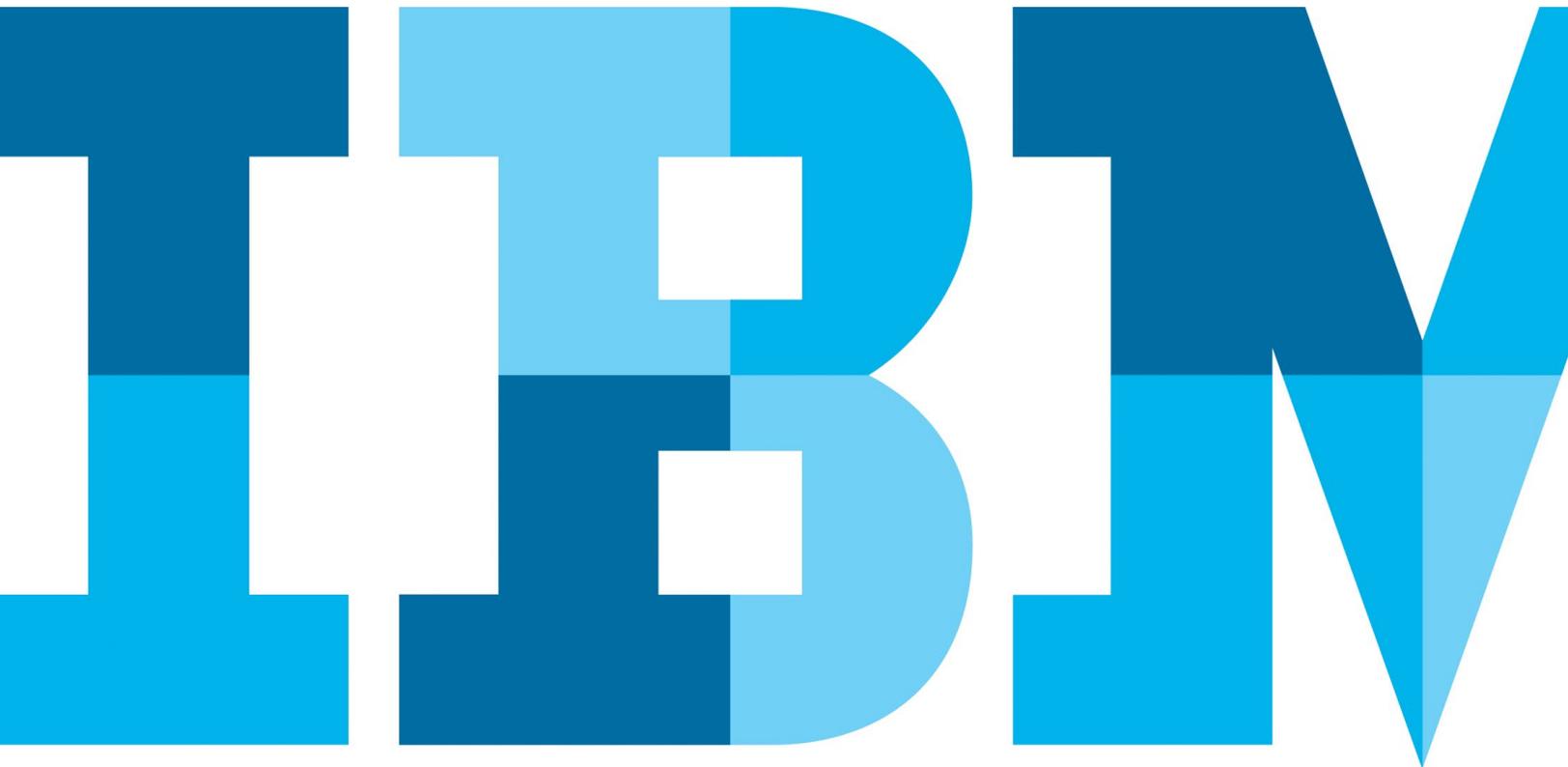


# Efficient, fast and reliable backup and recovery solutions featuring IBM ProtecTIER deduplication

*Protect More. Store Less.®*



IBM® ProtecTIER® offers revolutionary and patented inline deduplication technology that enables you to easily harness the power of deduplication to more efficiently and reliably protect and retain data longer and helps save money by reducing energy, floor space and maintenance requirements.

### Design factors to consider when evaluating deduplication solutions

When evaluating deduplication solutions, there are five important design factors to consider. Understanding these factors can help ensure that the deduplication solution you select today will meet your needs well into the future.

#### Performance

With data growing at an exponential rate and backup windows shrinking, the deduplication solution you choose needs to be able to backup and, more importantly, recover data as fast as possible.

