Storage Scale

IBM Storage Scale

IBM Storage Scale System

Licensing Information

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About this Document

In this document, we describe software licensing terms and conditions 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

Change Log

Authors	*Role*	*Date*	*Comments*
John Sing Carl Zetie	Storage Scale Offering Evangelist Offering Manager, Storage Scale	December 2019	Initial version
John Sing Tom O'Brien	Storage Scale Technical Leader Product Manager, Storage Scale	September 2021	2nd Edition. Updates for clarity and changes in licensing. Refined the Storage Scale Erasure Code Edition FAQ. Updated online IBM Documentation URL links. Changed "Elastic Storage Server" to "Elastic Storage System". Changed "Offering Management" to "Product Management"
John Sing Tom O'Brien	Storage Scale Technical Leader Product Manager, Storage Scale	September and October 2021	2.2 Edition. Page 4 and 8, clarified that Per TiB / PiB capacity license is the aggregate of binary TiB/PiB presented *to* the cluster from the NSD servers (*not* "by" the NSD servers).
John Sing Tom O'Brien	Storage Scale Technical Leader Product Manager, Storage Scale	October 15, 2021	2.2.1 Edition. Updated Storage Scale logo on title page. Updated Storage Scale ECE FAQ question 19 on page 29-30 to note that ECE has Data Management Edition level of function, therefore all other nodes in that same Storage Scale cluster must also be at functionality equivalent Data Management Edition level. Updated Appendix B link to "accessing remote Storage Scale file system"
John Sing Tom O'Brien	Storage Scale Technical Leader Product Manager, Storage Scale	August 23, 2022	2.2.2 Edition. Updated "License Trade-Ups" on page 14. Other minor clarifications and enhancements.
Tom O'Brien	Product Manager, Storage Scale	March 15, 2024	Updated Branding: IBM Storage Scale and IBM Storage Scale System. Added FAQ on Fusion Data Catalog. Other minor clarifications and enhancements
Tom O'Brien	Product Manager, Storage Scale	May 21, 2024	Updated example in Appendix D - Using mmlslicense to verify cluster capacity

IBM Storage Scale and IBM Storage Scale System Licensing – An Overview

IBM Storage Scale capacity licensing was announced in November 2017 with IBM Storage Scale. It is currently available across all IBM Storage Scale functionality levels. It provides the ability to license IBM Storage Scale clusters on a capacity licensing model and is calculated based on the aggregate usable capacity (total usable capacity) as seen by IBM Storage Scale NSD data servers in a cluster.

Note
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.

The general rule for capacity licensing is that all nodes in a single IBM Storage Scale cluster must be licensed by either "all capacity" or "all-sockets."[1]

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.

Separate IBM Storage 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[2].

Licensing Metrics

IBM Storage Scale capacity licensing can be measured using two metrics (under separate IBM Program IDs):

- "Per TiB" (Binary Tebibyte) or "Per PiB" (Binary Pebibyte) for IBM Storage Scale software environments.

- "Per Drive" ("per flash SSD or per HDD") for IBM Storage Scale System

  - Though IBM Storage Scale System is usually ordered with "Per Drive" license (which is also a capacity-based license), Scale System may also be ordered with "Per TiB" or

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[1] See "Appendix C - Special case: mixing IBM Storage Scale socket licensing and IBM Storage Scale System models", if you wish to add Storage Scale Server to existing socket-licensed clusters.
[2] See "Appendix B - Special Case: Remote cross cluster mount – different cluster licensing metrics Appendix A - Cross-cluster mount with capacity licensing – IBM Storage Scale client licenses are included" for additional discussion on this topic

"Per PiB" IBM Storage Scale licenses, or covered by a customer's existing IBM Storage Scale perpetual capacity licenses. Storage Scale System may also be covered by an Enterprise License Agreement which includes IBM Storage Scale.

- o An IBM Storage Scale System with a "Per Drive" license can be intermixed in the same cluster with other servers and storage which are covered by a "Per TiB" license. However, you need to ensure that you follow the licensing rules including use of the same IBM Storage Scale functionality level Edition. See "Customers with Combined Licenses" on page 13 of this document for more information.

Licensing Values and Benefits

Capacity Licensing brings great value to IBM Storage Scale and Storage Scale System clusters. Some of its important benefits include the following:

- Easy to understand and configure licensing

- Easy purchase and renewal procedures

- Easy to plan future budget

- Simplified IBM Storage Scale licensing audit rules eases audit and compliance processes. This is particularly useful as the cluster may grow to hundreds or even more nodes.

