IBM Storage Scale

License Measurement Methodology

Version: 1
Effective: September 2023
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Program Details

Product Name/Family	IBM Storage Scale
Metric(s)	Terabyte, Socket (Legacy)
Version(s)	5.1.x
Product ID/(s)	Current: 5737-F34, 5737-I39, 5737-J34 Legacy: 5737-F33, 5737-F35
General Availability	06 November 2020

Change Log

Date	Changes
August 2023	Initial version

This document has been created based on source materials including IBM License Information Documents (“LI Documents”, “LI Docs” or “LIs”), Announcement Letters, and IBM Documentation. In the event of any conflict between this document and the source materials the source materials take precedence. Source materials are listed at the end of the document.

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Description of Applicable Metrics

The applicable license metric for Storage Scale depends on whether you are a **new** or **existing** Storage Scale customer.

New Customers

Licensing for new Storage Scale customers is on a **Terabyte** or **Petabyte** basis and is applicable to the following Storage Scale programs:

- **Storage Scale Data Management Edition**
- **Storage Scale Data Access Edition**
- **Storage Scale Erasure Code Edition**

Existing Customers

Depending on when the Storage Scale licenses were purchased, existing customers may be licensed on a **Socket** basis.

Socket-licensed customers may continue to grow socket-licensed environments and may purchase as many additional Socket licenses as is required within the same Passport Advantage Site ID. It should be noted however that socket-licensed customers may not add a new cluster licensed on a Socket basis.

Socket-licensed customers also have the option to trade-up to **Terabyte** licensing, however there will be no forced migration.

Socket-based licensing is applicable to the following Storage Scale programs:

- **Storage Scale Standard Edition**
- **Storage Scale Advanced Edition**

Terabyte

Terabyte is a unit of measure by which the Program can be licensed. A Terabyte is 2 to the 40th power bytes. Licensee must obtain an entitlement for each Terabyte available to the Program.

Instead of the entitlements required for the Program directly, Licensee must obtain Terabyte entitlements for this Program sufficient to cover the Terabytes managed by the Program.

Petabyte

Petabyte is a unit of measure by which the Program can be licensed. A Petabyte is 2 to the 50th power bytes. Licensee must obtain an entitlement for each Petabyte available to the Program.

Instead of the entitlements required for the Program directly, Licensee must obtain Petabyte entitlements for this Program sufficient to cover the Petabytes managed by the Program.

Socket (Legacy Metric)

Socket is a unit of measure by which the Program can be licensed. A Socket is electronic circuitry that accepts a processor chip. A server is a physical computer that is comprised of processing units, memory, and input/output capabilities that executes requested procedures, commands, or applications for one or more users or client devices. Where racks, blade enclosures, or other similar equipment is being employed, each separable physical device (for example, a blade or a rack-mounted device) that has the required components is considered itself a separate server. A virtual server is either a virtual computer created by partitioning the resources available to a physical server or the unpartitioned physical server. Licensee must obtain entitlements for each Socket on the virtual servers made available to the Program.

How to measure license consumption

Separate IBM Spectrum Scale clusters that do not interact with each other (i.e. are not cross-mounted or remote mounted on each other) may be licensed with different metrics (i.e. sockets vs. capacity), and with different Editions and/or different functionality levels. See Licensing Special Cases for more information.

The general rule for capacity licensing is that all nodes in a single IBM Spectrum Scale cluster must be licensed by either “all capacity” or “all sockets”.

Calculating the number of Terabyte/Petabyte licenses required

Licensing for Data Access Edition is based on provisioned, usable TiB capacity as seen by Network Shared Disk (NSD) servers and presented to the IBM Storage Scale cluster. This is **after** the application of hardware RAID, hardware mirroring, hardware spares etc.

> Provisioned, usable capacity is the same as physical storage usage capacity with thick provisioned block storage. With thin provisioning, provisioned volume capacity may be significantly larger than physical capacity.

The TiB measurement is flat (i.e. there are no tiers) and the license consumption is calculated by counting all TiBs in all NSDs in the cluster.

Only NSD capacity contributes to the license consumption calculation. There is no charge for clients (either in the same cluster or separate cluster), protocol nodes, or server nodes (i.e. quorum, admin etc.)

