



# System Requirements

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# 1 System requirements

These system requirements contain detailed information about the software and hardware you use to host Relativity in your environment and in the cloud. These requirements also provide various recommendations for configuring a new deployment of Relativity, as well as scaling your environment as the number of users and the amount of data continue to grow.

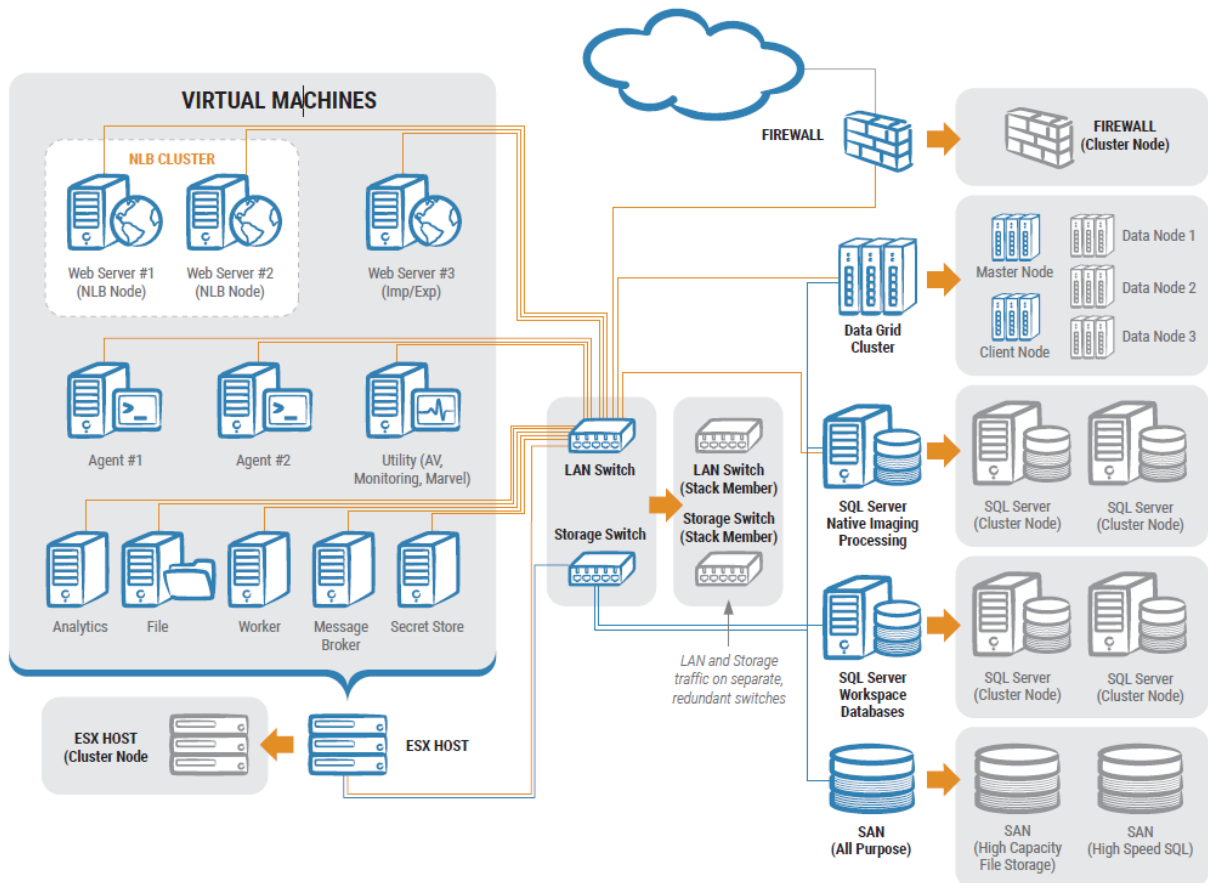
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**Note:** There are several references to .NET 4.8 in this topic. Relativity Server 2022 does not support .NET 4.8.1 or any subsequent versions.

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## 2 Infrastructure overview

Relativity is designed with a scalable infrastructure that you can tailor to your environment's requirements. It is developed on the .NET framework with a Microsoft SQL Server back-end. As illustrated in the following diagram, all areas of the platform are scalable providing support for any hardware vendor, hypervisor, and storage protocol.



### Web server

The web server is the gateway for all users to access Relativity. It authenticates the user with the system, contains APIs for searching and third-party applications, transfers documents to the end user in the Relativity Viewer, and is responsible for communications during imports and exports in workspaces. There are different mechanisms for authentication into the system including forms, active directory, two-factor, SAML 2.0, and OpenID Connect. User sessions can be load balanced with the included Relativity User Load Balancer or via available hardware load balancing solutions.