- It ensures an unlimited number of IBM Storage Scale client and server licenses for the cluster.

- Storage Scale remote mount clusters can also qualify for unlimited client and server licenses. This can be a significant value in terms of ease of licensing, tracking and audit, and cost reduction. In order for the Storage Scale remote cluster to qualify, ensure that all clusters interacting with each other while performing a remote mount of file systems, have the have the Capacity licensing model[3]. Refer to the Appendix A for more details on multi-cluster environment.

- It enables an existing IBM Storage Scale customer, to continue with their sockets-based licensing model on a per cluster and/or per Passport Advantage (PA) site-ID basis, for as long as they wish. If you are an existing IBM Storage Scale Socket-licensed customer, there will be no disruption or forced migration from IBM Storage Scale sockets licensing.

Note
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

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[3] Refer to "Appendix A - Cross-cluster mount with capacity licensing – IBM Storage Scale client licenses are included" and "Appendix B - Special Case: Remote cross cluster mount – different cluster licensing metrics" for additional discussion on this topic.

- 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.

License Editions

IBM Storage Scale is licensed by cluster. Separate IBM Storage Scale clusters (which do not interact with each other through cross-mount or remote mount) may be licensed with different Editions and/or different functionality levels. The License editions include the following:

- IBM Storage Scale Standard Edition

- IBM Storage Scale Advanced Edition

- IBM Storage Scale Data Access Edition, IBM Storage Scale for IBM Storage Scale System Data Access Edition

- IBM Storage Scale Data Management Edition. IBM Storage Scale for IBM Storage Scale System Data Management Edition

- IBM Storage Scale Erasure Code Edition

Note
• IBM Storage Scale Erasure Code Edition (ECE), described later in this document, has the same functionality level of IBM Storage Scale Data Management Edition and IBM Storage Scale Advanced Edition. However, it also provides the additional function of distributed IBM Storage Scale RAID across specific OEM distributed storage rich servers. The IBM Storage Scale Erasure Code Edition is a specific edition for the specific environments that require the use IBM Storage Scale RAID on storage rich servers.

The following table reviews the major features/functions of IBM Storage Scale that are available under the different editions:

https://www.ibm.com/docs/en/storage-scale/5.1.9?topic=overview-storage-scale-product-editions

Note
IBM Storage Suite includes IBM Storage Scale Data Management Edition. You may use your Storage Suite license to acquire and use IBM Storage Scale Data Management Edition on a Per TiB basis.

> Currently, both IBM Storage Scale Data Access Edition and IBM Storage Scale Erasure Code Edition are excluded from the Storage Suite.

License Edition Features for Customer Categories

New Customers – License by TiB

Capacity Licensing for new IBM Storage Scale software customers is on a per TiB basis. The features and functions provided by different license editions are as follows:

IBM Storage Scale Data Access Edition (DAE)

- Flat Per TiB pricing

    o No tiers. Just count all the TiBs in all the NSDs in the cluster

    o No charge for clients (in the same cluster or separate cluster), or protocol nodes, or server nodes (quorum, admin, etc.), or anything else besides NSD capacity

- Based on provisioned, usable TiB capacity seen by NSD servers

    o i.e. Total NSD usable capacity "visible" and presented to the IBM Storage Scale cluster from the NSD Data Servers, i.e. *after* applying h/w RAID, h/w mirroring, h/w spares, etc.

    o Also available as Per PiB license for large deployments

- To verify or audit for compliance, simply run:

    o `mmlslicense --capacity --formatted` command for each cluster, or use the IBM Storage Scale GUI (look under the "About" tab)

IBM Storage Scale Data Management Edition (DME)

- Includes all DAE functionalities

- Software encryption of IBM Storage Scale data

- Asynchronous disaster recovery (AFM-ADR)

- File audit logging

- Watch folder

Erasure Code Edition (ECE)

- All functionalities available under IBM Storage Scale Data Management Edition

- Deploy on storage rich servers with internal storage using IBM Storage Scale RAID (the same proven technology used in IBM Storage Scale System), using erasure coding for high durability, space efficiency, and rapid rebuilds.

