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CHICAGO, IL - 2001

Applications Management:
What's Out There for the Linux Industry?

Presented by:
Chris Lesar
VP Operations
Dirig Software

Dirig At-a-Glance

Product Focus: Application Management for eBusiness

- Located in Nashua, New Hampshire
- Founded Fall 1997
- Product Released Fall 1999; Current Release: 3.0
- 55 employees, 2 locations
- 20 customers; 30 sites
- First, complete eBusiness management solution capable of managing application server components
- Target markets – vertical enterprise markets (financial, health care, legal) large service providers/telcos, online businesses
- MSP Association Executive member
- Developer of Hewlett-Packard's Linux/Apache Smart Plug-In for HP OpenView

Linux developers are asking for additional management

What application management is not...

- It is not Network Management
  - Infrastructure, connectivity, etc.
  - HP OpenView, Aprisma, Micromuse, CA, Tivoli, Entuity, BB4, Atipa, etc.
- It is not Network Monitoring
  - Historical reporting on network infrastructure
  - Infovista, Trinagy, Quallaby, Concord, Opticom
- It is not just Systems Management
  - CPU, memory, disk, etc.
  - Tivoli, Caldera, CA, Enlighten, BMC, Concord

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Application Management is...

- Monitor, meter and manage applications and their systems
- Ensuring availability and improving performance
- Proactively predict and prevent application problems
- Identify root cause to correct and prevent downtime
- Acting on extracted data from within an application

Availabilty & Performance Management Growth
Source: Gartner

Year	Millions of Dollars
1999	~$2,500
2000	~$3,000
2001	~$3,500
2002	~$4,100
2003	~$4,800
2004	~$5,500

☐ Millions of Dollars
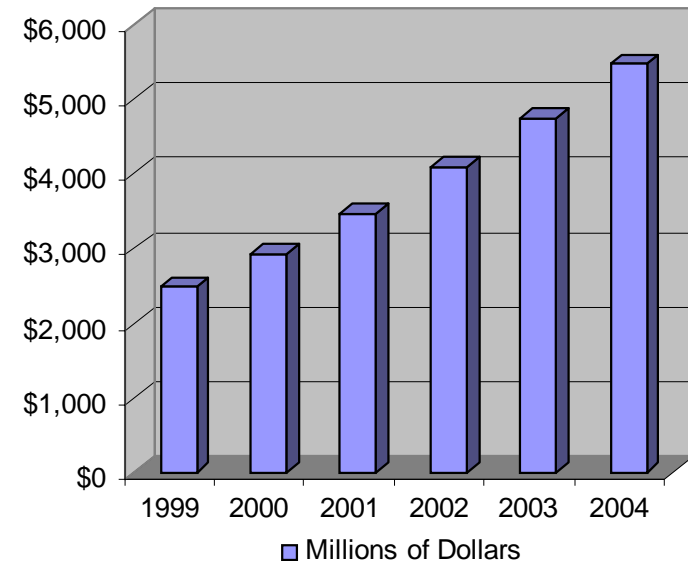
We've heard the numbers...

- 42 percent of Linux systems are running as Web servers;

- 24 percent of Linux systems are running as web infrastructure (messaging, file & print, caching and proxy servers)

SERVER MARKET SHARE

	1996	1999	2003
Windows	23.8%	36.8%	44.5%
Linux	6.0%	23.8%	36.7%
Netware	29.9 %	18.0 %	9.5 %
Unix	18.6 %	14.8 %	8.9 %

Source: IDC, 2000

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The OS of choice for the Internet

Netcraft, Inc. (www.netcraft.com), states that as of May 2000, 30 percent of all public Web sites run on Linux-based operating systems, making Linux the most popular choice for deploying public Web sites.

IDC research shows 40 percent of all spending on Linux servers is for Internet related applications, firmly entrenching Linux servers in the Internet infrastructure.

65 IBM Netfinity 4000R Servers
running Apache on Linux

Demand from the Enterprise

"Enterprise customers of Dell and IBM are asking for Linux capability. Those customers are beginning to recognize the value in implementing it (Linux) and you can bet the hardware vendors plan to comply."

Eric Klein, senior analyst,
Yankee Group

By Howard Millman
CNET Enterprise
10/24/00

Michael Dell – CEO Dell Computer

Dell Computer predicts that by 2003, 27% of the servers Dell sells will have Linux preinstalled. In the second quarter of 2000, 10% of Dell's server sales were Linux systems, up from 4% a year ago.

