



NumaStoreTM

Image Management Solution

Features List

10 Northern Boulevard, Unit 12 • Amherst, NH 03031 • P (603) 883-1909 • F (603) 883-0839
505 Deltona Boulevard, Unit 105 • Deltona, FL 32725 • P (386) 860-5858 • F (386) 860-5887



www.numastore.com • email: info@numa-inc.com



NumaStore™

NumaStore is available in four models from the basic CD-R to the robust LS.

NumaStore CD-R is designed to provide a low cost CD-(R)ecordable media based archive solution for patient image files. NumaStore CD-R is the introductory model of the NumaStore family of products and is a subset of the features available with the NumaStore LC and LS systems.

NumaStore DVD is another a low cost archive solution that is based on DVD-RAM media. NumaStore DVD provides additional storage capabilities of up to 9.4 GB per disk.

NumaStore LC (Low Cost) is the mid-level system that can be loaded with features to meet all the current needs yet stays within the budget requirements of most departments. NumaStore LC has all the standard features of NumaStore CD-R plus includes 180GB of online RAID Storage. The LC system can be ordered with any of the features that are available on the LS system including the LS hardware.

NumaStore LS is designed for the most demanding clinical and research facilities. The LS (Limitless Storage) includes all the software features Numa has to offer. The hardware is expandable to hold years or even decades of images.

This table lists the features that are available for the different models of NumaStore.

	NumaStore Features	NumaStore Models			
		CD-R	DVD	LC	LS
1	(1) Native format support or	S/O ¹	S/O ¹	S	S
2	DICOM C-Store Provider	S/O ¹	S/O ¹	S	S
3	Compression/Decompression	S	S	S	S
4	Cache	S	S	N/A ²	N/A ²
5	Watermarks	S	S	S	S
6	Tracking	S	S	S	S
7	Reporting	S	S	S	S
8	Auto-Import	O	O	S	S
9	Host is Peg Support	O	O	S	S
10	Native to DICOM Translation	O	O	S	S
11	DICOM Part 10 CD/DVD Writer	S	S	S	S
12	DICOM Part 10 CD/DVD Reader	S	S	S	S
13	Auto-Pull	S	S	S	S
14	Computer Server w/ 180GB ATA RAID			S	N/A
15	DICOM Q/R Provider			S	S
16	Auto-Forward			O	S
17	Custom Groupings			O	S
18	NumaStore LS Hardware			O ³	S
19	Additional Format Support	O	O	O	O
20	Additional Translation Modules	O	O	O	O
21	Auto-Translate			O	S
22	DICOM Push			S	S
23	Email Notification			O	S
	Future Software Features ⁴	CD-R	DVD	LC	LS
24	Auto-Export			O	S
25	Translate and Reply			O	S

S - Standard Feature **O** - Optional Features available for additional cost **N/A** –Non-Applicable

Notes:

1. NumaStore includes either one Native Format support or DICOM support
2. Temporary cache replaced by RAID
3. NumaStore LS Hardware includes expandable server with 145GB hot swap SCSI RAID
4. Works in progress. These features are currently unavailable.



NumaStore™ Feature Descriptions

1. Native Format Support: NumaStore supports nuclear medicine manufacturers *native** file format. The image file data is saved and written to the CD-R, DVD or RAID archive in the exact format as it is used on the originating system. This ensures that when the files are retrieved or exported from NumaStore they can be displayed and processed just as they were intended. Reference NumaStore compatibility matrix for a list of supported manufacturers' native formats.
2. DICOM C-Store Provider: With the DICOM C-Store Provider option NumaStore supports DICOM on the archive media. DICOM C-Store User devices can push files to NumaStore to be archived.
3. Compression/Decompression: NumaStore employs a loss-less compression method that has a typical compression factor of 4-5:1 with nuclear medicine or nuclear cardiology files. NumaStore is configured to automatically compress the files for storage in archive mode. This makes for efficient use of NumaStore archive media with unnoticeable effect on system performance. Compressed files are automatically decompressed when retrieved for display or processing by another workstation.
4. Cache: Cache is a temporary file storage space on a hard disk of the NumaStore CD-R/DVD computer. Cache is used to temporarily store the image files until they are written to the CD-R. It also enables fast access retrieval of recently archived files. The files can only be removed from the cache if they have been written to a CD-R/DVD in archive mode. Files that have been written to a CD-R/DVD are not immediately removed from cache. Files are deleted as the cache area becomes full. When files do need to be deleted from cache, the oldest stored files are deleted first. The user has the option to lock files and prevent some files from being deleted. Cache is replaced by RAID storage on the NumaStore LC and LS models.
5. Watermarks: Watermarks are used to measure NumaStore's archive space. The following watermarks are configurable.
 - Space used/available of the current CD-R/DVD
 - Space used/available of the system cache
 - Space used/available of the RAID volumesThe system will notify the user using visual and audible aids when the configurable watermarks are reached.
6. Tracking: NumaStore tracks or records information onto a database so that the user will be able to tell if certain patient images files have been archived to CD-R/DVD and on which CD-R/DVD.
7. Reporting: NumaStore can print reports of files that have been stored in the archive. This supplies the user with the current status of the system plus creates a record. For example, the archive date is a query attribute at the patient, study, series and image levels. The GUI supports the selection of a specific date or date range with a number of qualifiers, on, on or before, on or after, and inclusive between. Query results can then be printed.
8. Auto-Import: Auto-Import automatically imports and stores new *native** patient image files from a manufacturer's compatible workstation. In this configuration, NumaStore periodically checks the other systems and pulls over those files that are not on NumaStore. Auto-Import works for all image types. A programmable interface controls the frequency of Auto-Import. Once an Auto-Import is configured and enabled, no further user intervention is required to archive or move images from the source computer. A "throttling" method can be used to limit the number of patient image files that are auto-imported at any one time. This is to ensure that the network or computer system are not overwhelmed when NumaStore is initially installed. Currently, Auto-import only works with the Philips/ADAC Pegasys computers and networks.
9. Host is Peg Support: This unique feature allows the user to query and retrieve patient image files from an ADAC Pegasys computer using the "Host is Peg" or "Peg2Peg" interface. Users can stay seated at the Pegasys workstation and retrieve studies for processing.
10. Native to DICOM Translation: Patient Image files may be translated from the manufacturer's native format into DICOM before being exported, written to CD-R or RAID. This is useful for

