

The Business Case for High Availability Email

EXECUTIVE SUMMARY

Email has become an integral part of key business processes and an essential component of day-to-day operations. Sales and service for many large enterprises now rely on email communication, making it a key revenue-generating medium. For law firms, insurance agencies, financial institutions, and others, a loss or delay of key documents sent by email carries regulatory as well as financial implications.

Email use is growing in volume as fast as it is growing in business importance. The average email user sends 34 emails and receives 99 every day and overall email use is growing 53% per year. An estimated 16 billion messages will be sent in the United States alone in 2005.

As email becomes a more critical component of every enterprise, the consequences of downtime are getting worse. Yet, email outages continue to occur despite organizations' increasing efforts to prevent these with complex and costly infrastructure. In fact, overall email availability within most enterprises is unacceptably low and below the standards companies use for other critical applications.

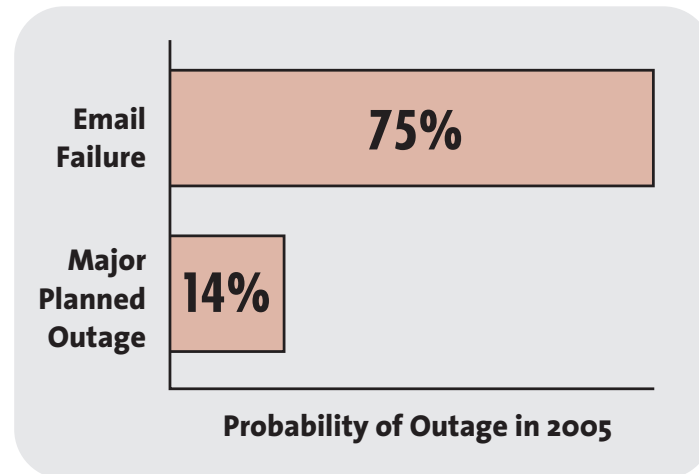
This report examines three primary factors that affect how companies can approach email availability from a business and economic perspective: First, there is a review of the typical levels of email availability at enterprises today, and a comparison of email to other critical enterprise systems. Second is a description of the financial impact of email outages. Third is a summary of three primary solution types that companies implement to increase email availability, including their relative effectiveness as well as a relative cost comparison.

Finally, included is an overview of Iron Mountain's Email Continuity service, a solution that guarantees email availability in the event of any type of email outage.

THE HIDDEN COSTS AND BUSINESS CONSEQUENCES OF EMAIL OUTAGES

In order to build a business case for high availability email, it is important to understand whether there is a problem with the current status quo. On this subject, the data is clear: 75 percent of companies are expected to experience a major email outage in 2005. Another 14 percent will likely experience a major planned outage due to a system or hardware upgrade or maintenance, data center move, patch management, or disaster recovery testing.¹

A 2004 study conducted by MessageOne, an Iron Mountain partner, showed that more than 55 percent of unplanned email outages last for 6 hours or more.² These outages may be caused by hardware or software failures, database or directory corruption, connectivity loss, network problems, natural disasters, viruses, or configuration management errors.³ Increasingly, planned outages are also impeding business productivity as the average duration of major planned outages is more than 24 hours. Furthermore, an Osterman Research study in 2003 showed that 41 percent of organizations experience monthly email outages lasting at 30 minutes or more.



What are the consequences of these email outages? The following examples clearly demonstrate that even a seemingly small outage can deliver a devastating financial impact to a business:

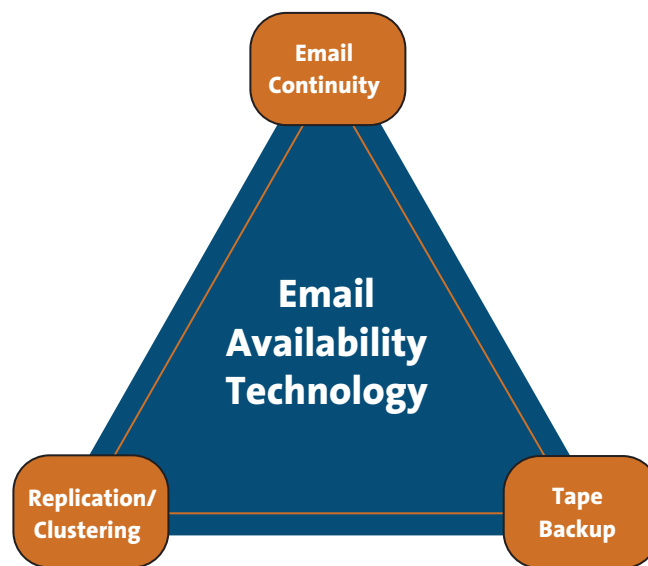
- A 5,000 person health care provider lost \$3 million during 8-hour outage when IT staff accidentally shut down data center power
- A 2,000 person national law firm CIO estimates a recent email outage cost the firm \$100,000/hr in lost revenue and productivity
- Five financial services firms were fined a total of \$8.25 million for failure to protect and preserve email communications
- A national financial services firm lost \$6 million from virus-related email outage plus additional damage as retail financial planners lost access to calendar used to track customer appointments

