High Availability Services for resilient infrastructure

Helping to keep your business-critical systems up and running
Today, your business simply can't afford to be brought to its knees by systems that are unavailable. IBM's High Availability Services for resilient infrastructure can help achieve your business availability goals and reduce operating cost by avoiding key system failures that could result in revenue and productivity losses.

The basic foundation for any resilient IT infrastructure begins with solid, reliable technologies. IBM @server are inherently designed to be highly available and IBM's High Availability Services for resilient infrastructure exploits the new and emerging Autonomic Computing technologies for self managing systems.

What really sets our high availability approach apart is ........

*IBM's High Availability Services help keep your entire IT environment -- from server to end-user -- up and running when you need it....*
High Availability Demands Are Driving Increasingly Complex IT Environments
Back Office is on the Front Line
Mission-Critical is now Business-Critical
Built it, and they will come!
## Tangible And Intangible Consequences Of Unavailability

- **Lost Revenue**
- **Lost Productivity, Overtime, Rework**
- **Impact on Customer Commitments, Missed Deadlines**
- **Fines / Penalties**
- **Negative Impact on Customer Satisfaction**
- **Weakened Market Position / Business Image**

Source: META Group  
File: Enterprise Data Center Strategies (EDCS) 1060  
Date: Feb 5, 2002  
Title: How Safe Is the Business? Perception/Reality Disconnect  
Author: Rob Schafer

### Potential Loss of Revenue by Industry Sector

<table>
<thead>
<tr>
<th>Industry Sector</th>
<th>Revenue/Hour</th>
<th>Revenue/Emp/Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>$281M</td>
<td>$569</td>
</tr>
<tr>
<td>Telecommunication</td>
<td>$2.06 M</td>
<td>$169</td>
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<tr>
<td>Manufacturing</td>
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<td>Financial Institutions</td>
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<td>Information Technology</td>
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<td>$184</td>
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<td>Insurance</td>
<td>$1.20 M</td>
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<td>Retail</td>
<td>$1.11 M</td>
<td>$244</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>$1.08 M</td>
<td>$167</td>
</tr>
<tr>
<td>Banking</td>
<td>$997 K</td>
<td>$131</td>
</tr>
<tr>
<td>Food/Beverage Processing</td>
<td>$804K</td>
<td>$153</td>
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<tr>
<td>Consumer Products</td>
<td>$786K</td>
<td>$128</td>
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<tr>
<td>Chemicals</td>
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<td>$195</td>
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<tr>
<td>Transportation</td>
<td>$669 K</td>
<td>$108</td>
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<tr>
<td>Utilities</td>
<td>$643K</td>
<td>$381</td>
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<tr>
<td>Healthcare</td>
<td>$636K</td>
<td>$143</td>
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<tr>
<td>Metals/Natural Resources</td>
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<td>$153</td>
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<tr>
<td>Professional Services</td>
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<td>$100</td>
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<td>Electronics</td>
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<td>Construction/Engineering</td>
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<td>$216</td>
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<tr>
<td>Media</td>
<td>$340K</td>
<td>$120</td>
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<tr>
<td>Hospitality</td>
<td>$331K</td>
<td>$39</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>$1,011K</strong></td>
<td><strong>$206</strong></td>
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</table>

**IBM Global Services**
**Threats to Availability**

- **Planned**
  - Database backups
  - Hardware and software upgrades
  - Hardware and Software maintenance
  - Reconfigurations, relocations

- **Unplanned**
  - Operating system failures
  - Application failures
  - Hardware failures
  - Operations errors
  - Ineffective processes
  - Natural disasters
  - Power outages
  - Deliberate attacks (virus, etc.)
Today's business-critical IT environments demand a shift from just a technology environment to a technology infrastructure …..a "resilient infrastructure"

- Resistant to unplanned disruptions.
- Security-rich environment that help mitigate risk.
- Transparely adaptive to change.
- Scalable to upswings and downswings in the market.
- Assists in rapid recovery should a failure or disruption occur.
The foundation for a resilient IT infrastructure requires technology that's reliable, available and self-managing. Autonomic Computing technology is emerging.

**Autonomic Computing Attributes**

- **Self-configuring**
  - Adapt automatically to the dynamically changing environments

- **Self-healing**
  - Discover, diagnose, and react to disruptions

- **Self-optimizing**
  - Monitor and tune resources automatically

- **Self-protecting**
  - Anticipate, detect, identify, and protect against attacks from anywhere

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Evolve Towards Self-managing Systems...
Taking business-critical availability to a new level...a balance of IT and business components is the key for creating and maintaining a resilient infrastructure.
Understanding High Availability.....

The objective is to provide an affordable level of availability that can support your business requirements and goals.

High Availability Solutions.....

