IBM FlashSystem 5000 and 5100 for Mid-Market
IBM FlashSystem 5010, 5030, and 5100

The IBM® FlashSystem® 5010, 5030, and 5100 help you meet the challenges of rapid data growth while staying within limited IT budgets.

These systems allow you to quickly consolidate, simplify, and optimize your IT infrastructure with an efficient, highly flexible, yet easy-to-use storage system with powerful virtualization features.

This IBM Redpaper® publication is intended for mid-market clients.

IBM FlashSystem 5010, 5030, and 5100 are affordable, high-performance storage solutions that are easy to use and grow. They are designed for businesses of all sizes including small, remote, and branch offices and regional and enterprise clients. They are a smarter, self-optimizing solution that requires less management, which enables organizations to overcome their storage challenges.

Midrange workloads: IBM FlashSystem 5010, 5030, and 5100 offer the performance, functionality, and cost-efficiency that is demanded by midrange workloads.
IBM FlashSystem 5010, 5030, and 5100 deliver advanced capabilities. Designed to provide organizations with the ability to consolidate and share data at an affordable price, these systems offer advanced enterprise software capabilities that until now were found only in more expensive systems. Consider the following points:

▶ IBM FlashSystem 5010, 5030, and 5100 are software-defined storage systems that are built with IBM Spectrum® Virtualize software and designed to consolidate workloads into a single storage system for ease of management and use. These systems reduce costs, and feature highly scalable capacity, high performance, and availability.

▶ IBM FlashSystem 5010 and 5030 offer the performance, functionality, and cost-efficiency that is demanded by entry and midrange workloads.

▶ The FlashSystem 5030 adds CPU power and other enterprise features, such as data reduction, high availability configurations, and data-at-rest encryption. Hosts can attach by using SAS, 16 Gb Fibre Channel, or iSCSI.

▶ IBM FlashSystem 5100 provides greater functionality, including end-to-end NVMe-accelerated performance, IBM FlashCore® Module technology, and support for Storage-Class Memory (SCM) drives for ultra-low latency.

▶ All of these systems support concurrent migration from your existing storage. In addition, FlashSystem 5100 supports external storage virtualization for over 500 storage systems from IBM and others, which enables storage consolidation and simplification through improved cross-system consistency.

These affordable storage solutions offer a wide range of enterprise-grade features that can easily evolve as your business grows. Reliable and fast data access is critical for running your business. Whatever the application, your data must be available, secure, and flexible for fast analysis and processing.

**IBM FlashSystem 5010, 5030, and 5100 highlights**

In this section, we highlight the key features of the IBM FlashSystem 5010, 5030, and 5100 solutions.

**IBM FlashSystem 5010**

IBM FlashSystem 5010 offers the following key features:

▶ Virtualization of internal storage

▶ 3-Site replication

▶ Local and remote replication (snapshots, disaster recovery, and copy and migrate to cloud)

▶ Easy Tier® AI-driven automated tiering

▶ Transparent data migration

▶ VMware and Red Hat OpenShift container integration
IBM FlashSystem 5030
In addition to the features of IBM FlashSystem 5010, IBM FlashSystem 5030 offers the following features:

- Data reduction (compression and deduplication)
- Scale-out clustering
- IBM HyperSwap® high availability
- Encryption

IBM FlashSystem 5100
IBM® FlashSystem 5100 includes the following advanced functions:

- NVMe flash and FC-NVMe host connections
- High-performance compression and encryption with IBM FlashCore® Modules
- External storage virtualization of more than 500 storage systems from IBM and others
- Storage-Class Memory

IBM FlashSystem family specifications
The specifications of the IBM FlashSystem® family are shown in Figure 2 on page 4.
<table>
<thead>
<tr>
<th></th>
<th>FlashSystem 5010</th>
<th>FlashSystem 5030</th>
<th>FlashSystem 5100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Software</strong></td>
<td>IBM Spectrum Virtualize</td>
<td>IBM Spectrum Virtualize</td>
<td>IBM Spectrum Virtualize</td>
</tr>
<tr>
<td><strong>Connectivity (Standard)</strong></td>
<td>1Gb Management/iSCSI</td>
<td>10Gb Management/iSCSI</td>
<td>10Gb Management/iSCSI</td>
</tr>
<tr>
<td><strong>Connectivity (Optional)</strong></td>
<td>16Gb FC 12Gb SAS 25Gb iSCSI 10Gb iSCSI</td>
<td>16Gb FC 12Gb SAS 25Gb iSCSI 10Gb iSCSI</td>
<td>32Gb FC – SCSINVMeoF 16Gb FC – SCSINVMeoF 25GbE – iSCSI/iSER</td>
</tr>
<tr>
<td><strong>Cache (per system)</strong></td>
<td>16GB, 32GB or 64GB</td>
<td>32GB or 64GB</td>
<td>64GB, 192GB or 576GB</td>
</tr>
<tr>
<td><strong>Capacity (per system)</strong></td>
<td>Up to 392 drives</td>
<td>Up to 504 drives</td>
<td>Up to 760 drives</td>
</tr>
<tr>
<td><strong>Capacity (per clustered system)</strong></td>
<td>--</td>
<td>Up to 1,008 drives</td>
<td>Up to 1,056 drives</td>
</tr>
<tr>
<td><strong>NVMe Drives</strong></td>
<td>--</td>
<td>--</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>SCM Drives</strong></td>
<td>--</td>
<td>--</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Internal Virtualization</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Thin Provisioning</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Data Migration</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>FlashCopy snapshots</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Remote Mirroring</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Easy Tier</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Encryption – Internal &amp; External</strong></td>
<td>--</td>
<td>Yes (Internal only)</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Compression</strong></td>
<td>--</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Deduplication</strong></td>
<td>--</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>System Clustering</strong></td>
<td>--</td>
<td>Yes (2-way)</td>
<td>Yes (2-way)</td>
</tr>
<tr>
<td><strong>HyperSwap</strong></td>
<td>--</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>External Virtualization</strong></td>
<td>--</td>
<td>--</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Power (DC is -48v)</strong></td>
<td>AC or DC</td>
<td>AC or DC</td>
<td>AC</td>
</tr>
<tr>
<td><strong>NEBS / ETSI</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>--</td>
</tr>
</tbody>
</table>

