



IBM RDX Removable
Disk Storage System

How to Protect Your Data With POWER9 Removable Storage

Power Systems

IBM Systems

The Problem

Not all small- to mid-size businesses (SMBs) have a data storage and protection strategy, and this could put them at risk. Small business owners typically have limited time, knowledge, experience or desire to dedicate to business continuity. Those that do back up their data often resort to using aging and technology-limited products with rudimentary processes.

- SMBs often do nothing or choose less reliable consumer-grade products, such as USB external HDDs or optical disks, to protect their critical data
- 48% of American SMBs have experienced data loss
- 32% of business owners surveyed think backing up company data is a hassle, because data backup consumes valuable IT management time
- More than 55% of SMBs have experienced a ransomware attack. And the most alarming result is the impact, often more than just stolen data. The cost of a ransomware attack is 10x higher than the ransom itself. Downtime, disruption and a potentially damaged business reputation present additional problems.
- 80% of businesses suffer setbacks and even failure due to loss of access to their data

In reality, SMBs have data backup and protection requirement needs that are similar, if not identical, to those of large businesses.

- Information is no less valuable to them than the data of a large business is to it.

- Small business legal/compliance requirements are increasing in much the same way as a large business.
- Digital assets are growing, requiring greater storage capacity (i.e., the volume of data to back up and recover is growing rapidly).
- Backup windows are shrinking from hours to minutes to support global, internet-driven operations.
- The exposure to data loss is the same as large businesses to fire, theft or natural disasters if data isn't moved off-site.
- Vulnerability to virus, sabotage, cybercrime and human error if data isn't backed up frequently and stored off-site/offline can have the same impact on a small business as a large one.
- Because energy costs are based somewhat on the volume of usage, SMBs may pay more per unit for storing inactive data on constantly spinning disks.
- No business can afford having their business operation go down. They need to be able to recover from a disaster quickly (in hours, not days).
- They often need to shuttle large amounts of data to other locations safely and securely.
- SMBs have smaller budgets for IT compared to larger organizations.

For a data storage and protection solution to be effective for SMBs, it must satisfy their needs.

- **Fast:** Users want instant access to their information. They don't want to wait hours for a backup to complete.
- **Simple:** Users want solutions that are easy to manage and administer
- **Secure:** Users want peace of mind against shock, disasters and the rising risk of cybertheft like ransomware
- **Rugged and Portable:** Users want a product that protects their data and allows for safe transport between locations or to off-site storage
- **Reliable:** Users want assurance that they can reliably restore their data from backup copies when needed
- **Affordable:** Users want a solution that will grow with them without becoming prohibitively expensive or requiring ongoing purchases of new hardware with subsequent generations of product
- **Scalable:** Users want a data backup system that they can expand easily by adding capacity with minimal costs as their business grows

It's not just SMBs that have this set of needs and requirements. Many enterprise companies have distributed/remote offices that have local data storage backup and protection needs. Think of large hotel chains, well-known fast-food restaurants, government organizations for public security and defense, banks and insurance companies, lawyers, tax accountants, doctors, and pharmacies. Each of these remote entities operate like an SMB, typically without dedicated IT personnel. These companies often want to implement a standard solution across multiple locations for consistency and compliance. And, of course, they want it as simple as possible to manage in order to minimize the need for in-depth training. Finally, several industries also have many of the same data storage and protection needs outlined above.

The geophysical industry is one example where capturing and backing up large amounts of data in the field in harsh unpredictable environments is a daily occurrence. Having a rugged, portable and reliable storage method is a must.

Another example is the video surveillance industry that's experiencing an exponential growth of data storage. They need or desire to store non-compressed video files and maintain them often for an extended period of time. A scalable system puts no cap on the amount of storage capacity they can utilize. Porting the data off-site for retention purposes is a need as well for an added level of security.