There are two ways in which to calculate the Terabyte / Petabyte license requirement for Storage Scale:

Using mmlslicense Command

This command was introduced in April 2017 and is available in all currently supported releases of Storage Scale.

Step 1: Identify TiB/PiB Capacity per Cluster

For each Storage Scale cluster in your environment run the following command from a command line prompt:

```
mmlslicense --capacity --formatted
```

The output of the command will display the aggregate sum of the usable NSD server storage that is visible for the Storage Scale cluster on which it was run.

An example output is shown below:

```
mmlslicense --capacity --formatted
```

```
NSD Summary:
============
Total Number of NSDs:  2
mynsd1:                          10,737,418,240 Bytes
mynsd2:                          10,737,418,240 Bytes

Cluster Summary:
================
Cluster Total Capacity:   21,474,836,480 Bytes
```

The cluster shown in the example above would need to be licensed for **22TiB**.

> Storage Scale software data replication does not reduce the aggregate TB/PB of usable capacity reported by the NSD Data Servers. For example, if for the 21.4TiB Storage Scale cluster in the example above you specify that all data is replicated twice, you would still need to license 22TiB of Storage Scale. The output of the `mmlslicense` command is specifically designed to be the aggregate quantity of Storage Scale TiB/PiB license you need.

The `mmlslicense` command takes in to account the effect of an Elastic Storage System (ESS) with IBM Storage Scale RAID, or IBM Storage Scale Erasure Code Edition (ECE) erasure coding.

Step 2: Calculate Total

Once the capacity data has been collected for each Storage Scale Cluster, add the reported capacity for each cluster together to determine the total quantity of Storage Scale TiB/PiB licenses required for your Storage Scale estate.

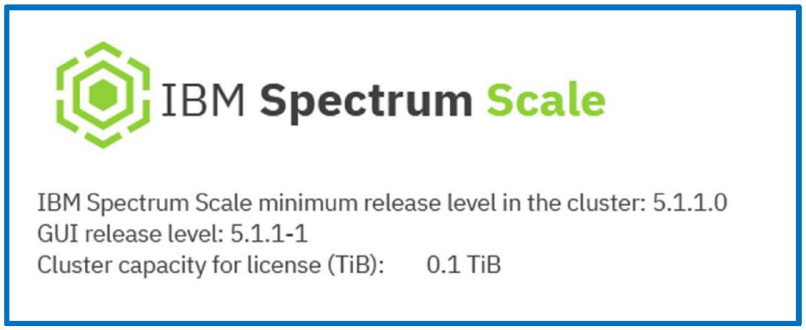
Using Storage Scale GUI Command

Alternatively, you may utilize the Storage Scale GUI to determine the usable NSD server storage.

Step 1: Identify TiB/PiB Capacity per Cluster

Within the Storage Scale GUI for each Storage Scale cluster, navigate to the ‘About’ menu.

An example output from this menu is shown below:



Step 2: Calculate Total

Once the capacity data has been collected for each Storage Scale Cluster, add the reported capacity for each cluster together to determine the total quantity of Storage Scale TiB/PiB licenses required for your Storage Scale estate.

Calculating the number of Socket licenses required (Legacy Metric)

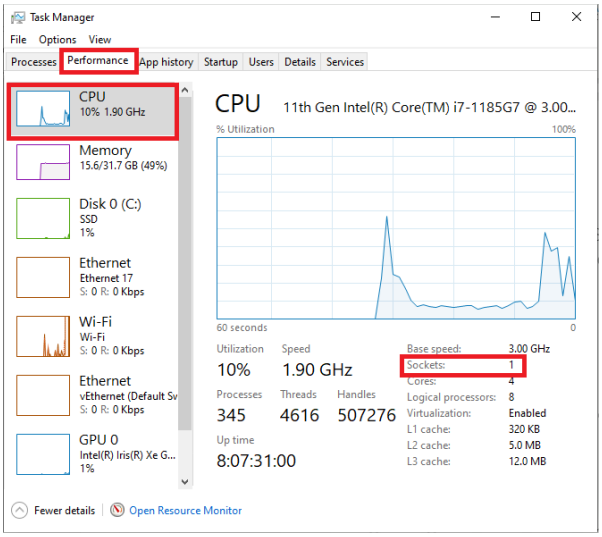
Step 1: Count Sockets

On each machine running Storage Scale count the number of active processor sockets available to the Program.

