IBM Storage Scale

IBM Storage Scale System

Licensing Information

October 2025

Table of Contents

About this Document

In this document, we describe software licensing for IBM Storage Scale and IBM Storage Scale System. Please share your comments and suggestions on the document via email to IBM Documentation feedback at: ibmdocs@us.ibm.com

IBM Storage Scale and IBM Storage Scale System Licensing

IBM Storage Scale software licensing

Product IDs (PID):

- 5737I39: IBM Storage Scale Data Access Edition
- 5737F34: IBM Storage Scale Data Management Edition
- 5737J34: IBM Storage Scale Erasure Code Edition

License Metric:

- Per TiB (often referred to as per TB) defined as 2 to the 40th power bytes.

IBM Storage Scale is licensed on the aggregate usable capacity (total usable capacity) as seen by IBM Storage Scale NSD data servers in a cluster. The license metric for IBM Storage Scale software environments is “Per TiB” (Binary Tebibyte) or “Per PiB” (Binary Pebibyte).

Usable capacity is defined as the aggregate binary TiB or PiB capacity available and presented to the IBM Storage Scale cluster from the NSD Data Servers. This is after applying h/w RAID, h/w mirroring, h/w spares and so on.

With IBM Storage Scale capacity licensing on a cluster, a customer only pays for the total aggregate usable TiB that is presented to that cluster from the NSD data servers. This accounts for the fact that there are multiple parity schemes that are selectable when you install an IBM Storage Scale System or IBM Storage Scale Erasure Code Edition (ECE). If you select a higher degree of parity and thus reduce the usable capacity, the IBM Storage Scale capacity licensing required is only the resulting aggregate usable capacity.

Using mmlslicense to verify cluster capacity

The mmlslicense command helps you determine the amount of IBM Storage Scale capacity for the purpose of capacity licensing. It displays the aggregate sum of the usable NSD Data Server storage that is visible for this Storage Scale cluster. This is aggregate usable capacity reported is after applying hardware RAID, hardware mirroring, hardware spares, and/or Storage Scale RAID.

```
[root@test1]#    mmlslicense --capacity --formatted

NSD Summary:
====================
  Total Number of NSDs:     3
  nsd_vdb:                  4,398,046,511,104 Bytes  (4.000 TiB)
  nsd_vdc:                  4,398,046,511,104 Bytes  (4.000 TiB)
  nsd_vdd:                  4,398,046,511,104 Bytes  (4.000 TiB)
Cluster Summary:
====================
 Cluster Total Capacity:    13,194,139,533,312 Bytes  (12.000 TiB)
```

Figure 1: mmlslicense Command

Note

The command is also available with –Y option for parseable output.

The cluster shown in the example above would need to be licensed for 12TiB.

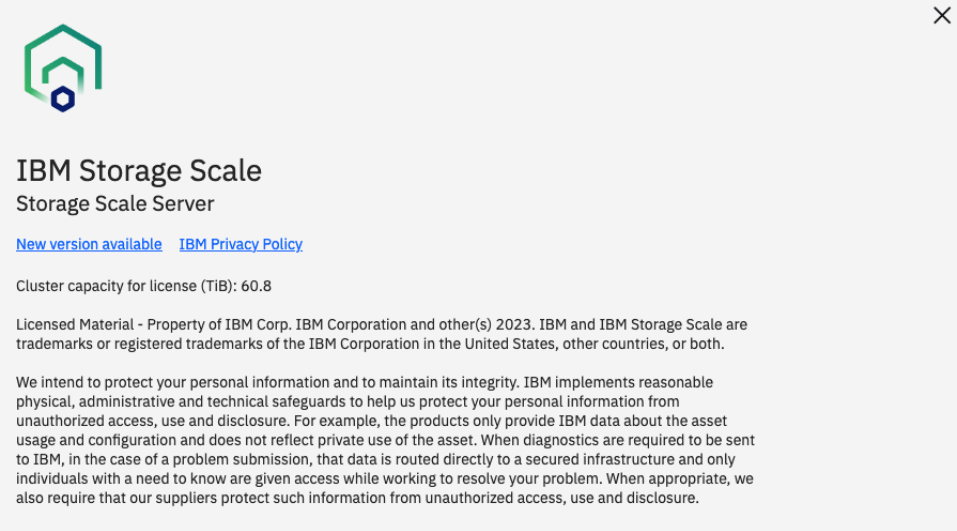
> Note: Storage Scale software data replication does not reduce the aggregate TiB of usable capacity reported by the NSD Data Servers. For example, if for the above 12 TiB Storage Scale cluster, you specify that all data is to be replicated twice (i.e. there are two copies of all data), you would still need to license 12 TiB of Storage Scale. The output of the mmlslicense command is specifically designed to be the aggregate quantity of Storage Scale Per TiB license that you need

For a Capacity-Licensed IBM Storage Scale cluster, there is no charge for unlimited number of clients (in the same cluster or a remote mounted separate cluster that is only mounting a capacity-licensed cluster), or IBM Storage Scale server licenses such as quorum nodes, protocol nodes, AFM gateways, or anything else besides NSD usable TiB capacity.

Using the GUI to verify cluster capacity

Depending on your IBM Storage Scale release level, the IBM Storage Scale GUI will help you find the total IBM Storage Scale cluster usable TiB of NSD capacity for licensing purposes. The “About” tab of the GUI displays the information.

For example, in the following cluster, 61 TiB of Storage Scale capacity license would be required.