Source: Information Week

Enterprise Acceptance

**IBM announces rollout of 15,000 Linux servers;
More to come**

On November 2, IBM announced a deal with Japanese retailer Lawson to install and help maintain approximately 15,000 servers preloaded with Linux...

"Over the next six months, [IBM] will have a series of announcements in which large customers will be making significant commitments to Linux. We think the time is now for enterprise customers to make these commitments." Steve Solazzo, IBM's VP for Linux strategy and marketing. "This deal far exceeds the scope of any previous Linux use in the enterprise."

LinuxWorld: Nov 4, 2000

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The Growth is in Servers...

IDC projects revenue for Linux-based servers to compound annually at a rate of 30 percent, making it the fastest-growing segment of that market.

<div align="right">Enterprise Linux Magazine – 9/2000</div>

Mission Critical Applications

NetLedger Launches Powerful, Consolidated Data Center; **Industry's Largest Deployment of Oracle on Linux**

NetLedger, Inc. announced the launch of a new, consolidated Data Center with increased capacity, more power, enhanced scalability and superior reliability. The new Data Center establishes NetLedger as <u>the largest Linux installation of Oracle worldwide</u>. The Data Center's platform is built on three breakthrough technologies: <u>VA Linux Systems</u>, Network Appliance, Inc., and Rainbow Technologies.

<div align="right">

LinuxPR

Mar 29, 2000

</div>

…and Applications

- Apache Web Server – 60% market share
- IBM Websphere – Apache web server built-in
- MySQL
- SendMail – used by 80% of ISPs (Netcraft)
- BEA Weblogic
- Oracle 8i, Internet Application Server
- Lotus Domino
- iPlanet
- Zeus Web Server
- Allaire Cold Fusion
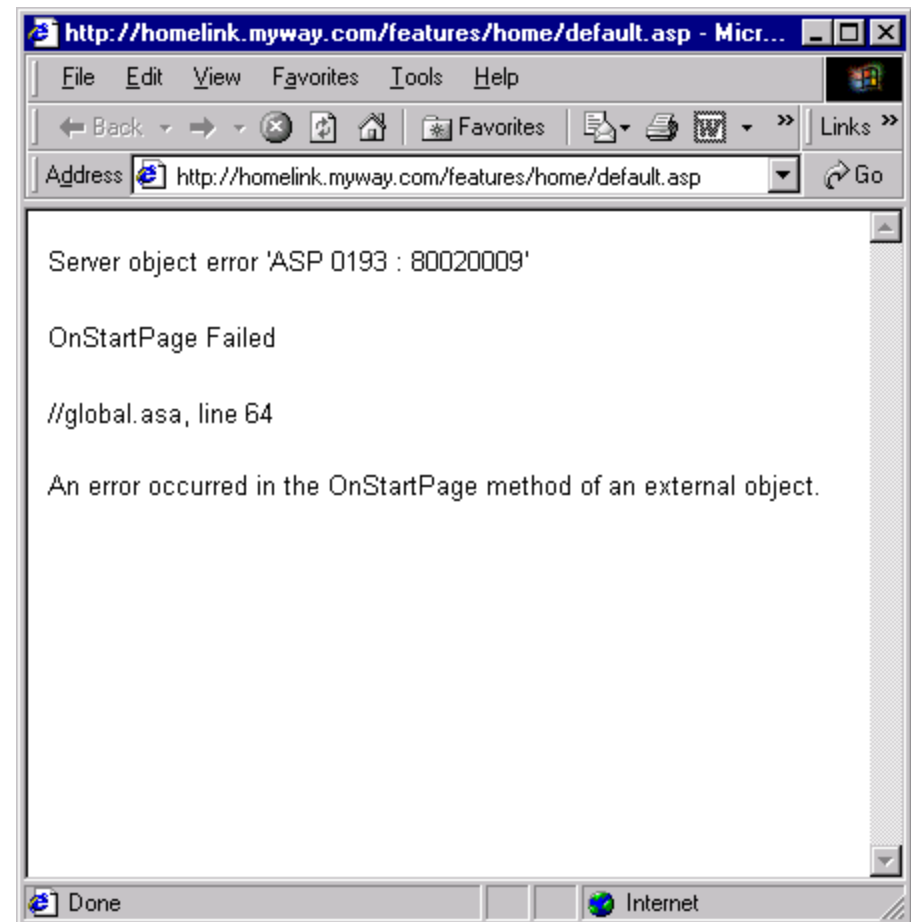
The need is there...

