

# IBM DS8880 Generation 1 storage family delivers a 15.36 TB flash capacity option and additional functions

## Table of contents

<a href="#">1 Overview</a>	<a href="#">3 Publications</a>
<a href="#">1 Key prerequisites</a>	<a href="#">5 Technical information</a>
<a href="#">1 Planned availability date</a>	<a href="#">9 Terms and conditions</a>
<a href="#">1 Description</a>	<a href="#">9 Prices</a>
<a href="#">2 Product number</a>	

## At a glance

IBM<sup>®</sup> DS8880 Generation 1 models now offer high-capacity 15.36 TB flash drives and enable write operations for zHyperLink.

## Overview

IBM DS8880 Gen 1 family offers:

- New high-capacity 15.36 TB flash drive sets that increase the overall system capacity to 737.28 TB per flash enclosure pair in the same physical space
- Write operations for zHyperLink

## Key prerequisites

All announced features and functions that are supported on the IBM DS8000<sup>®</sup> series require DS8000 LMC 8.8.51.xx.xx (bundle version 88.51.xxx.xx), or later.

## Planned availability date

December 7, 2018

## Description

### High-capacity flash drive set

IBM DS8880 offers a new high-capacity 15.36 TB flash drive set (feature number 1625) 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 3.84 TB and 7.68 TB high-capacity 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 737.28 TB raw.

### **Enable write operations for zHyperLink**

zHyperLink is a short distance, mainframe attach link. zHyperLink is intended to accelerate Db2<sup>(R)</sup> 12 for z/OS<sup>(R)</sup>, update intensive transaction processing, and improve active log write for z/OS. zHyperLink technology delivers low latency by using a new short distance link technology which compliments transactional SAN attached DS8880/F systems. Low latency read and write operations are provided for storage systems within the 150-meter distance requirement using a point to point link from the z14 to the DS8880/F I/O bay. Low I/O latencies deliver value through improved workload elapsed times and faster transactional response times, and contribute to lower scaling costs. The DS8880/F implementation of zHyperLink I/O delivers service times fast enough to enable a synchronous I/O model in high-performance IBM Z<sup>(R)</sup> servers. zHyperLink writes accelerates Db2 12 for z/OS transaction processing.

### **Restrictions**

- The zHyperLink write capability supports Metro Mirror and HyperSwap<sup>(R)</sup> within 150-meter distances.
- Asynchronous replication (Global Mirror, zGlobal Mirror (XRC), Global Copy), Safeguarded Copy, DS8882F, and any other 6-core configurations are not supported for zHyperLink write operations.

### **IBM Storage Insights**

With the basic version available at no charge, cloud-based IBM Storage Insights provides a single dashboard that gives you a clear view of all your IBM block storage, including IBM DS8880. You will be able to make better decisions by seeing trends in performance and capacity. Storage Insights simplifies uploading logs, speeds resolution with online configuration data, and provides an overview of open tickets, all in one place.

IBM DS8880 is introducing the next-generation Call Home infrastructure that enables continuous updates of the system's configuration and health, helping both you and IBM support to be aware of areas needing attention.

### **Section 508 of the US Rehabilitation Act**

---

IBM DS8000 storage family is capable as of December 7, 2018, when used in accordance with IBM's associated documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it. A US Section 508 Accessibility Conformance Statement can be requested on the [Product accessibility information](#) website.

---

## **Reference information**

---

For more information about available function authorizations, see Hardware Announcement [115-138](#), 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 of the IBM System Storage<sup>(R)</sup> 2831, 2832, 2833, and 2834 machine types:

<b>Description</b>	<b>Machine type</b>	<b>Model</b>	<b>Feature</b>
15.36 TB 2.5-inch high capacity flash	2831	980	1625
15.36 TB 2.5-inch high capacity flash	2831	981	1625
15.36 TB 2.5-inch high capacity flash	2831	982	1625
15.36 TB 2.5-inch high capacity flash	2831	98B	1625
15.36 TB 2.5-inch high capacity flash	2831	98E	1625
15.36 TB 2.5-inch high capacity flash	2831	98F	1625
15.36 TB 2.5-inch high capacity flash	2832	980	1625
15.36 TB 2.5-inch high capacity flash	2832	981	1625
15.36 TB 2.5-inch high capacity flash	2832	982	1625
15.36 TB 2.5-inch high capacity flash	2832	98B	1625
15.36 TB 2.5-inch high capacity flash	2832	98E	1625
15.36 TB 2.5-inch high capacity flash	2832	98F	1625
15.36 TB 2.5-inch high capacity flash	2833	980	1625
15.36 TB 2.5-inch high capacity flash	2833	981	1625
15.36 TB 2.5-inch high capacity flash	2833	982	1625
15.36 TB 2.5-inch high capacity flash	2833	98B	1625
15.36 TB 2.5-inch high capacity flash	2833	98E	1625
15.36 TB 2.5-inch high capacity flash	2833	98F	1625
15.36 TB 2.5-inch high capacity flash	2834	980	1625
15.36 TB 2.5-inch high capacity flash	2834	981	1625
15.36 TB 2.5-inch high capacity flash	2834	982	1625
15.36 TB 2.5-inch high capacity flash	2834	98B	1625
15.36 TB 2.5-inch high capacity flash	2834	98E	1625
15.36 TB 2.5-inch high capacity flash	2834	98F	1625

