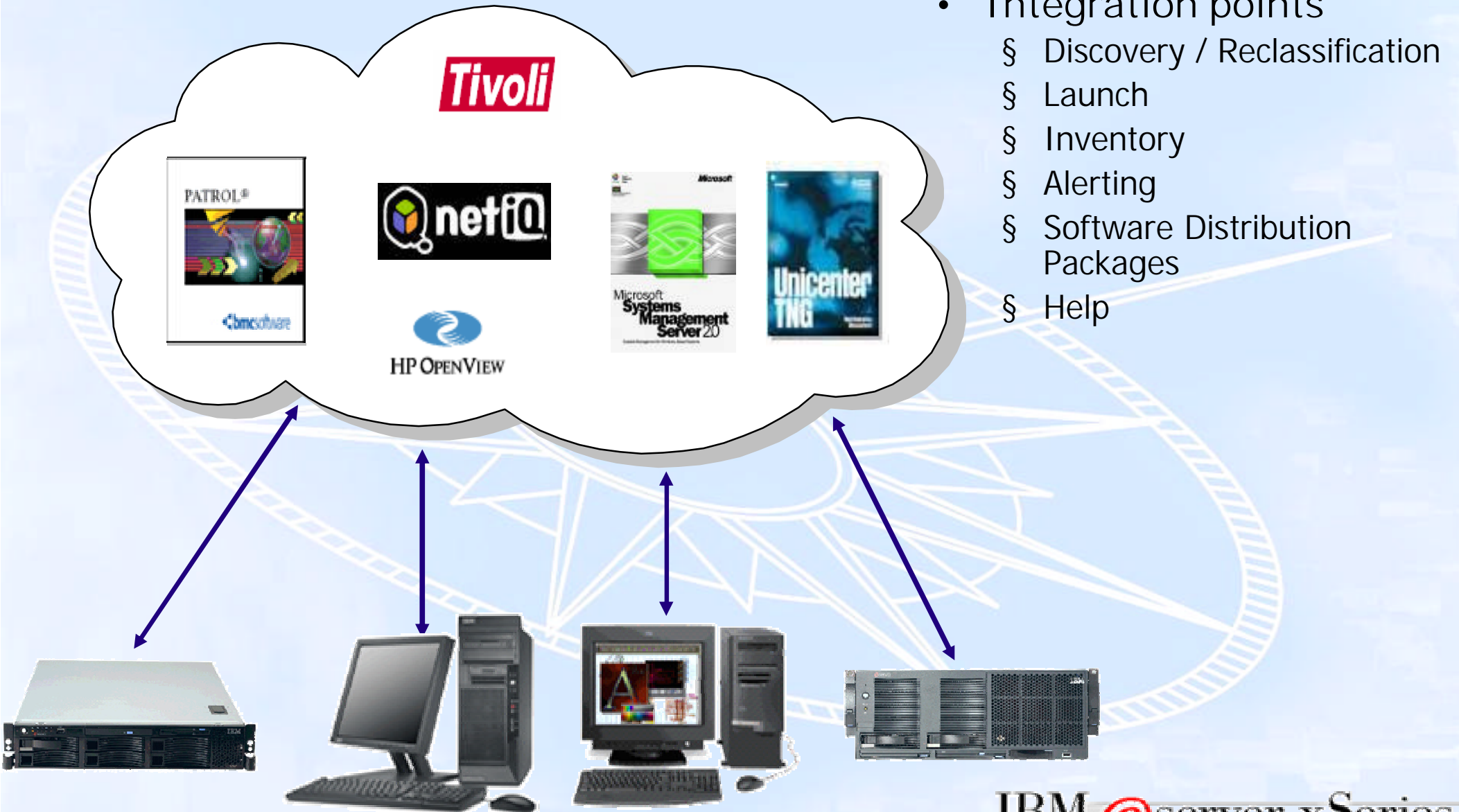
C:\>
```

System Accounts

- Add / Change / Delete local O/S user accounts including
 - § Group membership
 - § Password
 - § Logon script
- Add / Change / Delete local O/S groups including
 - § Group membership



Upward Integration



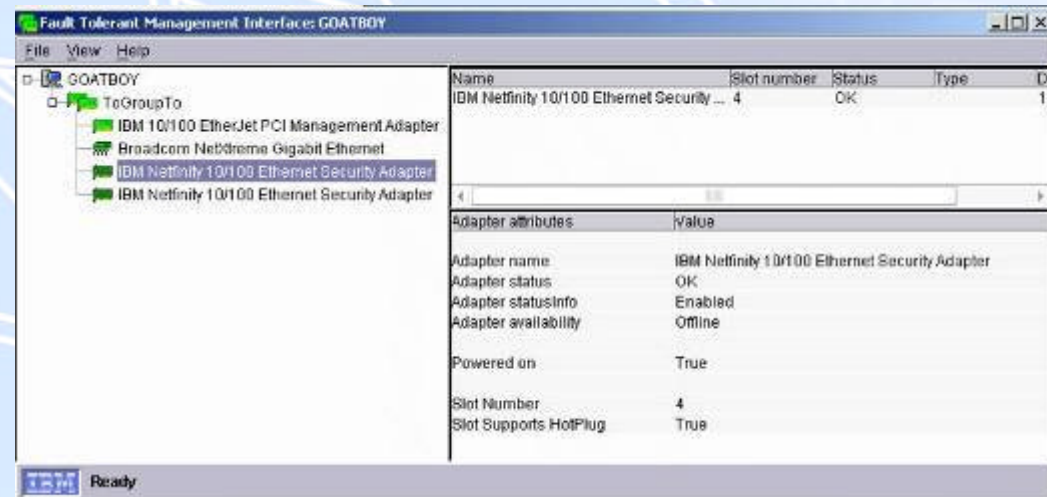
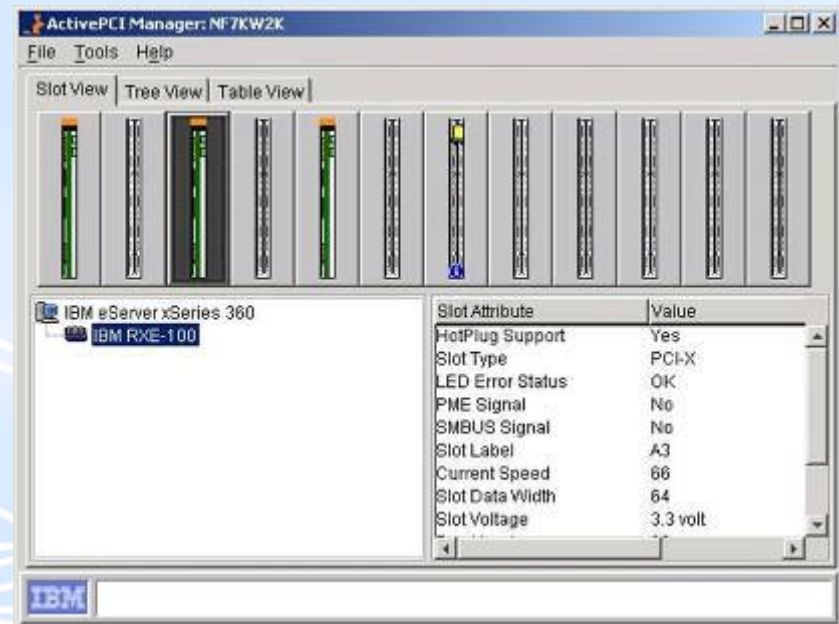
- Integration points
 - § Discovery / Reclassification
 - § Launch
 - § Inventory
 - § Alerting
 - § Software Distribution Packages
 - § Help

Server Plus Pack Component Overview

- “ ... is a new set of five tightly integrated tools that extends the capabilities of IBM Director for advanced server management, resulting in optimal performance and maximum availability.”
