



Technical
Specifications
Reference Guide

ARIA® ONCOLOGY INFORMATION SYSTEM
(OIS) FOR RADIATION ONCOLOGY (RO),
ARIA® ONCOLOGY INFORMATION SYSTEM
(OIS) FOR MEDICAL ONCOLOGY (MO),
ARIA® RADIATION THERAPY
MANAGEMENT (RTM) , ONCQT, ARIA
UNIFIED REPORTING APPLICATION
(AURA) v2.0, INSIGHTIVE™ ANALYTICS
v1.0, VELOCITY 3.1

13.6 MR0.5 (unless
otherwise noted)

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Document Title	Technical Specifications Reference Guide Reference Guide
Abstract	This document provides reference information for the software and computer hardware requirements for using Varian's software products. This document is the English-language original.
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Introduction:

This document provides the minimum and recommended software and hardware compatibility requirements for the following Varian software products:

- ARIA® oncology information system for Radiation Oncology (ARIA OIS for RO) v13.6
- ARIA® oncology information system for Medical Oncology (ARIA OIS for MO) v13.6
- ARIA® Radiation Therapy Management (ARIA RTM) v13.6
- ARIA ® Unified Reporting Application (AURA) v2.0
- InSightive™ Analytics v1.0
- Velocity 3.1
- OncQT v13.6
- Eclipse (in Citrix XenApp®) v13.6

NOTE: This document refers to the **MR 0.5 and above** release of version 13.6 of the affected software. The changes made primarily reflect the end of life for Citrix 5.0, please see Citrix support website for further details. Please see the change log at the beginning of the document for the substantive changes made.

Change Log

Revision Date	Change Record
May/2015	<ul style="list-style-type: none"> • Removed comment in Introduction in reference to NLS versions as 13.6 MR0.5 is the 'NLS release' of 13.6. • Updated Citrix XenApp specifications to remove Citrix 5.0 support and add Citrix 7.6 support • Updated Citrix XenApp specifications to remove Windows Server 2008 support and add Windows Server 2012 support • Updated HARRP specifications to remove Windows Server 2008 • Removed reference to MS Office 2013 not being supported on Windows Server 2008 and Citrix 5.0 as these platforms aren't supported with MR0.5. • Updated to remove MS Word 2007 support. • Updated to remove .NET 4.5.1 support and add .NET 4.5.2 • Removed reference to localization support. See appropriate Varian documentation related to Varian software localization support.

Client Software Technical Specifications:

Common:

The following technical specifications are common to all Varian client/desktop applications **excluding** Eclipse™ (see Eclipse Supported Hardware Reference Guide); specifically ARIA® oncology information system for Radiation Oncology (ARIA OIS for RO), ARIA® Radiation Therapy Management (ARIA RTM), ARIA® oncology information system for Medical Oncology (ARIA OIS for MO), ARIA® Unified Reporting Application (AURA), and InSightive™. Further tables below may modify these specifications based on the specific application.

System Requirements:	<ul style="list-style-type: none"> • Microsoft ® Windows® 7 and Windows 7 SP1 – Professional, Ultimate or Enterprise • Microsoft Windows 8.1 Professional or Enterprise • 64-bit only • .Net 4.5.2 or higher • Internet Explorer® 8 or higher (32 bit)
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	<ul style="list-style-type: none"> • Windows Installer 3.1 or higher • Minimum of a single Core 2[®] Duo @ 2.13 GHz or better <ul style="list-style-type: none"> ○ Dual core or better CPU recommended when running multiple UserHome Sessions and imaging applications. • 1 GB RAM minimum free memory <ul style="list-style-type: none"> ○ 2 GB RAM recommended when running multiple UserHome sessions and imaging applications. • 8 GB available free disk space • Video Adapter with 256 MB of video memory. DirectX[®] 9 hardware accelerated and Shader Model 3 minimum. <ul style="list-style-type: none"> ○ 512 MB of video memory recommended. • Minimum of 17" Monitor capable of 1280x1024 • Minimum of 100 Mbps NIC, 1 Gbps recommended. • Microsoft Windows compatible 101-key keyboard and 2-button mouse
<p>Optional Hardware Guidelines</p>	<ul style="list-style-type: none"> • Availability of an Optical Drive (CD/DVD) for importing documents or images. • 1 parallel, 1 serial and 2 USB ports for connecting optional peripherals. Serial-to-USB & Parallel-to-USB adapters may be available to support legacy 3rd party external hardware.

ARIA[®] OIS for RO:

<p>System Requirements:</p>	<ul style="list-style-type: none"> • Microsoft Word 2010 or higher for use with Dynamic Documents¹ • Adobe[®] Reader[®] 8.0 or later
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ARIA[®] OIS for MO:

<p>System Requirements:</p>	<ul style="list-style-type: none"> • Monitor: 15" or greater capable of 1024x768 minimum
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¹ Note that Varian has discontinued support for MS Word 2007

OncQT Client:

System Requirements:	<ul style="list-style-type: none">• See Common Specifications.
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InSightive:

System Requirements:	<ul style="list-style-type: none">• See Common system requirements above
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Velocity:

System Requirements:	<ul style="list-style-type: none">• Video adapter with 512 MB of video memory or higher with support for hardware accelerated OpenGL 2.0• Minimum of 2GB of RAM, 4GB recommended• 20" Monitor capable of 1600x1200 is recommended.
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Tablet, Slate, Convertible Laptops:

Provided a tablet, slate or convertible laptop computer meets or exceeds the specifications listed above these devices are supported. Note that Varian's applications are not designed for use with touch Interfaces and as such these devices must be supplied with a standard keyboard and mouse for optimal user experience.