Linux still lacks the infrastructure necessary to make CIOs comfortable using it. – Dan Kusnetzsky, IDC

- The network could still be operational...
- The Server could still be operational...
- The Application could still be operational...

But...

- Performance has degraded
- Connections dropped due to poor website response time
- Back-end database is offline

```
http://homelink.myway.com/features/home/default.asp - Micr...
File  Edit  View  Favorites  Tools  Help
Back ← → ⊗ ⊘ ⌂  Favorites  ⧉ ⊜ ⊠
Address  http://homelink.myway.com/features/home/default.asp       Go

Server object error 'ASP 0193 : 80020009'

OnStartPage Failed

//global.asa, line 64

An error occurred in the OnStartPage method of an external object.

Done                                Internet
```

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Understanding the volatility of your business

- Downtime
- Response Time
- IT Staff
    - Proactively manage an environment
    - Solve a problem before it exists
    - Present only the data needed to correct the abnormality
- Tie degradation of systems to revenue and or costs
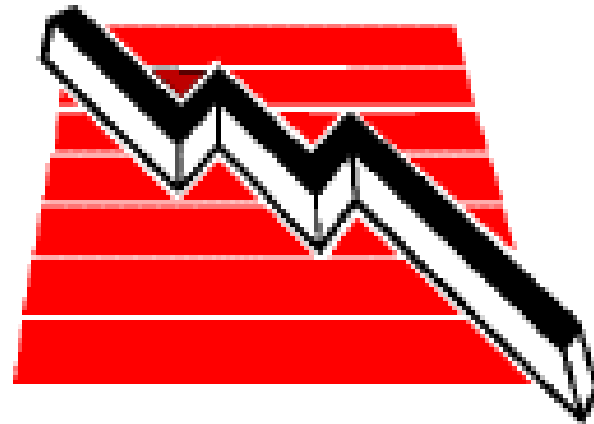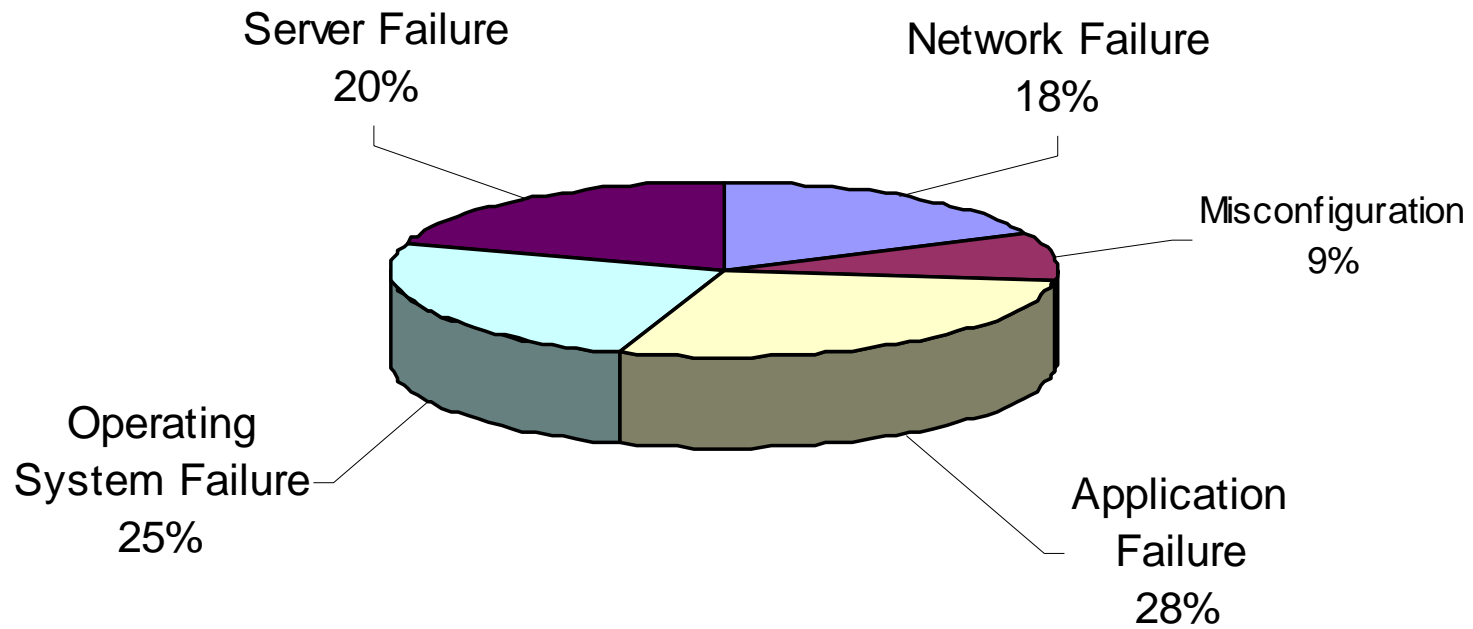
Evolution of IT Management