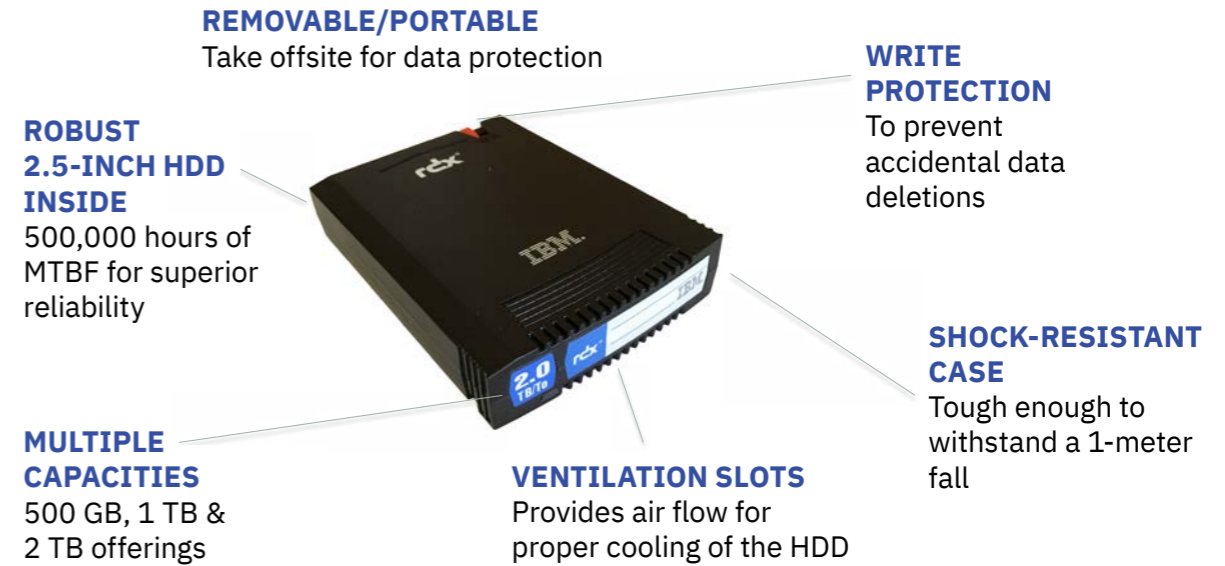
The Solution

The IBM RDX Removable Disk Storage System (IBM RDX) is the de facto standard for SMBs and distributed enterprises when data needs to be portable, removable and mobile. It's a key part of a sound data storage and protection strategy designed for backup, archive, data interchange and disaster recovery. The technology brings together the data protection benefits of removable media and the reliable performance of disk. It provides enterprise-grade performance (99.999% reliability and high speed) yet is very easy to use. Thousands of business customers use IBM RDX to store, protect and transfer mission-critical data every day.

The IBM RDX includes everything SMBs need to protect valuable data—without relying on a dedicated IT staff. Drag-and-drop functionality makes file access easy. And because it's compatible with most popular backup software, it's easy to schedule routine backups. It's also scalable, allowing you to configure right-sized options for your business. As your data needs expand, simply add more removable media. All IBM RDX drives or docking stations ("drives") are forward and backward compatible, eliminating the need for costly future hardware expenses. The IBM RDX is the only hardware-integrated removable media option for POWER9* servers.

IBM RDX CARTRIDGES

Combines the portability of tape with the performance of hard disk



IBM RDX DRIVES

- Provide the framework for user simplicity and data scalability
- USB 3.0 interface
- Sustained data transfer rates up to 100-plus MB/s
- Forward compatible with future cartridge capacities
- Drive letter stays with dock, allowing for spanning backup jobs across cartridges

EXTERNAL



INTERNAL 5.25" & 3.5"



IBM RDX Technology Features

Removability and Portability

The IBM RDX utilizes removable media in a protected housing that's ruggedly designed for portability. The media consists of a mobile 2.5-inch HDD suspended in a highly durable cartridge. HDD design features such as ramp-load heads and fluid dynamic bearings eliminate any concern about head-media contact or disk sticking. With its protective and robust cartridge design, the IBM RDX cartridge passes drop tests in excess of 1 meter onto a tiled concrete floor without damage. It's designed for static discharge resistance, fully protecting the disk drive electronics against electrostatic discharge events while handling the media or in long-term archive/off-site storage applications. Finally, the cartridge is also designed for vibration isolation and cooling.