Customers may also want to consider providing docking stations (if available) for use with these devices.

Citrix XenApp® (thin-client) Specifications:

ARIA OIS for RO, ARIA OIS for MO, Velocity, Eclipse, and AURA are supported in a Citrix XenApp® environment. The following are the specifications for a thin-client device for use of these applications.

System Requirements:	<ul style="list-style-type: none">• Citrix On-Line Plugin 11.2 or higher 32 or 64-bit.²• Microsoft Windows 7, Windows 7 SP1, or Windows 8.1 operating system.• Apple® OS X® 10.5 or higher• Intel® compatible processor at 1 GHz or higher• 2 GB RAM minimum• 500 MB minimum free disk space• Video Adapter with 256 MB of video memory. DirectX® 9 hardware accelerated and Shader Model 3 minimum.<ul style="list-style-type: none">○ 512 MB of video memory minimum for Eclipse• Minimum of 15" Monitor capable of 1024x768 for ARIA OIS for MO• Minimum of 17" Monitor capable of 1280x1024 for ARIA OIS for RO, ARIA RTM, Velocity, OncQT, and AURA• Minimum of 20" Monitor capable of 1280x1024 for Eclipse• Minimum of 100 Mbps NIC, 1 Gbps recommended.• Microsoft Windows compatible 101-key keyboard and 2-button mouse or equivalent for Apple OSX.
Optional Hardware Guidelines	<ul style="list-style-type: none">• Availability of an Optical Drive (CD/DVD) for importing documents or images.• 1 parallel, 1 serial and 2 USB ports for connecting optional peripherals. Serial-to-USB & Parallel-to-USB adapters may be available to support legacy 3rd party external hardware.• 20" Monitor capable of 1600x1200 for ARIA RTM, Velocity is recommended.• 23" Monitor capable of 1600x1200 for Eclipse is recommended.

² Varian recommends the use of the latest On-Line Plugin compatible with the client Operating System. Furthermore see the following Citrix hyperlink for the mapping of 'On-line Plugin' versions to 'Citrix Receiver' versions <http://support.citrix.com/article/CTX112613>.

Server Technical Specifications:

General Considerations:

The following are some general considerations when deploying Varian's oncology server software:

Anti-Virus:	<ul style="list-style-type: none">• Varian recommends deploying anti-virus software on the servers supporting Varian's oncology software though customers should turn-off active scanning of data directories and network packets transmitted between linear accelerators or 3rd party information systems.• See Varian's anti-virus guidelines (CTB-GE-309) for further details available through MyVarian.
Storage	<ul style="list-style-type: none">• Varian recommends deploying the Varian System Database as well as the file system storage on the equivalent of Direct Attached Storage with SAS drives and interfaces capable of 6 Gbps. While Varian supports deployments on SAN or other network storage technologies, performance may be impacted.• Varian recommends the use of hardware RAID (RAID1 for system and application files, RAID5 or 6 for data storage), the use of software RAID is discouraged.
Backup	<ul style="list-style-type: none">• Varian's Oncology System Servers are the repository of extremely important oncology workflow data, as such a proper enterprise backup solution is highly recommended.• Please see Varian's Backup Configuration Guidelines (CTB-GE-936) for further information regarding backing up the Varian System.
Redundancy	<ul style="list-style-type: none">• Varian's Radiation Oncology System software provides front line support for delivery of Radiation Oncology treatments on Varian or 3rd party linear accelerators; availability of the Varian System Server is extremely important, as such Varian recommends customers supply servers with

	<p>hardware redundancy in power supplies, fans and other hardware components that may be subject to regular failure.</p>
<p>User Authentication</p>	<ul style="list-style-type: none"> • Varian's software currently uses a Varian supplied user, group and rights management system though integration with Microsoft Windows Active Directory for launching the application and file system access is also required. Varian's Security Implementation Guide is available upon request.
<p>Network Integration</p>	<ul style="list-style-type: none"> • Varian's software supports only TCP/IP network environments with IPv4. Varian's software can exchange data with many different 3rd party systems including Hospital Information Systems, PACS, CT and other medical imaging devices, as well as Varian and 3rd party Linear accelerators as such network bandwidth requirements can vary greatly depending on many factors including the type and number of products deployed. Please see Varian's Network Configuration Guidelines (CTB-GE-945) available via MyVarian for more detailed information.

Radiation Oncology System Server:

Varian's Radiation Oncology System server software provides support for managing structured information in a database as well as unstructured data such as documents and medical images stored within the file system. The Radiation Oncology System Server software provides backend support for the ARIA OIS for RO, ARIA RTM, Eclipse and management of Treatment plans, records and images exchanged with Varian or 3rd party linear accelerators. The following are the technical specifications for supporting v13.6 of the Varian Radiation Oncology System Server software.