---

## **Business Partner information**

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld<sup>(R)</sup> ID and password are required (use IBMid).

[BP Attachment for Announcement Letter 118-094](#)

---

## **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<sup>\(R\)</sup>](#) 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 8.8.51.xx.xx (bundle version 88.51.xxx.xx), or later.

### Planning information

---

#### *Client 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<sup>®</sup> 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 <sup>®</sup>
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 [213-470](#), 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<sup>(R)</sup> 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<sup>(R)</sup> feature in a IBM z14<sup>TM</sup>.

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

### ***Direct client support***

Direct customer support for the DS8000 series is provided by IBM Operational Support Services - Support Line. This fee service can enhance your productivity by providing voice and electronic access into the IBM support organization. IBM Operational Support Services - Support Line will help answer questions pertaining to product and feature usage (how to), configuration, and product compatibility for eligible products. For a list of supported products, go to the [Supported Product List](#) website.

For more information on services, call 800-IBM-4YOU (426-4968).

### **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 client 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.

---

## **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<sup>TM</sup> 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 Service Agent](#) website.

---

## Terms and conditions

---

### MES discount applicable

No

### 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.

### Client setup

No

### Machine code

Same license terms and conditions as base machine

---

## Prices

---

The following are newly announced features of the IBM System Storage 2831 machine type:

Description	Model number	Feature numbers	Initial / MES / Both / Support	CSU	RP MES
15.36 TB 2.5-inch high capacity flash	980	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	981	1625	Both	No	No

<b>Description</b>	<b>Model number</b>	<b>Feature numbers</b>	<b>Initial / MES / Both / Support</b>	<b>CSU</b>	<b>RP MES</b>
15.36 TB 2.5-inch high capacity flash	982	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98B	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98E	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98F	1625	Both	No	No

The following are newly announced features of the IBM System Storage 2832 machine type:

<b>Description</b>	<b>Model number</b>	<b>Feature numbers</b>	<b>Initial / MES / Both / Support</b>	<b>CSU</b>	<b>RP MES</b>
15.36 TB 2.5-inch high capacity flash	980	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	981	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	982	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98B	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98E	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98F	1625	Both	No	No

The following are newly announced features of the IBM System Storage 2833 machine type:

<b>Description</b>	<b>Model number</b>	<b>Feature numbers</b>	<b>Initial / MES / Both / Support</b>	<b>CSU</b>	<b>RP MES</b>
15.36 TB 2.5-inch high capacity flash	980	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	981	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	982	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98B	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98E	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98F	1625	Both	No	No

The following are newly announced features of the IBM System Storage 2834 machine type:

<b>Description</b>	<b>Model number</b>	<b>Feature numbers</b>	<b>Initial / MES / Both / Support</b>	<b>CSU</b>	<b>RP MES</b>
15.36 TB 2.5-inch high capacity flash	980	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	981	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	982	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98B	1625	Both	No	No
15.36 TB 2.5-inch high capacity flash	98E	1625	Both	No	No
15.36 TB 2.5-inch high	98F	1625	Both	No	No

Description	Model number	Feature numbers	Initial / MES / Both / Support	CSU	RP MES
capacity flash					

CSU = Customer setup

RP MES = Returnable parts MES

### **Trademarks**

IBM z14 and Electronic Service Agent are trademarks of IBM Corporation in the United States, other countries, or both.

IBM, DS8000, System Storage, PartnerWorld, Global Technology Services, Db2, z/OS, IBM Z, HyperSwap, Tivoli, FICON and Express are registered trademarks of IBM Corporation in the United States, other countries, or both.

Other company, product, and service names may be trademarks or service marks of others.

### **Terms of use**

IBM products and services which are announced and available in your country can be ordered under the applicable standard agreements, terms, conditions, and prices in effect at the time. IBM reserves the right to modify or withdraw this announcement at any time without notice. This announcement is provided for your information only. Additional terms of use are located at

[Terms of use](#)

For the most current information regarding IBM products, consult your IBM representative or reseller, or go to the IBM worldwide contacts page

[IBM United States](#)