The method of counting the number of sockets will vary dependent on the operating system.

Windows

1. Open Task Manager
2. Click on the 'Performance' tab
3. Under the 'CPU' section you will see the number of sockets



Unix

1. Open up a Terminal Window
2. Run one of the following commands (dependent on Unix distribution)
    a. lscpu
    b. /proc/cpuinfo
    c. prtconf

Step 2: Calculate Total

Once the number of sockets has been counted for each machine running Storage Scale, add the socket counts together to determine the total quantity of Storage Scale Socket licenses required for your Storage Scale estate.

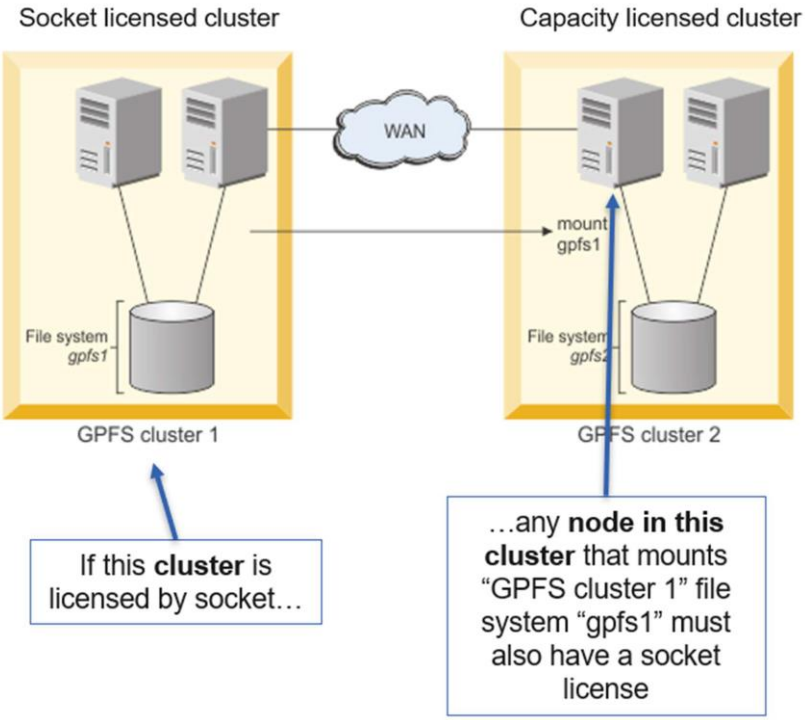
Licensing Special Cases

Remote cross cluster mount – different cluster licensing metrics

In a scenario where a client wishes to do a remote cross-cluster mount, and the two clusters have differing clustering licensing metrics and the cluster that owns the file system being remote mounted is still licensed by sockets the licensing rule is as follows:

If there any nodes in a capacity licensed cluster that wish to remote mount a file system owned by a sockets-licensed cluster those nodes in the capacity licensed cluster must also have a client socket license as well

This special case can be further illustrated in the diagram below:



Cluster 1 is licensed by socket and Cluster 2 is licensed by Capacity.

There are specific nodes in capacity-licensed Cluster 2, that desire to do a remote cross-cluster mount of file system "gpfs1" in socket-licensed Cluster 1.

In this case, those specific nodes in capacity-licensed Cluster 2, that actually cross-cluster remote mount Cluster 1 file system "gpfs1", must also have a socket client license. (However, you don't need to actually install the socket client license on that node – this is for software audit compliance purposes only.)

For the other nodes in Cluster 2 there is no need for a socket license on other nodes in capacity-licensed Cluster 2 that do not cross-cluster mount the remote file system "gpfs1" in socket-licensed Cluster 1.

This rule and clarification is in place to prevent unreasonable, arbitrary socket licensing requirements for nodes in a capacity-licensed cluster, where there are nodes that will never remote mount the socket-based cluster's "gpfs1" file system.