<p>System Requirements:</p>	<ul style="list-style-type: none"> • Microsoft SQL Server ® 2014 – software & licenses supplied by Varian • Microsoft Windows Server ® 2008 R2 SP1 (Standard or Enterprise) or Microsoft Windows Server 2012 R2 (Standard or Datacenter). • 64-bit only • .Net 4.5.2 or higher • Microsoft IIS 7.5 with Windows Server 2008 R2 or IIS v8.5 with Windows Server 2012 R2 • Internet Explorer 8 or higher (32 bit) • Windows Installer 3.1 or higher • Minimum of 6 cores, Intel Xeon @ 2.0 GHz or higher processor. • 8 GB RAM Minimum • Minimum of 20 GB free disk space for software installation. • Minimum of 100 Mbps NIC, 1 Gbps highly recommended.
<p>Hardware Guidelines</p>	<p>The following guidelines are minimum recommended hardware configurations. Actual hardware configurations required will vary depending on user load, patient load, data volumes, software modules purchased and other factors.</p> <p>Up to 2 Linear Accelerators or ~30 users:</p> <ul style="list-style-type: none"> • 8 cores, 2.0 GHz or higher minimum recommended • 16 GB Minimum recommended system memory <p>Up to 4 Linear Accelerators or ~60 users):</p> <ul style="list-style-type: none"> • 10 cores, 2.0 GHz or higher minimum recommended • 24 GB Minimum recommended system memory <p>Up to 6 Linear Accelerators or ~90 users:</p>

	<ul style="list-style-type: none"> • 12 cores, 2.0 GHz or higher minimum recommended • 32 GB Minimum recommended system memory <p>Enterprise Deployments (> 6 Linear Accelerators):</p> <ul style="list-style-type: none"> • Contact Varian for sizing and further technical guidance <p>NOTE:</p> <ul style="list-style-type: none"> • When deployed with Eclipse (with ARIA) and a FAS server environment the system server requirements should be increased by 2 cores & 4 GB of system memory to support the Distributed Calculation Framework (DCF) core distributor service. • In an 'Eclipse Only' deployment the above specifications apply.
<p>Data Storage Growth</p>	<p>There are two main storage requirements for the software supported by this server; database storage and file level storage (for managing electronic documents and medical images). Data storage growth depends on many factors including but not limited to # of patients per day being treated, the number & type of imaging events performed and the number and type of electronic documents being imported. Customers are advised to monitor their data storage growth to ensure that sufficient free space is always available. The following estimates are provided for further guidance:</p> <ul style="list-style-type: none"> • Database growth = ~10 GB/year/linear accelerator • File System growth = ~20 GB/year/linear accelerator – not integrated with Eclipse • File System Growth = ~60 GB/year/linear accelerator when integrated with Eclipse <p>Varian also makes available a 'system sizing chart' (Microsoft Excel workbook) available upon request that customers can use to estimate their expected storage requirements based on their specific usage patterns.</p>
<p>Storage Partitioning</p>	<p>Varian recommends the following storage partition scheme:</p> <p>System Partition ("C: Drive")- System & Installation files - ~80 GB</p> <p>DB Partition ("D: Drive") – DB Data + LOG files - 100 GB Min.,</p>

	<p>size varies depending on customer usage. File Data + Dump Partition ("E: Drive") – Image data, document data & database dumps – minimum of 500 GB but size varies on customer size, usage pattern, and time period of data retention.</p>
Additional Hardware components	<p>The following additional hardware is recommended to be available for system installation and management.</p> <ul style="list-style-type: none">• 15" monitor @ 1024 x 768 resolution• Optical Drive (CD/DVD) 8x or higher• 2 USB ports

Medical Oncology System Server:

Varian's Medical Oncology system server software provides support for managing structured information in a database as well as unstructured data such as documents stored within the file system. The Medical Oncology system server software provides backend support for ARIA oncology information system for Medical Oncology (ARIA OIS for MO) application. The following are the technical specifications for supporting v13.6 of the Varian Medical Oncology System Server software.

System Requirements:	<ul style="list-style-type: none">• Microsoft SQL Server 2014 – software & licenses supplied by Varian• Microsoft Windows Server 2008 R2 SP1 (Standard or Enterprise) or Microsoft Windows Server 2012 R2 (Standard or Datacenter).• 64-bit only• .Net 4.5.2 or higher• Internet Explorer 8 or higher (32 bit)• Windows Installer 3.1 or higher• Minimum of 6 cores, Intel Xeon @ 2.0 GHz or higher processor.• 8 GB RAM Minimum• Minimum of 4 GB free disk space for software installation.• Minimum of 100 Mbps NIC, 1 Gbps highly recommended.
Hardware Guidelines	<p>The following guidelines are minimum recommended hardware configurations. Actual hardware configurations required will vary depending on user load, patient load, data volumes, software modules purchased and other factors.</p> <p>Up to ~45 users:</p> <ul style="list-style-type: none">• 8 cores, 2.0 GHz or higher minimum recommended• 16 GB Minimum system memory <p>Up ~90 users:</p> <ul style="list-style-type: none">• 10 cores, 2.0 GHz or higher minimum recommended• 24 GB Minimum system memory <p>Up to ~135 users:</p> <ul style="list-style-type: none">• 12 cores, 2.0 GHz or higher minimum recommended• 32 GB Minimum system memory

