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IBM System Storage: Small and Medium Business Considerations for Business Continuity

This IBM® Redpaper provides an overview of a Business Continuity solution that is specific to the small and medium sized business (SMB) environment.

SMB enterprises, which play a vital role in our worldwide economy, are small or medium *only* in relation to the size and scale of large multi-national corporations. SMBs are often quite large within their regional or local geography, and certainly SMB enterprises are not small at all in terms of dynamic ideas, innovation, agility, and growth. In many ways, SMB companies have IT needs and concerns that are similar to large enterprises. Yet in other ways, SMB companies have key differences.

This IBM Redpaper provides a discussion of these differences. If your business exhibits characteristics of this vital type of enterprise, this discussion of key Business Continuity differences for SMB will be useful.

Small and medium sized business overview

SMBs play a very important role in the worldwide economy. As an example, according to U. S. Government Small Business Administration data, SMB companies range from home-based entrepreneurs (small business) to those with a thousand employees (medium business). Their annual revenues can run from thousands to billions of dollars. The same data says that in the U. S., SMB represents nearly 99.7% of all employers, responsible for nearly three quarters of the net new jobs that were created in the U. S. economy in the last three years. SMB accounts for over half of the U. S. private work force and drives over 40% of private sales.

While SMB statistics vary according to geography and economic conditions, clearly SMB companies have specific requirements for Business Continuity. SMB companies, depending on the nature of their business, have different Business Continuity requirements. As computing technologies become more affordable, SMB businesses can take advantage of emerging Business Continuity technologies to help drive growth and profits for their business.

SMB company profiles and Business Continuity needs

Recent natural disasters and terrorist threats have put Business Continuity as a top priority for enterprises worldwide, creating a sense of urgency within SMB companies to gear up their Business Continuity capabilities because many, if not most, are behind in this area. IBM customer surveys indicate that Business Continuity is the number one IT issue since 2003 for SMB companies.

The key SMB Business Continuity drives are:

- ▶ As SMB companies increasingly rely on their IT systems to support their business, any system downtime and data loss has severe negative impacts on revenues, profits, and client satisfaction. Extended outages or the inability to recover critical data can cause permanent damage to companies.
- ▶ Recent government compliance regulations, such as the U. S. Sarbanes-Oxley Act and HIPAA, also push data backup, restore, retention, security, auditability, and disaster recovery requirements to top priorities for public SMB companies.
- ▶ Customers and business partners increasingly require reliable and highly available systems as prerequisites for doing business.
- ▶ The ability to minimize risks is important for some maturing SMB companies. Planning for Business Continuity is similar to buying insurance. Recent events make this type of insurance a must have rather than a luxury as in the past.

Most SMB IT management finds Business Continuity complex and resource intensive, so Business Continuity planning usually is an afterthought. With increasing pressure from the lines of business and Business Continuity technologies and solutions becoming more affordable and simple, SMB IT management is moving Business Continuity projects forward. In some cases, Business Continuity can be used to drive additional revenues and profits.

With limited financial and technical resources, IT staff face the following challenges:

- ▶ Ever diminishing data backup window time—with more servers and storage devices coming on line, dramatic growth of data and the push for 24x7x365 system up-time, planned outage windows are smaller by the day, affecting the ability to back up systems, applications, and data adequately. Some data might not be backed up at all, exposing the business to liabilities and losses.

- ▶ Inefficient tools—because most off the shelf applications bought by SMB use their own backup and restore tools to support their data only, it is common for SMB IT staff to run numerous backup jobs daily, straining the system and staff resources, eating up precious backup window time; the trend is to have more applications so the situation will only get worse.
- ▶ Limited staffing and time—backup jobs usually are run after work hours and staff has to be around late to support these jobs, in addition to their day duties, resulting in low staff morale, jobs run poorly or not consistently
- ▶ Lack of experiences and skills—Business Continuity is still fairly new to SMB and experiences and skills in this area are usually not top priorities with the IT staff. A good example is systems management discipline, including change and problem management which affect system availability.
- ▶ Limited budgets and resources—SMB constantly reprioritize their projects, evaluate trade-offs, and balance resources to achieve their business goals. Business Continuity usually is not a top priority funded item until a systems outage actually impacts the business. The actions are usually reactive and can be costly in the long run, such as a total revamp of systems and hiring of outside consultants. Proper planning and funding is essential to successful Business Continuity implementation.