Compatibility

The IBM RDX system is compatible with all common backup applications and will plug-and-play in most backup architectures implemented by POWER9 clients. IT professionals aren't needed to change or configure designs, implement complicated backup processes or add cost to derive the benefits of using IBM RDX backup technology.

Simplicity

No IT skills are required for setup and operation. The IBM RDX has all of the benefits of using a disk drive, with no special setup required. It's incredibly easy to use with drag-and-drop performance. In fact, managing an IBM RDX device with a backup application is easier than using a tape device and as easy as using cloud backup services.

Performance

Like all tape drives, HDDs vary in throughput and performance. The advantage of disk compared to tape is the capability to randomly access data once it's recorded. Even if data is written in a sequential format, IBM RDX can access and read data randomly, which essentially eliminates seek time and vastly improves single file restore times. The drives utilize a SuperSpeed USB 3.0 interface yielding high performance with sustained transfer rates in excess of 100-plus MB/s. It should be noted that very large business enterprises may use tape for longer term information storage along with RDX technology for storing more critical quick-access data.

Mechanical Reliability

The IBM RDX cartridge is an enclosed system with a protected HDD inside. When a cartridge is inserted into an IBM RDX drive, the cartridge mating with the drive is done via an electronic connection. In other words, the media isn't pulled out of the cartridge and loaded into the drive as is done with tape systems and optical storage, often resulting in cartridge damage or lost data. IBM RDX media stays protected within the cartridge, and is less prone to the physical damage, dirt contaminations or harsh environmental conditions that's always possible with tape media products. This ensures more than 5,000 load/unload cycles, giving IBM RDX media an insertion usage life span more than 50x higher than most tape media. And RDX media doesn't require any maintenance for cleaning, as is the case with tape.

Affordability

The generational progression of tape drives and media is well known in the industry. To take advantage of current generation media storage capacities, clients must purchase both new tape drive hardware and new media. And after a while, the older generation tape and DVD become obsolete, requiring hours of operator time for data migration. The IBM RDX system has no equipment obsolescence. IBM RDX drives have both backward and forward media compatibility. As larger-capacity cartridges are launched, they will work with your existing IBM RDX drive in your POWER9 server. So, all IBM RDX systems are compatible with all IBM RDX media, now and in the future. For your budget, this means that the IBM RDX system has a low initial cost and a superior total cost of ownership (TCO) compared to leading tape products technologies. (TCO for tape products can be lower when total capacity is extremely large and you don't factor in maintenance for drive/head cleaning, frequent media replacements and data migration costs).

Backing Up Disk Volumes With IBM RDX

With the typical incremental backups used by tape users, recovery of an entire backed up disk volume requires the time-consuming process of going through every piece of tape media that has been used in the process. And if the backup catalog is somehow contaminated, finding a targeted file requires a slow serial search of each affected tape cartridge. IBM RDX cartridges are available in native capacities of 500 GB, 1 TB and 2 TB. The technology allows for backup jobs to span across different cartridges.

If the cartridge is full, the system prompts the user to simply insert another cartridge. With no limit on storage capacity per backup job, combined with the IBM RDX drive's USB 3.0 transfer rates, clients can do full daily backups and can be assured of entire disk data recovery in very little time. And where an RDX application requires multiple RDX drive cartridges, the user is simply prompted to remove and re-insert each RDX cartridge during the backup operation.