	<p>Enterprise Deployments (>135 users):</p> <ul style="list-style-type: none"> • Contact Varian for sizing and further technical guidance
<p>Data Storage Growth</p>	<p>There are two main storage requirements for the ARIA OIS for MO application; database storage and file system storage (for managing electronic documents). Data storage growth depends on many factors including but not limited to # of patients per day being treated, the number and type of electronic documents being imported; the number and type of HL7 interfaces (IEM software module required). Customers are advised to monitor their data storage growth to ensure that sufficient free space is always available. The following estimates are provided for further guidance:</p> <ul style="list-style-type: none"> • Database growth = ~10 GB/year/(Medical Oncologist) • File System growth = ~20 GB/year/(Medical Oncologist)
<p>Storage Partitioning</p>	<p>Varian recommends the following storage partition scheme:</p> <ul style="list-style-type: none"> • System Partition ("C: Drive")- System & Installation files - ~80 GB • DB Partition ("D: Drive") – DB Data + LOG files - 100 GB Min., size varies depending on customer usage. • File Data + Dump Partition ("E: Drive") – document data & database dumps – minimum of 100 GB but size varies on customer size, usage pattern, and time period of data retention.
<p>Additional Hardware components</p>	<p>The following additional hardware is recommended to be available for system installation and management.</p> <ul style="list-style-type: none"> • 15" monitor @ 1024 x 768 resolution • Optical Drive (CD/DVD) 8x or higher • 2 USB ports

Comprehensive Cancer Solution System Server:

Varian's Comprehensive Cancer Solution (CCS) is a deployment of the ARIA OIS for RO & ARIA OIS for MO applications, with or without Eclipse. The Comprehensive Cancer Solution system server software provides support for managing structured information in a database as well as unstructured data such as documents and medical images stored within the file system. The following are the technical specifications for supporting v13.6 of the Varian Comprehensive Cancer Solution system server software.

System Requirements:	<ul style="list-style-type: none">• Microsoft SQL Server 2014 – software and licenses supplied by Varian• Microsoft Windows Server 2008 R2 SP1 (Standard or Enterprise) or Microsoft Windows Server 2012 R2 (Standard or Datacenter).• 64-bit only• .Net 4.5.2 or higher• Microsoft IIS 7.5 with Windows Server 2008 R2 or IIS v8.5 with Windows Server 2012 R2• Internet Explorer 8 or higher (32 bit)• Windows Installer 3.1 or higher• Minimum of 6 cores, Intel Xeon @ 2.0 GHz or higher processor.• 8 GB RAM Minimum• Minimum of 20 GB free disk space for software installation.• Minimum of 100 Mbps NIC, 1 Gbps highly recommended.
Hardware Guidelines	<p>The following guidelines are minimum recommended hardware configurations. Actual hardware configurations required will vary depending on user load, patient load, data volumes, software modules purchased and other factors. The approximate user count is across all products and treatment modalities, a 'small' Radiation Oncology department and 'large' Medical Oncology department (or vice versa) may be part of the same practice, and as such sizing of the deployment needs to meet the requirements of both departments.</p> <p>Up to ~45 users (including ~2 to 3 Linear Accelerators):</p> <ul style="list-style-type: none">• 8 cores, 2.0 GHz or higher minimum recommended• 16 GB Minimum system memory <p>Up ~90 users (including ~3 to 5 Linear Accelerators):</p>

	<ul style="list-style-type: none"> • 10 cores, 2.0 GHz or higher minimum recommended • 24 GB Minimum system memory <p>Up to ~135 users (including ~5 to 7 Linear Accelerators):</p> <ul style="list-style-type: none"> • 12 cores, 2.0 GHz or higher minimum recommended • 32 GB Minimum system memory <p>Enterprise Deployments (>135 users or >7 Linear Accelerators):</p> <ul style="list-style-type: none"> • Contact Varian for sizing and further technical guidance <p>NOTE:</p> <p>When deployed with Eclipse and a FAS server environment the system server requirements should be increased by 2 cores & 4 GB of system memory to support the Distributed Calculation Framework (DCF) core distributor service.</p>
Data Storage Growth	<p>There are two main storage requirements for CCS; database storage and file storage (for managing electronic documents and medical images). Data storage growth depends on many factors including but not limited to # of patients per day being treated, the number & type of imaging events performed and the number and type of electronic documents being imported. Customers are advised to monitor their data storage growth to ensure that sufficient free space is always available. The following estimates are provided for further guidance:</p> <ul style="list-style-type: none"> • Database growth = ~10 GB/year/(linear accelerator or Medical Oncologist) • File System growth = ~20 GB/year/(linear accelerator or Medical Oncologist) – not integrated with Eclipse™ • File System Growth = ~60 GB/year/(linear accelerator or Medical Oncologist) when integrated with Eclipse™. <p>Varian also makes available a 'system sizing chart' (Microsoft Excel workbook) available upon request that customers can use to estimate their expected storage requirements based on their specific usage patterns.</p>
Storage Partitioning	<p>Varian recommends the following storage partition scheme:</p>