In this IBM Redpaper, we answer the following questions that are related to the successful planning, evaluation, and implementation of Business Continuity solutions for SMB companies:

- ▶ What are the key Business Continuity components for SMB, and how do they affect my business?
- ▶ What are the steps in planning for a successful SMB Business Continuity project?
- ▶ How much SMB Business Continuity can I afford for my company?
- ▶ Which SMB Business Continuity solutions are suitable for me?

SMB company IT needs as compared to large enterprises

SMB companies have IT needs and concerns similar to large enterprises. They need Enterprise Resource Planning (ERP), Supply Chain Management (SCM) and back-office systems (such as e-mail, accounting, and so on). The key differences are scale and costs. SMB growth rate tends to be steep. The capacity to start from very small and then scale big is a key requirement, without massive changes to existing systems.

SMB companies tend to be more cost sensitive. Maximizing value is a common mantra among SMB. It extends from the purchase and upkeep of necessary computing assets to engaging IT staff who perform a wide range of tasks including operations, support and maintenance. At the same time, most SMB companies have more flexibility in terms of leveraging standardized IT offerings with less customization and stringent service level requirements to keep their costs low, compared to large enterprises.

To deal with short term financial pressures, many SMB companies follow an IT purchasing strategy of choosing price over performance, and relying on platforms that staff members are familiar with, rather than alternatives that might offer features better suited to the company's actual business and technical needs. Recent surveys show that increasingly, SMB companies are starting to look at overall costs of ownership at a system level as compared with hardware or software components only in the past. Just as with large enterprises, SMB companies appreciate IT vendors who can demonstrate complete solutions (combination of hardware, software, services and the ability to integrate into their existing environments) and provide the best IT value in the long term.

SMB IT data center and staff issues

Most SMB IT staff have to support numerous IT platforms and a great variety of data center tasks, ranging from hardware and software installation, daily operations, help desk to troubleshooting problems. Because of the heavy load of fire fighting, IT management and staff usually spend little time on planning and procedures, impacting their overall productivity and the service levels to customers. These challenges and complexity tend to expand exponentially as the company grows, making it increasingly necessary and expensive to engage specialized contract services. Increasingly, SMB IT management pays more attention to planning and procedures to address these issues, especially in data center operations, such as backup, restore and Disaster Recovery. This area of expertise is usually not of high priority in SMB IT staff.

Business Continuity for SMB companies

The basic definition of Business Continuity is the ability to conduct business under any circumstances. From an IT standpoint, it is the ability to provide systems and data for business transactions to a set of service levels based on end-to-end availability, performance (such as response times), data security and integrity, and other factors. Service level agreements (SLAs) usually drive the Business Continuity design and budgets. For a variety of reasons, most SMB IT management does not have SLAs with the lines of business. As more SMB companies are leveraging their IT capabilities to drive revenues and profits, SLAs are increasingly required.

Major SMB Business Continuity design components

Particularly in SMB environments, these are the major Business Continuity design components:

- ▶ Prevention services
- ▶ Recovery services

Because budget and value are the decision criteria for SMB companies, recovery services are usually the starting points for Business Continuity. As prevention services are becoming more affordable, usually Business Continuity solutions consist of a combination of the two, depending on the company's needs.

The three aspects of Business Continuity are:

- ▶ High Availability
- ▶ Continuous Operations
- ▶ Disaster Recovery

Let us examine how an SMB enterprise usually views these three aspects.