- **Network Management**
    - Routers, hubs, switches, servers & desktops
- **Application Management**
    - Statistics from applications, outages, end-to-end response time

- **Future...Component Management**
    - Software objects that operate within an application server, each responsible for explicit tasks (i.e. credit card transaction verification)

What's causing poor performance?

Server Failure
20%

Network Failure
18%

Misconfiguration
9%

Operating
System Failure
25%

Application
Failure
28%

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Unplanned Downtime Costs Millions

A recent IDC survey:

- Cost of downtime is more than $4 million per year

- IT organizations experience 18 application failures per year

- Failures cost upwards of $220,00 each

"New deployments on operating systems such as Linux predictably stress time to market over stability, performance and scalability, adding to the risk."

Enterprise Linux Magazine – 9/2000

What does app management get you?

Greater control over your applications

- Automated corrective actions
- Provides rules, policies and/or actions for proactively managing a specific application
- Examples:
    - Start and restart services and/or processes
    - Monitor processes and restart if fails
    - Monitor and measure response times
    - Track performance counters
    - Monitor log files for patterns
    - Produce on-demand html reports
    - Throughput monitoring

What's out there for Linux?

- **Search on Application Management**
  - Linux Magazine online = 0 matches found
  - Linux Journal online = 0 matches found
- **Linuxcare's website**
  - 91 links for System Monitoring tools. Not one for Application Management
- **LinuxToday.com**
  - Dirig Announces Apache-Linux Applications and System Management Solution...

Manage IT, and they will come...

"Growth/acceptance of Linux will introduce management imperatives for this OS platform on servers... Major network and systems management platform vendors (HP, CA, et al.) are announcing support for Linux, but this is the tip of the iceberg. Linux-specific management applications will emerge, with subsequent integration into higher-level management tools."

META Group

Infrastructure Management Predictions: Part 1.
Meta Group; September 2000

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Change is coming…

CALDERA - adds Volution system management application

redhat - acquires Bluecurve for performance mgmt

atipa - acquires OpenNMS for "Bluebird" network management

SuSE - bundles Enlighten system monitoring solution

APRiSMA - integrates Dirig's Proctor technology to add application management into SPECTRUM

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Cass Information Systems

Cass Information Systems – the nation's leading provider of payment & information services for Financial, Accounts Payable, Transportation, Logistics, and Utility needs.

- Like many small to mid-sized enterprise companies, Cass Info Systems needed support for ManageX beyond the NT operating system.

- Cass worked with Dell Computer, a premier ManageX reseller and system integrator, who contacted Dirig for the Linux SPI solution to manage Cass's Apache web server.

- SPI installed at Cass, and within hours, they're able to successfully manage and monitor applications running on the Apache web server.

Cass Information Systems

"Having the flexibility to deploy both Linux and NT servers and be able to manage them seamlessly is vital to our success. Dirig's Linux SPI provides that flexibility and give us a solid management solution for our Internet services."

Tom Zygmunt, Director of Marketing
Cass Information Systems.

Intellispace

IntelliSpace, chose Dirig to monitor and manage systems within their regional datacenters and network operations centers (NOC) for multiple servers at each location, running a combination of Windows NT, 64-bit Sun Solaris, FreeBSD and BSDi. Provides expanded fault tolerance to IntelliSpace's:

- Network management systems
- Messaging systems.
- Primary DNS servers at each NOC

Back   Forward   Stop   Refresh   Home   Search   Favorites   History   Mail   Print   Edit

Address http://10.1.2.35:8080/mn/index.html   Go   Links »

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MANAGED NODE

Home > Apache Web Server [NT]