Note
- Provisioned, usable capacity is the same as physical storage usable capacity with thick provisioned block storage. Note that with thin provisioning, provisioned volume capacity may be significantly larger than physical capacity.   - IBM Storage Scale provides support for thinly provisioned storage in specific circumstances. The IBM Storage Scale FAQ has a section (currently, questions 4.12 through 4.14, at: https://www.ibm.com/docs/en/STXKQY/gpfsclustersfaq.html#thinprov) detailing IBM Storage Scale considerations for support of thin provisioned block storage. Question 4.13 states you must request an IBM RPQ to support thin provisioned storage. All thin provisioned storage may not be supported. If the IBM RPQ is granted, this will assure you have approved IBM Service/Support for running IBM Storage Scale on your specific configuration of thin provisioned storage.   - The `mmlslicense --capacity --formatted` command was introduced with IBM Storage Scale in April 2017. It will show the sum of the NSD TiB capacity for this cluster. This command and the IBM Storage Scale GUI, takes into account the effect of a Storage Scale System with IBM Storage Scale RAID, or IBM Storage Scale Erasure Code Edition (ECE) erasure coding. Refer to Appendix D for a detailed explanation along with an example. Note the exceptions to this command in "Customers with Combined Licenses" on page 13.

Existing Customers – Licensed by Sockets

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, a 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/5.1.9?topic=overview--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.

The features and functions provided by different license editions for socket-licensed customers are as follows:

IBM Storage Scale Standard Edition, licensed per socket

- For existing customers of the edition

  o All features as defined by Passport Advantage site ID are available

- To verify or audit for license compliance, customer must count sockets on each machine (system dependent process)

IBM Storage Scale Advanced Edition, licensed per socket

- For existing customers of Advanced Edition.

  o All features as defined by Passport Advantage site ID are available

- To verify or audit for license compliance, customer must count sockets on each machine (system dependent process)

IBM Storage Scale System Customers – Licensed per disk

A specific IBM Program ID with a "Per Disk" metric (5765-DAE or 5765-DME), is 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.

A definite advantage of the "Per Disk" metric is size of the SSD or HDD does not change the license list price. For example, if your IBM Storage Scale System model has 502 HDDs, your IBM Storage Scale for IBM Storage Scale System license list price would be the same, regardless of whether you are specifying 8TB HDDs or 14TB HDDs.

IBM Storage Scale for IBM Storage Scale System licensing helps to contribute to building a complete IBM hardware and software solution, by integrating the IBM Storage Scale and IBM Storage Scale System solution.

IBM Storage Scale for IBM Storage Scale System licenses can only be used on IBM Storage Scale System hardware. However, it can be transferred from the current generation "Per Disk"-licensed IBM Storage Scale System that is being decommissioned and re-used on its future or replacement IBM Storage Scale System equivalent, as long as the IBM machine type stays the same.

There are two License Editions for IBM Storage Scale for IBM Storage Scale System, which are:

- IBM Storage Scale for IBM Storage Scale System Data Access Edition (IBM program ID - AAS PID: **5765-DAE**)

- IBM Storage Scale for IBM Storage Scale System Data Management Edition ((IBM program ID -AAS PID**: 5765-DME**)

None of these IBM Storage Scale for IBM Storage Scale System program IDs have a Passport advantage number, therefore all Service/Support renewals for Storage Scale for IBM Storage Scale System software must be done through AAS.

Note

The PIDs (Program IDs) for IBM "IBM Storage Scale for IBM Storage Scale System" are *different* than the PIDs for "IBM Storage Scale" software-only, which uses IBM PID **5641-DAx** or **5641-DMx** (x = 1, 3, or 5 yrs of maintenance.

Note that when calling IBM for Service and Support for Storage Scale for IBM Storage Scale System, you open the ticket specifying "IBM Storage Scale System" thus routing you to the IBM Storage Scale

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System Solution Service/Support. You do **NOT** open the Storage Scale for IBM Storage Scale System ticket by specifying "Storage Scale".

More information on IBM Storage Scale System Solution Service Support may be found in the IBM Storage Scale System Support Reference Guide here:
https://www.ibm.com/support/pages/node/6252477

IBM Storage Scale System can also be licensed by an IBM Storage Scale software "Per TiB" or "Per PiB" license. If you opt for this licensing model, the usual "Per TiB" capacity licensing rules will apply. In the case of IBM Storage Scale System, this means licensing the entire IBM Storage Scale System with the maximum aggregate usable NSD data server capacity reported by the "`mmlslicense –capacity -- formatted`" command or the Storage Scale GUI. Higher degrees of parity and/or replication will reduce the aggregate usable TiB capacity that is reported by the NSD data servers, thereby reducing the amount of IBM Storage Scale usable capacity TiB that you are obligated to license.

