IBM DS8880 Generation 2 storage family delivers a 7.68 TB flash capacity option and additional functions

Table of contents

At a glance

IBM$^{(R)}$ DS8880 Generation 2 models offer high-capacity 7.68 TB flash drives, enablement of FlashCopy$^{(R)}$ in transparent cloud tiering, and containers support for IBM Storage.

Overview

IBM DS8880 Gen 2 family offers:

- New high-capacity 7.68 TB flash drive sets that increase the overall system capacity to 368.64 TB per flash enclosure pair in the same physical space
- Enablement of FlashCopy in transparent cloud tiering
- New containers support for IBM Storage

Key prerequisites

All announced features and functions that are supported on the IBM DS8000$^{(R)}$ series require DS8000 LMC 8.8.40.xx.xx (bundle version 88.40.xxx.xx), or later.

Planned availability date

June 8, 2018

Availability of programs with an encryption algorithm in France is subject to French government approval.

Description

High-capacity flash drive set

IBM DS8880 offers a new high-capacity 7.68 TB flash drive set (feature number 1624) to provide additional performance options with flexible capacity to address application and business requirements.

This high-capacity flash drive is in addition to the already supported 400 GB, 800 GB, 1.6 TB, and 3.2 TB high-performance flash drive sets, and the 3.84 TB high-capacity flash drive.

Easy Tier[(R)] has been enhanced to support the use of high-capacity flash drives and will treat them as a separate tier when combined with high-performance flash drives. This enables both types of flash drives to be contained in the same storage pool with Easy Tier promoting the most active data to the high-performance flash drives.

Intermixing of high-performance and high-capacity flash drives in the same enclosure is not supported.

With this added flash option, the maximum flash storage capacity supported per flash enclosure pair is 368.64 TB raw.

FlashCopy support in transparent cloud tiering

Transparent cloud tiering currently supports migration and recall of data to simplex and volumes participating in a metro mirrored relationship. This provides the capability to recall data and maintain disaster recovery and high availability positions.

Transparent cloud tiering is adding support for migration and recall of data to volumes that are in a FlashCopy relationship, broadening its capabilities and use cases.

IBM Storage Enabler for Containers support

Container technology is a new, up-and-coming technology which enables prepackaged and configured software to be deployed easily in any environment. This simple, flexible technology fits perfectly with the advantages of private and public cloud computing environments.

Due to this lightweight and flexible capability, containers historically have used short-term storage for the application within. As adoption for this grows, there is an inherent need for enterprise capabilities such as disaster recovery, concurrent upgrades, and container movement within the hybrid cloud environment.

IBM Storage Enabler for Containers software, in conjunction with IBM Spectrum[TM] Connect V3.4 and an orchestration layer such as Kubernetes or IBM Cloud[TM] Private, enables an application to store data separate from the container itself, in persistent, highly available DS8880 block storage.

Reference information

For more information about available function authorizations, see Hardware Announcement ZG15-0234, dated October 20, 2015.

For the IBM statement on compliance with the European Union Directive on Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment (2002/95/EC) (RoHS), go to the IBM and the Environment website.

Product number

The following are newly announced features on the specified models of IBM System Storage[(R)] 2831, 2832, 2833, and 2834 machine types:

Description	Machine type	Model	Feature
7.68 TB 2.5-inch high capacity flash	2831	84E	1624