Health Concerns

Excessive System CPU Utilization

Apache Web Server

Health Index : 3 / 12

CPU	**Memory**	**Swap**	**File Systems**		**Processes**		**Alerts (1)**	
16%	35%	48%	C:\ 94.52		iexplore	60.00	Major:	0
			D:\ 95.36		lsass	1.00	Minor:	0
					dsAgent	1.00	Info:	1

Internet

connected to : sox   About Dirig / Solutions   Dirig Support

MANAGED NODE

DIRIG *software*

Home > Sample Groups

Sample Groups

MySQL Statistics

MySQL Database – DirigCfg

MySQL Database – MspDB

MySQL Database – mysql

MySQL Database – test

MySQL Select Stats

MySQL Handler Stats

MySQL Key Stats

MySQL Connections – ODBC [76]

CPU	**Memory**	**Swap**	**File Systems**		**Processes**	**Alerts (5)**	
10%	56%	33%	C:\	93.14	iexplore 11.00	Major:	0
			D:\	50.94	dsAgent 4.00	Minor:	5
			E:\	19.95	dsAgent 2.00	Info:	0

Done   Local intranet

File   Edit   View   Favorites   Tools   Help

CPU DETAILED REPORT

DIRIG
software

Average: ○ Daily   ○ Hourly   ○ 15 Min   ● All

Key

- ■ CPU #0 Wait
- ■ CPU #0 User
- □ CPU #0 Kernel
- ■ CPU #0 Idle

Start Date: Thu Apr 19 2001
End Date: Thu Apr 19 2001

REN

Query

Start Time:
[04] : [02] : [41] [PM] ▲▼

End Time:
[04] : [27] : [41] [PM] ▲▼

[April ▼]   [2001] ▲▼

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	**19**	20	21
22	23	24	25	26	27	28
29	30					

[Plot It!]
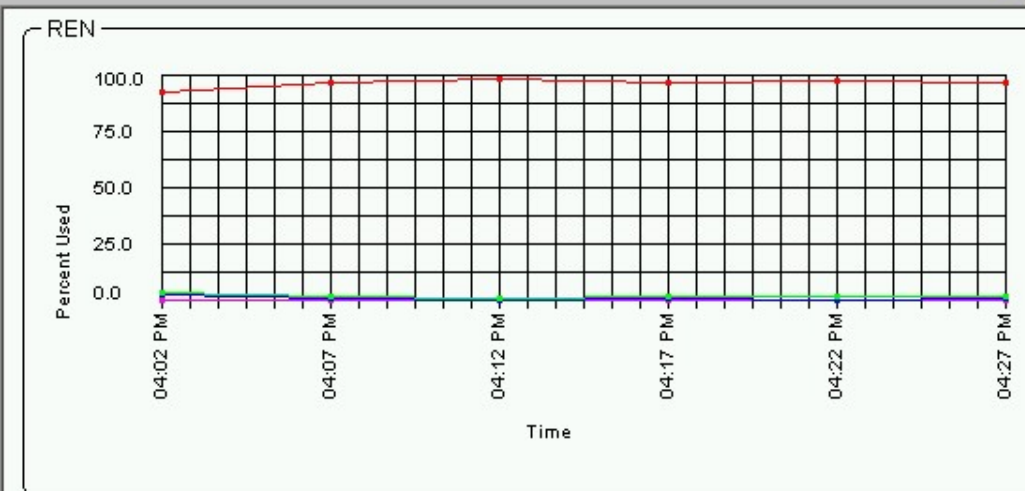
Configuration

Nodes

REN

Names

CPU #0 Wait
CPU #0 User
CPU #0 Kernel
CPU #0 Idle

Layout

● By Node

○ By Name

Done   Local intranet

Ensuring success through Application Management

- Make sure your IT infrastructure is architected for the web
- Multi-platform support
- Use specific application management to maximize performance, not just up time & availability
- Incorporate tools and infrastructure that are agile enough to move as fast as your business
- Detection of normal operating levels w/o tying up valuable resources
- Integrated, best-of-breed products can provide more robust management than traditional frameworks

Things To Look For cont...