Some deduplication vendors use post-processing because their technology is too slow to deduplicate inline. Some tout impressive performance results that are only theoretically achievable in lab environments with optimized data sets that contain 100 percent redundant data, not the true performance you would see in a production environment. Others optimize their products to deliver impressive backup performance but hide the fact that restoring data from those systems will be painfully slow.

ProtecTIER solutions provide inline deduplication that helps eliminate redundant data in real time as it is being received from backup servers. A single ProtecTIER solution is designed to provide up to 2500 MBps (9 TB an hour) or more sustained backup throughput and even faster restores at up to 3200 MBps (11.5 TB/hr) or more sustained recovery performance. IBM performance numbers are based on real customers running ProtecTIER in production environments, not theoretical numbers achievable only in a vendor's lab.



#### Capacity

*Business requirements are driving the need to retain large and ever-growing amounts of data onsite, and to be able to restore that data quickly when needed.*

ProtecTIER is designed to easily scale and handle growing data requirements for organizations of all sizes. ProtecTIER offers a revolutionary deduplication technology that helps enable the disk repository of a single ProtecTIER server to scale up to 1 PB without negatively affecting performance. And unlike hash-based deduplication products whose hash table grows linearly with the amount of data stored, the patented ProtecTIER's HyperFactor technology is designed to manage a petabyte repository with only a 4 GB index file.

#### Data integrity

*Information is your company's lifeline, and data integrity is essential. The deduplication solution you choose must ensure that your data is secure.*

Most deduplication products on the market today use a hashing algorithm to determine if data is a duplicate. With these products, there is the possibility that unique data will be discarded,

resulting in data corruption. ProtecTIER's HyperFactor is a unique deduplication technology that takes a non hash-based approach that performs a bit-for-bit comparison of data before deduplication. With this approach, there is a reduced risk of unique data being discarded due to a hash collision.

### Non-disruption

*With increasing pressure to improve service levels, the deduplication solution you choose must perform without disrupting daily production operations.*

With post-processing products, backup administrators already struggling to stay within backup windows also have to deal with an additional “deduplication window” that is designed to take four times as long to complete, bringing production operations to a halt. ProtecTIER's high-performance inline deduplication approach helps ensure that backup windows are met and that data is available for restore operations immediately.

### Production proven

*Although deduplication is not a new technology, many vendors failed to recognize its importance and are late to provide proven offerings.*

Since ProtecTIER was introduced in 2005, more than 182 PB of physical capacity have been deployed behind ProtecTIER servers into production environments in various industries around the world—more than any other vendor in the market today. Make sure that the deduplication solution you choose has been tested and proven in production environments with performance and capacity requirements similar to your own. Verify that the solution you choose is backed by quality and timely vendor support that will protect your investment for the long term.



### Building a Backup and Recovery Solution

Storage management software works in concert with storage hardware to help reduce the risks associated with data loss while helping to manage costs, reduce complexity, and address compliance with regulatory data retention requirements. IBM Tivoli® Storage Manager (TSM) offers centralized protection based on smart-move and smart-store technology providing faster backups and restores that require lesser network and storage resources.

Combining the data protection capabilities of TSM with IBM ProtecTIER solutions helps reduce the time and cost associated with managing backup and recovery processes and helps eliminate cumbersome tape media management and maintenance activities like tape head cleaning and tape re-tensioning.

IBM ProtecTIER solutions also support other leading backup and recovery applications.

**IBM System Storage TS7600 ProtecTIER family at a glance**

	<b>TS7620 Appliance Express</b>	<b>TS7650 Gateway</b>
Solution capabilities		
Deduplication method	Inline	Inline
Deduplication technology	HyperFactor®	HyperFactor
Backup performance (per node)	Up to 300 MBps	Up to 1600 MBps (5.7 TB/hr)
Backup performance (two node cluster)		Up to 2500 MBps (9 TB/hr)
Restore performance (per node)	Up to 300 MBps	Up to 2000 MBps (7.2 TB/hr)
Restore performance (two node cluster)		Up to 3200 MBps (11.5 TB/hr)
Useable physical capacity	5.5 to 35 TB	Up to 1 PB
Nominal capacity <sup>1</sup>	Up to 875 TB	Up to 25 PB
Virtual libraries per repository	4	16
Virtual drives (per node)	64	256
Virtual drives (two node cluster)		512
Virtual cartridges	8192	512 K
File systems per repository	Up to 4	Up to 128
Files per file system	Up to 1M	Up to 1M
Files per repository	Up to 4M	Up to 16M



## For more information

To learn more about how IBM ProtecTIER deduplication solutions can help you protect data more efficiently and reliably, contact your IBM representative or IBM Business Partner, or visit: [ibm.com/systems/storage/tape/protectier](http://ibm.com/systems/storage/tape/protectier)



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Actual available storage capacity may be reported for both uncompressed and compressed data and will vary and may be less than stated.

<sup>1</sup> Assuming a 25:1 deduplication ratio



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