IBM Storage Scale software for IBM Storage Scale System licensing

In June of 2025, a new licensing model was introduced for IBM Storage Scale for IBM Storage Scale System. The new license model replaces the previous per disk license model for Storage Scale software for Storage Scale System. This new license model is based on Per raw TB capacity of the drives. The raw TB capacity of a drive refers to the total storage capacity of the drive without considering any overhead or formatting losses – this is the per TB raw capacity of the drives as specified in e-config. For example, In the Scale System 6000, there are drive capacities for 3.84TB SSDs and for 22TB HDD – these are raw drive capacities and this is what is used for licensing purposes

Product IDs (PID):

- 5765-DAT: IBM Storage Scale Data Access Edition for IBM Storage Scale System
- 5765-DMT: IBM Storage Scale Data Management Edition for IBM Storage Scale System

License Metric:

- Per TB defined decimal terabyte 10 to the 12th power bytes

Beginning in June 2025

- Per TB PIDs
    - 5765-DAT IBM Storage Scale Data Access Edition for IBM Storage Scale System
    - 5765-DMT IBM Storage Scale Data Management Edition for IBM Storage Scale System
- New Scale Systems orders beginning in June deliver with IBM Storage Scale for Storage Scale System licensed per Raw TB
- Existing customers with installed Storage Scale Systems who chose to upgrade (e.g., additional flash drives or storage enclosures) will be grandfathered. Their upgrade configuration can include their prior “per disk” metric
- 5765-DAT and 5765-DMT PIDs are only for use for IBM Storage Scale System and are licensed only for the IBM Storage Scale System hardware on which it was purchased

New PIDs for Storage Scale for Scale System are different than the per TB Scale Software in PPA

	Existing PPA per TB Software	New Storage Scale System per raw TB
Products	5737-I39: Storage Scale Data Access Edition 5737-F34: Storage Scale Data Management Edition 5737-J34: Storage Scale Erasure Code Edition	5765-DAT: Storage Scale DAE for Storage Scale System 5765-DMT: Storage Scale DME for Storage Scale System
License	Perpetual	Licensed only for the IBM Storage Scale System hardware on which it was purchased
Portability	Portable – can be used on any supported HW	Tied to Scale System HW Can only be used on Scale System 6000 or ESS3500
Licensed Capacity	Usable capacity as specified by mmlslicense or GUI	Per TB raw capacity of the drives as specified in e-config

Determining Scale System Capacity Requirements

Licensing requirements for Storage Scale for Storage Scale System per TB is simply the raw capacity of the drives multiplied the quantity of drives, rounded down to the nearest TB

EXAMPLES

Example A: Storage Scale System 6000 with 48 15.36 TB Drives

- 48 drives X 15.36TB = 737.28
- Rounded down to 737 TB

In this example the license requirement for Storage Scale for Storage Scale System is 737 TB

This will automatically be handled in e-conf

Example B: ESS 3500 with 102 10 TB Drives

- 102 drives X 10TB = 1020 TB

In this example the license requirement for Storage Scale for Storage Scale System is 1020 TB

This will automatically be handled in e-conf

“Mixing’ license types scenarios FAQ

A) **Scenario:** Existing customer with a Scale System licensed per disk system. They want to expand capacity of existing system via upgrade

- Will be configured per disk for the HDD expansion
- Will be configured per disk for the TLC flash expansion
- Will be configured per **raw TB** for new QLC flash inclusion
- This will automatically be handled in e-config

B) **Scenario:** Existing customer with a Scale System licensed per disk, buys new Scale System wants to put in the same cluster

- New system on per raw TB
- May coexists in same cluster with the system that is licensed per disk

Storage Scale Data Acceleration Tier (DAT) licensing

The Storage Scale System Data Acceleration Tier (DAT) is a high-performance NVMeoF-based storage layer designed to deliver extreme IOPS and ultra-low latency for real-time AI inferencing workloads. It leverages Asymmetric Replication with one erasure-encoded reliable copy of the data and one performance copy for high-speed access. The table below summarizes the IBM Storage Scale software licensing implications of DAT deployment patterns and use cases.

<table>
<tr><th colspan="4">Storage Scale for Storage Scale System Data Acceleration Tier Licensing</th></tr>
<tr><td>DAT Use case</td><td>Scale PPA Software (per usable TB)</td><td>Scale for ESS (per Raw TB)</td><td>Scale for ESS (per Disk) (Deprecated)</td></tr>
<tr><td>DAT with perf pool NVMe inside ESS</td><td rowspan="3">When using PPA per TB licensing on a Storage Scale System, the usable capacity of the reliable pool and the performance pool need to be licensed. mmlslicense can be used to measure license requirements.</td><td>When using per Raw TB licenses, the raw drive capacities of the drives in the reliable pool and the performance pool require per raw TB licenses</td><td>When using per disk licenses, the disks in the reliable pool and the performance pool require per disk licenses</td></tr>
<tr><td>DAT with perf pool NVMe inside compute nodes</td><td rowspan="2">Reliable pool in Storage Scale System – license per Raw TB License

Performance pool - License drives outside Storage Scale System by per TB with PPA SW
• Use mmdf to understand which disks are in perf pool
• Use mmlslicense to get usable capacity for perf pool disks</td><td rowspan="2">Reliable pool in Storage Scale System – license per disk License

Performance pool - License drives outside Storage Scale System by per TB with PPA SW
• Use mmdf to understand which disks are in perf pool
• Use mmlslicense to get usable capacity for perf pool disks</td></tr>
<tr><td>DAT with perf pool NVMe inside JBOF</td></tr>
<tr><td>PIDS</td><td>PIDS:

5737-F34 IBM Storage Scale Data Management Edition

5737-I39 IBM Storage Scale Data Access Edition

5737-J34 IBM Storage Scale Erasure Code Edition</td><td>PIDS:

5765-DAT: IBM Storage Scale Data Access Edition for IBM Storage Scale System

5765-DMT: IBM Storage Scale Data Management Edition for IBM Storage Scale System</td><td>PIDS:

5765-DAE, 5765-DME, 5765-DA6, 5765-DM6</td></tr>
</table>

Storage Scale Storage Abstraction licensing

IBM Storage Scale 6.0 introduces Storage Abstraction licensing.