- Active PCI Manager
 - § Optimizes server throughput and performance by analyzing the current configuration of PCI cards determining the optimal placement
- Capacity Management
 - § Tracks resource utilization, identifies multiple levels of existing or potential bottlenecks, and makes recommendations to improve performance
- Rack Manager
 - § Configure and manage a rack by dragging and dropping elements on a realistic graphical depiction of the rack
- Software Rejuvenation
 - § Provides heuristics-based rejuvenation of server platforms and predicts pending software failures , enabling potential future outages to be averted
- System Availability
 - § Tracks and provides a variety of graphical views of system downtime or uptime for an individual system or group of systems

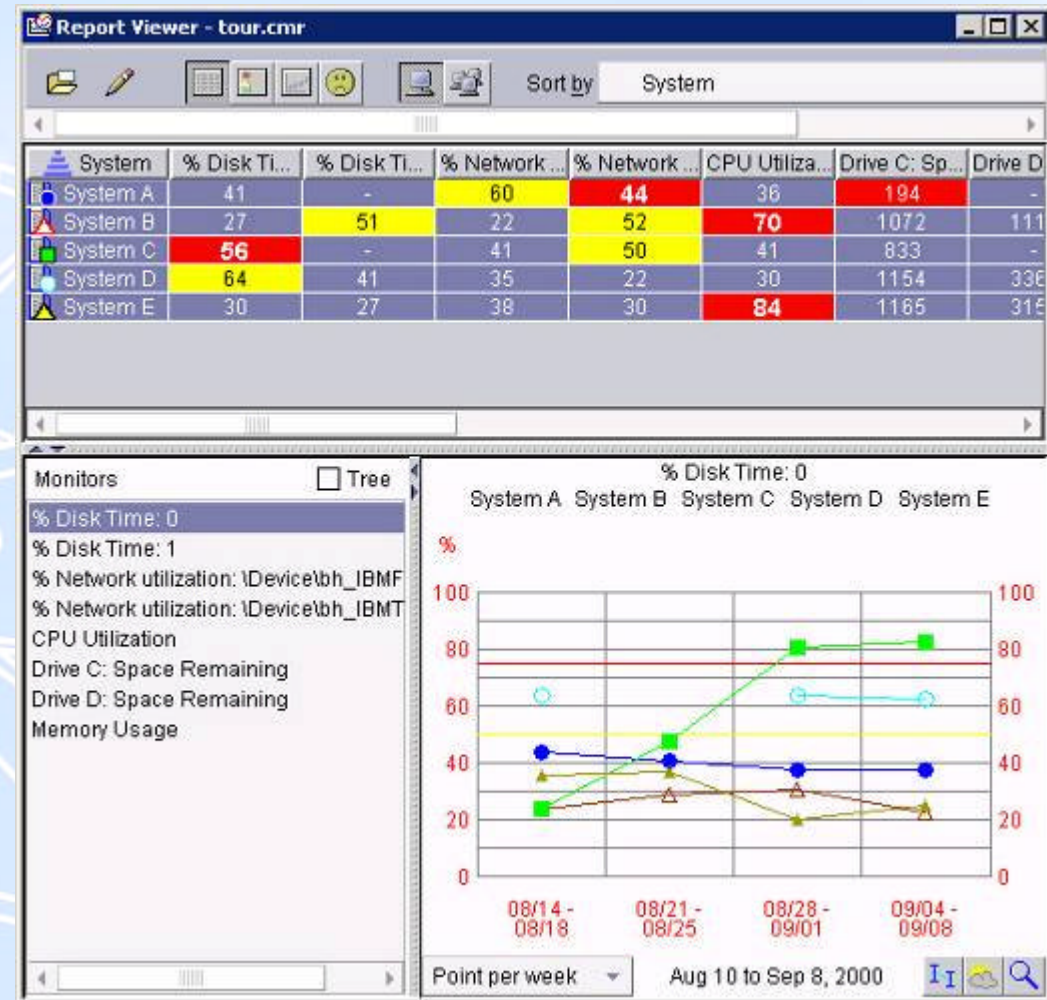
Active PCI Manager

- Optimize server throughput by determining the best placement for PCI cards
- Comparing the electronic characteristics of PCI cards to their I/O bus and identifies card / slot changes which may help server throughput
- Fault Tolerant Management Interface allows for the administrator to view real time adapter status



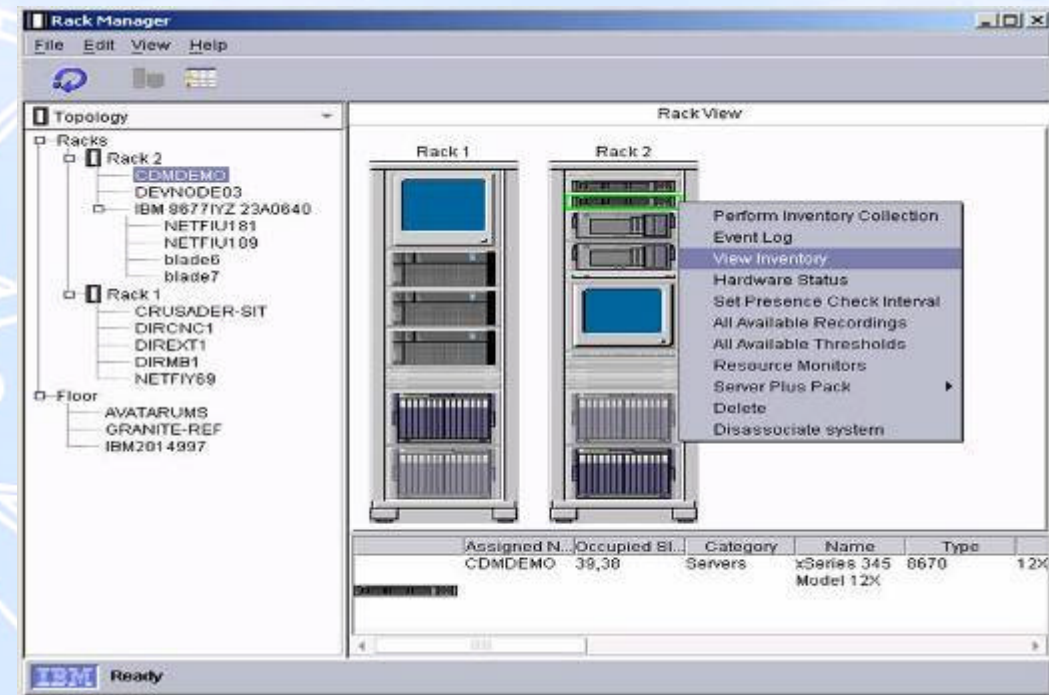
Capacity Management

- Diagnoses performance problems, recommends fixes and forecasts future performance using built-in artificial intelligence
- Displays server performance data graphically for easy-to-read analysis of system capacity