### Agent server (core)

Agents in Relativity are responsible for running all background processing tasks. When a user submits a job, such as a Production or OCR job, the associated agents will pick up the job and complete the work. The agents run under a Windows Service and often require various levels of CPU, RAM and I/O, depending on the job type. The agents can be scaled vertically and horizontally to accommodate organizational needs.

### Agent server (conversion)

In Server 2022, viewer conversion jobs are handled by the Conversion agents. Any Relativity agent server designated as a conversion agent server should only have one conversion agent deployed. Conversion jobs are multi-threaded and one conversion agent may utilize all available processor cores on a server.

For more information, see [System requirements on page 4](#).

### **Agent server (dtSearch)**

dtSearch queries are multi-threaded and spawn as many threads as there are sub-indexes or cores — whichever number is lowest will be the constraint. One dtSearch search agent may be able to utilize all available processor cores on a server. Therefore, each Relativity agent server that you designate to be a dtSearch search agent server should only have one dtSearch search agent and nothing else.

### **SQL Server (workspaces)**

This SQL Server is where the structured text and metadata resides for the documents. Each Relativity workspace is represented by its own SQL Server database. Environments may have one or more SQL Servers. In addition to workspace databases there are Relativity system databases present on each server that contain tables for system configurations, agent job queues, users/groups, and more.

### **SQL Server (Invariant/Worker Manager server)**

Relativity processing has individual store databases that correspond to each Relativity workspace database with processing enabled. Total memory and processor requirements for this role are not as demanding as the SQL Servers that house workspace databases. This server is also used for native imaging and save as PDF request management.

### **Worker**

The Worker role is responsible for handling enhanced native imaging and processing jobs. Relativity has placed a hard cap on the amount of threads that each Worker server can spawn. The hard cap is 16 threads. Each processor core and 2 GB RAM will create two threads. Therefore, it is suggested that 8 logical cores and 16 GB RAM be allocated to each worker server to get the most throughput.

### **Secret Store**

The Secret Store is a required component that provides secure, storage you can audit for Relativity secrets. A secret could be user credentials, a database connect string, an instance setting that contains confidential information such as your SMTP credentials, or a TLS certificate. The Secret Store database securely stores all confidential information that can be accessed only from authenticated servers.

For more information, see The Relativity Secret Store Guide.

### **Message broker**

The Relativity service bus is a message delivery service that communicates information about agent jobs to different application components. This infrastructure feature supports this communication by routing messages between application components. For example, Relativity uses the service bus for submitting conversion jobs to agents and returning converted documents.

### **Analytics**

The analytics server is responsible for building and storing the conceptual indexes in the environment. Once an index is built, the server also runs the conceptual features such as categorization and clustering. In addition to conceptual indexing, structured analytics sets run on this server for textual analysis features such as email threading or language identification. The indexes and structured analytics sets are stored on disk in a configurable location.

### **File server**

This server may not be required depending on the available storage. Relativity does not install any software on a file server for Relativity. Relativity just needs to know where the files, Natives/Images, live and the web

servers need to be able to access those locations. The same applies to dtSearch, Analytics index, and viewer cache locations.

#### **Data Grid master node**

This is the server within a cluster that manages changes across the entire cluster.

#### **Data Grid client node**

This is the server that serves as the gateway through which data enters a cluster. When there is more than one in an environment, these can be thought of as load balancers which service requests for data.

#### **Data Grid data node**

This is the server that stores data within a cluster.

## 3 Scalability

You can scale Relativity installations to handle the performance, storage, and other environmental factors necessary to support the addition of new users, continual growth of data, and increased demands for searching capabilities.

### 3.1 Tier level definitions

We have identified tier levels that support varying numbers of users and sizes of active data. You can use these tier level definitions to determine the cores, RAM, and other equipment required to support the rapid growth of your Relativity installation. Key terms used in the following table include:

- **Enabled User Accounts**—amount of enabled Relativity User accounts.
- **Simultaneous Users**—average amount of simultaneous users logged into Relativity.
- **Active SQL Data (TB)**—total amount of disk space consumed by SQL databases (mdf) and full text (ndf) indexes.
- **Active Record Count (MM)**—total amount of records, documents, included across all active Relativity workspaces.
- **Active File Size (TB)**—total amount of disk space consumed by native and image files.