Storage Abstraction licensing only applies to clusters if all nodes in the cluster are on Storage Scale 6.0 or above. It does not apply to “mixed” cluster, e.g., some nodes of the cluster are on Storage Scale 6.0 and some nodes are on Storage Scale 5.2.3. “Mixed” cluster do not need an Storage Abstraction license.

How capacity for Storage Abstraction is defined

Storage Abstraction is the Storage Scale Active File Management (AFM) capability to cache external data into the Storage Scale filesystem. Other use cases for AFM do not require Storage Abstraction licensing, for example tiering data out of scale to cloud, or using AFM DR would not require Storage Abstraction licensing.

Customers get 12TiB of Storage Abstraction as a ‘base’ entitlement within their IBM Storage Scale software licensing. Usage beyond the 12 TiB requires additional Storage Abstraction licensing.

Filesets and Filesystems that are configured to cache data in from external storage can grow and shrink based on workload. Scale Storage Abstraction is licensed on the “high water mark” usage of the aggregate size (TB) of all filesets and filesystems that are configured to cache data in from external storage

Included in abstraction measurement:

- non-IBM NFS sources
- non-IBM S3 sources

Not included in abstraction measurement:

- IBM Cloud Object Storage (COS)
- IBM Storage Scale (CES S3, NFS, GPFS)
- IBM Storage Ceph
- IBM Storage Deep Archive
- IBM Fusion

Measuring License Requirements for Storage Abstraction

mmlslicense can be used to determine the “high water” amount of Storage Abstraction used. The screenshot below shows the output of the mmlslicense --capacity afmCache command which is intended to give a summarized view at a filesystem level.

```
(10:54:17) c69u01:~ # mmlslicense --capacity afmCache
 File System                          Cache Size (TiB)      Cache Size (TB)
-------------------------------------------------------------------------------
 fs1                                            14.551                15.998
 fs2                                            19.328                21.252

 Total Used Capacity                            33.879                37.250

 Included Capacity                              10.914                12.000
 Purchased Capacity                             25.000                27.488
 Total Capacity                                 35.914                39.488
(10:54:19) c69u01:~ #
```

Note: both TB and TiB sizes are displayed.

The TiB measurement would be used on the following PIDs

- IBM Storage Scale Data Management Edition (5737-F34)
- IBM Storage Scale Data Access Edition (5737-I39)
- IBM Storage Scale Erasure Code Edition (5737-J34)
- IBM Storage Scale Data Access Edition (5641-DA, DA3, DA5)
- IBM Storage Scale Data Management Edition (5641-DM, DM3, DM5)

The TB measurement would be used on the following PIDs

- IBM Storage Scale Data Access Edition for IBM Storage Scale System (5765-DAT)
- IBM Storage Scale Data Management Edition for IBM Storage Scale System (5765-DMT)

Running the mmlslicense --capacity afmCache --verbose command will give you a more granular view of filesystems and filesets that are configured to cache in external storage

```
(10:54:19) c69u01:~ # mmlslicense --capacity afmCache --verbose
 File System               Fileset                          Cache Size (MiB)     Cache Size (TiB)      Cache Size (TB)
-------------------------------------------------------------------------------------------------------------------------
 fs1                       drp1                                      1048576                1.000                1.100
 fs1                       ro1                                       1098576                1.048                1.152
 fs1                       mu2                                       2048576                1.954                2.148
 fs1                       ro5                                        102499                0.098                0.107
 fs1                       lu1                                        302499                0.288                0.317
 fs1                       drp2                                       455559                0.434                0.478
 fs1                       ro3                                             0                0.000                0.000
 fs1                       ro4                                        953674                0.909                1.000
 fs1                       adro2                                     1907349                1.819                2.000
 fs1                       mu4                                       7340032                7.000                7.697
 fs2                       root                                        85320                0.081                0.089
 fs2                       sw5                                       9340032                8.907                9.794
 fs2                       sw9                                      10241024                9.767               10.738
 fs2                       lu2                                        510240                0.487                0.535
 fs2                       sw4                                         90490                0.086                0.095

 File System                         Cache Size (TiB)      Cache Size (TB)
-------------------------------------------------------------------------
 fs1                                       14.551               15.998
 fs2                                       19.328               21.252

 Total Used Capacity                       33.879               37.250

 Included Capacity                         10.914               12.000
 Purchased Capacity                        25.000               27.488
 Total Capacity                            35.914               39.488
```

Maintaining compliance for Storage Abstraction usage

A customer can set a quota on the fileset to ensure they don't exceed what they are entitled to.

Alternatively, a customer can input the number of additional Storage Abstraction entailments purchase and Scale check peak usage against entitlement and alert a customer if they exceed the total of the 12TB base entitlement plus any additional Storage Abstraction entitlement purchased.

Appendix

Appendix A - Previous Licensing Models

Per Socket Licensing

Product IDs (PID):

- 5737-F33: IBM Storage Scale Standard Edition
- 5737-F35: IBM Storage Scale Advanced Edition

License Metric:

- Per socket. 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.

Existing IBM Storage Scale socket-licensed customers can continue to grow existing socket-licensed clusters.

- Must be an existing customer on sockets in an existing Passport Advantage site
- May not license a new cluster by sockets
- No mixing of Scale Standard Edition licenses and Scale Advanced Edition licenses

Customers can also choose to trade-up to capacity licensing.