However, as requirements can change, it is prudent to plan to capacity license for the highest IBM Storage Scale System usable TiB capacity that will be used on that IBM Storage Scale System model.

Contact your IBM representative if you need assistance in estimating the amount of usable TiB that will be surfaced to IBM Storage Scale NSD data servers by an IBM Storage Scale System.

IBM Storage Scale for IBM Storage Scale System software still provides all the benefits of the IBM Storage Scale capacity license, particularly the ones mentioned below:

- There is no charge for unlimited number of additional IBM Storage Scale clients or servers or protocol nodes, or anything else, other than the NSD capacity in the same capacity-licensed cluster

- The unlimited number of additional IBM Storage Scale clients, servers or protocol nodes also applies to any remote cluster that mounts IBM Storage Scale capacity-based clusters[4]

IBM Storage Scale System customers may also have an Enterprise License Agreement (ELA) and may choose to license their IBM Storage Scale System using their ELA IBM Storage Scale Per TiB capacity licensing.

An Enterprise License Agreement (ELA) is a separate IBM software agreement where a specified amount of IBM Software licenses (IBM Storage Scale per TiB) have already been purchased to be used where ever desired within the enterprise.

LICENSE EXCEPTIONS
IBM makes an exception to the general rule that "a cluster must be all-capacity or all-sockets" if you wish to use your 1st generation IBM Storage Scale System (licensed by socket) in a capacity-licensed cluster.

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[4] See "Appendix A - Cross-cluster mount with capacity licensing – IBM Storage Scale client licenses are included" for more discussion on this topic.

However, all nodes in a single cluster must have functionality compatible Editions.
Refer to the Appendix C for more details.

Customers with Combined Licenses

If you desire to have a combination of IBM Storage Scale "Per TiB" capacity-licensed software and IBM Storage Scale for IBM Storage Scale System "Per Disk" in one cluster, you can opt for either of the two Licensing options. An example of this would be having both software-only Storage Scale NSD data servers and IBM Storage Scale System in the same Storage Scale cluster. The general rule for this scenario is to consider the IBM Storage Scale System as a "licensing island" that can be excluded while planning licensing for the rest of the IBM Storage Scale cluster:

- License Scale and IBM Storage Scale System separately, with compatible licenses - The features available under this option include:

  o Each IBM Storage Scale System machine is individually licensed with the Per Disk license while the rest of the Storage Scale NSD data servers in the cluster are licensed as software with Per TiB or Per PiB licenses

  o All nodes in a cluster must be on functionality compatible Editions. Examples include (but not limited to):

    o All nodes must be on IBM Storage Scale Data Access Edition or Data Management Edition or

    o IBM Storage Scale System must be on IBM Storage Scale Data Management Edition and other nodes on IBM Storage Scale Erasure Code Edition

- License entire cluster using Per TiB
  This licensing model is an option for customers who want to use an IBM Enterprise License Agreement (ELA) to cover everything, or want to reuse existing software licenses with an IBM Storage Scale System purchase, and thus do not want to order the Storage Scale for IBM Storage Scale System "Per Disk" licenses. The IBM Storage Scale System capacity is calculated as usable capacity *after* applying IBM Storage Scale RAID. It is important that all nodes in a cluster are on functionality compatible Editions.

- If you are using the "License entire cluster using Per TiB" option, it is important for proper ordering that your IBM representative should remove the default IBM Storage Scale for IBM Storage Scale System "Per Disk" license from your IBM Storage Scale System order and license the IBM Storage Scale System using the IBM Storage Scale "Per TiB" software license from the ELA

Note
- If IBM employees or IBM Business Partners need to order IBM Storage Scale System without IBM Storage Scale for IBM Storage Scale System 5765-DxE licensing in the eConfig, they need to do the following: - In eConfig for ESS 5000, on the **5105-22E server configuration** screen, select the **Preload only, no license** option.

> • In eConfig for ESS 3200 or ESS 3500, on the **5141-FN1 or 5141-FN2 configuration** screen under "IBM Storage Scale Edition Packages", select the "**Preload only, no license**" option.

