

# IBM System Storage N3000 Express

*Advanced system designed to enable outstanding,  
cost-effective deployment versatility*



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## Highlights

- Leverage a high-performing and flexible operating system (OS), data management software, and redundancy for continuous operations
  - Achieve better data protection and retention with support for disk-based backup with file- or application-level recovery
  - Simplify management by performing on-the-fly provisioning with self-diagnosing systems
  - Improve versatility through support for concurrent file and I/O block serving over Ethernet and Fibre Channel storage area network (SAN) infrastructures
  - Scale SAN and network-attached storage (NAS) to tens of petabytes without reconfiguring running applications, using Clustered Data ONTAP
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The promise of expanding the data center with small, low-cost servers has led to an unintended consequence—“stranded storage” from internal disks or direct-attached storage (DAS) solutions. IT professionals today are overwhelmed by the amount of data they have to manage. They are challenged by the need to keep pace with their organization’s growing business, to improve backup and restore effectiveness, and to implement disaster-recovery solutions without overwhelming IT staff—often on a shoestring budget. This has led IBM to develop solutions that improve storage efficiency and data protection while considering the assets companies currently have.

IBM® System Storage® N3000 Express systems are designed to provide primary and secondary storage for small to midsized organizations, consolidating all of their fragmented application-based storage and unstructured data into one single-code system. Easily managed and expandable, this platform can help IT generalists increase their effectiveness. N3000 Express systems offer integrated data access, intelligent management software and data protection capabilities—such as those found in higher-end IBM System Storage N series systems—all in a cost-effective package. N3000 Express series innovations include internal controller support for SAS or SATA drives, expandable I/O connectivity and onboard remote management.

The N3000 Express series is compatible with the entire family of N series storage systems, which features a comprehensive lineup of hardware and software designed to address a variety of possible deployment environments.



The IBM System Storage N3150 system fits 48 TB of internal raw capacity into a 2U enclosure, with optional external expansion that can increase total system raw capacity to 240 TB. The IBM System Storage N3220 system contains 21.6 TB of internal raw capacity in a 2U enclosure, with optional external expansion that can increase total system raw capacity to 501 TB. The IBM System Storage N3240 system accommodates 96 TB of internal raw capacity in its 4U enclosure, with optional external expansion that can increase total system raw capacity to 576 TB. Whether used for primary or secondary storage, N3000 Express systems are intended to provide outstanding deployment versatility and connectivity to help satisfy your data protection and recovery needs at an affordable cost, while improving storage efficiency.

### Easy to use

N3000 Express systems offer versatility through single-code file storage—Common Internet File System (CIFS) and Network File System (NFS)—which also supports block storage. The Internet Small Computer System Interface (iSCSI) and Fibre Channel protocol can be used as primary or secondary storage. These systems are designed to address storage consolidation challenges as well as application server virtualization projects in an environment of continuous operation. With Data ONTAP Snapshot technology, N3000 Express systems enable storage efficiency by helping increase utilization through thin provisioning (with FlexVol and FlexClone technologies) and reduce storage space requirements.

### More business uptime

N3000 Express systems support dual-controller configurations with automated active-active failover for continuous operations. Using the N series SnapManager set of features, multipath high availability for business continuity, and intelligent data protection and disaster-recovery software, N3000 Express systems are intended to help keep your business running smoothly.



### Designed to help keep costs low

N3000 Express systems are designed to be entry points into the entire N series family. These systems provide multiple I/O connectivity options, a small footprint to hold high-density SAS or SATA drives, and external expansion using low-cost SATA drives and Fibre Channel disks for production applications, which leads to improved storage efficiency. They also utilize Data ONTAP Snapshot technology. These truly versatile systems can be deployed to address some of the most demanding application environments. For further systems administration time and cost advantages, N3000 Express systems come standard with remote onboard management capabilities to help simplify remote system monitoring, cycle power, execute firmware upgrades, enter console commands and run diagnostics to help maintain the reliability of the system and your business-critical data.

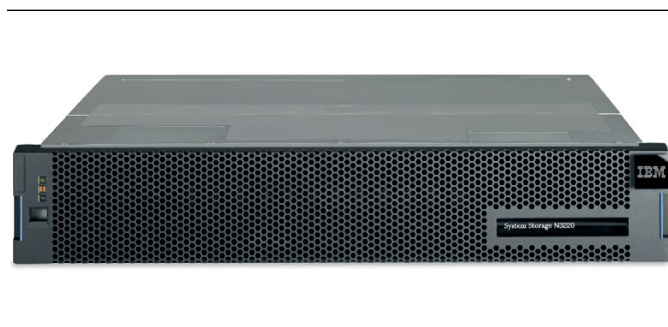
### Highly flexible storage

N3000 Express systems are designed for a broad range of deployment scenarios. The flexibility of these systems allows them to address the storage needs of a wide range of organizations, including distributed enterprises and data centers for

small to midsized organizations. N3000 Express systems also support sites with compute- and data-intensive enterprise applications, such as database, data warehousing, workgroup collaboration and messaging. N3000 Express systems function as “integration engines,” which enable users to simultaneously serve both file- and block-level data across single or multiple networks—demanding procedures that for some solutions require multiple, separately managed systems. N3000 Express systems support Ethernet and Fibre Channel environments, enabling economical NAS, Fibre Channel and iSCSI deployments.