Description	Machine type	Model	Feature
DS8000 LMC R8.4 indicator	2831	84E	1984
7.68 TB 2.5-inch high capacity flash	2831	85E	1624
DS8000 LMC R8.4 indicator	2831	85E	1984
7.68 TB 2.5-inch high capacity flash	2831	86E	1624
DS8000 LMC R8.4 indicator	2831	86E	1984
7.68 TB 2.5-inch high capacity flash	2831	984	1624
DS8000 LMC R8.4	2831	984	1884
7.68 TB 2.5-inch high capacity flash	2831	985	1624
DS8000 LMC R8.4	2831	985	1884
7.68 TB 2.5-inch high capacity flash	2831	986	1624
DS8000 LMC R8.4	2831	986	1884
7.68 TB 2.5-inch high capacity flash	2832	84E	1624
DS8000 LMC R8.4 indicator	2832	84E	1984
7.68 TB 2.5-inch high capacity flash	2832	85E	1624
DS8000 LMC R8.4 indicator	2832	85E	1984
7.68 TB 2.5-inch high capacity flash	2832	86E	1624
DS8000 LMC R8.4 indicator	2832	86E	1984
7.68 TB 2.5-inch high capacity flash	2832	984	1624
DS8000 LMC R8.4	2832	984	1884
7.68 TB 2.5-inch high capacity flash	2832	985	1624
DS8000 LMC R8.4	2832	985	1884
7.68 TB 2.5-inch high capacity flash	2832	986	1624
DS8000 LMC R8.4	2832	986	1884
7.68 TB 2.5-inch high capacity flash	2833	84E	1624
DS8000 LMC R8.4 indicator	2833	84E	1984
7.68 TB 2.5-inch high capacity flash	2833	85E	1624
DS8000 LMC R8.4 indicator	2833	85E	1984
7.68 TB 2.5-inch high capacity flash	2833	86E	1624
DS8000 LMC R8.4 indicator	2833	86E	1984
7.68 TB 2.5-inch high capacity flash	2833	984	1624
DS8000 LMC R8.4	2833	984	1884
7.68 TB 2.5-inch high capacity flash	2833	985	1624
DS8000 LMC R8.4	2833	985	1884
7.68 TB 2.5-inch high capacity flash	2833	986	1624
DS8000 LMC R8.4	2833	986	1884

Description	Machine type	Model	Feature
7.68 TB 2.5-inch high capacity flash	2834	84E	1624
DS8000 LMC R8.4 indicator	2834	84E	1984
7.68 TB 2.5-inch high capacity flash	2834	85E	1624
DS8000 LMC R8.4 indicator	2834	85E	1984
7.68 TB 2.5-inch high capacity flash	2834	86E	1624
DS8000 LMC R8.4 indicator	2834	86E	1984
7.68 TB 2.5-inch high capacity flash	2834	984	1624
DS8000 LMC R8.4	2834	984	1884
7.68 TB 2.5-inch high capacity flash	2834	985	1624
DS8000 LMC R8.4	2834	985	1884
7.68 TB 2.5-inch high capacity flash	2834	986	1624
DS8000 LMC R8.4	2834	986	1884

Publications

DS8000 publications are made available at the IBM Publications Center.

You can search, view, and collaborate with documentation using IBM Knowledge Center. IBM Knowledge Center is an IBM-wide view of technical information with multiple sources of offerings in a single location.

IBM Knowledge Center provides a centralized and consolidated way to access the information you need to use IBM products and also provides innovative ways to find information and to create your own set of information to cater to your needs. You will be able to personalize views, build customer documents, and interact with other information.

To access the IBM Publications Center Portal, go to the IBM Publications Center website.

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided. A large number of publications are available online in various file formats, which can currently be downloaded.

National language support
None

Services

IBM Systems Lab Services

IBM Systems Lab Services offers a wide array of services available for your enterprise. It brings expertise on the latest technologies from the IBM development community and can help with your most difficult technical challenges.

IBM Systems Lab Services exists to help you successfully implement emerging technologies so as to accelerate your return on investment and improve your satisfaction with your IBM systems and solutions. Services examples include initial implementation, integration, migration, and skills transfer on IBM systems solution capabilities and recommended practices. IBM Systems Lab Services is one of the

service organizations of IBM's world-renowned IBM Systems Group development labs.

For details on available services, contact your IBM representative or go to the Lab Services website.

Global Technology Services

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an on-demand business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or go to the IBM Global Technology Services[R] website.

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or go to the Resiliency Services website.

Details on education offerings related to specific products can be found on the IBM authorized training website.

Technical information

Specified operating environment

Hardware requirements
Licensed Machine Code

All announced features and functions are supported on the IBM System Storage DS8000 series and require DS8000 LMC 8.8.40.xx.xx (bundle version 88.40.xxx.xx), or later.