Secure Data for Moving and Archiving

The rugged design of the IBM RDX media makes it perfect for data movement/shuttling and data exchange between locations. So, when transporting, it's important to prevent the media from unauthorized access. IBM RDX media can be secured via most commercially available backup software offerings with AES 256-bit encryption and password protection.

Isn't RAID Backup Enough?

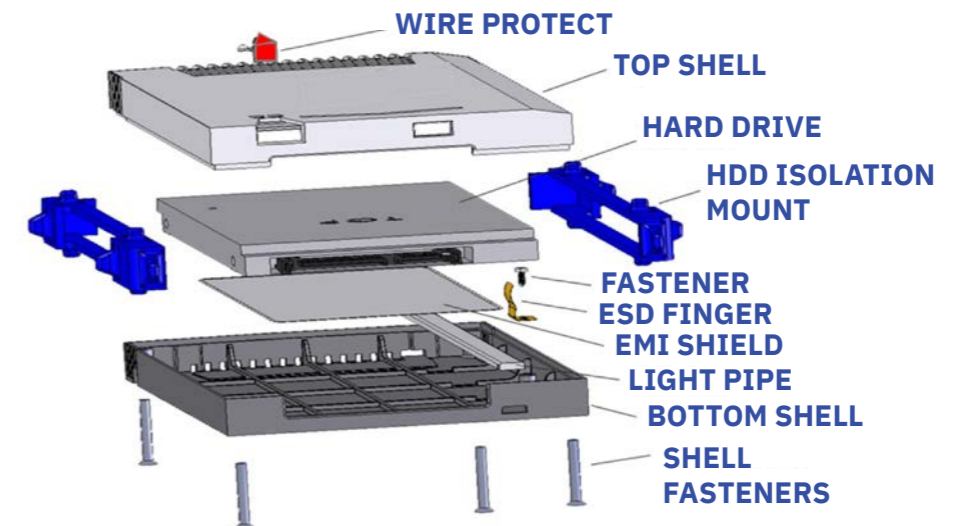
Many users often feel confident that RAID is a sufficient method for protecting their data because the data can be recovered if a disk fails. But what happens if there's a larger system failure, a virus attack, theft, disaster or even simple data deletion, which happens more often due to an increasing trend for cyberattacks? RAID technology doesn't protect against any of these incidents. By having local and off-site copies of the SMB's data on IBM RDX media, they are protected from any of these types of events.

IBM RDX Versus Cloud Storage

Backing up to the cloud (i.e., paying for backup as a service) is becoming more and more popular. But there are still concerns about security, bandwidth and cost. Users often worry if their data is safe against spying eyes or manipulation. Network bandwidth is also still an issue for cloud backup. Many SMBs are struggling with getting backups to the cloud with full system protection. And in the event of a disaster or failed equipment, how fast can users establish a network connection, retrieve their data, and get their systems up and running? Often, people don't consider the time to download several TBs of data over the internet. This can take days, depending on internet connection speeds, something no business can afford. Finally, storage backup cost needs to be considered. Cloud providers usually offer low initial prices, but with increasing capacity needs, pricing tends to increase. Also, the cost to get advanced backup functionalities or a restore can be significantly higher than the normal backup operation.

IBM RDX is an affordable alternative to SMB users who share the cloud concerns described above. Since it resides in a known and protected environment, backup data on an IBM RDX drive is secure. And because IBM RDX drives are directly connected to the server, backup is fast and is done locally rather than over a network/internet. Restores can be easily performed with RDX even if the system needs to be rebuilt from scratch. Lastly, if a POWER9 user has already deployed a good cloud strategy, IBM RDX can be used as a supplement to store most critical data locally.