Prevention services

Prevention services are the ability to avoid outages or minimize down time by anticipation, systems planning, and high availability technology and solution deployment. The aspects of Business Continuity that fall under prevention services are:

- ▶ *High Availability* builds reliability and redundancy into systems infrastructure, including hardware, software, and networks, to eliminate single points of failure. It also includes some automatic switchover or restart capabilities to minimize down time.
- ▶ *Continuous Operations* minimizes data center operation impacts on up time, including hardware and software maintenance and changes, backup, systems management, speedy problem resolution, virus and spam attacks prevention, security measures, and so on. The solutions usually involve management and process automation, systems and data consolidation (less to support) and improved efficiency of operations. You can find more information about Continuous Availability solutions in *IBM System Storage Business Continuity: Part 2 Solutions Guide*, SG24-6548.

Recovery services

Recovery services are the ability to recover the system and data speedily in whole, partial or degraded modes when outages occur. The aspects of Business Continuity that fall under prevention services are:

- ▶ *Disaster Recovery* invoked when the primary operation site is no longer operable and the alternate site is the only option.
- ▶ *System component or operation recovery* invoked when an individual component or group of components fail or when human errors occur during operation.

Service level targets dictate the degrees of prevention and recovery services that are required and the budgets that support them. Usually it is a decision on risks—a balance between the avoidance costs and Business Continuity solutions investments.

Business Continuity impacts on SMB business

Business Continuity impacts are usually measured in potential revenue and profits loss, staff productivity loss, customer, and IBM Business Partner satisfaction and loyalty loss, and so forth. Revenue and profit loss can be calculated by dollars lost by the inability to conduct business due to a system outage for a time frame. Other impacts can be estimated by industry averages. A risk assessment of the potential costs and the odds of the outages will be the primary factors for the Business Continuity measure necessity, design and budgets.

Successful SMB Business Continuity planning and implementation

We recommended the following planning steps, especially for the SMB enterprise:

1. Conduct a risk assessment to develop a set of Business Continuity service targets and IT metrics for key business processes with lines of business.

The assessment results should determine Business Continuity priorities, scope, goals, budgets, and success criteria. The service targets can include end-to-end systems availability and response time, disaster recovery objectives, and so on.

2. Assess present attainment of these service targets and metrics.
Establish a base line for a comparison of and an understanding of the challenges to meet these targets.
3. Develop and evaluate technology and solution options.
The success criteria should drive the evaluation and priority. The technology and solutions are fairly standard these days.
4. Develop an architecture and roadmap to support the solution implementation.
Business Continuity solutions usually take some time to implement based on budgets and resource availability. A base architecture on which the solutions can build is critical.
5. Develop an overall Business Continuity strategy and plan.
It is important that the IT Business Continuity plan coordinates with the overall business plan.

SMB Business Continuity implementation steps

We recommended the following steps for implementing Business Continuity, especially for the SMB enterprise:

1. Simplify, consolidate, standardize and centralize infrastructure.
Reduce the number of servers, storage and network equipment footprints, reduce the number of application instances and operating systems to be supported, reduce the complexity of backup and management, deploy technologies such as server and storage virtualization, clustering and centralization, including SAN and NAS.
2. Build well documented and tested data center systems management procedures.
The ability to minimize human errors and preventable outages is the key to minimizing down time
3. Acquire systems management tools to monitor, prevent outages, automate diagnostics and recovery, and report to stakeholders.
Tools are important to prevent and predict outages and avoid them
4. Make Business Continuity a strategic part of application and IT infrastructure planning.
Business Continuity, based on SLA targets (both IT internal and lines of business external) must be key system acquisition and design criteria

SMB Business Continuity affordability

There are two major factors in assessing affordability:

- ▶ How much the business can afford to lose
- ▶ How much the business can afford to pay

Basically, this is a risk and investment assessment. It is somewhat similar to a home owner's insurance. Although Business Continuity is more than loss recovery, it can be used to drive the positive aspects of the business. It can be leveraged to increase business, improve staff productivity and build confidence and trust with customers and partners.

Calculating affordability

To calculate affordability, especially for the SMB enterprise, you need to determine your *recovery objective* by asking the following questions:

- ▶ How much downtime can your business tolerate before it starts to hurt your bottom line (potential revenues and profits loss, customer satisfaction or defection, staff morale, business partnership breakage and government regulatory liabilities)? Is the affordable downtime in seconds, minutes, hours or days?
- ▶ How much data loss and what data loss will start to hurt bottom line? For what period of time?