	<ul style="list-style-type: none"> • System Partition ("C: Drive")- System & Installation files - ~80 GB • DB Partition ("D: Drive") – DB Data + LOG files - 100 GB Min., size varies depending on customer usage. • File Data + Dump Partition ("E: Drive") – Image data, document data & database dumps – minimum of 500 GB but size varies on customer size, usage pattern, and time period of data retention.
<p>Additional Hardware components</p>	<p>The following additional hardware is recommended to be available for system installation and management.</p> <ul style="list-style-type: none"> • 15" monitor @ 1024 x 768 resolution • Optical Drive (CD/DVD) 8x or higher • 2 USB ports

Data Warehouse Server for ARIA Unified Reporting Application (AURA):

With version 13.6 Varian has introduced the new ARIA Unified Reporting Application (AURA) (included with ARIA OIS for RO v13.6). AURA requires a second 'reporting database' for managing data used for reporting. This second database can be placed on the same server as the main production server, on its own 'data warehouse' (or 'AURA') server or on a server also supporting the InSightive Analytics software (optional purchase).

The following are the **additional** technical specifications for the AURA database reporting application.

<p>System Requirements:</p>	<ul style="list-style-type: none"> • Microsoft SQL 2014 – software & licenses supplied by Varian • Microsoft Windows Server 2008 R2 SP1 (Standard or Enterprise) or Microsoft Windows Server 2012 R2 (Standard or Datacenter). • 64-bit only • .Net 4.5.2 or higher • Internet Explorer 8 or higher (32 bit) • Windows Installer 3.1 or higher • Minimum of 2 cores, Intel Xeon @ 2.0 GHz or higher processor. • 8 GB RAM Minimum • Minimum of 10 GB free disk space for software installation. • Minimum of 100 Mbps NIC, 1 Gbps highly recommended.
<p>Hardware Guidelines</p>	<p>The following guidelines are additional minimum recommended hardware requirements to support the AURA data warehouse server. Actual hardware configurations required will vary depending on user load, patient load, data volumes, and other factors.</p> <p>Up to 2 Linear Accelerators or ~30 users:</p> <ul style="list-style-type: none"> • 2 cores, 2.0 GHz or higher minimum recommended • 8 GB Minimum system memory <p>Up to 4 Linear Accelerators or ~60 users:</p> <ul style="list-style-type: none"> • 4 cores, 2.0 GHz or higher minimum recommended • 12 GB Minimum system memory

	<p>Up to 6 Linear Accelerators or ~90 users:</p> <ul style="list-style-type: none"> • 6 cores, 2.0 GHz or higher minimum recommended • 16 GB Minimum system memory <p>Enterprise Deployments (>6 Linear Accelerators):</p> <ul style="list-style-type: none"> • Contact Varian for sizing and further technical guidance
Data Storage Growth	<ul style="list-style-type: none"> • The data reporting database will grow at roughly the same rate as the main system database <ul style="list-style-type: none"> ○ ~10 GB/year/linear accelerator
Storage Partitioning	<p>Varian recommends the following storage partition scheme:</p> <ul style="list-style-type: none"> • System Partition ("C: Drive")- System & Installation files - ~80 GB • DB Partition ("D: Drive") – DB Data + LOG files - 100 GB Min., size varies depending on customer usage. • Dump Partition ("E: Drive") –database dumps – minimum of 100 GB but size varies on customer size, usage pattern, and time period of data retention.

Information Exchange Manager (IEM) Server:

The IEM interface engine uses standard HL7 interfaces to exchange patient data with the hospital information system and ancillary departments such as pathology, radiology, pharmacy and laboratory. In addition to standard interface configurations, the IEM server can provide customized, non-HL7 interfaces to ensure connectivity to enterprise systems (custom professional services may be required).

The following are the technical specifications for supporting v13.6 of the IEM Server software.

System Requirements:	<ul style="list-style-type: none"> • Varian Radiation Oncology or Medical Oncology system server software v13.6 or higher. • Microsoft Windows Server 2008 R2 SP1 (Standard or Enterprise) or Microsoft Windows Server 2012 R2 (Standard or Datacenter). • 64-bit only • .Net 4.5.2 or higher • Internet Explorer 8 or higher (32 bit) • Windows Installer 3.1 or higher • Minimum of 4 cores, Intel Xeon @ 2.0 GHz or higher processor. • 4 GB RAM Minimum • Minimum of 30 GB free disk space for software installation. • Minimum of 100 Mbps NIC, 1 Gbps highly recommended.
Hardware Guidelines	<p>The amount of CPU and RAM assigned to an IEM server can vary widely depending on the number & type of interfaces, the amount of filtering of the HL 7 data feed and the message volume. Customers are encouraged to perform load testing prior to putting any new interface in to production and adjust the amount of CPU and RAM as needed.</p>
Storage	<ul style="list-style-type: none"> • Sufficient temporary free space for message processing. Specifically ~300 GB of free space if supporting document &/or faxing exchange
Storage Partitioning	<p>Varian recommends the following storage partition scheme:</p> <p>System Partition ("C: Drive")- System & Installation files - ~80 GB</p> <p>Data/Temp Partition ("D: Drive") – ~ 300 GB Min., size varies depending on customer usage.</p>

Additional Hardware components	The following additional hardware is recommended to be available for system installation and management. <ul style="list-style-type: none">• 15" monitor @ 1024 x 768 resolution• Optical Drive (CD/DVD) 8x or higher• 2 USB ports
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InSightive™ Analytics Server:

With v13.6 Varian has introduced the InSightive Analytics solution. Operating in tandem with the ARIA OIS for RO, InSightive illustrates the story of your practice by mining the depths of your data to produce customizable, analytics dashboards that may result in better-informed, evidence-based decision making.