When an IBM Storage Scale cluster is licensed by sockets, individual socket licenses are required for every IBM Storage Scale node in that cluster: servers, clients, and FPO servers.

In a socket-licensed cluster, an IBM Storage Scale server license is required anytime a node displays the following behavior:

- Manages IBM Storage Scale cluster functions
- Exports IBM Storage Scale data through non-IBM Storage Scale file serving protocols (protocol node)
- Performs IBM Storage Scale NSD data serving

Refer the decision tree in the IBM Storage Scale online IBM Documentation URL given below to know whether a sockets-based node requires a server, client, or FPO (File Placement Optimizer) license:
https://www.ibm.com/docs/en/storage-scale/5.2.2?topic=overview-storage-scale-license-designation

Notes

- In any IBM Storage Scale cluster, all nodes in that single cluster must be on functionality compatible Editions.
- All IBM Storage Scale V4 (5641-GPF) customers have had their software entitlements moved to the appropriate IBM Storage Scale V5 entitlement.
- For new IBM Storage Scale customers, or for Passport Advantage Site ID's that do not already have IBM Storage Scale socket-licensed clusters installed, IBM Storage Scale licensing is by Capacity.
- FPO functionality is included in all capacity-licensed versions of IBM Storage Scale and a separate license for the FPO function is not needed if you are on capacity licensing. Capacity for the FPO storage is counted as part of the capacity license; all usable IBM Storage Scale storage used by FPO, including replicas, is counted.
- In a socket-licensed environment, IBM Storage Scale FPO (File Placement Optimizer) functionality requires a separate FPO licensed feature code.

Storage Scale software for Scale System per Disk Licensing

In June of 2025, a new licensing model was introduced for IBM Storage Scale for IBM Storage Scale System. This license model is Per TB Raw Capacity - raw capacity is the storage space available before any overhead like RAID etc..

Beginning in June 2025

- New Scale Systems orders beginning in June deliver with IBM Storage Scale for Storage Scale System licensed per Raw TB
- Existing customers with Storage Scale for Storage Scale System per disk licensing may expand capacity on current Scale System via MES leveraging per disk software licensing
- Existing systems licensed per disk can be 'mixed' with systems licensed with per TB software for Scale System

For those system licensed per disk, specific IBM Program IDs with a "Per Disk" metric (5765-DAE, 5765-DME, 5765-DA6, 5765-DM6), are normally used for licensing IBM Storage Scale for IBM Storage Scale System software on an IBM Storage Scale System. IBM Storage Scale for IBM Storage Scale System software licenses include IBM Storage Scale RAID license entitlement. The license price for IBM Storage Scale for IBM Storage Scale System is tiered; Flash SSDs and Hard Disk HDDs have different list prices per TB. You only need to count the number of SSDs or HDDs for the "Per Disk" metric.

Appendix B - Cross-cluster mount with capacity licensing – IBM Storage Scale client licenses are included

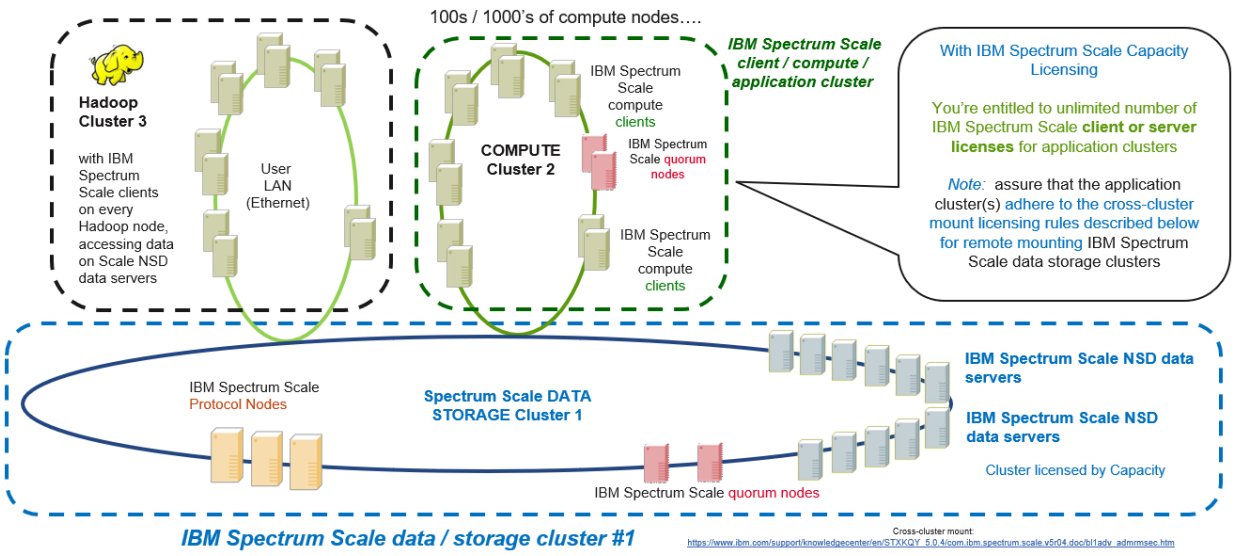


Figure 1: Licensing of cross-cluster mount functionality for capacity licensed IBM Storage Scale clusters

In this section, we diagram and summarize the value of capacity licensing in the remote cross-cluster mount functionality of IBM Storage Scale. In a cross-cluster mount, node(s) in one cluster mount remote file system(s) that is resident in another cluster.