- Reports can be saved in CMR, TXT, HTML, XML formats, or report data saved to SQL database
- Ability to send Events based on bottleneck detection



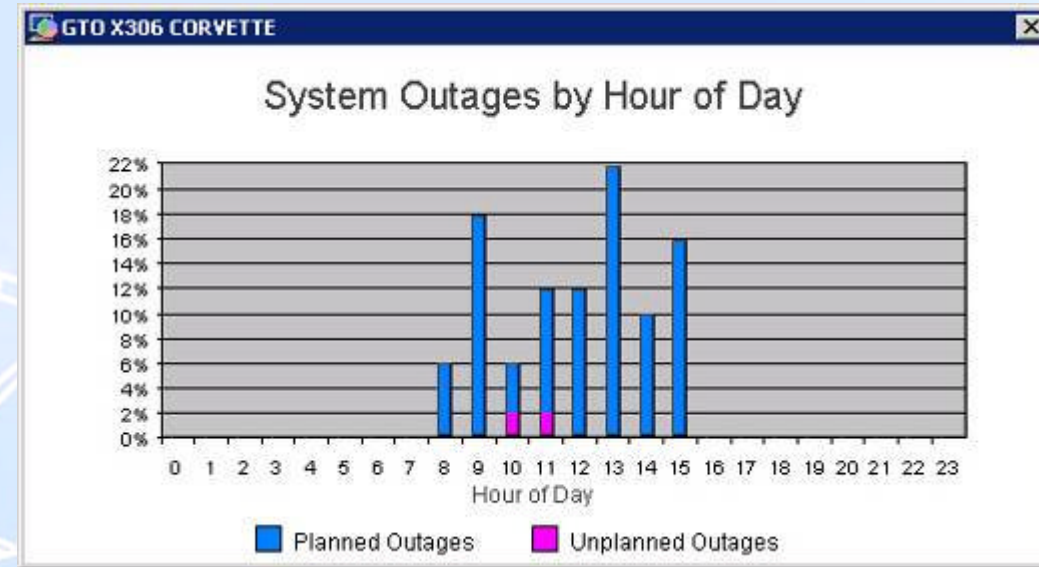
Rack Manager

- A management interface which allows for logical grouping of systems in the rack in which they reside
- Allows for building out of rack including storage, input and power components
- Management functions can be launched from within this interface



System Availability

- Tracks downtime and uptime so you can measure the effectiveness of your systems management tools
- Customize graphical views of availability on Systems / Groups and distinguish between planned and unplanned outages
- Report data saved in database
- Ability to send Events based on problematic systems
- Graphs can be exported in HTML or XML format



GTO X306 CORVETTE

System Availability Report

System(s) Name:	GTO X306 CORVETTE
Date Report from:	Thursday, July 8, 2004 4:19:18 AM
Date Report to:	Wednesday, July 14, 2004 4:53:53 PM
Total Uptime:	13 day(s) 11:54:27
Total Downtime:	0 day(s) 01:39:20
System Availability:	99.49667%
Total Restarts:	54
Mean Time Between Outages:	0 day(s) 09:59:53
Average Days Analyzed Per System:	4 day(s) 12:30:55
Number Of Systems Restarted:	3 out of 3
Mean Time Between Unplanned Outages:	8 day(s) 17:57:13

Problematic Systems

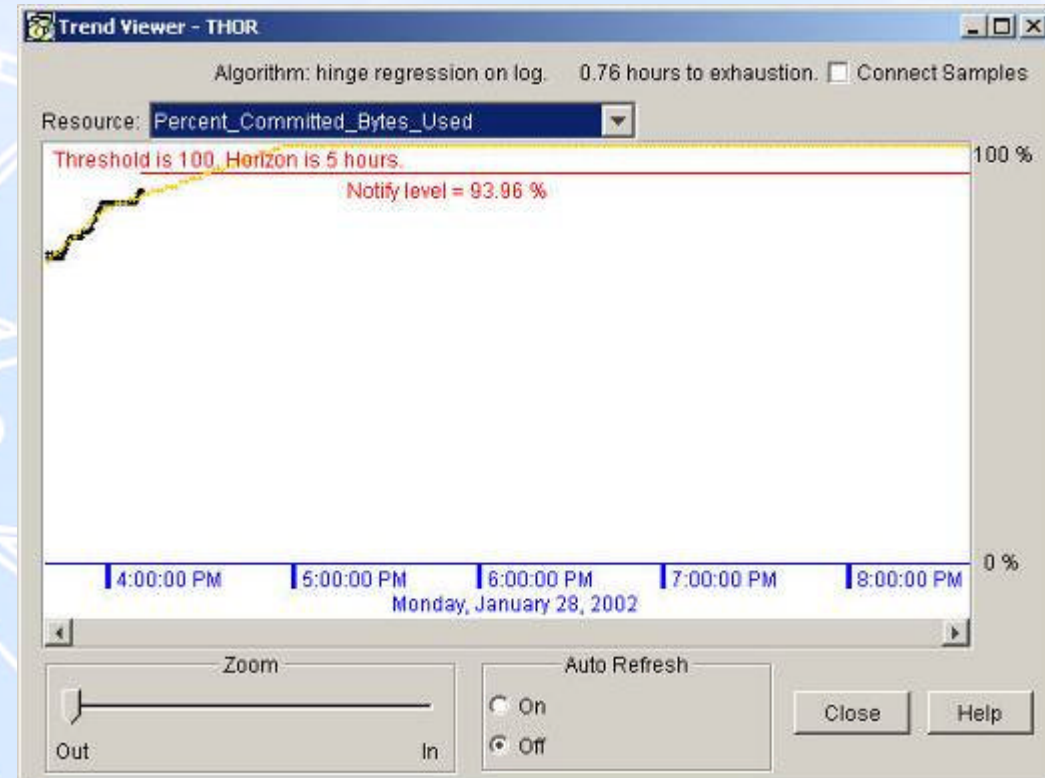
System Name	Problematic Explanation
GTO X306	There was/were 1 unplanned outage(s) within the past 30 d.