The AURA data reporting database may be deployed on the same server as the InSightive Analytics services provided the system has sufficient system resources to support both.

The following are the technical specifications for supporting v13.6 of the InSightive Server software.

System Requirements:	<ul style="list-style-type: none">• AURA 2.0• Tableau Server software – software and licenses supplied by Varian.• Microsoft Windows Server 2008 R2 SP1 (Standard or Enterprise) or Microsoft Windows Server 2012 R2 (Standard or Datacenter).• 64-bit only• .Net 4.5.2 or higher• Internet Explorer 8 or higher (32 bit)• Windows Installer 3.1 or higher• Minimum of 2 cores, Intel Xeon @ 2.0 GHz or higher processor.• 8 GB RAM Minimum• Minimum of 30 GB free disk space for software installation.• Minimum of 100 Mbps NIC, 1 Gbps highly recommended.
Hardware Guidelines	<p>The following guidelines are minimum recommended hardware configurations. Actual hardware configurations required will vary depending on user load, patient load, data volumes, visual complexity and other factors.</p> <p>Up to 12 InSightive Users:</p> <ul style="list-style-type: none">• 4 cores, 2.0 GHz or higher minimum recommended• 4 GB Minimum system memory <p>Up to 24 InSightive Users:</p> <ul style="list-style-type: none">• 4 cores, 2.0 GHz or higher minimum recommended• 8 GB Minimum system memory <p>Enterprise Deployments:</p>

	<ul style="list-style-type: none">• Contact Varian for sizing and further technical guidance
Additional Hardware components	<p>The following additional hardware is recommended to be available for system installation and management.</p> <ul style="list-style-type: none">• 15" monitor @ 1024 x 768 resolution• Optical Drive (CD/DVD) 8x or higher• 2 USB ports

OncQT Server:

The following are the technical specifications for supporting v13.6 of the OncQT Server software.

System Requirements:	<ul style="list-style-type: none">• ARIA OIS for RO, ARIA OIS for MO or CCS v13.6• Microsoft Windows Server 2008 R2 SP1 (Standard or Enterprise) or Microsoft Windows Server 2012 R2 (Standard or Datacenter).• 64-bit only• .Net 4.5.2 or higher• Internet Explorer 8 or higher (32 bit)• Windows Installer 3.1 or higher• Minimum of 2 cores, Intel Xeon @ 2.0 GHz or higher processor.• 6 GB RAM Minimum• Minimum of 8 GB free disk space for software installation.• Minimum of 100 Mbps NIC, 1 Gbps highly recommended.
Hardware Guidelines	<p>The following guidelines are minimum recommended hardware for an average deployment of OncQT. OncQT is a reporting/data analysis tool; adjust these recommendations to accommodate the number of concurrent users and complexity of the reports developed.</p> <p>For ~5 concurrent users of OncQT</p> <ul style="list-style-type: none">• 2 cores, 2.0 GHz or higher minimum recommended• 6 GB Minimum system memory
Storage	<ul style="list-style-type: none">• The storage for OncQT is based on the size of the Varian System Database with which OncQT is synchronizing data. The size of the storage for OncQT should be assigned as ~2 times the size of the Varian System Database.
Storage Partitioning	<p>Varian recommends the following storage partition scheme:</p> <ul style="list-style-type: none">• System Partition ("C: Drive")- System & Installation files - ~80 GB• DB Partition ("D: Drive") – DB Data – ~100 GB Min., size varies depending on Varian System Database size & usage.

Additional Hardware components	The following additional hardware is recommended to be available for system installation and management. <ul style="list-style-type: none">• 15" monitor @ 1024 x 768 resolution• Optical Drive (CD/DVD) 8x or higher• 2 USB ports
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VelocityGrid Server:

Velocity is imaging informatics focused software with an emphasis on including the rest of the radiation oncology specific data for current and future consumption. The software is typically utilized in one of two ways; as a transitional step in the radiation oncology workflow or as a data repository (PACs).

The following are the technical specifications for supporting the VelocityGrid Server software.