Looking at the industry on average, according to The META Group,⁴ Inc., typical email uptime is somewhere between 99 percent and 99.9 percent. Although these numbers appear high, this means that most companies experience an accumulation of between 8 hours and 4 days of email downtime every year.

By comparison, the requirements for high availability data storage systems and other business applications governed by six sigma and other standards, such as manufacturing and production systems, range between 99.99 percent and 99.9999 percent.

THE ECONOMICS OF EMAIL AVAILABILITY

There is no single solution on the market that can guarantee perfect availability, full recovery capabilities, and attractive economics. However, there are four complementary approaches to email availability that cover the broad range of options available, and when combined can virtually eliminate downtime. Each of these options has a unique architecture, list of benefits, and cost structure. These solutions fall into three primary categories: Email continuity, replication and clustering, and tape backup.



TAPE BACKUP

This option involves point-in-time backups that can be used to restore the system in the event of a catastrophic failure. This is a low cost method of ensuring a recoverable historical record of emails, and most companies have invested in some method of tape backup.

Advantages of tape backup:

- Low cost solutions that can help organizations recover their stored email
- Low complexity: Simple to implement and widely deployed today, tape backup is typically the first measure of defense against email problems
- Straightforward recovery: With database corruption or a disaster, an administrator can return to the last good back-up

Disadvantages of tape backup:

- Involves a 24-72 hour recovery time, making tape not a true “high availability” solution
- High Field Failure Rates (including media failure) average between 5-11%
- Substantial Data Loss Window is typical depending of the timing of the most recent backup relative to the outage (RPO of 24 hours for nightly tape backups)

Tape is an essential tool for disaster recovery, but cannot be relied upon as a means to high email availability. Tape does not provide email continuity during an outage and furthermore, there may be a significant loss of data from the time of the last backup and the time the outage, or corruption occurs.

REPLICATION AND CLUSTERING

This approach involves a second complete email system mirroring your primary system, and can be quickly activated in the event of a primary system failure. Clustering specifically involves using two or more servers at the same location to simultaneously receive a data stream. The goal with clustering is to have parallel capacity to maintain continuity in the event of failure of a single device.

Advantages of replication and clustering:

- E-mail service can usually be restored in less than 3 hours
- Planned system maintenance can be performed by moving service to your secondary environment without downtime

Disadvantages of replication:

- Replication solutions are expensive, considering the additional hardware and space required as well as implementation and maintenance costs
- Database corruption and viruses are likely to impact the secondary system just as they impact the primary
- Administration, fail-over to the secondary system, and fail-back are extremely complex processes and require highly skilled staff
- Without skilled staff or the exact checklist for failover available, the process of moving to a secondary system can take hours and aggravate any email outage

Disadvantages of clustering

- Clustering solutions are expensive in the same way as replication systems, with hardware, implementation, and maintenance costs
- Any data corruption as well as viruses, etc. are likely to affect all clustered servers in the same way, leading to a system outage
- Local pairs of clustered servers provide minimal protection against disasters, connectivity problems, and power outages, while remote pairs are typically prohibitively expensive for Exchange environments and can easily get out-of-sync

Although expensive, high availability replication and clustering solutions usually provide quick recovery in the event of an outage. However, these systems are not immune to database corruption, Active Directory problems, viruses, or malware that are replicated to the secondary. Furthermore, due to the complexity of the failover process, it is possible to extend an outage rather than shorten one.

EMAIL CONTINUITY SERVICES

Email continuity services involve a stand-by email system that fully synchronizes with the primary all user data including contact lists, calendars and other information. This service can be quickly activated in the event of an outage in your primary system, and your replication and clustering system. This is a service hosted at an off-site location so is not prone to any of typical outages that occur on-site.

