

Perceptive VNA

Technical Specifications

6.0.x

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perceptivesoftware
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About Perceptive Acuo VNA technical specifications

Perceptive Acuo VNA (vendor neutral archive) is designed to serve healthcare organizations that want to achieve full interoperability across multiple disparate systems and image-enable their EMR (electronic medical record). The technical specifications in this document are specific to Perceptive Acuo VNA 6.0.x.

A required amount of memory and disk space is provided. You must meet these requirements to support your Perceptive Acuo VNA system. These requirements specifically list the needs of Perceptive Acuo VNA and do not include any amount of memory or disk space you require for the operating system, environment, or other software that runs on the same machine.

Note The Health Insurance Portability and Accountability Act (HIPAA) require that security be maintained, for example, by having locking access doors on enclosures that contain patient records and information.

About Perceptive Acuo VNA

Perceptive Acuo VNA is built on an open, standards-based foundation and includes the following suite of products.

- **AcuoMed Image Manager** - AcuoMed Image Manager (or AcuoMed for short) is Acuo Technologies' medical imaging product that provides an open-systems solution for transporting, storing, tracking, and retrieving digital medical images across an entire storage system network. AcuoMed works in concert with Acuo Technologies' AcuoStore product.
- **AcuoStore** - AcuoStore is a digital asset management service that AcuoMed uses to store and retrieve digital medical images based on a Globally Unique Asset ID (GUID).
- **Acuo High Availability** - Acuo High Availability (or Acuo HA for short) is a clip replication feature for Acuo systems that are connected to a CAS device. Acuo HA provides Publisher-to-Subscriber active-to-active viewing, querying and transferring abilities on distributed dynamic data using Microsoft WCF and MSDTC technologies.
- **Acuo TagMapper** - Acuo TagMapper is a feature that is used to modify tag data within incoming and outgoing DICOM messages. The TagMapper feature is executed while processing a DICOM Message. TagMapper commands are read from a command file and executed using information from the Tag Data, TagMapper DB table (if used), and/or string data within the associated command file. TagMapper initializes when AcuoMed starts.
- **AcuoWADO** - Acuo Technologies offers WADO (Web Access to DICOM Objects) support in the form of an installed WADO service, AcuoWADO. WADO is a standard that specifies web-based services for accessing and presenting DICOM persistent objects. It provides a simple mechanism for accessing DICOM persistent objects from HTML pages or XML documents, through the HTTP/HTTPS protocol, using DICOM UIDs. Data may be retrieved either in a presentation-ready form as specified by the requester (e.g., JPEG or GIF) or in a native DICOM format.
- **AcuoAccess** - AcuoAccess is a suite of SOAP and RESTful web services that provide non-DICOM access to DICOM data. This enables total control of the data, ending PACS vendor lock-in through a standard set of RESTful interfaces for access to all enterprise content (DICOM or non-DICOM). AcuoACCESS includes standards such as Web Access to DICOM Objects (WADO), developing standards such as Medical Image Network Transport (MINT), as well as WADO-RS and QIDO. The Perceptive Acuo Reference Viewer uses AcuoAccess.
- **Acuo Workflow Services** - Acuo Workflow is a set of web services that allows customers to control workflow within the Acuo VNA. The services expose metadata in the form of a WSDL. A WSDL is an

XML format for describing network services as a set of endpoints operating on messages that contain either document-oriented or procedure-oriented information

- **AcuoSemantix** - AcuoSemantix is an HL-7/XML/DICOM based solution designed to bridge the gap between HIS/RIS environments and DICOM PACS environments. AcuoSemantix receives and decodes HL7 messages, and performs DICOM workflow equivalent operations with existing AcuoMed installations.

Product requirements

The follow product requirements apply to all products in the Perceptive Acuo VNA suite.

Specification	Description
Hardware	<ul style="list-style-type: none">• RAID-ready, rack-mounted enclosure designed for external direct-attached storage solution with a locking front door.• Three separate RAID storage units:<ol style="list-style-type: none">1. System Drive - 80 Gigabytes of RAID 12. Database Drives<ol style="list-style-type: none">a. Database Files - RAID 10 on its own physical drive/busb. Transaction Logs - RAID 1 on its own physical drive/busc. Database Backups - RAID 5 on its own physical drive, possibly sharing this with the Image Drive3. Image Drive<ol style="list-style-type: none">a. RAID 5 scaled over time.• Server with dual quad core processor or better and as many open card slots as possible.• 17" monitor running at a minimum screen area of 1024 x 768 pixels• CD-ROM/DVD read/write drive for writing trace files• Mouse and keyboard <p>Note Based on how often you store and retrieve images and your required response times, you may have additional hardware requirements to optimize the performance of your system.</p>
Operating Systems	<ul style="list-style-type: none">• Windows Server 2008 R2, Windows Server 2012, and Windows Server 2012 R2
DBMS	<ul style="list-style-type: none">• SQL Server 2008, SQL Server 2008R2, and SQL Server 2012
Memory	<ul style="list-style-type: none">• 6 Gigabyte minimum recommended, 12 Gigabyte for systems that are also running SQL Server.• More memory may be required for compression enabled systems.

Specification	Description
Disk Space for Dilib Share	To configure the maximum amount of disk space needed for the Dilib Share, multiply the amount of daily storage by 14 days. If Reconciliation is enabled, also consider how often the Reconciliation Event Manager is maintained. An Asset will remain in Dilib until the Asset has passed Reconciliation. It is important to place the Dilib share on the most stable, highly available drive, RAID 5 or 1+0 recommended.

AcuoHA product requirements

The following additional product requirements apply to AcuoHA only.