- Data sampling Technology
    - Manage ANY application right out of the box
- Fully integrated system & app management w/ a single console
- Web-based UI
    - Dynamic HTML for real-time monitoring
    - Remote management
    - Customizable Interface
- Automated corrective actions
- Partitioned Server Support

- Determines normal operating levels and variances from the norm
- Subscriber View for service Providers
    - Real-time view into SLA for piece of mind
- Role based view for administrators
    - View only what you are responsible for
- Response Times
- Integrates into other applications for a best-of-breed solution

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The Future of Management Needs:
Application Component Management

Transformation of Infrastructure Management

- **Network Management**
  - Routers, hubs, switches, servers & desktops
- **Application Management**
  - Statistics from applications, outages, end-to-end response time
- **Component Management**
  - Software objects that operate within an application server, each responsible for explicit tasks (i.e. credit card transaction verification)

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The Need for Component Mgmt

"We see next-generation application management tools attacking the application component level, exposing a new level of valuable detail (e.g., what each object is doing, what/how objects are interfacing) specifically targeting web application servers. A management solution that addresses the entire ebusiness infrastructure regardless of platform or application server will clearly have an advantage over specific point products that speak to similar needs."

Meta Group analyst Corey Ferengul, Program Director of Service Management Strategies.

"Fenway"
The 1st Complete Management Solution

- All aspects of Application Server will be monitored and managed
  - From the transaction engine through the components
- The **ONLY** product that supports **both** EJB (Enterprise Java Beans) *and* Microsoft COM+
- Enhanced Managed Node and Console
  - New Subagent
  - Management servlet for Java-based platforms
- Leading application servers supported thru new SAMs
  - BEA, IBM, Allaire, ATG, iPlanet
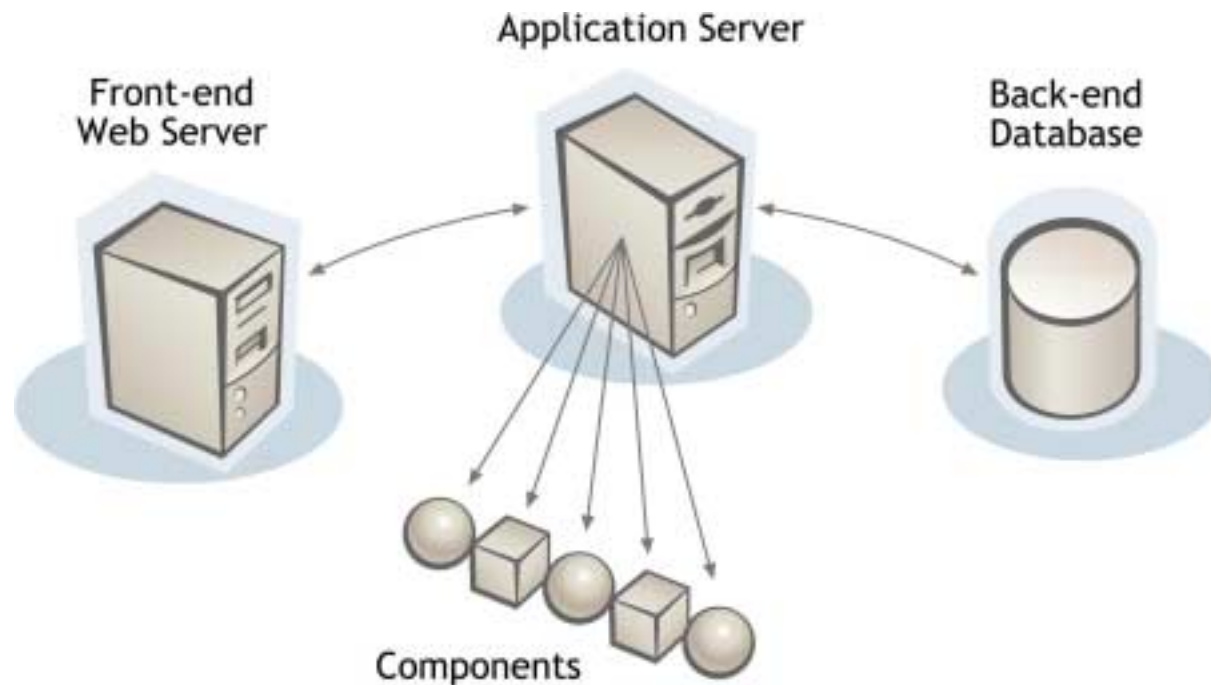
The Future of Application Management

*Everything is up and running
but you still can't buy that book...why?*

- Management of application servers and the solutions developed with them
- Components (EJBs & COM+ objects), connection pools, web applications
- The inner workings of E-commerce
    - Transaction processing, inventory, etc.