### Affordable data protection for distributed enterprises

N3000 Express systems can offer significant advantages for distributed enterprises with remote and branch office sites. These organizations and others can use SnapVault and SnapMirror software functions to implement cost-effective data protection strategies by mirroring data back to a corporate data center. N3000 Express systems can help improve data availability and simplify backup and restore operations by implementing centralized backup through a single methodology. This helps reduce tape management requirements and the need for remote systems administration. Recovering data backed up on N3000 Express systems can be faster than recovering from tape.



### Support for low TCO and long-term investment protection

N3000 Express systems support a low total cost of ownership (TCO) with an affordable price point and easy installation, configuration and ongoing maintenance. Standardization on the N series storage architecture can help your organization reduce complexity and take advantage of your staff's IT skills. The innovative design of these systems results in a small form factor appliance that conserves scarce and valuable space in data centers or remote office locations. In addition, the ability to support single-code storage networks enables users to make the most of their current network investments while deploying a long-term, highly expandable and easily upgradeable storage solution.

### Automation, consolidation and simplification

N3000 Express systems are empowered with OnCommand, a multiprotocol manager that delivers a single-code experience to manage physical and virtual storage environments using integrated workflows and policy-driven automation. From a single interface, OnCommand enables the consolidation and simplification of shared IT storage management, delivering greater flexibility and efficiency.

Also, the capabilities of expandability, connectivity, data protection and retention, copy recovery, and availability integrate with leading IT management frameworks. The software provides common management services, integration, security and role-based access controls. OnCommand offers data and storage management tools that increase productivity and storage efficiency and provide agility for organizations of all sizes. It supports and integrates with higher-level IT orchestration and management frameworks, which helps users manage data from a business perspective, enabling administrators to manage data across applications, databases, servers and storage.