This table identifies the combination of users, data, and file sizes associated with each tier.

	Tier 1 - Entry Level Environment	Tier 2 - Mid Level Environment	Tier 3 - Large Scale Environment
Enabled User Accounts	< 300	300 - 1000	1000+
Simultaneous Users	< 100	100 - 500	500+
Active SQL Data (TB)	< 1	1 - 10	10+
Active Record Count (MM)	< 20	20 - 100	100+
Active File Size (TB)	< 5	5 - 30	30+

The equipment used to support environments at each tier is described in the following table.

	Tier 1 - Entry Level Environment	Tier 2 - Mid Level Environment	Tier 3 - Large Scale Environment
Total Cores for Non-SQL	< 48	48 - 192	192+
Total Memory (GB) for Non-SQL	< 96	96 - 384	384+
Total Cores for SQL Server	< 16	16 - 96	96+
Total Memory (GB) for SQL Server	< 128	128 - 1024	1024+



	<b>Tier 1 - Entry Level Environment</b>	<b>Tier 2 - Mid Level Environment</b>	<b>Tier 3 - Large Scale Environment</b>
Total SQL Storage I/O (Gbps)	4 - 8	8+	16+
SQL Tempdb Storage	Separate spindles	SSD or flash	SSD or flash

## 4 Required configurations for new deployments

Contact [Customer Support](#) for assistance with designing your Relativity infrastructure.

### Notes:

- The following Tier 1 example environments provide information for different user and data counts. Most new deployments adhere to one of these Tier 1 examples.

### 4.1 Tier 1 - Hardware requirements (25-50 named users)

We support the installation of all Relativity components on a single device for 25-50 named user agreements. We also require that you install a hypervisor to this device so each Relativity role has its own virtual machine.

The following table provides virtual machine specifications for the single server setup.

Tier 1 (25-50 named users) - Single Server Deployment			
	Quantity	Memory (GB)	CPU
Web	2	16	8
Agent (core)	2	4	4
Agent (dtSearch)	1	4	4
Agent (conversion)	1	8	4
Agent (PDF)*	1	16	8
Analytics	1	32	4
Worker	1	16	8
Secret Store	1	4	4
SQL (workspace databases)	1	64	8
SQL (Invariant/Worker Manager server)	1	16	4
Data Grid master/data/client node	1	16	4
Message broker server	1	4	4

\* If users have a dedicated Invariant worker for Save As PDF jobs they can either decommission it or convert it to an agent server following the recommendation of two PDF Worker agents per VM.

While Relativity supports the use of virtual machines, Relativity also requires differing configurations depending on the tier level of your environment. High Availability and Disaster Recovery requirements influence the number of SQL Servers as described in [Infrastructure configuration](#). You can distribute Relativity workspace databases across multiple SQL instances.

This table lists the recommendations for environments at Tier 1.

Tier 1 (100+ named users) - Entry Level Environment			
	Quantity	Memory (GB)	CPU
Web	2	16	8
Agent (core)	2	4	4
Agent (dtSearch)	1	4	4
Agent (conversion)	1	16	8
Agent (PDF)*	1	16	8

Tier 1 (100+ named users) - Entry Level Environment			
	Quantity	Memory (GB)	CPU
Analytics	1	32	8
Worker	2	16	8
Secret Store	1	4	4
Message broker server	1	8	8
SQL (workspace databases)	1	64	8
SQL (Invariant/Worker Manager server)	1	16	4
Data Grid Mast Node/Data Node/Client Node	3	16	4

\* If users have a dedicated Invariant worker for Save As PDF jobs they can either decommission it, or convert it to an agent server following the recommendation of two PDF Worker agents per VM.

## 4.2 Tier 2 - Hardware requirements (300 or more named users)

For Tier 2 environments, Relativity requires additional virtual machines, as well as increased RAM and CPUs as illustrated in the following table. Additionally, it is suggested that SQL, Workspace Databases, instances are not virtualized when supporting larger data sets.

Tier 2 (300+ named users) - Mid Level Environment			
	Quantity	Memory (GB)	CPU
Web	2	32	8
Agent (core)	3	16	8
Agent (dtSearch)	2	16	8
Agent (conversion)	2	16	8
Agent (PDF)*	2	16	8
Analytics (structured analytics)	1	32	8
Analytics (Analytics indexing)	1	32	4
Worker (processing, imaging)	2	16	8
Secret Store	1	4	4
Message broker server	1	16	16
SQL (workspace databases)	2	256	16
SQL (Invariant/Worker Manager server)	1	32	4
Data Grid master node	3	32	8

\* If users have a dedicated Invariant worker for Save As PDF jobs they can either decommission it, or convert it to an agent server following the recommendation of two PDF Worker agents per VM.