*Figure 2  FlashSystem 5010, 5030, and 5100 specifications*
Reduce complexity with one storage platform: IBM FlashSystem

For years, storage vendors introduced multiple platforms, each addressing specific requirements. These platforms add complexity because each one is different: different APIs, different management, and troubleshooting tools, different access to the cloud. And that is for only a single vendor. Consider a multi-vendor installation and the problem becomes even more complex.

**Single platform:** IBM FlashSystem 5010, 5030, and 5100 deliver entry-level, enterprise solutions at a midrange price.

In addition, data can transparently move back and forth to hybrid cloud environments by taking advantage of IBM Spectrum® Virtualize for Public Cloud.

Using the rich functionality that is provided by the IBM FlashSystem platform, clients can easily configure, secure, and manage their environment (see Figure 3).

The IBM FlashSystem family can be used as persistent, highly available storage in Red Hat OpenShift and other container environments. This feature improves flexibility, simplifies deployment, and lowers costs.

FlashSystem is proven and dependable. More than 193,500 systems are running IBM Spectrum Virtualize, managing more than 13.1 exabytes of data\(^1\) and delivering “six nines” of availability.

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\(^1\) Based on IBM internal measurements – June 2020.
Reduce footprint, complexity, and overhead

The business solution features and benefits are listed in Table 1.

Table 1  Business solution features and benefits

<table>
<thead>
<tr>
<th>Business need</th>
<th>Reduce space and operational costs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solution</td>
<td>IBM FlashSystem 5010, 5030, and 5100 models are available on a single 2U enclosure. These systems can range 720 TB - 2 PB with the ability to cluster, scale capacity, and performance to many petabytes and hundreds of thousands of input/output operations per second (IOPS).</td>
</tr>
</tbody>
</table>
| Benefits      | Save on:  
|               | ▸ Capital expenditures  
|               | ▸ Operational expenditures  
|               | ▸ Valuable rack and floor space  
|               | ▸ Power and cooling cost |

IBM Spectrum Virtualize software that is included with the IBM FlashSystem family enables you to optimize storage and maximize efficiency, which dramatically saves cost, floor space and time, freeing up staff and increasing productivity.

IBM Spectrum Virtualize includes the following components:

▸ IBM Easy Tier

IBM Easy Tier provides automatic nondisruptive migration of the most frequently accessed data to the highest performing storage tier while moving less active data to lower performing and less costly storage. No user action is needed because Easy Tier uses AI technologies to recognize data use patterns. By servicing most of the application workload from the fastest storage, Easy Tier accelerates application performance and improves cost efficiency.

▸ Data Reduction Pools

Data reduction pools increase usable capacity by up to five times with sophisticated compression and deduplication technologies2. When combined with storage virtualization, data reduction pools can increase the effective capacity of existing storage, extending its life and further reducing costs.

In addition, SCSI UNMAP support automatically frees storage space when servers delete data.

The benefits of data reduction include reduced acquisition cost, reduced space, and lower power and cooling costs throughout the system lifetime.

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2 From IBM FlashSystem 5030 on.
Easy to manage with cloud-based IBM Storage Insights
The features and benefits of IBM Storage Insights are listed in Table 2.

### Table 2  IBM Storage Insights features and benefits

<table>
<thead>
<tr>
<th>Business need</th>
<th>Solution</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease and simplicity of monitoring, managing, and supporting storage systems.</td>
<td>IBM Storage Insights is a cloud-based, AI-driven storage management solution that provides a unified view of your storage environment with key capacity and performance information, planning, reporting, alerts, and streamlined support access. IBM Storage Insights offer best practices for monitoring and managing the clients’ storage environments. The service collects approximately 23 million data points per day from each storage system and works to predict and prevent issues before they affect business.</td>
<td>Understand how your systems are operating and performing, and plan for the future. With IBM Storage Insights, approximately 66% of issues are resolved automatically, and when support is needed, a 40% faster action plan after ticket opening, which results in faster resolution.</td>
</tr>
</tbody>
</table>

Cloud-based IBM Storage Insights provides a single dashboard that gives you a clear view of all of your IBM block storage (see Figure 4). You can make better decisions by seeing trends in performance and capacity. With storage health information, you can focus on areas that need attention. IBM Storage Insights provides a clear view of your environments without the need to install or maintain complex software.

![Storage Insights dashboard](image.png)

**Figure 4  Storage Insights dashboard**
What’s next: Where to get help

The IBM FlashSystem family is simple, but sophisticated. IBM FlashSystem 5010, 5030, and 5100 bring enterprise features and functions to smaller, mid-market businesses, such as yours.

The IBM FlashSystem family is fast, efficient, easy, resilient, and flexible. Everything is simple from configuration, management, and security to support and the use of IBM Storage Insights. The platform also is scalable, tiers easily, and moves data seamlessly. It also is integrated with other application layers, such as containers, VMware, or Hyper-V, and is easy to protect and upgrade.

With the help of IBM and its Business Partners, you can get everything that you need for operations in a single innovative platform that meets all of your storage needs.

Resources for more information
For more information about the concepts that are highlighted in this paper, see IBM FlashSystem 5000 Family Products, SG24-8449.

For more information or for answers to questions, contact your IBM Business Partner.
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