✓ Are not a specific technology
✓ Should address ALL potential causes of outages
✓ Incorporate a variety of strategies and emerging technologies
✓ Should balance cost versus acceptable risk
✓ Require planning and analysis to identify problems, recommend solutions and monitor and manage availability levels
✓ Incorporate all these elements into a comprehensive "Business Availability Strategy"
IBM High Availability Services for resilient infrastructure

Designed to optimize uptime and reduce the amount of time your systems are unavailable due to any reason......planned or unplanned.

Designed to:

- Reduce the number of unplanned outages
- Reduce or eliminate the number of planned outages
- Reduce the duration of outages
- Reduce the scope and impact of outages
- Enable planning, design, implement, and managing strategies for continued availability improvements.
The IBM "Bounded System" Methodology

Designed to enable the creation of an effective, manageable, measureable, high availability solution that can:

- Define the business-critical systems elements and environment
- Enable the identification of potential inhibitors to availability and causes of downtime in the three key areas of: **Technology, Process and Organization**
- Enable the ability to monitor, measure and manage availability of the environment
- Enable the development of a complete **End-to-End** solution.

The IBM "Bounded System" Methodology

- Hardware
- Software
- People & Skills
- IT Business Processes
- Operational Processes
- Applications
- Physical Site & Utilities

Create a generic model for end-to-end components

Link the model components

Organize the data into our standard domain model

Derive end-to-end availability from outage and/or product data

Develop plans and processes to support availability in each domain
IBM High Availability Services for resilient infrastructure - Phase 1

Phase 1 - High Availability Readiness Review

- Coverage Requirement (e.g. 24x7)
- Degree of Availability (e.g. 99.9%)

- Business Availability Needs
  - Current Availability Level
  - High level review of Hardware, Software, Applications, Processes, Procedures, etc.

- Business IT Environment
  - Business System Availability Goal
  - Prioritized List of Issues & Concerns

- Availability Goals
  - Target System
  - High Availability Plan

- Process Issues
  - Availability measurement and reporting
  - Problem management
  - Change management
  - Testing
  - Operations
  - Help desk
  - Backup & recovery
  - Service level agreements

- Technology Issues
  - Network Design
  - Clustering and parallel technology
  - Fault tolerance and redundancy
  - Capacity and performance
  - Server consolidation
  - Disk mirroring and RAID technology
  - Environmentals

- Organization Issues
  - IT Business structure alignment
  - People skills
  - e-business
  - Process to organizational linkages
IBM High Availability Services for resilient infrastructure - Phase 2

Phase 2 - Comprehensive Availability Assessment

- All Phase 1 Issues and Concerns
  - Factors affecting availability
  - Analysis of causes and impacts

- Causes of Issues and Concerns
- Bounded System Identification
  - Measurable target system

- IT Environment
  - In-depth review of Hardware, Software, Applications, Processes, Procedures, etc.

High Availability Improvement Recommendations
Including Recommendations to help Reduce or Eliminate Planned Outages
IBM High Availability Services for resilient infrastructure - Phase 3

Phase 3 - Design and Deliver A Unique Availability Solution For A Resilient IT Infrastructure

- Availability measurement and reporting
- Problem management
- Change management
- Testing
- Operations
- Help desk
- Backup and recovery
- Service level agreements

- Network design
- Clustering and parallel technology
- Fault tolerance and redundancy
- Capacity and performance
- Server consolidation
- Disk mirroring and RAID technology
- Environmental

- IT business structure alignment
- People skills
- E-business
- Process to organizational linkages

High Availability Solution Plan
A Balance of Improvement Recommendations with Business Needs and Affordability

Process Issues

Technology Issues

Organizational Issues

Process Solutions

Technology Solutions

Organizational Solutions

- Availability manager
- Enhance systems management disciplines
- Availability measurement and reporting services
- Testing services
- Help desk services
- Improved operational process / procedures
- Business continuity and recover services

- Parallel / cluster / mirroring services
- Fault tolerant / redundancy
- Server consolidation
- System, network and application design
- Remote monitoring
- Enhanced 7x24 hardware maintenance
- SupportLine and advanced technical support
- IT optimization services
- Performance and capacity planning
- Environmental, site planning, power protection services

- Availability manager
- E-business services
- On-site technical assistance
- IBM education services
- Human resource planning
- Technical advocate services
A Comprehensive High Availability Solution

**Availability readiness review**
- Availability management overview and education
- Identify your IT availability vision and goals
- Identify and prioritize availability initiatives
- Develop next step to implementing a high availability plan

**Tailored packaged solution**
- Designs a tailored package of availability products and services
- Addresses vulnerabilities
- Corrects weaknesses
- Supports IBM and OEM products
- Includes an assigned availability manager

**Availability assessment**
- Evaluates requirements and business goals
- Sets availability targets
- Defines bounded system environment
- Detailed set of recommendations
- Analysis of planned and unplanned outages and potential single points of failure
IBM High Availability Services for resilient infrastructure provides.....