Availability Details

System Name	Start Time	Stop Time	Duration Time	Event Type
GTO	Thursday, July ...	Thursday, July ...	0 day(s) 05:14:44	Uptime
GTO	Thursday, July ...	Thursday, July ...	0 day(s) 00:01:51	Planned Outage
GTO	Thursday, July ...	Thursday, July ...	0 day(s) 00:09:39	Uptime
GTO	Thursday, July ...	Thursday, July ...	0 day(s) 00:01:47	Planned Outage

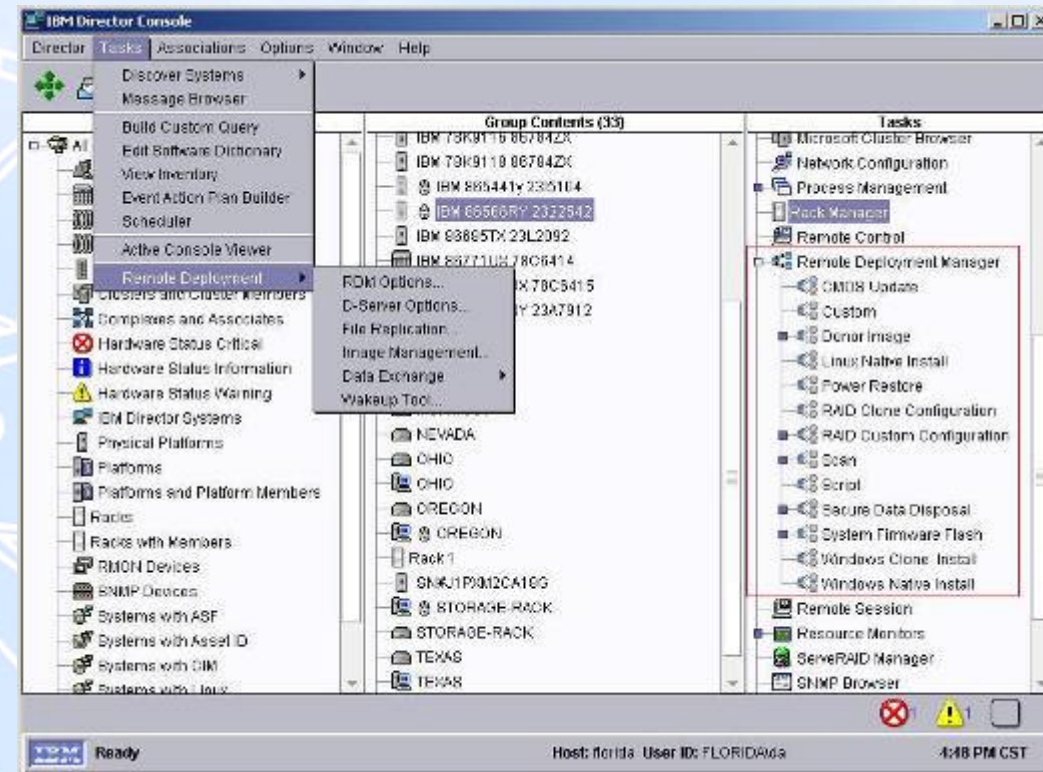
Software Rejuvenation

- Monitors the O/S for evidence of resource exhaustion
- Predicts time period when software aging will bring down server
- Proactively alerts in advance to avoid unplanned outages
- Trend Viewer shows resource utilization
- Application Culprit List identifies suspect applications



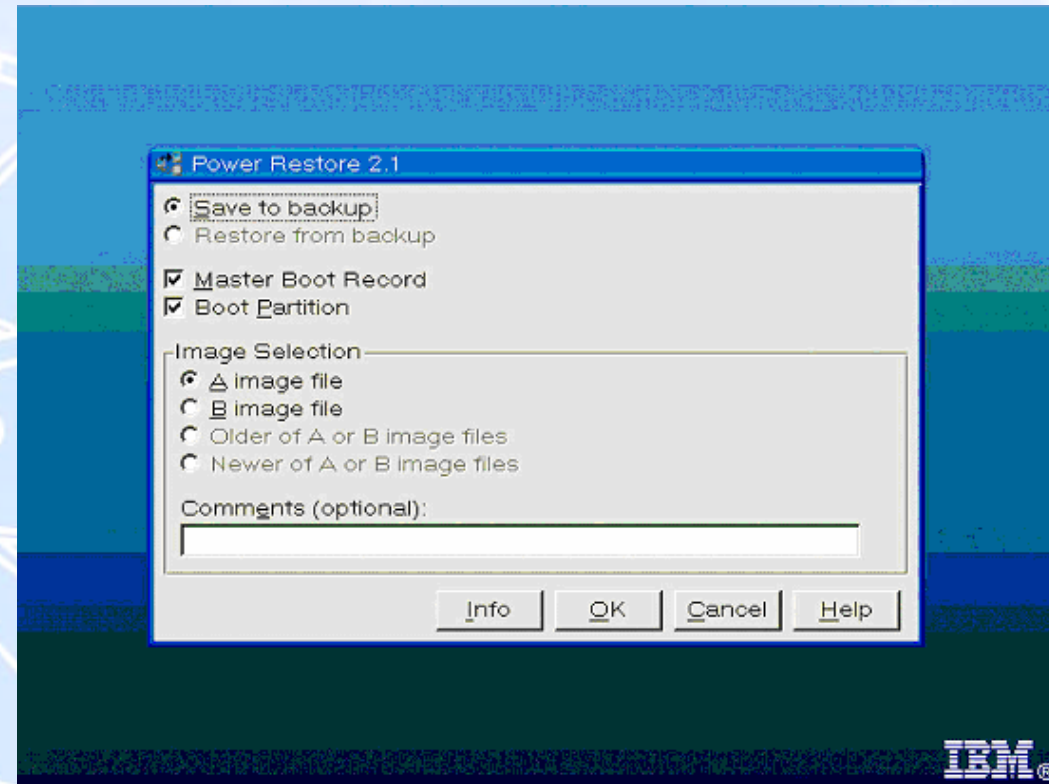
Remote Deployment Manager 4.11

- Extension to IBM Director
- Simplifies and automates the deployment, redeployment, lower-level management and disposal of xSeries servers, IntelliStation® workstations, ThinkPad® laptops, NetVista™ desktops and IBM Point-of-Sale computers