The IBM team, the IBM Business Partner, and the customer are responsible for ordering and installing the correct amount of IBM Storage Scale Per TiB or Per PiB software licensing as appropriate for these scenarios.

For more information on how to use eConfig to order an IBM Storage Scale System and delete the normal defaulted IBM Storage Scale for IBM Storage Scale System software order, IBMers and Business Partners are encouraged to request help from IBM Techline.

Note

> • Refer to the Appendix A and Appendix B for more details on different conditions of multi-cluster environments you need to consider for licensing.
>
> • In case of complex licensing scenarios that are not covered by the previous guidelines, IBM Storage Scale Product Management will be happy to work with you towards a solution. Contact your IBM representative for any assistance if required.

License Trade-ups

Existing IBM Storage Scale "Per Socket" customers can choose to convert to "Per TiB" capacity licensing. This can be done on a per-cluster basis. IBM is not requiring customers to trade-up. Customers can choose to trade up.

A common reason for trading up is a customer on IBM Storage Scale Standard Edition who wants to move to IBM Storage Scale Data Management Edition to take advantage of enhanced functionality such as software encryption. Another common reason for trading up is an interest in licensing simplicity.

The pricing on a trade up purchase is calculated by IBM with the goal that Service & Support maintenance after trade-up remains the same when moving to a commensurate edition (e.g. Standard Edition to Data Access Edition, Advanced Edition to Data Management Edition). For a cross edition trade up (e.g. Standard Edition to Data Management Edition), there is a Service & Support maintenance increase in association with the "to" edition price uplift, and there is a one-time incremental license differential fee.

If a customer wishes to purchase more TiBs than needed for their current deployment, they may purchase additional TiBs using the net new capacity Data Access Edition (DAE) or Data Management Edition (DME) parts either after or concurrent with their trade up part transaction. Existing IBM Storage Scale DAE and DME customers may also upgrade to IBM Storage Scale Erasure Code Edition (ECE).

Customers should contact their IBM Representative if they would like to trade up to Storage Scale capacity licensing. They should provide their IBM customer number, Passport Advantage site ID, and the total number of TiBs currently under Storage Scale management as evidenced by

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the "`mmlslicense –capacity --formatted`" command. Your IBM representative can
work with IBM's Storage Scale product manager and WW Brand pricer to create an associated bid.

Appendix

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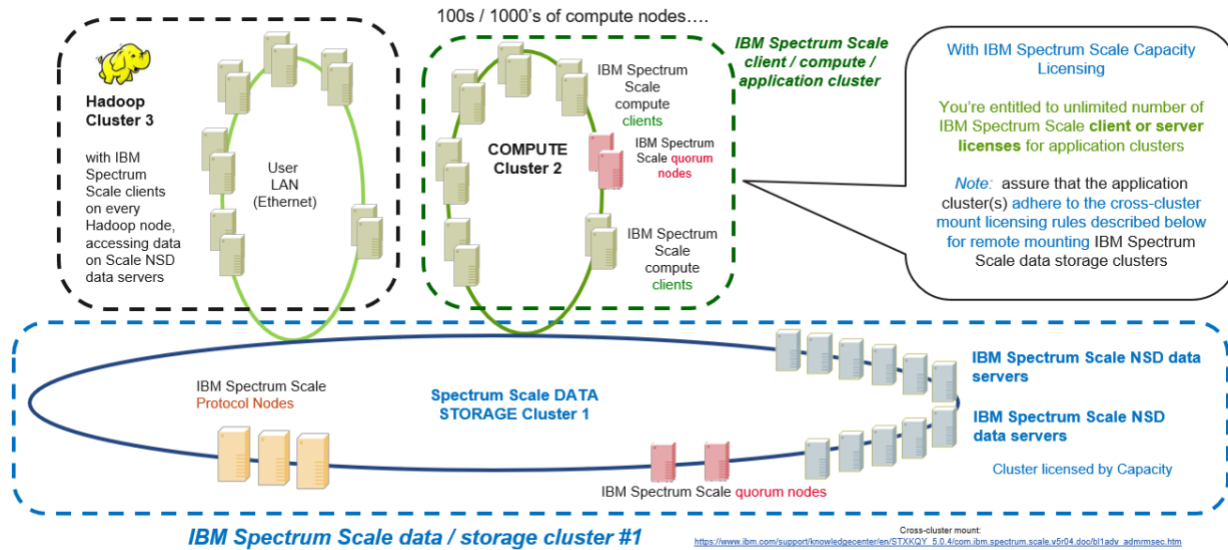

Figure 1: Licensing of cross-cluster mount functionality for capacity licensed IBM Storage Scale clusters

In this chapter, 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

Note
• Note: IBM also supports the special case that allows socket-based and capacity-licensed clusters to be able to remote cross-cluster mount with each other within specific licensing rules.   See Appendix B for more details. Please contact your IBM representative for any queries on IBM Storage Scale licensing in a multi-cluster / remote cluster environment.