Advantages of email continuity service:

- Low cost standby system
- Simple and rapid to deploy and low cost and easy to maintain
- Negligible outages: Email functionality can be restored in less than one minute
- Email outages are never visible to the outside world
- Only solution to work through all types of outages including database corruption, viruses and “malware”, hardware failures, and connectivity outages

Disadvantages of email continuity service:

- Continuity only - does not recover the primary environment
- Not all e-mail capabilities and features are supported in email client
- In some cases, limited access to historical email for recovery purposes

E-mail continuity services are low cost and the most likely option to ensure email continuity during an outage and have a very significant impact on true email availability metrics. This service does not replace, but complements traditional recovery and backup options to provide a highly available solution to email.

CONCLUSIONS: ANALYZING EMAIL AVAILABILITY STRATEGIES

Given the advantages and disadvantages of each approach to email availability described above, organizations can develop an ideal combination of solutions to meet their goals for decreasing the impact of email outages while optimizing costs. While each approach alone is vulnerable to different types of outages and does not constitute a complete solution to email availability, a combination of a recovery solution with an email continuity approach will help to cover all bases and maintain high availability.

To put all solutions in perspective, the table below shows the primary uses and relative costs of each type of email continuity solution and the primary purpose of each.

Also shown is the degree to which each solves the problem of true email continuity, or availability, as opposed to simply providing email recovery. The types of outages addressed by each solution are compared as well. As is evident from the table, having an effective email recovery solution is not the same as maintaining continuity or availability during an outage.

	Tape backup	Replication/ clustering	Email continuity service
Cost	\$	\$\$\$\$\$	\$
Recovery time	24-72 Hours	1-3 Hours	1 Minute
Designed for continuity	No	Yes	Yes
Designed for recovery	Yes	Yes	No
Operational difficulty	Medium	High	Low
Continuity during:			
Hardware outage	●	●	●
Most disasters	●	●	●
Database corruption	●	●	●
Directory corruption	●	●	●
Viruses	●	●	●
Connectivity loss	●	●	●
Planned Outages	●	●	●

ECONOMICS AND EFFECTIVENESS OF THE THREE EMAIL AVAILABILITY APPROACHES

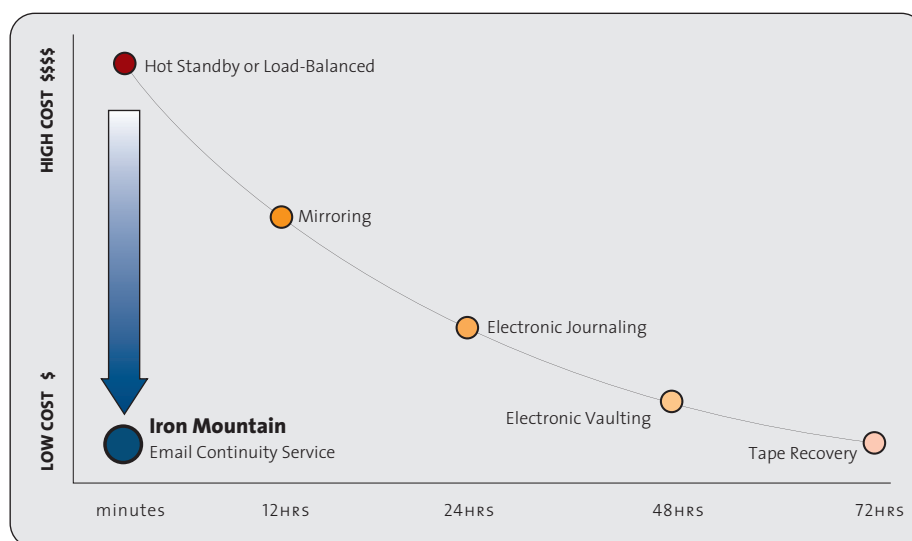
In conclusion, the increasingly high costs of email outages make it imperative for companies to re-examine their email availability strategy. Investments in typical email disaster recovery solutions such as clustering, replication, and tape backup still leave large gaps in providing email continuity, thus leaving room for costly outages to continue. An investment in a low cost email continuity service will help to alleviate the problem of continuity, while recovering from an outage can occur in parallel.

INTRODUCTION TO IRON MOUNTAIN'S EMAIL CONTINUITY SERVICE: GUARANTEED EMAIL AVAILABILITY

Iron Mountain's Email Continuity service is a highly scalable standby messaging system that provides 99.999% availability at 10% of the cost of traditional replication solutions.

The Email Continuity service is continuously synchronized with your primary Microsoft Exchange, Lotus Notes, or Novell GroupWise system so that it can be activated in less than a minute during any email outage. The service is hosted at Iron Mountain's world-class disaster recovery facilities equipped with redundant power, servers and internet backbones, and manned 24x7 by expert support staff. And, the Email Continuity service provides continuity of email as well as contacts, calendar items, and global address and distribution lists.