systems that do not support DICOM but need to share files with other DICOM devices or when creating CDs. (See DICOM Part 10 CD/DVD Writer and DICOM Push below)

11. DICOM Part 10 CD/DVD Writer: When in CD DICOM Write Mode, patient image files are written to the CD-R/DVD in DICOM Part 10 format. This allows CD/DVDs to be shared with other DICOM Part 10 compliant systems.
12. DICOM Part 10 CD/DVD Reader: This feature allows NumaStore to read or import DICOM Part 10 files generated by other DICOM devices into the database and add to cache or the archive.
13. Auto-Pull: NumaStore can be configured to automatically pull (retrieve) and store new DICOM image files from other DICOM devices. In this configuration, NumaStore periodically checks one or more DICOM compliant systems and pulls over those files that are not on NumaStore. Auto-Pull can “filter” the data files and only pull certain types. Selectable image types include raw, processed, secondary captures, and all. There is a configurable interface to control the frequency and filtering of Auto-Pull. Once an Auto-Pull is configured and enabled, no further user intervention is required to archive or move images from the source computer.
14. 120GB ATA RAID: This is the major feature of NumaStore LC. The cache storage of NumaStore CD-R is replaced by three 60GB hard disk drives in RAID 5 configuration. This gives the system a total of 120GB of online storage. Compression/Decompression is supported. This archive is not expandable but the files can be migrated to other systems or media.
15. DICOM Q/R Provider: With DICOM Q/R (Query and Retrieve) Provider service running NumaStore responds to queries from other DICOM compliant devices. This allows doctors or technologists at other DICOM Q/R User workstations to move DICOM files from NumaStore to their workstation for review or processing.
16. Auto-Forward: Once image data is stored in NumaStore, NumaStore can automatically send DICOM files to other DICOM compliant systems. This feature is referred to as Auto-Forward. Auto-Forward can be preprogrammed to recognize certain image types and allow only those images types to be moved. Auto-Forward can “filter” the data files and only forward certain types. Selectable image types include raw, processed, secondary captures, and all. For example, using Auto-Forward and Filter, NumaStore can be configured to archive all nuclear medicine files types then select only the secondary capture images and forward those on to a PACS system. Once Auto-Forward is configured and enabled, no further user intervention is required. Auto-Forward uses DICOM C-STORE User. DICOM files are automatically forwarded to another DICOM device that supports C-STORE Provider.
17. Custom Groupings: This advanced feature allows the user to select image files and create groups of studies. These groups can be assigned to an owner. This feature allows the owners or users to quickly retrieve these studies. Custom Groupings is a great feature for teaching or research facilities that need to segregate studies by custom definable findings, acquisition protocols or patient demographics.
18. NumaStore LS Hardware Upgrade: This upgrade replaces the standard LC hardware with all the hardware that comes standard with the NumaStore LS system.
19. Additional Format Support: NumaStore can be configured to support several native manufacturers’ file formats as well as DICOM in the same database and archive.
20. Additional Translation Modules: With this feature NumaStore can translate patient image files into another format. These Additional Translation Modules employ the same image file translation and connectivity technology found in the NumaLink Image Translation System.
21. Auto-Translate: When configured, Auto-Translate will take patient image files that are stored in NumaStore’s cache or archive and automatically translate them into another format and send them to another system. Auto-Translate can be configured to support only certain data types. Auto-Translate employs the same image file translation and connectivity technology found in the NumaLink Image Translation System.
22. DICOM Push: DICOM Push allows the user of NumaStore to manually send DICOM files to other DICOM compliant devices. DICOM Push adds DICOM C-STORE User functionality to NumaStore.
23. Email notification: The NumaStore systems can be configured to email the system administrator and/or Numa service when errors are detected.



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Future Features:

These features are works in progress and will be available for NumaStore LC and LS soon in new releases.

24. Auto-Export: NumaStore can be configured to automatically export files that are archived in NumaStore cache or online RAID. Auto-Export is similar to Auto-Forward except it works with *native* formats.
25. Translate and Reply: This is a combination of the DICOM Q/R Provider feature (see above) and a translation module. With this feature enabled, NumaStore will automatically translate a *native** file format into DICOM and respond to a DICOM query. This allows the system to maintain the integrity of the original native files in the archive for nuclear medicine but supply DICOM to other devices inside or outside the nuclear medicine department.

* Native File Format: Each nuclear medicine equipment manufacturer designs its own image file format for use in its computer systems. These files contain information about the patient, the acquisition protocols, as well as the image data. Because of the independent design, these files cannot be shared with other manufacturers' systems and may not translate well into universal formats such as DICOM or Interfile.