IBM RDX CARTRIDGE ARCHITECTURE



IBM RDX Versus Consumer-Grade

External USB Disk Drives

As you have now learned how IBM RDX helps manage and protect your data in numerous environments, we must also compare advantages of RDX technology to consumer-grade external USB disk drives. While external USB disk drives purchased at a local electronics store do store data at a lower price than IBM RDX systems, there are significant and critical differences. First of all, these external drives are designed for a personal computer, not a professional environment. IBM RDX media use business-grade HDDs that provide a more robust level of reliability and durability. As described earlier, IBM RDX media also has a rugged design that can withstand drops, shocks and electrostatic discharge, providing a much longer data protection lifetime. The risk of failure with low-cost disk drives due to shock and electrostatic, in particular, is higher than RDX. Furthermore, IBM RDX simplifies media handling as it doesn't require the constant plugging and unplugging of cables as is the case with an external USB disk drive. The table at right shows the main comparison points between these technologies. In essence, low-cost USB drives still require some form of data backup; IBM RDX can be both a data storage and a backup device.

Comparison of IBM RDX and USB Drives

	IBM RDX	External HDD	IBM RDX Advantage
Static Protection	Yes	No	IBM RDX is designed, tested and has passed specific IBM ESD requirements
Drop Protection	Yes	No	Cartridge and drive durability translates into longer life and reliability
Vibration Isolation	Yes	No	Operating vibration resistance means better performance when mounted on multi-disk, multi-fan servers
Portable	Yes	No	Cartridges are designed to be portable for off-site storage and archive
Expandable	Yes	No	Ability to add cartridges and dynamically increase capacity
System Integration	Yes	No	IBM RDX can be integrated into systems for easier handling
Media Spanning	Yes	No	Enables data transfers that are larger than a single cartridge or disk device
Business Security and Compliance	Yes	No	Business-grade security features are available for IBM RDX with commercial-grade backup software
Cooling and Ventilation	Yes	No	IBM RDX drive and cartridge design are optimized for cooling and ventilation, which translates into longer life and reliability
Business-Grade	Yes	Consumer Only	IBM RDX is designed for business-grade applications to backup, archive and store business-critical data