System Requirements:	<ul style="list-style-type: none">• Microsoft Windows Server 2008 R2 SP1 (Standard or Enterprise) or Microsoft Windows Server 2012 R2 (Standard or Datacenter).• 64-bit only• .Net 4.5.2 or higher• Internet Explorer 8 or higher (32 bit)• Windows Installer 3.1 or higher• Minimum of 1 core, Intel Xeon @ 2.0 GHz or higher processor.• 8 GB RAM Minimum• Minimum of 30 GB free disk space for software installation.• Minimum of 100 Mbps NIC, 1 Gbps highly recommended.
Hardware Guidelines	<p>The following guidelines are minimum recommended hardware configurations. Actual hardware configurations required will vary depending on user load, data volumes, and other factors.</p> <p>Up to 10 Velocity Users:</p> <ul style="list-style-type: none">• 4 cores, 2.0 GHz or higher minimum recommended• 32 GB Minimum system memory <p>Up to 25 Velocity Users:</p> <ul style="list-style-type: none">• 6 cores, 2.0 GHz or higher minimum recommended• 32 GB Minimum system memory <p>Enterprise Deployments (>25 Velocity Users):</p> <ul style="list-style-type: none">• Contact Varian for sizing and further technical guidance

Data Storage Growth	<p>The primary data storage consideration for the VelocityGrid server is for file system storage of DICOM and other imported objects. Data storage growth depends on many factors including but not limited to # of patients per day, the number & type of imaging events performed and the number and type of electronic objects being imported. Customers are advised to monitor their data storage growth to ensure that sufficient free space is always available. The following estimates are provided for further guidance:</p> <ul style="list-style-type: none"> • ~500 MB/Patient (or ~150 GB/year/linear accelerator)
Storage Partitioning	<p>Varian recommends the following storage partition scheme:</p> <ul style="list-style-type: none"> • System Partition ("C: Drive")- System & Installation files - ~80 GB • Data Partition ("D: Drive") – DB + File System Data – ~500 GB Min., size varies depending on usage.
Additional Hardware components	<p>The following additional hardware is recommended to be available for system installation and management.</p> <ul style="list-style-type: none"> • 15" monitor @ 1024 x 768 resolution • Optical Drive (CD/DVD) 8x or higher • 2 USB ports

Citrix XenApp Server:

Varian supports deployment of ARIA OIS for RO (including AURA), ARIA RTM, and ARIA OIS for MO, OncQT, Velocity and Eclipse software in a Citrix XenApp farm.

The following are the technical specifications for the supported Varian client software on a single Citrix XenApp server. Depending on the user load one or more Citrix XenApp servers may be required to support the oncology practice.

<p>System Requirements:</p>	<ul style="list-style-type: none"> • Microsoft Windows Server 2008 R2 SP1 (Standard or Enterprise) or Microsoft Windows Server 2012 R2 (Standard or DataCenter) • 64-bit only • .Net 4.5.2 or higher • Internet Explorer 8 or higher (32 bit) • Windows Installer 3.1 or higher • Minimum of 40 GB free disk space for software installation. • Minimum of 100 Mbps NIC, 1 Gbps highly recommended.
<p>Citrix XenApp</p>	<ul style="list-style-type: none"> • Citrix XenApp 6.5 (64-bit) -> ARIA OIS for MO, ARIA OIS for RO (with AURA), ARIA RTM, Velocity, and Eclipse • Citrix XenApp 7.6 (64-bit) – ARIA OIS for MO, ARIA OIS for RO (with AURA), ARIA RTM, Velocity and Eclipse
<p>Hardware Guidelines</p>	<p>The following guidelines are minimum recommended hardware configurations. Actual hardware configurations required will vary depending on user load; Varian applications deployed and in the case of OncQT & Eclipse the complexity of the information being processed.</p> <p>4 Cores, 2.0 Ghz or higher minimum & 16 GB RAM recommended supports the following user counts:</p> <ul style="list-style-type: none"> • Per 25 users of ARIA OIS for RO with ARIA RTM • Per 25 users of ARIA OIS for MO • Per 5 users of OncQT • Per 3 users of Eclipse client software • Per 3 users of Velocity client software <p>The above user counts are for the identified applications when published to run on separate XenApp servers. The applications can be published to run on the same XenApp server but the amount of resources assigned to the XenApp server should be adjusted for the number of users expected of</p>

	<p>the given applications desired to run on the server. For example, to support 25 ARIA OIS for RO and 3 Eclipse users on the same XenApp Server concurrently the server would require a minimum of 8 cores and 32 GB of RAM.</p> <p>Customers should regularly monitor resource utilization of Citrix XenApp servers and adjust available resources or number of servers in a farm to meet their actual workload.</p>
Storage	<ul style="list-style-type: none"> • ~40 GB of free disk space
Storage Partitioning	<p>Varian recommends the following storage partition scheme:</p> <ul style="list-style-type: none"> • System Partition ("C: Drive")- System & Installation files - ~80 GB • Temp/Data Partition ("D: Drive") –100 GB Min., size varies depending on customer usage.
Additional Hardware components	<p>The following additional hardware is recommended to be available for system installation and management.</p> <ul style="list-style-type: none"> • 15" monitor @ 1024 x 768 resolution • Optical Drive (CD/DVD) 8x or higher • 2 USB ports
Notes:	<ul style="list-style-type: none"> • Varian is not a Citrix XenApp authorized reseller; customers are responsible for maintaining sufficient Citrix XenApp and Microsoft RDS licenses for their environment. • The recommended CPU and RAM requirements are provided for guidance only. Varian recommends monitoring actual usage to allow adjusting the amount of CPU and RAM available in the XenApp farm to support customer's actual user load. • Customers should always plan for an "N+1" XenApp server configuration to ensure proper responsiveness and load balancing. • For MS Office support in Citrix, please check MS latest requirements documentation. • Customers should also be aware that to install MS Office components in a Citrix XenApp environment they must use MS Open Volume licensing. Please check MS latest licensing requirements. • When deploying Eclipse client software in a Citrix XenApp farm customers must purchase (from Varian) Varian's Framework Agent Servers (FAS) for

	calculation support.
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HARRP Server:

Varian's High Availability and Rapid Recovery Protection (HARRP) solution is powered by Vision Solutions Double-Take® Software and is designed to protect your clinical data and allow you to rapidly resume clinical operations.