With IBM Storage Scale Capacity Licensing, you are entitled to unlimited number of IBM Storage Scale **client or server licenses** for all the nodes in both local and remote clusters when:

- The Storage Scale data storage cluster that owns the file system being remote mounted is capacity licensed
- The remote compute clusters are also capacity licensed, and only mount file systems from clusters that are capacity licensed.

In the diagram above, if all clusters are capacity licensed, and the NSD storage capacity is kept in Data Storage cluster 1, you are entitled to unlimited numbers of Storage Scale client and server licenses in Compute Cluster 2 and Hadoop Cluster 3.

This illustrates the high value proposition of Storage Scale capacity licensing. The value of capacity licensing in remote cross cluster mount, "compute cluster" configurations is that your compute clusters and numbers of nodes can easily grow, without concern for additional Storage Scale licensing costs for the growing numbers of Compute nodes, Compute clusters, Hadoop nodes, Hadoop clusters. You can install Storage Scale client and server licenses where ever needed according to your technical requirements. You can configure your data storage and compute clusters more easily, more flexibly, and saving money by not having cost restrictions placed by licensing requirements on fast growing numbers of nodes and clusters.

From a best practices standpoint, if you have clusters doing cross-cluster remote mount of file system in other clusters, for ease of record keeping and ease of software compliance, ideally arrange all the

clusters interacting with each other to have the same licensing model, i.e. either “all capacity” or “all-sockets”.

Refer to the IBM Storage Scale online IBM Documentation URL given below for more information on IBM Storage Scale remote mount (also known as cross-cluster mount):

https://www.ibm.com/docs/en/Storage-scale/5.1.4?topic=system-mounting-remote-gpfs-file

Active File Management licensing considerations

Note that this cross-cluster remote mount consider for licensing, does *not* apply to IBM Storage Scale Active File Management (AFM). AFM operates typically over a WAN, has completely different operational characteristics than the cross-cluster mount and usage cases, and has a completely different, much more insulated-from-the-other-cluster operational characteristics.

By design, AFM is designed to be usable on different IBM Storage Scale clusters that could be from different company divisions or even different customer entities.

For this reason, AFM does **not** require two different IBM Storage Scale clusters connected by AFM, to be on the same licensing metrics.

Appendix C - Special Case: Remote cross cluster mount – different cluster licensing metrics

Here we consider and further clarify the special case where we wish to do remote cross-cluster mount, and the two clusters have differing clustering licensing metrics, where the cluster that owns the file system being remote mounted, *is still licensed by sockets*. Consider the diagram below:

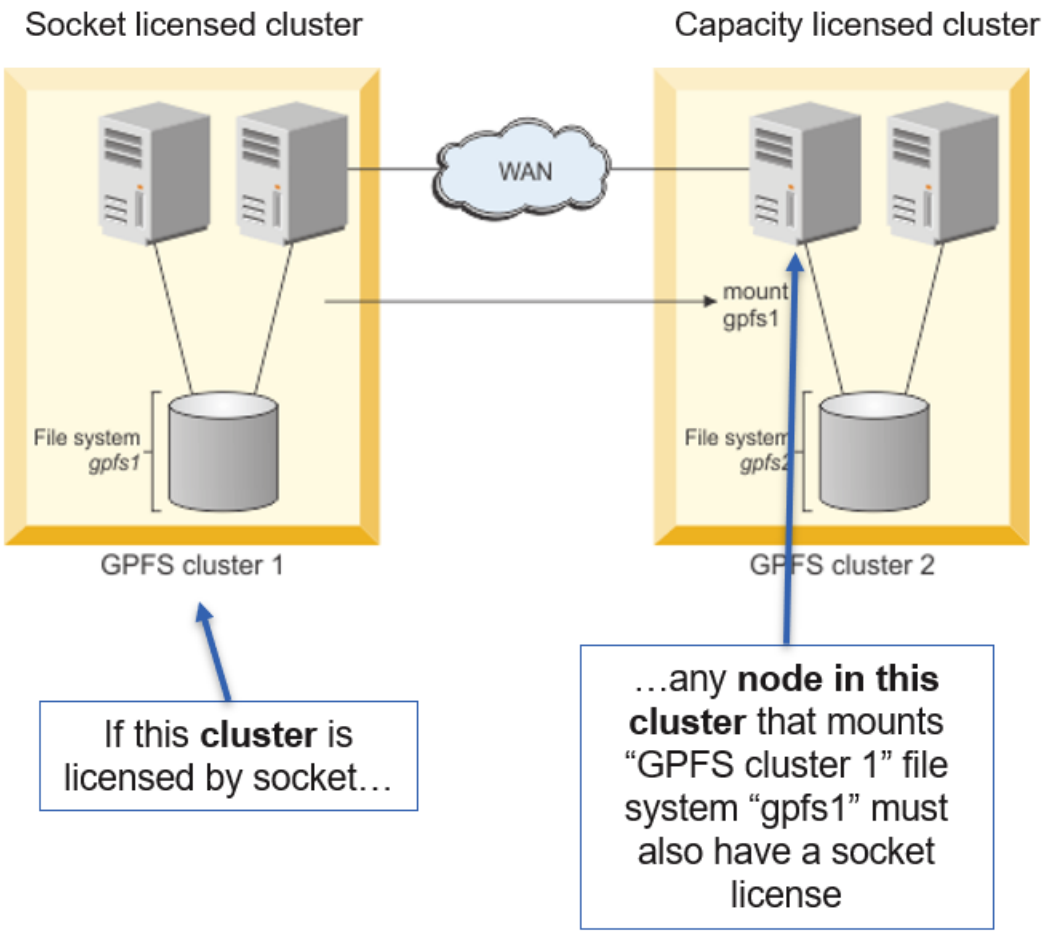


Figure 2: Licensing of cross-cluster mount functionality with mixed cluster licensing metrics

The licensing rule for this special case is:

- 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

The special case can be further illustrated as shown in the diagram above:

- Cluster 1 is licensed by socket.
- Cluster 2 is licensed by capacity.