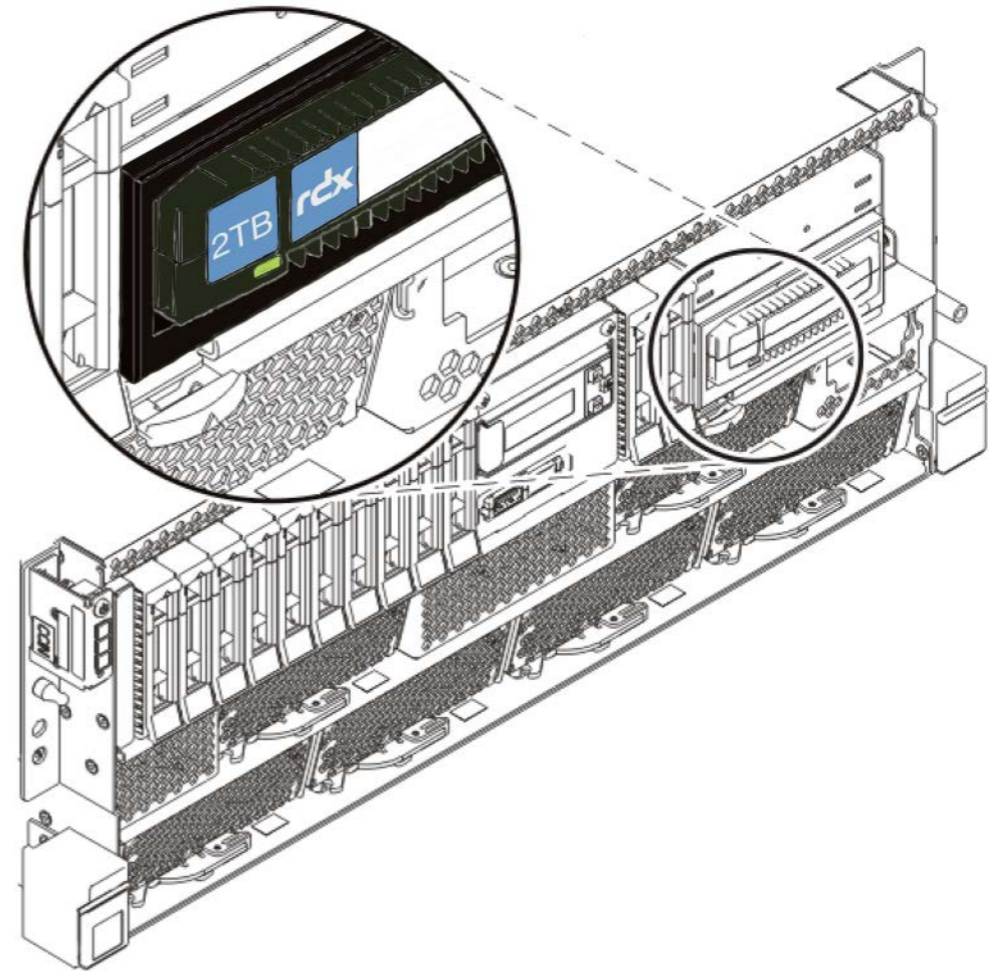
IBM RDX Product Offerings

POWER9 server model numbers that can be configured with an IBM RDX 3.5-inch internal USB 3.0 drive are S914, S924 and H924. E950 and E980 servers can be ordered with IBM RDX external drives. The IBM 7226 Multi Media Storage Enclosure can also be attached in POWER9 rack environments to supply IBM RDX technology in shared POWER9 system environments.

Conclusion

The growth of corporate digital assets and issues such as compliance and disaster recovery have expanded SMB storage requirements. Feature for feature, the IBM RDX Removable Hard Disk Storage System is a reliable, flexible and expandable solution designed to meet these growing data protection needs.

Enterprise organizations with many distributed offices/locations along with many vertical industries have similar needs for rugged, removable, portable, reliable and secure data storage. IBM RDX is the only enterprise-grade removable storage technology integrated into POWER9 servers available to meet these specific needs.



Next Steps

Before you make an investment in POWER9 servers, take the time to develop a data storage and protection strategy. Consider the following questions to see if IBM RDX is right for your business.

- How much data are you backing up? IBM RDX cartridge capacities are 500 GB, 1 TB and 2 TB. And you can simply add more removable cartridges as your data needs expand. Remember, all IBM RDX drives are forward and backward compatible, a perfect data backup solution for most SMBs!
- How often are you backing up? No matter how frequent your business backup needs may be, you can use software to create a backup schedule and establish a “set and forget” backup solution. IBM RDX is compatible with most industry-leading backup software on the market today including Veritas, Veeam and Acronis.
- How long does it take you to back up? IBM RDX systems are capable of backup speeds of up to 360 GB of data per hour.
- Are you managing your backups yourself without the support of IT staff? IBM RDX is a simple, intuitive, out-of-the-box backup solution. Users can perform drag-and-drop backups or establish an automated backup schedule utilizing commercially available software.
- Are you transporting your data off-site or between multiple office locations? IBM RDX is a hard drive in a ruggedized cartridge, capable of withstanding up to a 1-meter drop and protected for electrostatic discharge events while handling. RDX is your best choice if you are dealing with sensitive or regulated data that you need to share or transport off-site along with AES 256-bit encryption and password protections provided by most commercially available backup software.
- Are you following best practice guidelines by maintaining an off-site copy of your data? A typical SMB backup solution suggests a three-cartridge rotation to implement a 3-2-1 backup strategy (i.e., keep at least three (3) copies of your data, store two (2) backup copies on different storage media, with one (1) of them located off-site).
- Where are you currently putting your backups today? Are you using the cloud exclusively, aging save/restore technologies or consumer-grade products with the limitations highlighted in this e-book? Removable media is a key part of a sound data storage and protection strategy. IBM RDX is the only hardware integrated removable storage option offered on POWER9 servers.



CONFIGURE A SERVER
WITH IBM RDX HERE

ibm.com/it-infrastructure/power/scale-out