If the licensing metrics are reversed, where the owning cluster is a capacity licensed cluster and a node in a socket-licensed cluster wants to remote mount a file system owned by a capacity-licensed cluster – no additional licensing is required. The socket-licensed cluster node already has socket license. The capacity licensed cluster has no dependencies.

Bundled and Supporting Programs

Supporting Programs are licensed with the Principal Program as long as they are used exclusively in a manner necessary for, or directly related to, a licensed use of the Principal Program. You should ensure that installations of Supporting Programs are documented so that they are not accidentally used for any other purpose as this requires the installations to be separately licensed. Records will also ensure that installations used solely as Supporting Programs are not inadvertently counted for licensing purposes.

For a more detailed explanation of Bundled and Supporting Programs please read the user guide on the IBM Software Licensing & Compliance website.

The following Programs are Supporting Programs for version 5.1.8.1:

```
IBM Websphere Application Server Liberty 23.0.0.6
IBM Spectrum Fusion 2.5.0
```

The list of Bundled and Supporting Programs may change between versions; select the LI document for your version from the links in the License Information Document/(s) section.

Once you have identified the installations of any Supporting Programs, ensure that these are documented in your internal Software Asset Management records as being associated with Storage Scale. This has two benefits:

1. It will ensure that these installations are not accidentally counted as licensable deployments and included in measurements for any separate licenses to these Bundled or Supporting Programs that you may hold.
2. Restrictions or limitations on the functionality that may be used can be documented. These are in addition to the general limitation that the program may only be used to support the functioning of the Principal Program.

Restrictions to the use of Bundled and Supporting Programs

Prohibited Components

Programs that are bundled with or support Storage Scale include components which the base license does not grant you the right to use. Even though these components are included when the bundled or supporting programs are installed, their use is prohibited in the license agreement and a separate license must be purchased if you require these components.

You must ensure that the following features of the Bundled or Supporting Programs have not been used, and are not used in the future unless you have a separate license to cover the use of these components:

Bundled or Supporting Program	Prohibited Component(s)
IBM Websphere Application Server Liberty	IBM Websphere eXtreme Scale

Any use (historical or future) of these Prohibited Components requires a separate license (either to the Bundled or Supporting Program itself, or the functionality).

Permitted Components

You must ensure that **only** the following features of the Bundled and Supporting Programs are used. Use of any other features of these programs requires the program to be separately licensed:

Bundled or Supporting Program	Permitted Component(s)
Spectrum Fusion	Fusion Data Cataloging

Entitlements granted for Bundled and Supporting Programs

Sufficient licenses must be purchased to cover your use of the Program “as a whole”, including the Supporting Programs. If the Supporting Programs are installed on separate machines from the principal program, those installations must be included in the license count.

Components Not Used for Establishing Required Entitlements

The following components are not used to determine the number of entitlements required for Storage Scale.

Supporting Program	Component
IBM WebSphere Application Server Liberty	Administrative Scripting IBM Thin Client for JPA with WebSphere Application Server Performance and Analysis Tools: Dynamic Cache Monitor Web Server Plugins

Additional Restrictions for Bundled and Supporting Programs

The following additional restrictions apply to the use of Components of the Bundled and Supporting Programs:

Component	Restrictions
IBM Storage Scale Dynamic Pagepool	These components may only be used as part of the Licensee’s internal development and test environment for internal non-production activities:
IBM Storage Scale Online Filesystem Check	

IBM Storage Scale Cloudkit for Google Cloud Platform (GCP) for IBM Storage Scale Data Management & Data Access Editions	

Additional Restrictions

There are additional restrictions when using **IBM Storage Scale Data Access Edition, IBM Storage Scale Client** and **IBM Storage Scale File Placement Optimizer**:

Storage Scale Component	Restrictions
IBM Storage Scale Data Access Edition	Licensee is not authorized to use any of the components or functions of: - **Fusion Data Cataloging (component of IBM Spectrum Fusion and/or IBM Storage Fusion)**
IBM Storage Scale Client	**Licensee is not authorized to:** Configure a virtual server in the following IBM Storage Scale roles: - Configuration Manager - Quorum node - Manager node - Network Shared Disk (NSD) Server node - Cluster Export Services node (also known as Protocol node) - Advanced File Management (AFM) Gateway node - Transparent Cloud Tiering Gateway node Export IBM Storage Scale data to virtual servers that do not have a valid IBM Storage Scale license through any application, protocol or method, including but not limited to: - Network File System (NFS) - Server Message Block (SMB) - File Transfer Protocol (FTP) - Hypertext Transfer Protocol (HTTP) - Object Protocol (OpenStack Swift, Amazon S3 Emulation)
IBM Storage Scale File Placement Optimizer	**Licensee is not authorized to:** Configure a virtual server in the following IBM Storage Scale roles: - Configuration Manager - Quorum node - Manager node - Cluster Export Services (also known as Protocol node) - Advanced File Management (AFM) Gateway node - Transparent Cloud Tiering Gateway node

	Configure a virtual server as an IBM Storage Scale Network Shared Disk (NSD) Server node for providing IBM Storage Scale data access to virtual servers that do not have a valid IBM Storage Scale Server or IBM Storage Scale File Placement Optimizer license entitlement. Export IBM Storage Scale data to virtual servers that do not have a valid IBM Storage Scale license through any application, protocol or method, including but not limited to: - Network File System (NFS) - Server Message Block (SMB) - File Transfer Protocol (FTP) - Hypertext Transfer Protocol (HTTP) - Object Protocol (OpenStack Swift, Amazon S3 Emulation)

Non-licensable installation and/or use

Backup and Standby Installations

Installations solely used for backup and standby purposes (and users logging into those installations) may not require a license. Such installations are intended to enable clients to continue to be operational if an emergency occurs and servers stop working, without requiring additional entitlements.

IBM has published policies for determining whether a backup or standby installation requires a license:

- one for programs licensed under the International Program License Agreement ("IPLA") or Customer Relationship Agreement ("CRA")
- one for programs licensed under the older IBM Customer Agreement ("ICA")

The Backup and Disaster Recovery licensing guide explains in more detail whether a license is needed for installations by reference to the type of configuration.

If any installations are backup and/or standby installations which meet the criteria set out in the IBM policy, such installations should not be included as licensable installations. Ensure to keep a record of the reason why these installations do not require a license, along with any backing evidence that you are able to obtain to this effect.

Installations subject to Temporary Additional Use authorization

Under specific scenarios (such as datacenter migrations, system-to-system migrations) IBM authorizes clients to use additional installations for non-production use for a period of up to 90 days. This is set out in a policy document on the IBM website.

Before discarding any installation from the license count ensure that the installation complies with the three main principles of the policy:

1. The reason for the additional installation must fall under one of the valid scenarios listed in the policy.
2. The installation must not be older than 90 days (by reference to the date it was installed and the date the count is being performed). If it is older than 90 days, ensure that specific authorization has been gained from IBM for its continued use, and that this is documented.
3. The other, licensable installations of the program are properly licensed. If there are license shortfalls or use outside of the terms of the applicable license agreement(s), then the Temporary Additional Use authorization does not apply.

Part Numbers

The part numbers listed below are taken at a point in time and represent the latest part numbers that may be used to license the Program. IBM endeavors to keep this list up to date; however, to ensure that you have the most up-to-date information available, please use the **Product Search** functionality on the IBM Software Licensing & Compliance website.

The link which will take you to the specific results for **Storage Scale Data Management Edition** is: https://www.ibm.com/about/software-licensing/us-en/product_search?search=5737-F34&type=ALL

The link which will take you to the specific results for **Storage Scale Data Access Edition** is: https://www.ibm.com/about/software-licensing/us-en/product_search?search=5737-I39&type=all&platform=

The link which will take you to the specific results for **Storage Scale Erasure Code Edition** is: https://www.ibm.com/about/software-licensing/us-en/product_search?search=5737-J34&type=ALL