**IBM System Storage N3000 Express at a glance**

|  | N3150   | N3150   | N3220  | N3220   | N3240  | N3240   |
|--|---|---|--|---|--|---|
| <b>Machine type model</b>                                      | 2857-A15  | 2857-A25  | 2857-A12   | 2857-A22  | 2857-A14   | 2857-A24  |
| <b>Controller configuration</b>                                | Single  | Dual* (active/<br>active)                         | Single   | Dual* (active/<br>active)                         | Single   | Dual* (active/<br>active)                         |
| <b>Processor speed and type</b>                                | Dual-core Intel Xeon 1.73 GHz   |   |  |   |  |   |
| <b>Random access memory</b>                                    | 6 GB  | 12 GB   | 6 GB   | 12 GB   | 6 GB   | 12 GB   |
| <b>Fibre Channel ports (speed)</b>                             | N/A   | N/A   | 2 (8 Gbps) <sup>†</sup>  | 4 (8 Gbps) <sup>†</sup>                           | 2 (8 Gbps) <sup>†</sup>  | 4 (8 Gbps) <sup>†</sup>                           |
| <b>Ethernet ports (speed)</b>                                  | 4 (1 Gbps)<br>onboard<br>2 (10 Gbps) <sup>†</sup>   | 8 (1 Gbps)<br>onboard<br>4 (10 Gbps) <sup>†</sup> | 4 (1 Gbps)<br>onboard<br>2 (10 Gbps) <sup>†</sup>  | 8 (1 Gbps)<br>onboard<br>4 (10 Gbps) <sup>†</sup> | 4 (1 Gbps)<br>onboard<br>2 (10 Gbps) <sup>†</sup>  | 8 (1 Gbps)<br>onboard<br>4 (10 Gbps) <sup>†</sup> |
| <b>Maximum raw capacity</b>                                    | 240 TB  |   | 501 TB   |   | 576 TB   |   |
| <b>Maximum number of disk drives</b>                           | 60<br>12 internal   |   | 144<br>24 internal   |   | 144<br>24 internal   |   |
| <b>Disk drives supported in controller (type, size, speed)</b> | <p><b>SAS:</b> 600 GB, 600 GB self-encryption disk (SED), 900 GB, 900 GB SED, 1.2 TB small form factor (SFF) hard disk drive (HDD) (10k rpm), 4 TB nearline SAS, 4 TB nearline SAS SED HDD (7.2k rpm)</p> <p><b>SATA:</b> 1 TB, 2 TB, 3 TB, 3 TB SED HDD (7.2k rpm)</p> <p><b>SSD:</b> 100 GB, 200 GB, 800 GB</p> <p><b>Hybrid configuration:</b> 200 GB SSD with 2 TB SATA HDD, 900 GB SAS HDD, 4 TB nearline SAS HDD or 4 TB nearline SAS SED HDD</p>   |   | <p><b>SAS:</b> 450 GB, 600 GB, 600 GB SED, 900 GB, 900 GB SED, 1.2 TB SFF HDD (10k rpm)</p> <p><b>SSD:</b> 200 GB, 800 GB</p> <p><b>Hybrid configuration:</b> 200 GB SSD with 900 GB SAS HDD</p> |   | <p><b>SATA:</b> 1 TB, 2 TB, 3 TB, 3 TB SED HDD (7.2k rpm), 4 TB nearline SAS, 4 TB nearline SAS SED HDD (7.2k rpm)</p> <p><b>SSD:</b> 200 GB</p> <p><b>Hybrid configuration:</b> 200 GB SSD with 2 TB SATA HDD, 4 TB nearline SAS HDD or 4 TB nearline SAS SED HDD</p> |   |
| <b>Disk expansion units supported</b>                          | <p><b>EXN3000 – SAS disk storage expansion unit</b><br/>SAS: 300 GB, 450 GB, 600 GB, 600 GB SED HDD (15k rpm), 4 TB nearline SAS, 4 TB nearline SAS SED HDD (7.2k rpm)<br/>SSD: 200 GB<br/>SATA: 1 TB, 2 TB, 3 TB, 3 TB SED HDD (7.2k rpm)<br/>Hybrid configuration: 200 GB SSD with 2 TB SATA HDD</p> <p><b>EXN3500 – SAS disk storage small form factor expansion unit</b><br/>SAS: 450 GB, 600 GB, 600 GB SED, 900 GB, 900 GB SED, 1.2 TB HDD (10k rpm)<br/>SSD: 200 GB, 400 GB, 800 GB, 1.6 TB<br/>Hybrid configuration: 200 GB SSD with 900 GB SAS HDD</p> |   |  |   |  |   |
| <b>Warranty</b>  | 3 years for hardware and licensed software, customer-replaceable unit (CRU) and on-site service, next business day 9x5, service upgrades available  |   |  |   |  |   |

| <b>Software</b>  |   |  |   |
|--|---|--|---|
| <b>Operating systems</b>   | Data ONTAP<br>Clustered Data ONTAP*   |  |   |
| <b>Operating systems supported</b>   | Microsoft Windows, Microsoft Windows Server, Oracle Solaris, IBM AIX®, HP-UX, Mac OS and Linux host operating systems, as well as Microsoft Windows Server 2008 Hyper-V, Citrix XenServer and VMware ESX for server virtualization  |  |   |
| <b>Software features</b>   | <table border="0"> <tr> <td style="vertical-align: top;"> <b>Standard</b><br/>                     Integrated RAID manager including: RAID-DP<br/>                     Snapshot<br/>                     Fast Boot<br/>                     NIS<br/>                     DNS<br/>                     Flash Pool†<br/>                     FlexVol<br/>                     FlexShare<br/>                     NDMP<br/>                     Data compression**<br/>                     Storage encryption<br/>                     Deduplication<br/>                     HTTPFTP<br/>                     AV Connector‡                 </td> <td style="vertical-align: top;"> <b>Licensed</b><br/>                     CIFS<br/>                     NFS<br/>                     iSCSI<br/>                     FCP<br/>                     FlexClone<br/>                     Clustered Failover<br/>                     SnapLock§<br/>                     SnapMirror§<br/>                     SnapRestore<br/>                     Single Mailbox Recovery<br/>                     SnapVault<br/>                     SnapManager for Microsoft Exchange<br/>                     SnapManager for Microsoft SQL Server<br/>                     SnapManager for Microsoft Office SharePoint (SMSP)<br/>                     SnapManager for Oracle<br/>                     SnapManager for SAP<br/>                     SnapManager for Virtual Infrastructure<br/>                     SnapManager for Microsoft Hyper-V<br/>                     SnapDrive<br/>                     SyncMirror§<br/>                     OnCommand                 </td> </tr> </table> | <b>Standard</b><br>Integrated RAID manager including: RAID-DP<br>Snapshot<br>Fast Boot<br>NIS<br>DNS<br>Flash Pool†<br>FlexVol<br>FlexShare<br>NDMP<br>Data compression**<br>Storage encryption<br>Deduplication<br>HTTPFTP<br>AV Connector‡ | <b>Licensed</b><br>CIFS<br>NFS<br>iSCSI<br>FCP<br>FlexClone<br>Clustered Failover<br>SnapLock§<br>SnapMirror§<br>SnapRestore<br>Single Mailbox Recovery<br>SnapVault<br>SnapManager for Microsoft Exchange<br>SnapManager for Microsoft SQL Server<br>SnapManager for Microsoft Office SharePoint (SMSP)<br>SnapManager for Oracle<br>SnapManager for SAP<br>SnapManager for Virtual Infrastructure<br>SnapManager for Microsoft Hyper-V<br>SnapDrive<br>SyncMirror§<br>OnCommand |
| <b>Standard</b><br>Integrated RAID manager including: RAID-DP<br>Snapshot<br>Fast Boot<br>NIS<br>DNS<br>Flash Pool†<br>FlexVol<br>FlexShare<br>NDMP<br>Data compression**<br>Storage encryption<br>Deduplication<br>HTTPFTP<br>AV Connector‡ | <b>Licensed</b><br>CIFS<br>NFS<br>iSCSI<br>FCP<br>FlexClone<br>Clustered Failover<br>SnapLock§<br>SnapMirror§<br>SnapRestore<br>Single Mailbox Recovery<br>SnapVault<br>SnapManager for Microsoft Exchange<br>SnapManager for Microsoft SQL Server<br>SnapManager for Microsoft Office SharePoint (SMSP)<br>SnapManager for Oracle<br>SnapManager for SAP<br>SnapManager for Virtual Infrastructure<br>SnapManager for Microsoft Hyper-V<br>SnapDrive<br>SyncMirror§<br>OnCommand   |  |   |
| <b>Clustered Data ONTAP support</b>  |   |  |   |
| Cluster nodes  | Up to four††  |  |   |
| Cluster data communication interconnect  | 10 GbE  |  |   |
| Cluster capacity   | Up to 864 TB  |  |   |
| Storage protocols  | Fibre Channel, iSCSI, NFS, parallel NFS (pNFS), CIFS or Server Message Block (SMB)  |  |   |