- Suppose that 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.)*
- And 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.

More information about IBM Storage Scale remote mount (also known as cross-cluster mount), may be found here:

https://www.ibm.com/docs/en/Storage-scale/5.1.4?topic=administering-accessing-remote-gpfs-file-system

Active File Management licensing considerations

Note that this cross-cluster remote mount consider for licensing, does *not* apply to IBM Storage Scale Active File Management (AFM). AFM operates typically over a WAN, has completely different operational characteristics than the cross-cluster mount and usage cases, and has a completely different, much more insulated-from-the-other-cluster operational characteristics.

By design, AFM is designed to be usable on different IBM Storage Scale clusters that could be from different company divisions or even different customer entities.

For this reason, AFM does **not** require two different IBM Storage Scale clusters connected by AFM, to be on the same licensing metrics.

Appendix D - Special case: mixing IBM Storage Scale socket licensing and IBM Storage Scale System models

You may want to add or use IBM Storage Scale System within an IBM Storage Scale cluster that is licensed by Sockets. In such a scenario, you need to license each IBM Storage Scale System machine individually using the appropriate licensing model:

- 1st Generation IBM Storage Scale System machines remain on socket and server licensing
- 2nd Generation and subsequent IBM Storage Scale System machines are licensed Per Disk using Storage Scale for IBM Storage Scale System software (5765-DAx or 5765-DMx)
- License the rest of the cluster as IBM Storage Scale “per Socket” software as before
    - As per the general Storage Scale licensing rule “If *any* node in the IBM Storage Scale cluster is licensed by socket; then IBM Storage Scale servers, clients, protocol nodes, etc. *also all must* be licensed by socket”.

Note

- All nodes in a cluster must be on *compatible* licenses, i.e.
    - All nodes on IBM Storage Scale Standard Edition or Data Access Edition
    - All nodes on IBM Storage Scale on Advanced or Data Management Edition

Normally, licensing per sockets precludes the Socket-based cluster from being able to use the Storage Utility Offering for IBM Storage Scale System (which is based on capacity licensing). However, the customer may convert their sockets-based IBM Storage Scale cluster to Per TiB capacity licensing.

If you have a complex scenario, where it would make sense for IBM to resolve this situation, request your IBM representative to contact IBM Storage Scale Product Management and evaluate the feasibility of creating a custom licensing solution to resolve such a circumstance.

A key value for a Capacity-Licensed cluster is that there is no charge for unlimited number of Storage Scale servers or clients (in the same cluster or a remote mounted separate cluster that is only mounting a capacity-licensed cluster), or protocol nodes, or anything else besides NSD capacity.

If you have other complex licensing scenarios that are not covered by the previous guidelines, contact your IBM representative. They will contact the IBM Storage Scale Product Management to work with you on your situation.

IBM Storage Scale licensing on the 1st generation IBM Storage Scale System were by socket. These models were:

- GL2, GL4, GL6, GS1, GS2, GS4, GS6

These IBM Storage Scale System models were withdrawn from marketing in January 2018. These 1st generation IBM Storage Scale System went End of Service as of December 31, 2021.

Appendix E - Reference Links

Helpful hints and tips are listed below.

You can read more about these functions and functionality levels at the IBM Storage Scale Knowledge Center URL given below:

https://www.ibm.com/docs/en/storage-scale/5.2.3?topic=overview-storage-scale-product-editions

In the IBM Storage Scale IBM Documentation online website, use the drop-down menu to choose your desired release, using the “Change version or product” tab.

This URL takes you to the IBM Documentation online master index for IBM Storage Scale manuals:

https://www.ibm.com/docs/en/Storage-scale

We recommend that you go the IBM Redbooks website, and search on IBM Storage Scale, for a wealth of information:

http://www.redbooks.ibm.com/redbooks.nsf/searchsite?SearchView&query=Storage%20Scale

Other Storage Scale FAQ's

Licensing FAQ

1. **Can I mix the different metrics?**

   Different clusters can be on different metrics and can mount their individual file systems. However, you can't mix socket and TiB or socket and Per Disk licenses within a single cluster (other than the exception for IBM Storage Scale System described in Appendix D).

2. **Do "advanced" functions (e.g. encryption) work across IBM Storage Scale Advanced and Data Management edition clusters?**

   In most cases, Yes.

3. **Who can continue to buy IBM Storage Scale Advanced Edition?**

   All existing customers with Advanced licenses, based on Passport Advantage site number.

4. **Who can continue to buy IBM Storage Scale Standard Edition?**

   All existing customers with Standard licenses, based on Passport Advantage site number.

5. **Does data in Storage Archive or moved to an object store (e.g. AFM) count for Per TiB pricing?**

   You do not pay for external storage pool capacity. You only pay for the capacity of the storage managed by IBM Storage Scale NSD data servers.

6. **What about compression, replication, AFM, etc.?**

   Many things that IBM Storage Scale software does can change the amount of file data you can store. None of these things change the capacity of the NSDs, and therefore don't change the licensed TiBs. The licensed TiBs are stable unless you add or remove NSDs (using the Storage Scale mmcrnsd, mmdelnsd commands).