Part Description	License	S&S	Reinstatement
IBM Storage Scale Data Management Edition	D1VLALL	E0NZ5LL	D1VLBLL
IBM Storage Scale Data Management Edition for AWS	D20IKLL	E0PL2LL	-
IBM Storage Scale Data Management Edition Petabyte	D2715LL	E0QSALL	D2716LL
IBM Storage Scale Data Access Edition	D20RJLL	E0PMGLL	D20RKLL
IBM Storage Scale Data Access Edition Per Petabyte	D2711LL	E0QS9LL	D2712LL
IBM Storage Scale Erasure Code Edition	D2226LL	E0PSELL	D2227LL
IBM Storage Scale Erasure Code Edition Petabyte	D2356LL	E0Q6ALL	D2357LL

Product Evolutions

This program may have undergone evolutions during its lifecycle. This may have resulted in the program name or license metric changing. As a result, the current name may differ from that stated on your original Proof of Entitlement. The table below lists the evolutions that this program has undergone:

The link which will take you to the evolution history for **Storage Scale Data Management Edition** is: https://www.ibm.com/about/software-licensing/us-en/product_search?search=5737-F34&type=ALL

Previous Names

IBM Spectrum Scale Data Management Edition

This program has also been known under the following Program names:

- Spectrum Scale Capacity
- Spectrum Scale Data Management Edition for Linux on System Z

Product Lifecycle Information

Version	General Availability	End of Marketing	End of Support
5.1.x	2020-11-06	-	-
5.0.x	2017-11-14	-	2022-04-30

Source Materials

License Information Document/(s)

Version	Program ID	Program
5.1.8.1	5737-I39	IBM Storage Scale Data Access Edition
5.1.8.1	5737-F34	IBM Storage Scale Data Management Edition
5.1.8.1	5737-J34	IBM Storage Scale Erasure Code

IBM Offering Information

Software Announcements

Number	Date	Title
AD23-0177	23 May 2023	IBM Storage Scale provides a global data platform for unstructured data to accelerate business results and innovation
AD20-1462	13 October 2020	IBM Spectrum Scale 5.1 delivers software-defined storage designed to make data storage management simple, efficient, and intelligent at any scale

Withdrawal Announcements

Number	Date	Title
AD21-0170	13 April 2021	Software withdrawal and support discontinuance: IBM Spectrum Scale 5.0 programs

Support Discontinuance

Number	Date	Title

AD21-0170	13 April 2021	Software withdrawal and support discontinuance: IBM Spectrum Scale 5.0 programs

Other References

Type	Name
Online IBM Resource	Storage Scale Knowledge Center
Online IBM Resource	Storage Scale Documentation

[Text snippets to be deleted before publishing]

Removing duplicate users

Identify and remove any duplicate User IDs across all the reports you have generated which list users. Also ensure that any individual users who may have multiple user IDs are identified, and that you are only counting each individual user for one user ID.

Calculating the number of Employee User Value Unit licenses required

The basis for calculating the number of EUVU licenses is the number of employees in your organization. Each employee must be counted for a license regardless of whether that individual has accessed the Program.

The process for counting the number of EUVU licenses required is therefore different:

Step 1: Identify the number of employees

Obtain a count of unique persons employed, contracting for, or with system access in your Enterprise.

The exact process for doing this will vary by organization but will typically involve working with Human Resources and IT departments to determine how all employees, contractors and temporary help are tracked.

Step 2: Convert the count of employees to User Value Units

Use the conversion tables as set out in the applicable License Information document for your version of the Program to determine how many Employee UVU licenses are required for your total number of Employee Users.

The conversion table for version [version] is replicated below as an example:

Conversion table: Employee Users → Employee User Value Unit

From	To	UVU per User
1 user	**2,500 users**	1.00
2,501 users	**5,000 users**	0.80
5,001 users	**10,000 users**	0.70
10,001 users	**30,000 users**	0.65
30,001 users	**50,000 users**	0.55
50,001 users	**100,000 users**	0.50
100,001 users	**300,000 users**	0.46
300,001 users	**500,000 users**	0.40
500,001 users	**1,000,000 users**	0.36
More than 1,000,000 users		0.32

Questions and Comments:

If you have questions regarding the content of this methodology, or any aspect of IBM’s licensing terms and conditions, please contact us at www.ibm.com/about/software-licensing/contact