Planning information

Customer responsibilities
Physical configuration planning

Physical configuration planning is a customer responsibility. A marketing specialist can help plan and select the DS8000 series physical configuration and features. Introductory information, including required and optional features, can be found in the *IBM DS8880 Introduction and Planning Guide* (GC27-8525).

Capacity and performance planning assistance is also available. Through the use of Disk Magic, a disk marketing specialist can help plan and anticipate performance characteristics for specific workloads by modeling proposed configurations.

Installation planning

Installation planning is a customer responsibility. Information about planning the installation of a DS8000 series, including equipment, site, and power requirements, can be found in the *IBM DS8880 Introduction and Planning Guide* (GC27-8525).

Logical configuration planning and application

Logical configuration planning is a customer responsibility. Logical configuration refers to the creation of RAID ranks, volumes, and LUNs, and the assignment of the configured capacity to servers.

Application of the initial logical configuration and all subsequent modifications to the logical configuration is a customer responsibility. The logical configuration can be created, applied, and modified using the DS Storage Manager, DS CLI, or DS Open API, and also the DS8000 GUI.

IBM Global Services will also apply or modify the logical configuration (fee-based service).

Licensed Machine Code planning and application

IBM may release changes to the DS8000 series Licensed Machine Code. IBM plans to make the most current DS8000 series Licensed Machine Code changes available for download by the DS8000 series system from the IBM System Storage technical support website. Not all Licensed Machine Code changes may be available through the support website. If the machine does not function as warranted and a problem can be resolved through the application of downloadable Licensed Machine Code, the customer is responsible for downloading and installing these designated Licensed Machine Code changes as IBM specifies. IBM has responsibility for installing changes that IBM does not make available for you to download. The DS8000 series includes many enhancements to make the Licensed Machine Code change process simpler, quicker, and more automated. A request can be made for IBM to install downloadable Licensed Machine Code changes, however there may be a charge for that service.

Calculating physical and effective capacity

See the *IBM DS8880 Introduction and Planning Guide* (GC27-8525) for capacity calculation guidelines.

Encryption planning

Encryption planning is a customer responsibility. There are three major planning components to the implementation of an encryption environment. Review all planning requirements and include them in the installation considerations.

- IBM Storage Appliance planning
- IBM Security Key Lifecycle Manager (SKLM) planning
- Encryption activation review planning

IBM Storage Appliance planning

IBM Storage Appliance planning is a customer responsibility. Introductory information, including required and optional features, can be found in the *IBM Storage Appliance Guide* (SC27-8520).

According to encryption best practices, DS8880 requires at least two storage appliances and associated software for each site that has one or more encryption-enabled DS8000 system. One server must be isolated and the others can be of any supported appliance configuration. Any site that operates independently of other sites must have storage appliances for the encryption-enabled DS8000 systems at that site.

It is the customer's responsibility to replicate any key labels and their associated key material across all storage appliances attached to a given encryption-enabled DS8000 before configuring that key label on the DS8000.

Dual storage appliance server planning

DS8000 supports the ability to configure two independent key labels for each encryption-enabled DS8000. This capability enables the use of two independent storage appliance server platforms when one or both storage appliance server platforms are using secure-key mode key stores. This enables the isolated storage appliance server platform to be used in conjunction with a second appliance server platform that is operating with a secure-key mode key store.

For customers desiring NIST 800-131a compliance, IBM SKLM, formerly known as IBM Tivoli(R) Key Lifecycle Manager, V2.5, or later, is required.

IBM SKLM planning

The DS8000 series supports IBM SKLM V2.5, or later.

Program number	VRM	Program name
5724-T60	2.5.0	IBM Security Key Lifecycle Manager for Distributed
5641-KL1/3	2.6.0	IBM Security Key Lifecycle Manager for Distributed
5698-B35	1.1.0	IBM Security Key Lifecycle Manager for z/OS(R)
5698-B42	1.1.0	IBM Security Key Lifecycle Manager for Storage

To support enterprise-wide encryption-key management, an updated set of pricing metrics is available. These pricing metrics are simpler and more comprehensive for devices, users, and server capacity.

For self-encrypting disk drives, the metric is per client device with the disk drive feature number.