HARRP provides continuous data protection and ensures minimal data loss and immediate recovery from primary system outage or disaster recovery by replicating changes in data and configuration from a 'source' (or production) server to the 'HARRP' or 'target' server. The following are the technical specifications for supporting the HARRP Server software.

System Requirements:	<ul style="list-style-type: none">• DoubleTake – software & licenses supplied by Varian<ul style="list-style-type: none">○ DoubleTake 5.2 has been validated with Varian software on Windows Server 2008 R2○ DoubleTake v7.1 has been validated with Varian software on Windows Server 2008 R2 and Windows Server 2012 R2• The HARRP target server must meet the same system requirements as the source server it is replicating.
Hardware Guidelines	The HARRP target server hardware must meet the same hardware requirements as the production source server hardware that the HARRP solution is deployed to protect to maintain the same performance.
Data Storage	Since the HARRP solution performs bit-level replication of the data of the production servers being protected, the data storage requirements for the HARRP failover servers must be maintained at the same level as the production servers.
Storage Partitioning	Partitioning scheme of storage should match the partition scheme of the server that the HARRP target server has been deployed to support.
Additional Hardware components	The following additional hardware is recommended to be available for system installation and management. <ul style="list-style-type: none">• 15" monitor @ 1024 x 768 resolution• Optical Drive (CD/DVD) 8x or higher• 2 USB ports

Appendix A – Single Server Deployments:

The following appendix is provided for clarity for those customers that may want to deploy the AURA database in a single server deployment along with the Radiation Oncology or CCS System Server; or the AURA database with the InSightive Analytics server software.

Please see the relevant section in the main body of the document for complete system specifications and requirements. As a reminder, actual resource requirements depend heavily on actual workload experienced, for reporting tools like AURA and InSightive this workload is dependent on not just the number of concurrent users but the complexity of the reports and dashboards being used.

Radiation Oncology System Server w AURA

	Up to 2 Linear Accelerators or ~ 30 Users	Up to 4 Linear Accelerators or ~60 users	Up to 6 Linear Accelerators or ~90 Users
CPU Cores:	10 cores	14 cores	18 cores
RAM	24 GB	36 GB	48 GB
Database Storage Growth	AURA Database growth = ~20 GB/year/linear accelerator	AURA Database growth = ~20 GB/year/linear accelerator	AURA Database growth = ~20 GB/year/linear accelerator
Database Storage Partitioning	<ul style="list-style-type: none"> • DB Partition ("D: Drive") – DB Data + LOG files - 100 GB Min., size varies depending on customer usage. • Dump Partition ("E: Drive") – database dumps – minimum of 100 GB but size varies on customer size, usage pattern, and retention 	<ul style="list-style-type: none"> • DB Partition ("D: Drive") – DB Data + LOG files - 100 GB Min., size varies depending on customer usage. • Dump Partition ("E: Drive") – database dumps – minimum of 100 GB but size varies on customer size, usage pattern, and retention 	<ul style="list-style-type: none"> • DB Partition ("D: Drive") – DB Data + LOG files - 100 GB Min., size varies depending on customer usage. • Dump Partition ("E: Drive") – database dumps – minimum of 100 GB but size varies on customer size, usage pattern, and retention

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InSightive server w AURA

	Up to 2 Linear Accelerators or ~ 30 Users and ~6 InSightive users	Up to 4 Linear Accelerators or ~60 users and ~12 InSightive users	Up to 6 Linear Accelerators or ~90 Users and ~24 InSightive users
CPU Cores:	6 cores	8 cores	10 cores
RAM	12 GB	16 GB	24 GB
Database Storage Growth	Database growth = ~10 GB/year/linear accelerator	Database growth = ~10 GB/year/linear accelerator	Database growth = ~10 GB/year/linear accelerator
Database Storage Partitioning	<ul style="list-style-type: none"> • DB Partition ("D: Drive") – DB Data + LOG files - 100 GB Min., size varies depending on customer usage. • Dump Partition ("E: Drive") – database dumps – minimum of 100 GB but size varies on customer size, usage pattern, and retention policies 	<ul style="list-style-type: none"> • DB Partition ("D: Drive") – DB Data + LOG files - 100 GB Min., size varies depending on customer usage. • Dump Partition ("E: Drive") – database dumps – minimum of 100 GB but size varies on customer size, usage pattern, and retention policies 	<ul style="list-style-type: none"> • DB Partition ("D: Drive") – DB Data + LOG files - 100 GB Min., size varies depending on customer usage. • Dump Partition ("E: Drive") – database dumps – minimum of 100 GB but size varies on customer size, usage pattern, and retention policies

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