Please take the following into consideration for any sized environment:

**Note:** For the File, Document, role, the type of storage system used will determine if you need to install the Windows operating system.

File (Docu- ment)	<ul style="list-style-type: none"> <li>■ Processor: 4 cores (2GHz)</li> <li>■ Memory: 4GB RAM</li> <li>■ Network: Gigabit Ethernet</li> </ul>
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- Storage: See [Storage](#).

Relativity requires an active SMTP server on your network. It interfaces with this server to send notifications and monthly billing statistics. The hardware requirements for this role are minimal. You can leverage an existing SMTP server in the network or merge this server with the agent server role.

## 4.3 Storage

For each type of data, the amount of recommended space depends on the number of records imported, as well as the type and length of the expected reviews. Each server or VM needs space for the OS, page file, and Relativity installation files. The Relativity Processing SQL Server requires all the same SQL data with the exception of SQL Full Text Indexes. Throughput, especially when multiple SQL Servers or Data Grid Data Nodes are virtualized on a single host, should be put through a regiment of rigorous random and sequential read/write IO testing before installation of Relativity is completed.

Recommended space by data type:

Data Type	25-50 Named Users	100+ Named Users	Disk I/O
SQL databases	500 GB	750 GB	High The databases can live across multiple storage volumes and SQL instances.
SQL full text indexes	150 GB	250 GB	Moderate Index size depends on the number of fields and records indexed.
SQL database logs	150 GB	250 GB	High Regular transaction log backups keep these values small and provide point in time recovery.
SQL Tempdb	80 GB	80 GB	High We recommend eight 10GB Tempdb data files for new deployments. SSDs recommended.
SQL backups	500 GB	1000 GB	Low-High We recommend having a backup strategy. This volume is not required. Larger data sizes may require higher I/O throughput.
dtSearch indexes	150 GB	250 GB	Moderate The dtSearch index share is typically stored in the same location as the files.

Data Type	25-50 Named Users	100+ Named Users	Disk I/O
Analytics indexes	150 GB	250 GB	High
	The Analytics index volume is mounted to the Analytics virtual machine with speed and connectivity similar to that of SQL Server.		
Files (natives/images)	1500 GB	3000 GB	Low-High
	The files may not require a Windows installation depending on the storage. Multiple Processing Workers online will require more file storage I/O.		
Viewer cache	500 GB	1000 GB	High
Temporarily store natives, images, productions, and other file types the viewer uses. It is recommended that the cache be stored on tier-one storage, SSDs, in environments with hundreds of concurrent users. Recommended 1TB viewer cache space available for every 100 concurrent users.			
Agent (conversion)	250 GB	250 GB	High
This is the Windows temp directory used during document conversion.			
Worker (native imaging/processing)	250 GB	250 GB	High
	This is the Windows temp directory used by native applications during imaging and processing. This temp location never exceeds 250 GB for each Worker server.		
Data Grid data node	1 TB	1-10 TB	High

## 5 Infrastructure configuration

### Infrastructure configuration

Relativity supports the following technologies as part of its infrastructure configuration:

- **Virtualization**—all aspects of Relativity can be virtualized. Some roles are more RAM and CPU intensive as others. You have to make sure when virtualizing Relativity that you do not over commit the RAM and CPU on a virtual machine to host ratio.
- **High Availability (HA)**—Relativity supports SQL Server Failover and File Server Clustering along with available hypervisor solutions.
- **Disaster Recovery (DR)**—Relativity supports Microsoft SQL Server mirroring, log shipping, and SAN replication technologies. These approaches typically require manual failover and increased downtime.
- **Web Server Load Balancing**—Relativity supports only single affinity in Windows Network Load Balancing (NLB). The Relativity User Load Balancer (RULB) provides the ability to distribute the user load evenly.
- **Perimeter Networking (DMZ)**—Relativity requires certain ports to remain open for proper server communication. For more details, download the Relativity Infrastructure Ports Diagram from the Relativity Community. Note that you must have a valid user name and password to download this content.

### 5.1 Guides for infrastructure management

Review the following guides to become familiar with best practices for managing the Relativity infrastructure:

- Pre-Installation Guide
- Environment Optimization Guide
- Infrastructure Planning Recommendations

## 6 Software requirements

Relativity has specific software requirements for servers or virtual machines, user workstations, and the Relativity Desktop Client. The requirements for servers differ by the role assigned to them in your system configuration.