7. **Binary TiBs or Decimal TBs?**

   Capacity Licensing is in Binary (2^{40} bytes). IBM licensing simply calls these "TBs" or "Terabytes". When IBM intends Decimal TBs, it says "Decimal TBs" or "Decimal Terabytes"

8. **How are Local Read Only Cache (LROC) and Highly Available Write Cache (HAWC) treated in capacity licensing?**

- In a software defined environment (5737I39: Storage Scale Data Access Edition, 5737F34: Storage Scale Data Management Edition, 5737J34: Storage Scale Erasure Code Edition) Local Read Only Cache (LROC) and Highly Available Write Cache are included as capacity measured by mmlslicense.

- In a Scale System environment (5765-DAT: Storage Scale DAE for Storage Scale System, 5765-DMT: Storage Scale DME for Storage Scale System, or the former per disk PIDs) LROC HAWC are not part of the measurement for licensing purposes

9. **What Storage Scale Edition is required for the use of Self Encrypting Drives**

   Storage Scale Data Management Edition or Storage Scale Erasure Code Edition are required for the use of native encryption or Self Encrypting Drives

10. **IBM Fusion Data Catalog entitlement was added to IBM Scale Data Management Edition and IBM Scale Erasure Code Edition in Scale 5.1.8, how is this licensed?**

    In Storage Scale 5.1.8, IBM Fusion Data Catalog was added to the Scale DME and ECE license as a supporting program. It enables unified metadata management and insights for heterogeneous unstructured data. A Scale customer can freely deploy and use Fusion Data catalog. There is no TB limit on Fusion Data Catalog from a licensing perspective. It can be used to scan any data source supported by Fusion Data Catalog. Fusion Data Catalog requires an OpenShift environment. Customers will need to acquire OpenShift licenses needed for the environment. Fusion Data Catalog entitlement with Scale gives a customer the access to the Fusion management services needed to run Fusion Data Catalog.

11. **Where can I find more information on licensing questions related to solutions that OEM Storage Scale**

    Storage Scale FAQ page

    https://www.ibm.com/docs/en/storage-scale?topic=STXKQY/gpfsclustersfaq.html

    Look under FAQ questions 13.10, 13.11, 13.12 and 13.13

Note

Refer to the IBM Storage Scale online IBM Documentation at the given URL for a more detailed FAQ: https://www.ibm.com/docs/en/STXKQY/gpfsclustersfaq.html

IBM Storage Scale Erasure Code Edition FAQs

The following frequently asked questions focus on Storage Scale Erasure Code Edition licensing questions. For more ECE FAQs, see the IBM Storage Scale FAQ section on Erasure Code Edition (currently Chapter 18), at:
https://www.ibm.com/docs/en/STXKQY/gpfsclustersfaq.html

12. **What is the value proposition of IBM Storage Scale Erasure Code Edition**?

    IBM Storage Scale Erasure Code Edition provides all the functionality, reliability, scalability, and performance of IBM Storage Scale Data Management Edition, plus network-dispersed IBM Storage Scale RAID, on the customer's own choice of commodity hardware.

13. **What are the hardware and software requirements for IBM Storage Scale Erasure Code Edition?**

    Currently, IBM Storage Scale Erasure Code Edition supports popular x86 servers running Red Hat Enterprise Linux (RHEL). It requires certain widely used server technologies and specific configuration requirements. It does not require specific vendors or models. See the Storage Scale FAQ (https://www.ibm.com/docs/en/Storage-scale?topic=STXKQY/gpfsclustersfaq.html), chapter 18, "Storage Scale Erasure Code Edition Questions" for more details.

14. **What are the pre-requisites for ordering IBM Storage Scale Erasure Code Edition?**

    You should converse with your IBM team to determine if this edition is an appropriate solution to your IBM Storage Scale needs. IBM Storage Scale Erasure Code Edition will require running IBM provided network and server pre-check tools to assure that the server/network configuration will be able to support ECE. These network and server pre-check tools can be accessed at: https://github.com/IBM/StorageScaleTools

    If you need help in determining if IBM Storage Scale Erasure Code Edition is an appropriate solution for your environment, contact your IBM or IBM Business Partner representative.

15. **How to license and order IBM Storage Scale Erasure Code Edition?**

    IBM Storage Scale Erasure Code Edition is a generally availability product. It may be ordered with Per Terabyte (binary TiB) licensing metric through normal IBM Software ordering procedures. See the IBM Storage Scale 5.1 announcement letter of October 13, 2020, for more details on ordering procedures. Note that Storage Scale Erasure Code Edition is currently supported only on x86 servers, and only on Red Hat Enterprise Linux at appropriate release levels.

    Note that ordering IBM Storage Erasure Code Edition with optional Per Petabyte licensing metrics is a restricted part number. If you desire to order ECE with these licensing metrics, contact your IBM representative. They will work with IBM Storage Scale Product Management to assure ECE is an appropriate solution. Upon acceptance and approval by IBM Storage Scale Product Management that ECE is an appropriate solution, Product Management will approve order placement for IBM Storage Scale Erasure Code Edition with these licensing metrics.

IBM Storage Scale Erasure Code Edition, when licensed by “per usable terabyte TiB” or by “per usable petabyte PiB”, uses IBM Storage Scale’s definition of “usable capacity” being “the aggregate binary TiB or PiB, that is visible to the IBM Storage Scale NSD data servers”. This means that changing the Erasure Code Edition parity scheme also changes the amount of usable storage capacity. It is the responsibility of the customer to monitor their ECE usable capacity, and assure that the appropriate amount of Erasure Coded Edition Per Terabyte (binary TiB) or Per Petabyte (binary PiB) licensing is in place. Note that in IBM definitions, “terabyte” and “petabyte” are binary, i.e. 2^{40} bytes and 2^{50} bytes respectively.

16. **Does ECE support IBM POWER servers?**

    At this time, only x86 servers are supported.