Application Server & Components

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Home > Fenway

Java Application Servers
  bea1
    Global Statistics
    Connection Pools
    Web Applications
    Modelled Applications
      General
        Servlets
        EJBs
      cookie
        Servlets
        EJBs
  MTS/COM+
    MSDTC Global Statistics
    Web Applications
    Modelled Applications
      Tic-Tac-Toe
        Application Statistics
        Objects
      Sample Bank
        Application Statistics
        Objects

EJB List

Refresh

Name	CommittedTx	RollbackedTx	CacheSize
readMostly.StockWriterHome	0	0	0
readMostly.StockHome	0	0	0
beanManaged.AccountHome	0	0	0
containerManaged.AccountHome	0	0	0
statefulSession.TraderHome	0	0	0
SubClass.ChildHome	0	0	0
statelessSession.TraderHome	0	0	0

CPU	Memory	Swap	File Systems		Processes		Alerts (0)	
			C:\	93.96	lsass	1.00	Major:	0
			D:\	76.96	taskmgr	1.00	Minor:	0
1%	97%	79%			System	0.00	Info:	0

Internet

File   Edit   View   Favorites   Tools   Help

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Application Server: bea1

Memory History

- Java Application Server
  - bea1
    - Global Statistics
    - Connection Pool
    - Web Application
    - Modelled Applica
      - General
        - Servlets
        - EJBs
      - cookie
        - Servlets
        - EJBs
- MTS/COM+
  - MSDTC Global Stat
  - Web Applications
  - Modelled Applicatio
    - Tic-Tac-Toe
      - Application S
      - Objects
    - Sample Bank
      - Application S
      - Objects
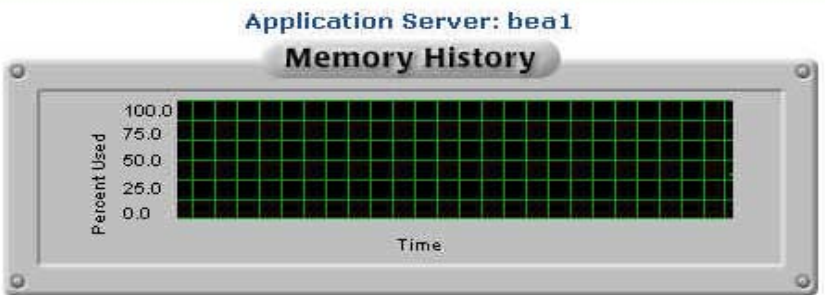
Application Server Statistics

Queue Length: 0
Queue Throughput: 1 /sec

Heap Statistics

■ Heap Used
□ Heap Free

Total: 67108 K
Free: 41065 K
Used: 26043 K
Percentage: 38 %

CPU	Memory	Swap	File Systems		Processes		Alerts (0)	
			C:\	93.96	lsass	1.00	Major:	0
0%	97%	79%	D:\	76.96	dsProc	1.00	Minor:	0
					System	0.00	Info:	0

Internet

File   Edit   View   Favorites   Tools   Help

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- Java Application Servers
  - bea1
    - Global Statistics
    - Connection Pools
    - Web Applications
    - Modelled Applications
      - General
        - Servlets
        - EJBs
      - cookie
        - Servlets
        - EJBs
  - MTS/COM+
    - MSDTC Global Statistics
    - Web Applications
    - Modelled Applications
      - Tic-Tac-Toe
        - Application Statistics
        - Objects
      - Sample Bank
        - Application Statistics
        - Objects

Connection Pool List

Refresh

Name	PoolSize	NumWait	MaxWaitTime	Grants	Releases
demoPool	1	0	0	16	16
oraclePool	1	0	0	0	0

CPU	Memory	Swap	File Systems		Processes		Alerts (0)	
0%	97%	79%	C:\	93.96	csrss	1.00	Major:	0
			D:\	76.96	lsass	1.00	Minor:	0
					dsProc	1.00	Info:	0

Internet

Dirig is already there...

- Specific application management for:
  - BEA Weblogic, ATG Dynamo, IBM Websphere, Allaire Cold Fusion & Jrun
- Connectivity between front end web server & backend database
- Validation of solution during development
- Maintaining performance, once hosted in production

Ensuring the completion of every e-transaction!

Summary –
Get the eBusiness advantage...

- Failure prevention – proactive application and system management

- Hands-off management – manage critical applications without IT intervention

- Remote management – manage applications from any web enabled device

- Maximize availability and performance of all your critical ebusiness systems and applications