- Remotely flash a selected system's BIOS, modify CMOS settings, perform automated installation of Microsoft® Windows® XP, Windows 2000, or RH Linux, and backup and recover the primary partition



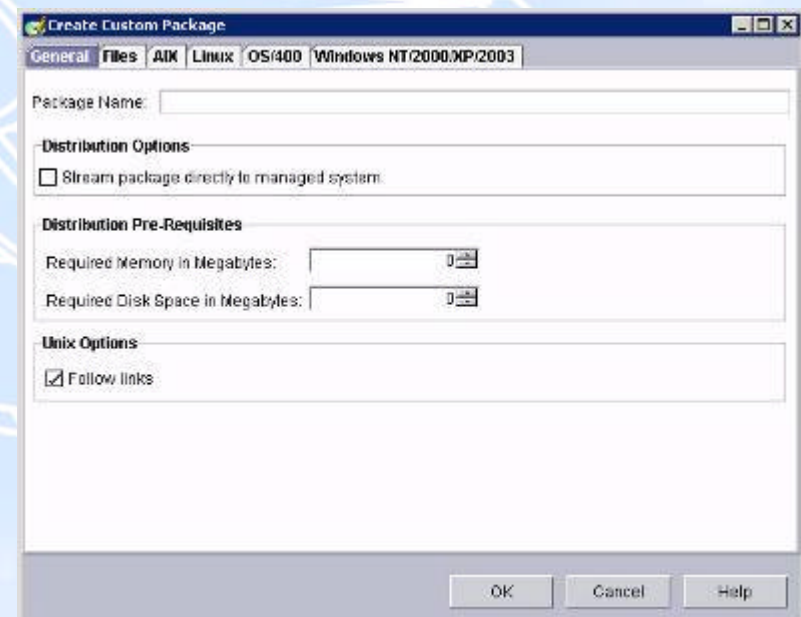
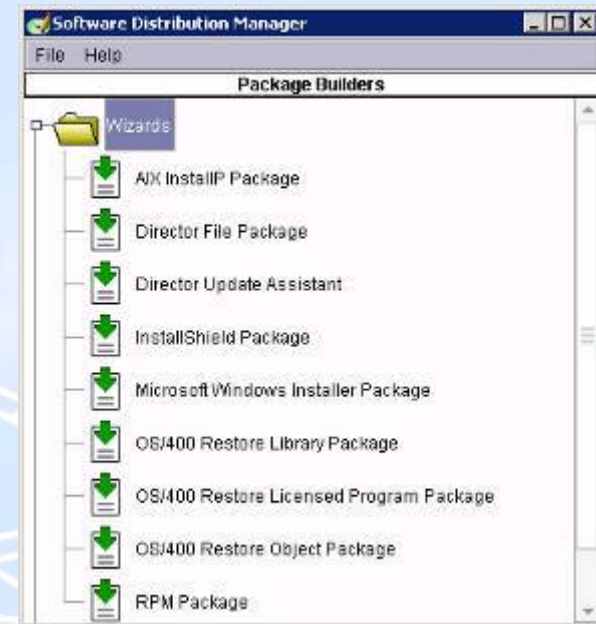
Power Restore

- A backup/recovery mechanism that allows the backup of the primary partition of a system (when it is in a known good state)
- It copies the primary partition to a hidden partition on the system hard drive
- In the case of a later failure due to a corrupted or missing file, Power Restore can restore the system's primary partition to the backed-up state
- Up to two versions can be stored on a system at a given time



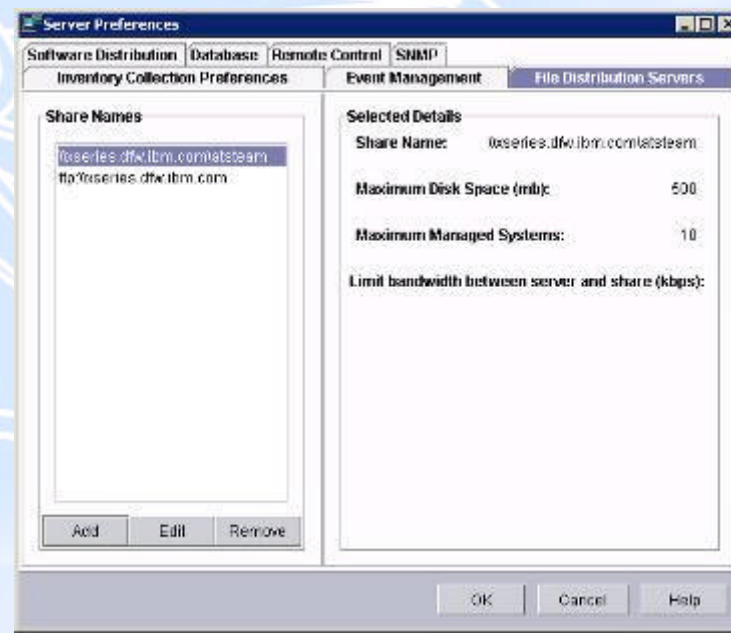
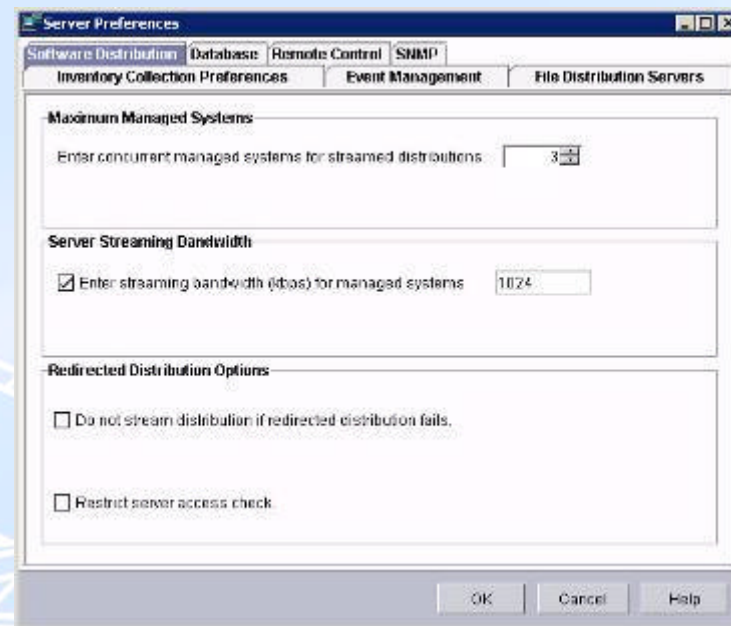
Software Distribution Premium Edition

- Extension to IBM Director
- Allows for packaging and distribution of applications which use AIX InstallP, InstallShield, Windows Installer, OS/400 Restore, RPM