**Note:** Make sure that you install the latest service packs and updates for your Windows Operating system and the latest service packs and cumulative updates for your SQL Server. However, compatibility for higher .NET versions is not guaranteed and we do not recommend installing higher .NET versions than what is listed as required by your Relativity version.

### 6.1 System (servers or virtual machines)

**Note:** Relativity is compatible with local settings Only for webservice servers.

The general software requirements for servers and virtual machines include Microsoft Windows Server and .NET technologies. Microsoft Office and other applications are required for worker servers.

The following table provides software requirements by server role.

Server Role	Software Requirements
Web	<ul style="list-style-type: none"><li>Windows Server 2019, Windows Server 2016, or Windows Server 2012 R2</li><li>.NET 4.7.2 or 4.8</li><li>.NET 3.5</li></ul>
Agent	<ul style="list-style-type: none"><li>Windows Server 2019, Windows Server 2016, or Windows Server 2012 R2</li><li>.NET 4.7.2 or 4.8</li><li>.NET 3.5</li></ul>
Analytics	<ul style="list-style-type: none"><li>Windows Server 2019, Windows Server 2016, or Windows Server 2012 R2</li><li>.NET 4.7.2 or 4.8</li></ul> <p><b>Note:</b> Java is already packaged with the Analytics installer, so it is not considered a separate requirement.</p>
Secret Store	<ul style="list-style-type: none"><li>Windows Server 2019, Windows Server 2016, or Windows Server 2012 R2</li><li>.NET 4.7.2 or 4.8</li><li>.NET 3.5</li><li>Windows Server 2016, Windows Server 2019</li></ul>
Message broker	<ul style="list-style-type: none"><li>.NET 4.7.2 or 4.8</li><li>.NET 3.5</li><li>RabbitMQ</li></ul>

## Server Role

## Software Requirements

SQL

- Windows Server 2019, Windows Server 2016, or Windows Server 2012 R2
- SQL Server 2017 or SQL Server 2019
  - SQL Server 2019 requires Windows Server 2016 or 2019.
- Relativity supports in-place upgrades from SQL Server 2016 to any higher supported version. For details on SQL Server upgrade, follow the [EDDS migration Guide](#). To determine if you should upgrade your current SQL Server version to SQL Server 2019, note the following considerations. Contact [Relativity Support](#) if you have further questions.
  - The base operating system of your SQL Server must be at a minimum Windows Server 2016. Any Windows Server version below 2016 will require an EDDS migration to be performed to a server with a proper operating system version and SQL version. Relativity does not support in-place operating system upgrades. .
  - SQL Server version lower than SQL 2016 will require an EDDS migration since upgrading to SQL Server 2019 from versions lower than SQL Server 2016 has not been tested by Relativity.

■ .NET 4.7.2 or 4.8

■ .NET 3.5

Additional considerations:

- Each environment is different, research settings that your specific environment may utilize before performing any upgrades.
- Ensure that you have tested backups before performing any upgrades.
- Although an in-place SQL upgrade is supported by Relativity. Performing an EDDS migration is the cleanest way to perform a SQL upgrade.

Worker

Software	Description	Required for system installation?
Windows Server 2019, Windows Server 2016, or Windows Server 2012 R2	Required server software.	Yes
.NET 4.7.2 or 4.8	Required server software.	Yes
.NET 3.5	Required server software.	Yes
Desktop Experience (Windows Server feature)	Required server software.	Yes
Microsoft Office 2016 Professional (32-bit)	This includes: <ul style="list-style-type: none"> <li>■ Excel—used for Processing and Native Imaging of</li> </ul>	No - you are able to install the worker manager server without first installing Office.



**Server  
Role**

**Software Requirements**

Software	Description	Required for system installation?
	<p>most spreadsheet based documents .xlsx, .xlsm, .xlsb, .odc, .ods, and others.</p> <ul style="list-style-type: none"> <li>■ Word—used for Processing and Native Imaging of .docx, .docm, .dotx, .dotm, .doc, and others.</li> <li>■ Powerpoint—used for Processing and Native imaging of .pptx, .pptm, .ppsm, .potx, .potm, and others.</li> <li>■ Outlook - used for Processing and Native imaging of .msg, .pst, .ost, and others.</li> <li>■ OneNote – used for Processing and Native Imaging of .one and .tmp files, and others.</li> <li>■ Publisher—used for Processing and Native Imaging of .pub files and others.</li> </ul>	
<p><b>Note:</b> There is no backwards compatibility for Microsoft Office versions. The versions listed here are the only ones supported.</p>		<p><b>Note:</b> Some features found in files created in different versions of Office may not be available or render correctly when processed or imaged using a different version than the file was originally created in. For more information about features differences between Office versions, please consult the appropriate Microsoft documentation.</p>