The table below shows how the Email Continuity service, as a low cost continuity service, fundamentally changes the economics of providing high availability email. While a "hot standby" replication system, (i.e. an alternative server constantly available to take on the role of the primary email system), remains extremely costly as a means to ensure email continuity, the the Email Continuity service provides the same level of continuity at a fraction of the cost. Other means of email recovery require a lengthy implementation time, thus not solving the immediate problem of an email outage.

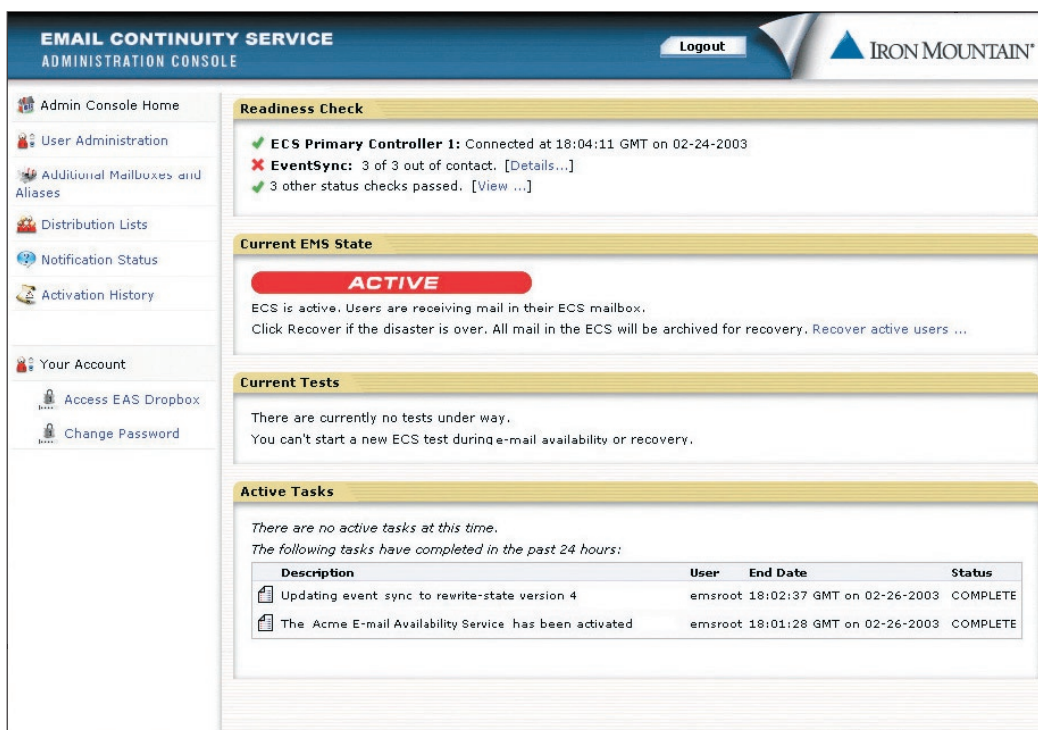


AVERAGE DURATION OF EMAIL OUTAGES FOR VARIOUS EMAIL AVAILABILITY SOLUTIONS

The Email Continuity service includes the following features:

- **Guaranteed 60-Second Email Continuity** – Activate in less than 60 seconds to provide any employee with full email and BlackBerry access during an email outage. It ensures that email never bounces and that email system outages are never evident to the outside world.
- **Emergency Access to Historical Email** – Email Continuity service includes ActiveMailbox™, the ability to intelligently synchronize historical email to your standby email system based on your organization's needs. For example, you can provide executives with a full email history, managers with the last five days of email, and other employees with no email history at all in their inbox.
- **Automated Synchronization** – Automatically synchronizes corporate directories, user accounts, contacts, calendars, and distribution lists to secure data centers.
- **Designed for Immunity** – Linux-based system provides immunity from viruses and database corruption that may cause downtime in the primary system. Email Continuity service is fully compatible with Microsoft Exchange, Lotus Notes, and Novell GroupWise email system.
- **Quick Recovery** – After an outage, the Email Continuity service automatically moves all sent and received email back to the primary system in one step, with all forensic information intact.

The Email Continuity service is priced like insurance: a fraction of the cost of complementary alternatives, making it a solution that organizations can easily implement regardless of prior investment in email availability solutions. As an immediate fail-over messaging system, the service provides email as well as BlackBerry access despite any type of problem in your primary system.



WITH A SINGLE WEB-BASED CONSOLE, THE EMAIL CONTINUITY SERVICE IS EASY TO USE AND ACCESSIBLE FROM ANY REMOTE LOCATION

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