- World-class IT business-critical consulting
- Hardware and software support services
- Systems and network management
- Business continuity and recovery services
- Security and protection services
- e-business infrastructure services
- Operations and administrative services
- Site management and technology enablement
- Multivendor support services - hardware and software
- .....and much more
IBM High Availability Services for resilient infrastructure

- Help prevent and reduce your IT business systems downtime
- Offer a solution tailored to your business-critical needs and goals
- Help tune and optimize your system performance
- Help you improve your system and network management
- Accelerates the implementation of new technologies
- Provides a single point of contact for support
- Provides access to extensive IBM services resources

- Offers resilient infrastructure efficiencies including potentially reducing or eliminating planned downtime along with the exploitation of IBM's Autonomic Computing Technologies.

For more information...
Backup Charts
User demand for high availability of critical systems is driving the market for high-availability services. This Magic Quadrant will help users find a server vendor suited to their high-availability needs.

To help organizations choose the right server vendor for their specific availability needs, Gartner created a Magic Quadrant that positions nine leading server vendors according to their high-availability services strategy, offerings and capabilities (see Figure 1).

Note that the Magic Quadrant takes into account each vendor's total strategy for high-availability services, regardless of technology platform (fault-tolerant servers, midrange servers, mainframes and so on).

We examined the server vendors from two perspectives: their "completeness of vision" and their "ability to execute."

**Completeness of vision:** The server vendor's focus and investment in the future of high-availability services. This perspective evaluates how successful a company will be at meeting the future needs of its customers based on Gartner's scenario for where the high-availability services market is heading.

**Ability to execute:** The server vendor's focus on delivering high-availability services. This perspective examines how well a company is doing based on current business and technological realities and on what is being delivered. From these two perspectives, 15 specific rating criteria were weighted and used to evaluate the vendors' high-availability services.

**Specific rating criteria for server vendors' completeness of vision:**
- Long-term vision and strategic plan for high-availability services
- High-availability services for the full IT life cycle
- Use of holistic methodology for high-availability services
- Escalation process for high-availability support
- Reimbursement of customers for lost revenue
- Customer skills training and education offerings
- Process or mechanism for ensuring service quality

Source: Gartner Research Note. September 30, 2002
Markets, M-18-0369
A. Mac Neela, B. Igou, E. Rocco
Specific rating criteria for server vendors’ ability to execute:

- Specialists in high-availability services
- Remote-site recovery capability
- Comprehensive global service and support
- Relationship management
- Alliances and partnerships
- Uptime guarantee
- Guaranteed restoration time for hardware
- Guaranteed restoration time for software

For each criterion, Gartner scored vendors from one to 10, where one indicated "worst in class" (or "has no offering") and 10 indicated "best in class." These scores were based on vendor briefings, information collected from end-user contacts, general Gartner knowledge and other secondary means. The Magic Quadrant was not based directly on customer interviews, and the results should not be taken as indications of customers' satisfaction levels.

**Bottom Line:** Organizations that are designing, developing and maintaining a high-availability strategy for their IT systems should continue to find server vendors’ services divisions an essential resource. They should also find them important for the success of related availability objectives, such as operational efficiency and quality control.

Organizations can use this Magic Quadrant in two ways: to gain insight into the relative positioning of the server vendors’ capabilities for high-availability services; and to help them choose which vendor is best-suited to their IT infrastructure and availability needs.

Source: Gartner Research Note. September 30, 2002
Markets, M-18-0369
A. Mac Neela, B. Igou, E. Rocco
A Gartner Research Study Evaluating Selected Vendor High-Availability Services

Figure 1
Magic Quadrant Evaluating Selected Vendors for Their High-Availability Services

FTSI = Fujitsu Technology Solutions, Inc.

Source: Gartner Research Note. September 30, 2002
Markets, M-18-0369
A. Mac Neela, B. Igou, E. Rocco
Best-in-Class Hardware Support Vendors According to End Users

The users were then asked to think about the three companies that they considered best in class relative to hardware support services. Table 2-6 lists the vendors named most often.

Percentage of Users Naming Company in Top Three

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>24%</td>
</tr>
<tr>
<td>Dell Computer</td>
<td>15%</td>
</tr>
<tr>
<td>Hewlett-Packard</td>
<td>13%</td>
</tr>
<tr>
<td>Cisco Systems</td>
<td>10%</td>
</tr>
<tr>
<td>Compaq*</td>
<td>8%</td>
</tr>
</tbody>
</table>

* NOTE: The results reflect the world before HP and Compaq officially merged. The data reflect companies that received more than 5 percent of responses.

Source: Gartner Dataquest (July 2002) Table 2-6 from survey "What Users Really Want, Need and Believe About Hardware Support Services"  Author - Eric Rocco