For more information about the licensing requirements and pricing of the metric, see Software Announcement ZP13-0595, dated October 29, 2013.

Isolated key server ordering options

- **Single/dual storage appliance server - Feature numbers 1761 and 1762 are available through machine-type model 2421-AP1:** New storage appliance server options are available in addition to the existing SKLM isolated key manager (feature number 0204).
- **Customer acquired isolated key server:** See the *IBM Security Key Lifecycle Manager Installation and Configuration Guide* (SC27-5335) for hardware and operating system requirements.

Note: Regardless of the ordering method, customers will need to acquire an SKLM license for use of the SKLM software ordered separately from the stand-alone server hardware.

Note: The licensing for SKLM includes both an install license for the SKLM management software and a license for the encrypting drives.

IBM Security Key Lifecycle Manager V2.6 English publications may be viewed online on the electronic availability date in IBM Knowledge Center.

To access the IBM Publications Center portal, go to IBM Publications Center website.

Encryption activation review planning

Encryption activation is a customer responsibility. IBM encryption offerings must be activated prior to use. This activation is part of the installation and configuration steps required for use of the technology. This installation and activation review is performed by the IBM Systems and Technology Lab Services group.

Send email to

storsvcs@us.ibm.com

Go to the Storage Services website and click on **Contact now** to submit your inquiry or request.

You are responsible for downloading or obtaining from IBM, and installing designated Machine Code (microcode, basic input/output system code (called BIOS), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other

software updates in a timely manner from an IBM internet website or from other electronic media, and following the instructions that IBM provides. You may request IBM to install Machine Code changes; however, you may be charged for that service.

Cable orders

Cables are required to connect DS8000 series 8 Gbps or 16 Gbps FCP/FICON[R] host adapter ports to server or fabric ports. Cables can be purchased using DS8000 series feature numbers.

Additional cable options, along with product support services such as installation, are offered by IBM Global Services' Networking Services.

Fibre Channel/FICON (shortwave)

Shortwave Fibre Channel and FICON ports on the DS8000 series require a 50 micron (multimode) fiber optic cable terminated with a LC connector. Fibre Channel cables can be purchased using feature numbers 141x for 50 micron cables.

Fibre Channel/FICON (longwave)

Longwave Fibre Channel and FICON ports on the DS8000 series require a 9 micron (singlemode) fiber optic cable terminated with a LC connector. Fibre Channel cables can be purchased using feature numbers 142x for 9 micron cables.

Cables are required to connect a zHyperLink adapter port from a DS8880 to a server or port of the zHyperLink Express[R] feature in a IBM z14[TM].

These are single 24-fiber cables with MTP connectors. Internally, a single cable houses 12 fibers for transmitting and 12 fibers for receiving.

Two fiber distances are available as DS8880 feature codes for the zHyperLink Express:

- Feature 1450 - 150 m zHyperLink cable: OM4 50/125 micrometer multimode fiber optic cable with a fiber bandwidth at wavelength 4.7 GHz-km at 850 nm
- Feature 1451 - 40 m zHyperLink cable: OM4 50/125 micrometer multimode fiber optic cable with a fiber bandwidth at wavelength 2.0 GHz-km at 850 nm

Security, auditability, and control

This product uses the security and auditability features of the host hardware, host software, and application software to which it is attached.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

IBM Systems Lab Services

For details on available services, contact your IBM representative or go to the Lab Services website.

Global Technology Services

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings, for the efficient installation, implementation, and/or integration of this product.

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a web-enabled

solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, go to the IBM Electronic Support website.

Terms and conditions

Field installable feature

Yes

Warranty period

Machine type 2831: One year

Machine type 2832: Two years

Machine type 2833: Three years

Machine type 2834: Four years

Customers should consult with their financial personnel on the appropriate financial treatment for this offering.

To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or IBM. An IBM part or feature installed during the initial installation of an IBM machine is subject to the full warranty period specified by IBM. An IBM part or feature that replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which it is installed.

Customer setup

No

Machine code

Same license terms and conditions as base machine

Prices

For all local charges, contact your IBM representative.

Announcement countries

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