- Allows for creation of custom packages including registry modifications, custom files and pre/post install routines
- Integrates into Director scheduler to allow for customized schedules for application installation



Software Distribution Settings

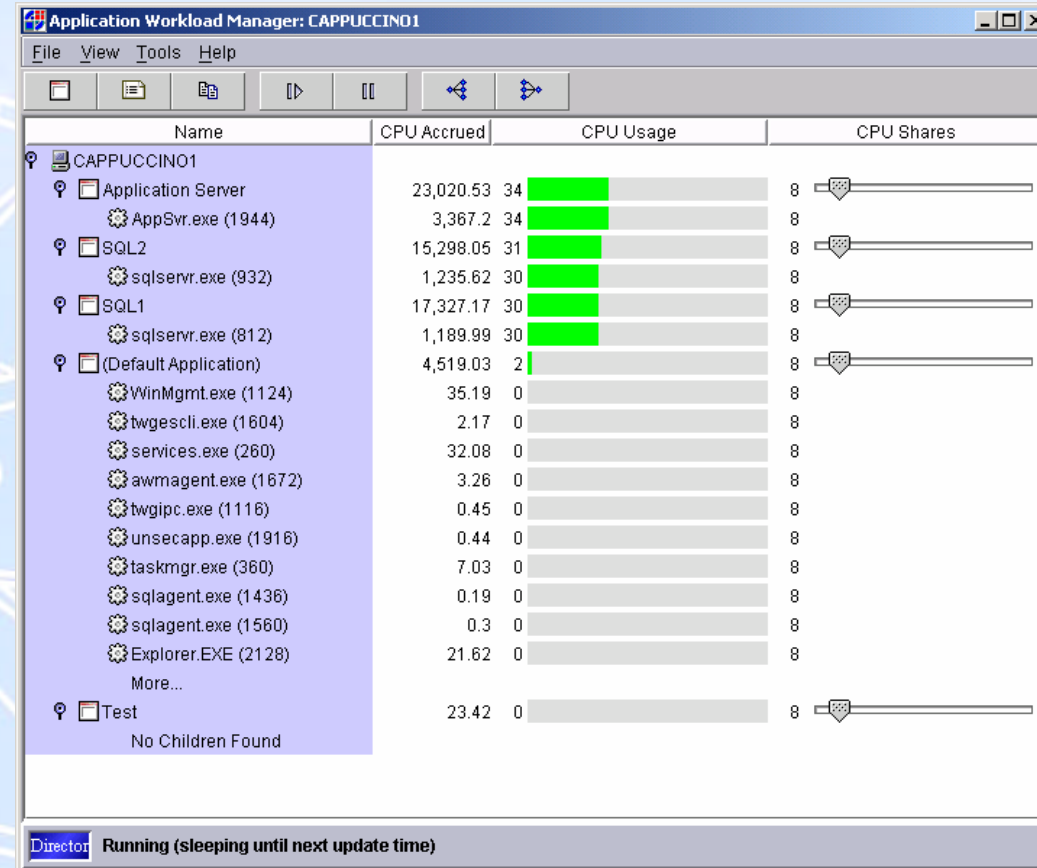
- Can restrict the number of concurrent distributions as well as the amount of network bandwidth used during distribution
- Supports distribution share-points or fan-out servers to localize distribution traffic
- Share-points can be SMB or FTP servers
- Systems or Groups can be assigned to user-specified share-points



Application Workload Manager

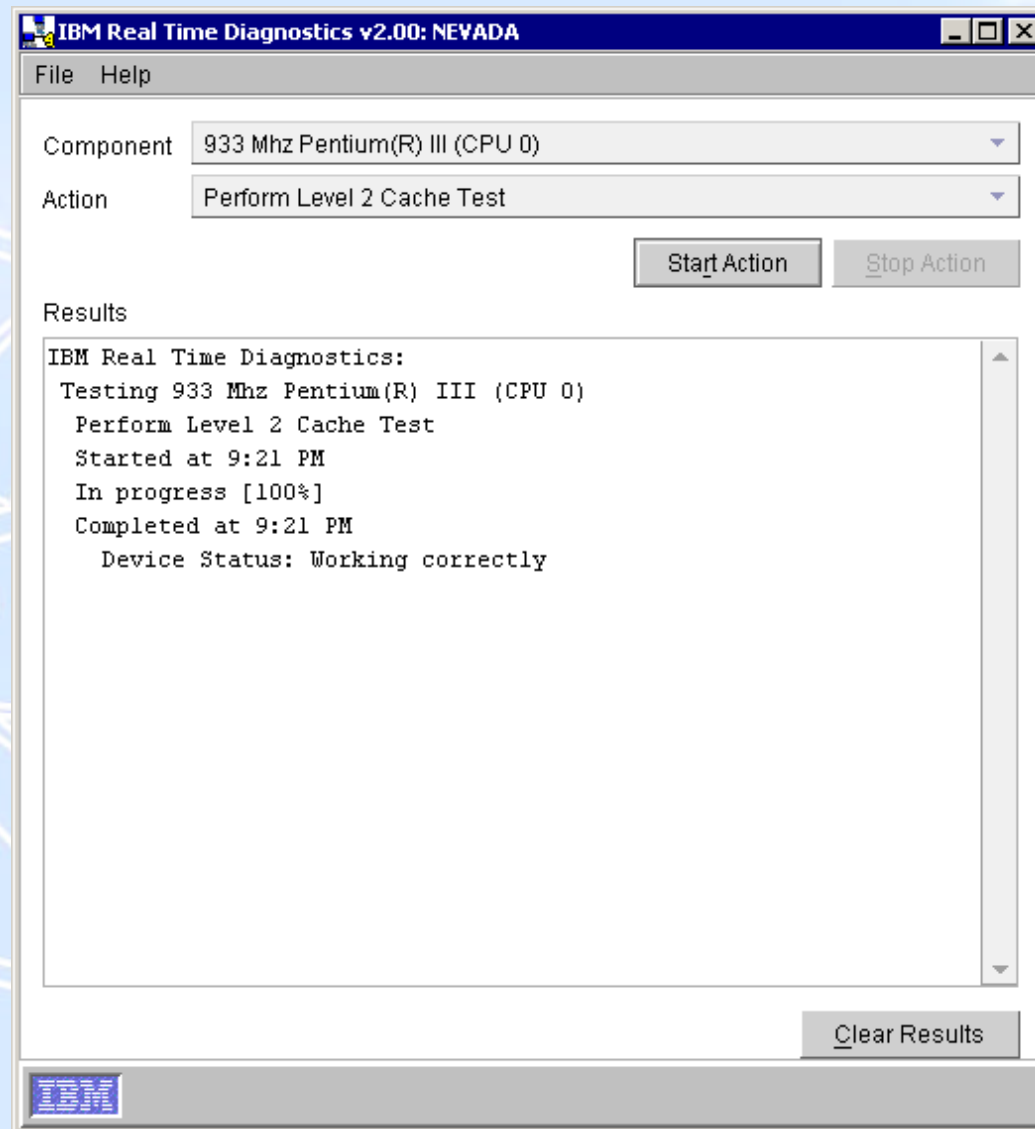


- Extension to IBM Director to control how multiple applications use server resources
- Protects against unexpected resource contention
- Tracks total resource usage of processes over time
- Ensures application availability and quality of service by autonomously managing contending workloads on a server
- Facilitates the value of higher server utilization and consolidation