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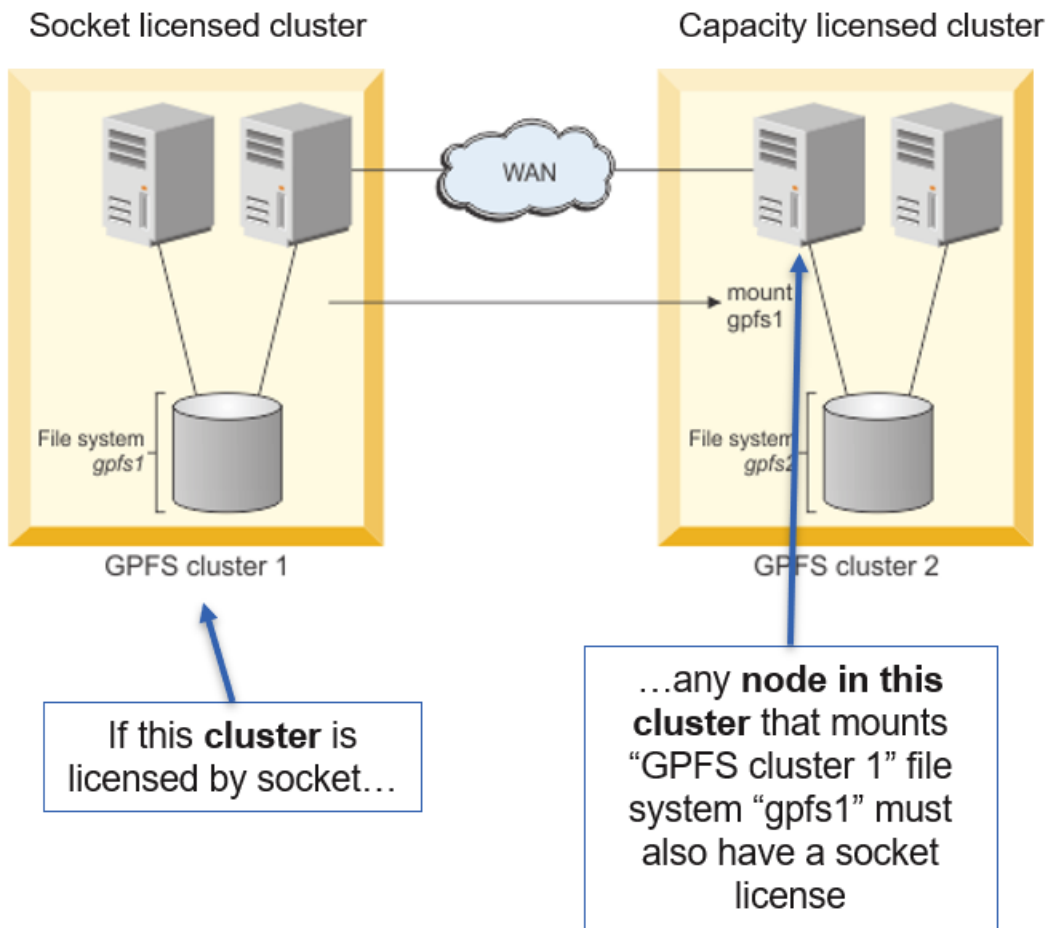
Figure 2: Licensing of cross-cluster mount functionality with mixed cluster licensing metrics

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 C - 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

    o 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 D - Using mmlslicense to verify cluster capacity

The `mmlslicense` command was introduced to IBM Storage Scale in April 2017, and is present in all currently supported releases of Storage Scale. It 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@sess6k1vm-mgmt ~]# mmlslicense --capacity --formatted

NSD Summary:
=====================
  Total Number of NSDs:     4
  RG001LG001VS001:          34.943.501.598.720 Bytes
  RG001LG002VS001:          34.943.501.598.720 Bytes
  RG001LG003VS001:          34.943.501.598.720 Bytes
  RG001LG004VS001:          34.943.501.598.720 Bytes

Cluster Summary:
=====================
  Cluster Total Capacity:   139.774.006.394.880 Bytes
```

Figure 1: mmlslicense Command

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

The mmlslicense command returns the aggregate number of bytes, this needs to be converted to TiB. A simple way to do this is to use an online calculator. You can find this by searching online "convert bytes to TIB".