Specification	Description
Hardware	<ul style="list-style-type: none">Two machines running a supported Windows server and SQL server are required for configuring the Publisher and Subscriber servers.A connection to an Archive device (Bycast/Centera) is required and each machine (Publisher and Subscriber) must be connected to the same type of device.
Software	<ul style="list-style-type: none">AcuoStore and AcuoMed 6.0.x and above must be installed before running the Acuo HA installer.It is recommended that the HA Publisher is configured to write continuously to the associated archive device.AcuoStore application names must be labeled exactly the same for both Publisher and Subscriber.In addition to AcuoStore and AcuoMed, an HA Database must be installed on both the Publisher and Subscriber servers.MS DTC Service (Distributed Transaction Coordinator must be enabled on both the Publisher and Subscriber machines. Configuration steps vary depending on the Windows version. Refer to the steps below for each version.

Network profile

Use the following network profile as a reference when planning or troubleshooting anti-virus, firewall, VPN, load balancing, or other network related technologies in conjunction with an AcuoMed or AcuoStore deployment.

AcuoMed service

AcuoMed			
Role	Protocol	Port	Function
Server	TCP – DICOM	Configurable	General Communication
Client	TCP - DICOM	Configurable	General Communication
Client	TCP - DCOM	Configurable	AcuoStore
Server	TCP - DCOM	Dynamically Assigned (135, 1024-65535) *	MMC
Client	TCP/UDP-ADO	1433, 1434	SQL Server
Client	TCP - CIFS	445	Network Storage

Connection usage profile

Some client connections are managed in a pool, but most are dynamically requested and released as needed. On heavily loaded systems, the result can be hundreds of connections established or released per second, and thousands of connections open at one time. Some of this is mitigated or hidden by caching or pooling inherent to ADO & CIFS.

(*) DCOM assigns 1 listening port per server process, and relies on the Service Control Manager listening on TCP/UDP port 135 for DCOM port discovery. A more narrow range can be specified, though this is a server level specification, and Microsoft recommends a range of 100 or greater. Refer to the following documentation for more detail.

- *How to configure RPC dynamic port allocation to work with firewalls*
<http://support.microsoft.com/kb/154596>

Network considerations

The following network considerations apply to all system levels.

- 1 Gigabit Ethernet (switched topology preferable)
- Network cards as needed for load balancing. For example, multi-port Ethernet network interface cards (NICs) with a minimum of two ports each. Additional NICs can be added to the system as needed (including a hot spare).

Note Based on how often you store and retrieve images or your required response times, you may have additional hardware requirements for optimizing your system's performance.

Other hardware considerations

Disk Space Needed for the Dilib Share. To configure the maximum amount of disk space needed for the Dilib Share, multiply the amount of daily storage by 14 days. If Reconciliation is enabled, also consider how often the Reconciliation Event Manager is maintained. An Asset will remain in Dilib until the Asset has passed Reconciliation. It is important to place the Dilib share on the most stable, highly available drive, RAID 5 or 1+0 recommended.

Network Attached Storage and Archive Devices. Many innovative technologies, such as Network Attached Storage and Archive Devices like EMC Centera and NetApp/Bycast Grid Solutions, which can be presented as a single large volume with a high level of data integrity provided by the storage subsystem, are available on the market today. Acuo's Universal Clinical Platform provides a natively integrated approach to these devices through AcuoStore and recommends the use of these devices for your long-term image storage needs.

Dynamic Disks in a RAID Configuration for Volume Spanning. By initializing RAID's as dynamic disks instead of basic disks, the disk drives can be expanded under the Windows Disk Administrator in the facility called Volume Spanning. Without volume spanning, the share name would need to point at a different volume to expand storage space. Or if the user wanted to "span volumes," he or she would need to copy the stored data offline, reinitialize the disk volume to dynamic, extend the drive, and then restore the data from its offline location. Dynamic Disks are not supported in a clustered configuration and should only be used with caution. Refer to Microsoft Online Help for more information.

It is recommended that each RAID device be supported by optical fiber channel cards using separate SCSI 2 busses that support transfer rates from 10 to 20 megabytes per second. By placing the system, databases, and images on separate RAID devices, you achieve improved performance as well as greater flexibility if you need to add more storage space for images, for example, NTFS Compression

Windows supports data compression. Compressing files, folders, and programs decreases their size and reduces the amount of space they use on your drives or removable storage devices. You can compress individual files and folders using NTFS compression, as well as entire NTFS drives. You may notice a decrease in performance when working with NTFS-compressed files as you would with any other data compression facility. When you open a compressed file, Windows automatically decompresses it for you, and when you close the file, Windows compresses it again. NTFS-compressed files and folders only remain compressed while they are stored on an NTFS drive. If you do not have a NTFS drive, this option is not available. To determine whether your drive is formatted with NTFS, right-click a drive, and then click Properties. The file system is indicated on the General tab. For more information, refer to Windows Online Help for this topic.

Optional use of an HSM (Hierarchical Storage System). HSM is policy-based management of file backup and archiving in a way that uses storage devices economically and without the user needing to be aware of when files are being retrieved from backup storage media. The hierarchy represents different types of storage media, such as redundant array of independent disks systems, optical storage, or tape, each type representing a different level of cost and speed of retrieval when access is needed. Using an HSM product, an administrator can establish and state guidelines for how often different kinds of files are to be copied to a backup storage device. Once the guideline has been set up, the HSM software manages everything automatically.

Example Configuration Recommendations. SCSI-attached library with at least three internal drive units that supports the formats supported by your Hierarchical Storage Management (HSM). SCSI differential adapter card for the library. Refer to your library documentation for SCSI types and recommendations.