- Faster return on investment and reduced IT costs due to higher server utilization and fewer number of servers
- Reduces downtime costs caused by resource contention



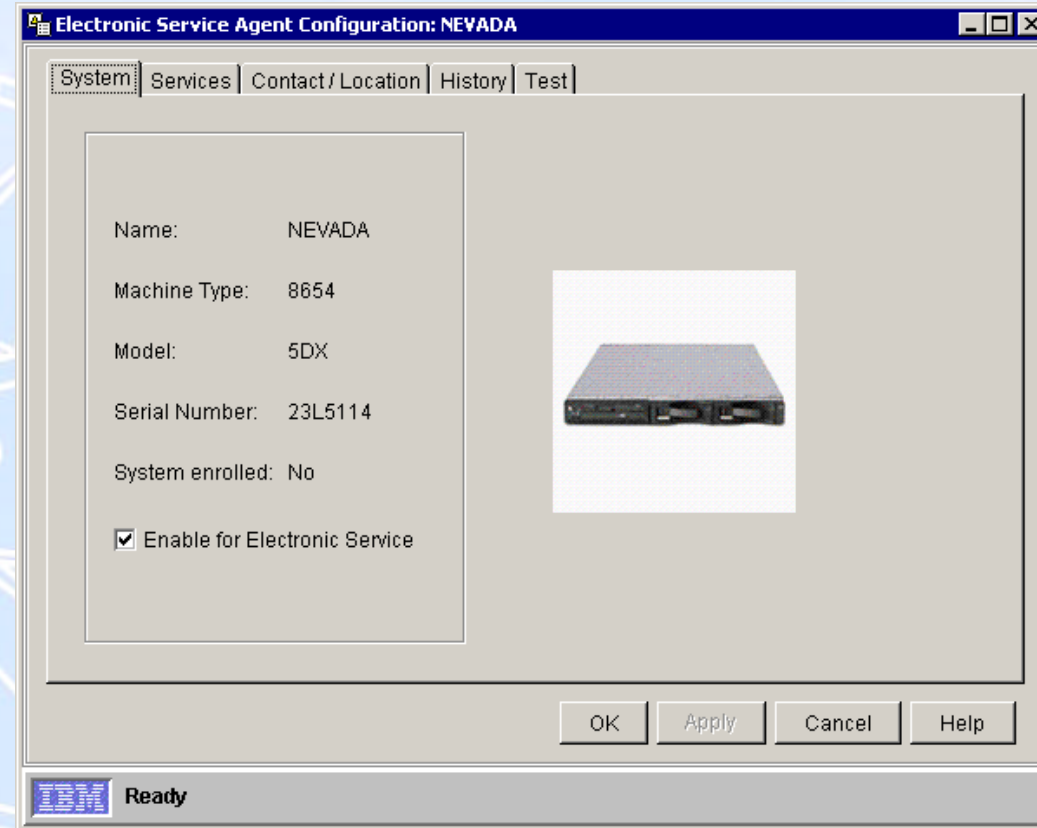
Real Time Diagnostics

- Downloadable extension to IBM Director
- Helps maintain server availability by performing diagnostics on system and subsystem components via a consistent, easy-to-use interface, while your server is still running
- Analyzes all of your system and subsystem components, including processor, hard disk drives, Ethernet, tape drives, memory and RAID and proactively informs you of the suspected component's problem



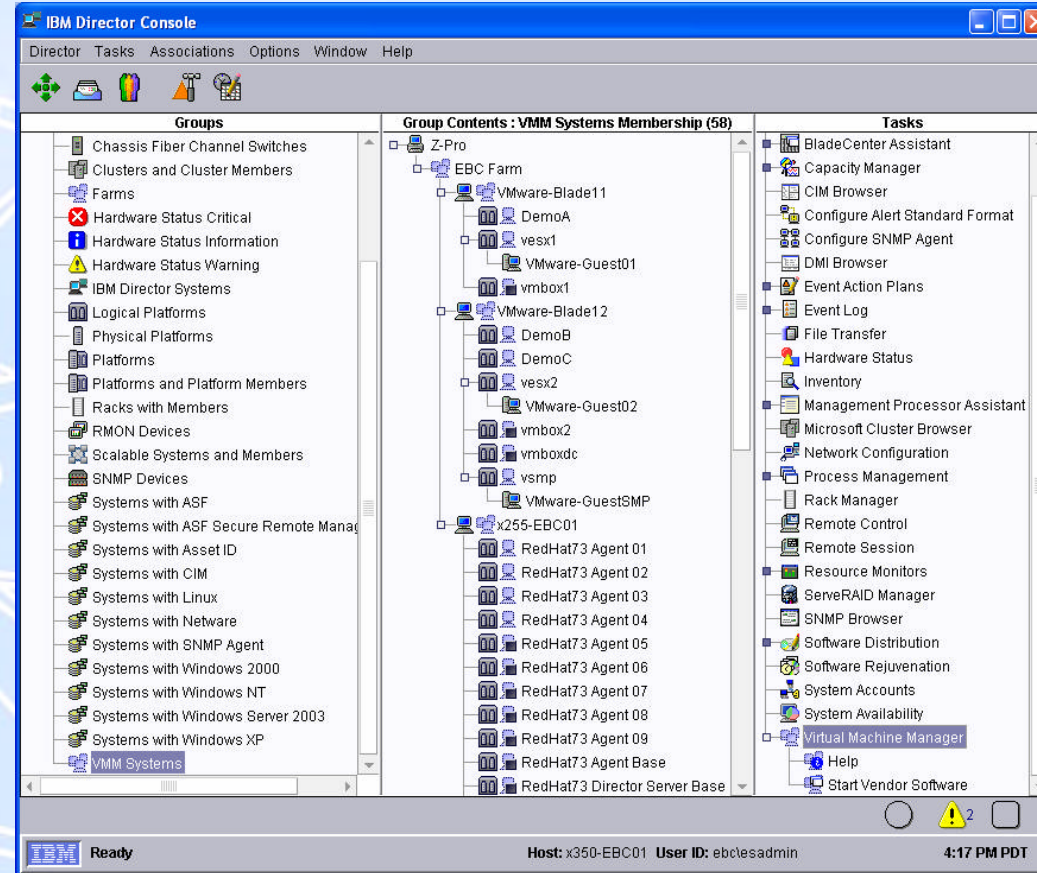
Electronic Service Agent

- Downloadable extension to IBM Director
- Program from IBM Global Services designed to provide proactive electronic support and electronic problem management capabilities through an electronic dialogue between your systems and IBM.
- Enables you to maximize the value of your I/T investments.