## Extended innovation through clustered architecture

The Clustered Data ONTAP OS can help address the challenges of managing growing and dynamic businesses by further extending the innovation of Data ONTAP. This optional, clustered architecture scales and adapts to the environment's changing needs, reducing risk and cost. Clustered Data ONTAP is designed to help eliminate downtime, enabling operators to service their infrastructures without disrupting access to user data and applications—even during regular business hours.

Proven operational efficiency helps to simplify the overall storage environment and manage the storage infrastructure at scale by automating important processes and increasing productivity. Users can add capacity as needed across both SAN and NAS environments—without the disruptive hardware upgrades required by some storage vendors.

Clustered Data ONTAP provides up to four storage controllers (or nodes) managed as a single logical pool, so operations scale even more easily.

## Why IBM?

When storage is part of the problem and not part of the solution, IBM can help. IBM offers innovative technology, open standards, excellent performance, and a broad portfolio of storage-proven software, hardware and solutions offerings—all backed by the world-class service and support that set IBM apart. As a market leader in the storage industry, IBM can help you handle the challenges that your organization encounters.

## For more information

To learn more about IBM System Storage N3000 Express systems, please contact your IBM representative or IBM Business Partner, or visit:

[ibm.com/systems/storage/network](http://ibm.com/systems/storage/network)

For N3000 Express series modular disk storage system technical specifications and optional adapters available, please visit: [ibm.com/systems/storage/network/n3000/appliance](http://ibm.com/systems/storage/network/n3000/appliance)

For N3000 Express series interoperability, please visit: [ibm.com/systems/storage/network/interophome.html](http://ibm.com/systems/storage/network/interophome.html)

For an overview of N3000 Express series software features, functions and benefits, please visit: [ibm.com/systems/storage/network/n3000/appliance/features.html](http://ibm.com/systems/storage/network/n3000/appliance/features.html)

Additionally, IBM Global Financing can help you acquire the IT solutions that your business needs in the most cost-effective and strategic way possible. We'll partner with credit-qualified clients to customize an IT financing solution to suit your business goals, enable effective cash management, and improve your total cost of ownership. IBM Global Financing is your smartest choice to fund critical IT investments and propel your business forward. For more information, visit: [ibm.com/financing](http://ibm.com/financing)

\* Clustered Data ONTAP is available as an option.

Clustered Data ONTAP only supports dual-node systems.

† Optional ports available with add-on mezzanine cards.

‡ Supported on EXN3000 and N3240 when SSD and SATA HDD are installed.

§ Not supported in Clustered Data ONTAP.

\*\* Available only in Data ONTAP 8.1 or later.

†† Cluster nodes are single-storage controllers. A cluster can mix controllers of different models.

‡‡ Vendors supported: McAfee, Symantec, TrendMicro



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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.



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