```
Digital Storage

139,774,006,394,  =  127.12371826171

Byte              Tebibyte
```

The cluster shown in the example above would need to be licensed for 128TiB.

> Note: Storage Scale software data replication does not reduce the aggregate TB of usable capacity reported by the NSD Data Servers. For example, if for the above 128 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 128 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

If you are on a older level of IBM Storage Scale that does not support this command and need to aggregate your NSD server capacity for licensing purposes, simply sum up the total NSD capacity across your NSD data servers. If necessary, a script is available upon request from IBM Service/Support that will

assist you in summarizing the NSD capacity across multiple IBM Storage Scale capacity licensed data servers and clusters.

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, Transparent Cloud Tiering nodes, AFM gateways, or anything else besides NSD usable TiB capacity.

Please note if you are combining IBM Storage Scale System "Per Disk" and non- IBM Storage Scale System "Per TiB" capacity licensing in the same cluster, as described in "Customers with Combined Licenses" on page 13, that there is an exception to this `mmlslicense` license reporting scenario. If you are in the "IBM Storage Scale System and non- IBM Storage Scale System combining licenses scenario", you would treat the IBM Storage Scale System as a "licensing island" . Therefore, you would manually subtract the aggregate IBM Storage Scale System usable capacity from the output of the `mmlslicense` command, to arrive at the aggregate usable NSD data server capacity that needs to be licensed in this cluster for the other Storage Scale NSD data servers, by "Per TiB" capacity license.

Appendix E - 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.
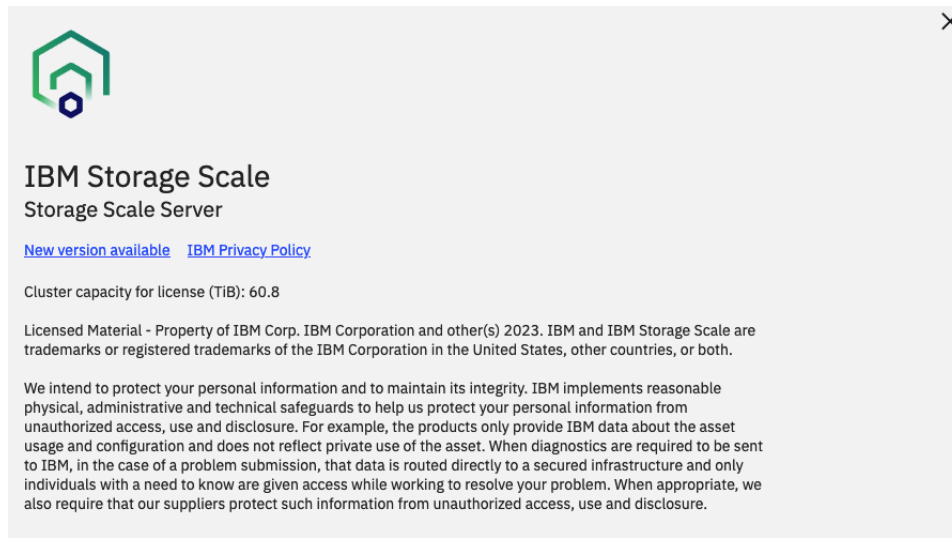

Figure 2: IBM Storage Scale GUI

Please note that if you are combining IBM Storage Scale System "Per Disk" and non- IBM Storage Scale System "Per TiB" capacity licensing in the same cluster, as described in "Customers with Combined Licenses" on page 13, that there is an exception to this GUI "About" license reporting scenario.

If you are in the "IBM Storage Scale System and non- IBM Storage Scale System combining licenses scenario", you would treat the IBM Storage Scale System as a "licensing island" .

Therefore, you would manually subtract the aggregate IBM Storage Scale System usable capacity from the output of the GUI "About" screen shown above, to arrive at the aggregate usable NSD data server capacity that needs to be licensed in this cluster for the other Storage Scale NSD data servers, by "Per TiB" capacity license.

Appendix F - IBM Storage Scale Per TiB Capacity Licensing with IBM Storage Scale System

Summarizing what has been previously stated elsewhere in this document, customers may choose to use traditional IBM Storage Scale Per TiB perpetual licenses to license their IBM Storage Scale System (and not the normal default IBM Storage Scale for IBM Storage Scale System Per Disk licenses).

Some reasons for using this licensing option are:

- Use IBM Storage Scale capacity licenses in an ELA, IULA or similar environment, to license IBM Storage Scale System machines

- Trade up existing IBM Storage Scale software socket licenses to use against new IBM Storage Scale System machines

- License a mixed environment of IBM Storage Scale System and IBM Storage Scale using "Per TiB" licensing

IBM Storage Scale software (i.e. IBM Storage Scale Data Access Edition Per TiB or Data Management Edition Per TiB) can be used to license IBM Storage Scale System. This is a conventional perpetual IBM Storage Scale software license that can be used for "new" or "old" IBM Storage Scale System, or any Scale software deployment, or any mixture.

When ordering IBM Storage Scale System for this scenario, the IBM / IBM Business Partner team must delete the IBM Storage Scale for IBM Storage Scale System licenses that are normally defaulted and included in the eConfig for IBM Storage Scale System order. The IBM team, IBM Business Partner and the customer are then responsible to separately purchase and assure the customer profile is installed with the correct amount of required Storage Scale "Per TiB" licenses through Passport Advantage or AAS.