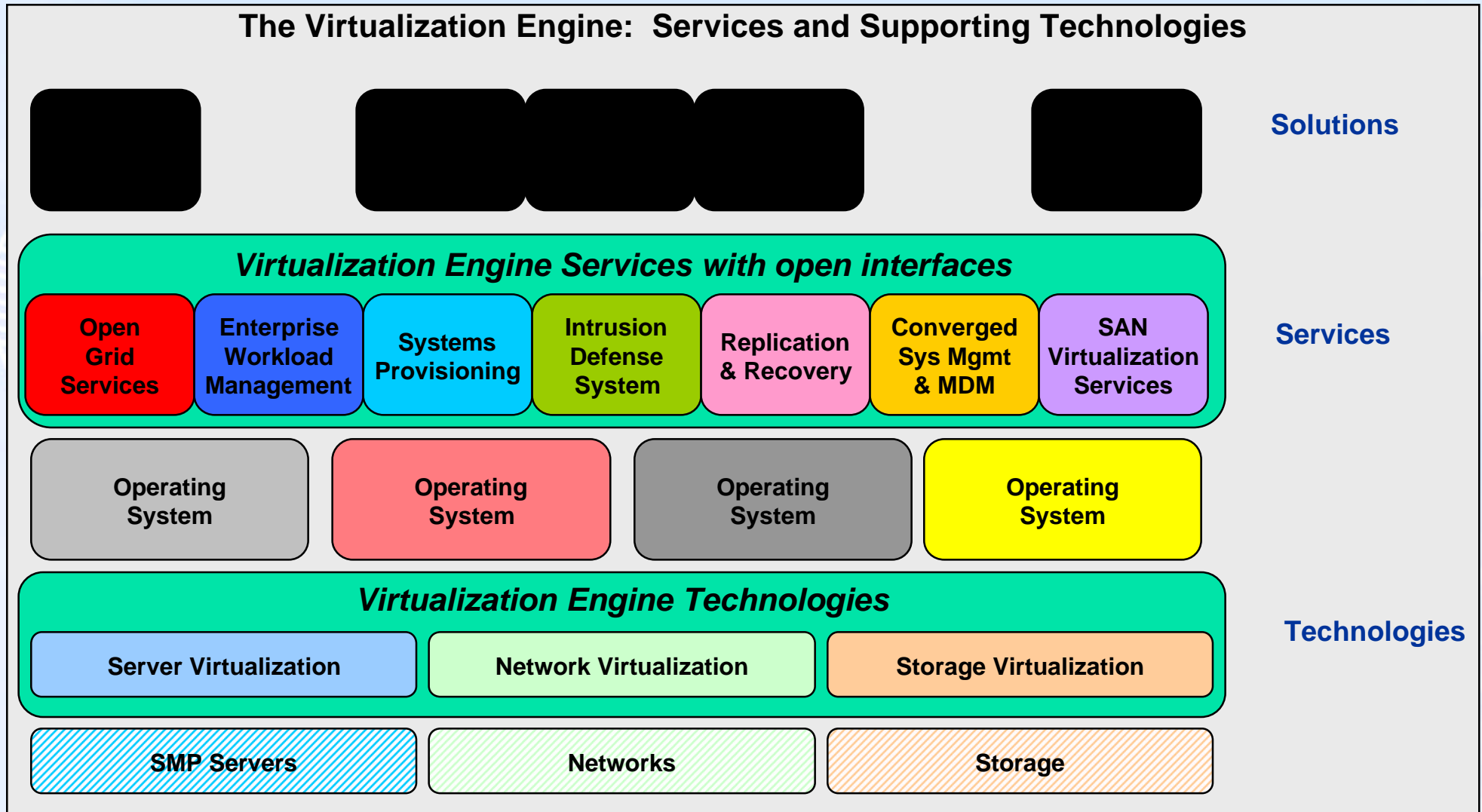


Virtual Machine Manager

- Extends the management of VMware virtual machines
- Adds new managed object types
- Provides correlation between VirtualCenter, Virtual Farm, Physical Host, and Virtual Machines
- Integration point for VirtualCenter



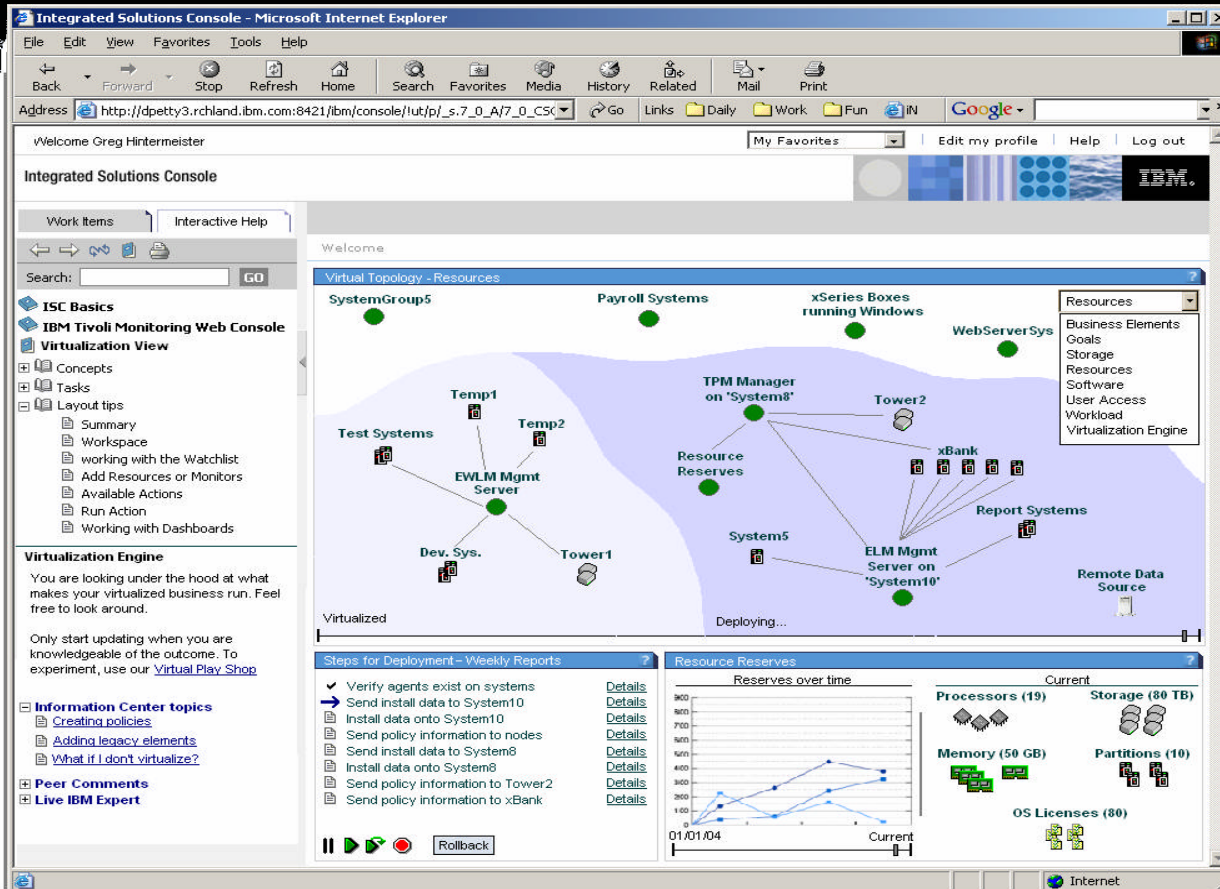
IBM Virtualization Engine





IBM Virtualization Engine™ Console

The VE “Dashboard”



Intuitive, web-based user interface for VE Systems Services

Utilizes IBM's Integrated Solutions Console

Simplifying Monitoring and Management of IT Infrastructure

IBM  server xSeries
Advanced Technical Support



Thank You ! ! !



Back-up Charts