    For more information on ECE supported hardware, see the IBM Storage Scale FAQ section on Erasure Code Edition at:
    https://www.ibm.com/docs/en/STXKQY/gpfsclustersfaq.html#ece__whyece

17. **Can IBM Storage Scale Erasure Code Edition be purchased through IBM Business Partners?**

    IBM Storage Scale Erasure Code Edition with the standard Per TiB licensing metric is orderable by IBM Business Partners through normal IBM Software ordering procedures. Prerequisite network checks as documented in question 13 above must be performed by the IBM Business Partner to assure that ECE is an appropriate solution for your environment.

18. **Is IBM Storage Scale Erasure Code Edition included in the Storage Suite?**

    IBM Storage Scale Erasure Code Edition is not currently included in the Storage Suite.

19. **May I purchase ECE and use it both with and without the erasure coding capability, i.e. both internal disk and SAN/LAN configurations?**

    Yes. The IBM Storage Scale Erasure Code Edition license will allow you to download any of IBM Storage Scale Erasure Code Edition, Data Management Edition or Data Access Edition. You will be responsible to be compliant with licensing provided the total TBs deployed across all Editions does not exceed your IBM Storage Scale Erasure Code Edition entitlement.

20. **May I use my IBM Storage Scale Erasure Code Edition licenses in a cluster together within an IBM Storage Scale System? If so, will the required capacity continue to be calculated as it is today with IBM Storage Scale Data Management Edition, i.e. as the net / RAIDed capacity reported by the IBM Storage Scale mmlslicense command and/or the IBM Storage Scale System GUI?**

    Yes, you may deploy ECE licenses in the same cluster as IBM Storage Scale System. IBM Storage Scale Erasure Code Edition licenses will be treated for licensing purposes, the same as IBM Storage Scale DME licenses. If your ECE clusters’s “Per TiB” or “Per PiB” licensing metrics will be combining ECE with Storage Scale for IBM Storage Scale System Data Management Edition “Per Disk” licenses, the same licensing rules apply as discussed in “IBM Storage Scale System Customers with Combined Licenses“ on page 13 of this document.

Note that it is stated on page 13, that " All nodes (in a Storage Scale cluster) need to be on functionality compatible Editions". It is stated for Storage Scale ECE in table on pages 6,7, that ECE has the functionality of Data Management Edition.

This means that if you have Storage Scale ECE nodes and IBM Storage Scale System nodes in the same Storage Scale cluster, the IBM Storage Scale System must be running Storage Scale for IBM Storage Scale System Data Management Edition (5765-DME).

Also see Storage Scale FAQ question 18.3 for additional considerations for ECE and IBM Storage Scale System in the same cluster:
https://www.ibm.com/docs/en/STXKQY/gpfsclustersfaq.html#ece__eceess

21. **Can IBM Storage Scale Erasure Code Edition be offered within an ELA, provided the client meets OM's technical & business prerequisites?**

    Yes. Please contact your IBM representative who will contact IBM Storage Scale product management to request approval of ECE being included in the ELA.

22. **Is it possible for IBM to trade-up existing IBM Storage Scale licensees to IBM Storage Scale Erasure Code Edition from (a) IBM Storage Scale Data Management Edition/Suite, (b) IBM Storage Scale Data Access Edition, (c) IBM Storage Scale Advanced Edition, (d) IBM Storage Scale Standard Edition?**

    Existing licenses for any Edition of IBM Storage Scale can be traded up. Contact your IBM representative to work with IBM Storage Scale Product Management for a quote. Trade-ups from IBM Storage Scale Data Management Edition or Data Access Edition will be "one TB for one TB" and based on the difference in price between the editions. Trade-ups from IBM Storage Scale Advanced Edition or IBM Storage Scale Standard Edition are similar to the existing process for trading up to Data Management Edition.

23. **May I deploy IBM Storage Scale Erasure Code Edition in the same Scale cluster as (a) IBM Storage Scale Data Access Edition, (b) Data Management Edition, (c) IBM Storage Scale System Data Access Edition, (d) IBM Storage Scale System Data Management Edition? How are the current rules governing Multi-Clustering of different Scale Editions affected by the introduction of IBM Storage Scale Erasure Code Edition?**

    The same rules apply to IBM Storage Scale Erasure Code Edition as to IBM Storage Scale Data Management Edition. Therefore, yes, Storage Scale Erasure Code Edition can be intermixed in clusters that run Storage Scale Data Management Edition, Storage Scale Advanced Edition, and Storage Scale for IBM Storage Scale System Data Management Edition. Note that different IBM Storage Scale edition functionality levels cannot be mixed in the same cluster.

    For multi-clustering, the same licensing rules apply as Appendix A and Appendix B of this document. Multi-clustering is supported, with the same limitations as for Data Management Edition. See the multi-cluster discussion in Appendix A and Appendix B in this document for details.

    Also see Storage Scale FAQ question 18.3 for additional considerations for ECE and IBM Storage Scale System in the same cluster:
    https://www.ibm.com/docs/en/STXKQY/gpfsclustersfaq.html#ece__eceess

24. **Can IBM Storage Scale Erasure Code Edition ensure the following:**
(a) be fully managed and accessed from containers through Storage Container Interface,
(b) be run by itself in container mode?

IBM Storage Scale Erasure Code Edition will support containerized workloads today and containerization in the future in the same way as other IBM Storage Scale editions.

a) At today's current release levels, this means that Storage Scale containers can remote mount existing Storage Scale ECE NSD data servers.

b) Standalone Storage Scale ECE NSD data servers themselves are not currently supported in containers in standalone Storage Scale software.