IBM Storage Suite licenses can also be used against IBM Storage Scale System in a similar manner. Existing IBM Storage Scale software socket licenses can also be converted to IBM Storage Scale Data Access Edition Per TiB or Data Management Edition Per TiB. For example, an enterprise may have existing unused Socket licenses, perhaps in an ELA.

Contact your IBM representative to collaborate with IBM Storage Scale Product Management team and utilize the (restricted) Trade Up part in Passport Advantage to convert sockets to sufficient TB capacity.

Usable capacity on an IBM Storage Scale System is defined as the total TiB usable capacity as seen by the NSD Data Servers. This refers to the usable capacity that is seen after applying IBM Storage Scale RAID.

Note
There is no path to re-use "old" IBM Storage Scale System socket licenses or "new" IBM Storage Scale System per-disk licenses as part of a Per TiB license.

Appendix G - 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/5.1.9?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

Appendix H - Contact for complex licensing situations

Note
As of August 19, 2022, the IBM Storage Scale Product Manager who should be contacted for complex Licensing Scenario questions is: Tom E O'Brien/Austin/IBM Email: tomobrie@us.ibm.com

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 C).

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. **Can I migrate from socket licensing to Per TiB pricing?**

   Yes, the process is described in the Existing Customers – Licensed by Sockets section.

6. **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.

7. **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).

8. **Can I get licenses for new IBM Storage Scale System in an ELA, or transfer existing licenses?**

   Yes, but only Capacity licenses are supported on currently available IBM Storage Scale System models. So, you would

   (i)   Configure IBM Storage Scale System without IBM Storage Scale software in eConfig, and

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(ii)   Buy (or trade up to) Data Access or Data Management Per TiB to use with the IBM Storage Scale System

9. **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"

10. **Will the File Placement Optimizer (FPO) feature of IBM Storage Scale Data Advanced Edition and Data Management Edition continue to be supported, and if so for how long?**

FPO functionality is stabilized. See "Summary of changes, Stabilized items" at https://www.ibm.com/docs/en/Storage-scale/5.1.1?topic=summary-changes#soa__table_flf_pmq_h4b   for more information.

FPO remains supported and current with updates to the operating systems. You do not need to change any of your existing applications and scripts that use a stabilized function now. You should not expect significant new functionality or enhancements to FPO.

For capacity licensed customers, IBM Storage Scale FPO functionality is included with IBM Storage Scale Data Access Edition, Data Management Edition, and Erasure Code Edition. For customers still entitled to sockets licensing, FPO is a separate Passport Advantage part number under either IBM Storage Scale Standard Edition or Advanced Edition.

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

Local Read Only Cache (LROC) and Highly Available Write Cache are included as capacity measured by mmlslicense

12. **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.

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

13. **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.

14. **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.

15. **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.

16. **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.

17. **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

18. **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.

19. **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.

20. **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.

21. **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

22. **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.

23. **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.

24. **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

25. **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.