You also need to determine your *budget objective* by asking the following questions:

- ▶ How much money loss can be attributed to the outages the business can afford?
- ▶ What are the odds of outage occurring?
- ▶ What is the percentage of the potential loss the business is willing and can afford to pay? The ratios vary by industries and business types (reliance on IT). They can range from 10% to >1% of the total IT annual budget (ongoing and capital).

SMB Business Continuity solution components

Figure 1 lists the components that typically make up a cost-effective SMB Business Continuity solution, according to their tier level of recovery. While your results will vary according to your specific requirements, this table can provide a good beginning guideline. You can use it to build a chart for your enterprise.

Typical BC Solution by Tier	Operating system clustering	Storage mirror	Database replication	Point in Time Copy	Tivoli Storage Manager	Tape Library	Tape	Services
Hot-Hot Tier 7	X	X	X	X	X	X	X	X
Hot - Standby Tier 6		X	X	X	X	X	X	X
Database replication Tier 5			X	X	X	X	X	X
Point in Time Copy Tier 4				X	X	X	X	X
Remote tape vault Tier 3					X	X	X	X
Remote warm site Tier 2					X	X	X	X
Cold Site Tier 1					X	X	X	X
No backup Tier 0								

Figure 1 SMB typical Business Continuity solution components

These terms are defined, along with description of the Business Continuity tiers, and the various types of solution components in *IBM System Storage Business Continuity: Part 1 Planning Guide*, SG24-6547.

Typical SMB Business Continuity solutions: Performance and downtime

This section shows the performance and downtime characteristics of typical Business Continuity solutions in the SMB environment. While your results will vary according to your specific requirements, the table in this section can provide a good beginning guideline to what you might expect at differing tier levels of recovery.

You can use Figure 2 to build a chart for your enterprise's Business Continuity solution. Components for typical SMB Business Continuity solutions—along with the definitions of these terms, the tiers, and the various types of solution components—are described in *IBM System Storage Business Continuity: Part 1 Planning Guide*, SG24-6547.

Typical BC Solution by Tier	Performance in event of unplanned outage	Downtime (typical)	Typical Solution Components Components are cumulative, each solution has as pre-req, solutions in lower tiers
Hot-Hot Tier 7	No impact	0	Clustered operating system with storage mirroring, database integration
Hot - Standby Tier 6	Just adequate to run the business	1-4 hours	Metro Mirror or Global Mirror
Database replication Tier 5	Just adequate to run the business	1-6 hours	Database-level integration and replication
Point in Time Copy Tier 4	Just adequate to run the business	4-8 hours	One to two tape drives, add DS4000 FlashCopy, Tivoli Storage Manager, server to host TSM
Remote tape vault Tier 3	Just adequate to run the business	8-16 hours	One to two tape drives, DS4000 disk to improve performance, Tivoli Storage Manager, server to host TSM
Remote warm site Tier 2	Just adequate to run the business	16-24 hours	One to two tape drives, Tivoli Storage Manager, server to host TSM
Cold Site Tier 1	Just adequate to run the business	24-72 hours	One to two tape drives, Tivoli Storage Manager, server to host TSM
No backup Tier 0	?? - if system available at all	> 72 hours	

Figure 2 Typical SMB Business Continuity solution - performance and downtime characteristics

The components shown in Figure 2 are not the only components or products that can be part of the solution. These are meant as general guidelines. The products shown are typical and can be substituted as specific client requirements dictate. Other variations of these typical solutions can include network attached storage (NAS) devices, centralized tape libraries, and other products for specific circumstances. SMB companies, just like larger enterprises, can scale up the tiers by deploying additional solutions and technologies as the business grows.

Summary

Business Continuity is, and will be, a key requirement for SMB to conduct business. Solutions and technologies continue to improve and affordable to SMB companies. It is important for SMB IT management to incorporate Business Continuity planning in their strategy and building systems and applications from the beginning. It will cost less and help drive their business objectives from the start.

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