**Server  
Role**

**Software Requirements**

Software	Description	Required for system installation?
	<p><b>Note:</b> The Courier New font must be installed on your machine. This font is installed by default when you install Microsoft Office, in which case you must ensure that you do not remove it.</p>	
	<p><b>Note:</b> Relativity does not support add-ins for Microsoft Office.</p>	
Microsoft Works 6–9 File Converter	The Microsoft Works Converter is also required. You can download it from the Relativity Community <a href="#">here</a> .	Yes
Microsoft Visio 2016 Professional or Standard SP2 (32-bit)	Used for processing and imaging .vsd, .vdx, .vss, .vsx, .vst, .vsw files.	No
Microsoft Project Professional 2016 (32-bit)	Used for processing and native imaging of .mpp files.	No
(Optional) Lotus Notes v8.5 and higher	It is recommended that you install Lotus Notes 9 or higher on your workers, because Lotus Notes version 8.5.x cannot read certain Lotus 9 databases. Please note that some Lotus 9 databases cannot be opened in 8.5.x and will generate an error during processing.	No
<ul style="list-style-type: none"> <li>Lotus Notes v8.5.3 with Fix Pack 6</li> <li>Lotus Notes v8.5.2 with Fix Pack 4</li> </ul>		<ul style="list-style-type: none"> <li>This is only required for processing and imaging .vsd, .vdx, .vss, .vsx, .vst, .vsw files. You can still install processing without this component, but you will not be able to process or image those files without it.</li> <li>This is only required for processing and imaging .mpp files. You can still install processing without this component, but you will not be able to process or image .mpp files without it.</li> <li>Lotus Notes is an optional installation; however, if you do install it, you need to restart the worker machine. There is no need to restart the queue manager service.</li> </ul>

Server Role	Software Requirements		
	Software	Description	Required for system installation?
	<ul style="list-style-type: none"> <li>Lotus Notes v9.0</li> <li>Lotus Notes v9.0.1</li> <li>Lotus Notes v10.0.1</li> <li>Solidworks eDrawings Viewer 2017 (64-bit) version only with SP5 or above.</li> <li>Solidworks eDrawings Viewer 2018 (64-bit)</li> <li>Solidworks eDrawings Viewer 2019</li> <li>Solidworks eDrawings Viewer 2020</li> </ul>	<p>Used for processing, text extraction, and imaging for CAD files. This is the only optional component.</p> <ul style="list-style-type: none"> <li>To download the viewer, go <a href="#">here</a>.</li> <li>Solidworks eDrawings Viewer 2017 SP5 and above is supported.</li> </ul>	<p>No</p> <ul style="list-style-type: none"> <li>The Solidworks eDrawings Viewer is not a pre-requisite for general use of Relativity Processing. Solidworks is only required for performing native imaging and text extraction on any supported CAD files in your data sources. You should install it only on the worker designated to perform these types of jobs. If you attempt to process a CAD file without the Solidworks viewer installed, you receive a simple document-level error prompting you to install it. Once you install the Solidworks viewer, you can retry that error and proceed with your processing job.</li> </ul>
	JungUm Global Viewer v9.1 or higher	This is required for processing and imaging GUL files, for Korean documents.	<p>No</p> <ul style="list-style-type: none"> <li>After you install the JungUm Global Viewer on the worker, you should restart the worker machine, but there is no need to restart the queue</li> </ul>
<p>* Microsoft Project and Visio are not required to install and use Relativity Processing. These components are only required if you intend to process Project and Visio files, specifically.</p>			

## 6.2 Workstations (end-user PCs)

In Relativity, end users perform their reviews on workstations. Each workstation should be configured with a browser in which to use the Relativity web application, an operating system on which to run the Relativity Desktop Client, and the currently supported version of .NET.

### 6.2.0.1 Supported browsers for Relativity Web application

Relativity supports the following Browsers:

Browser requirements	Relativity
Internet Explorer (any version)	Not supported
Chrome (for Windows and Mac OSX)	3 latest browser versions at time of release
Firefox (for Windows and Mac OSX)	3 latest browser versions at time of release
Safari (OSX 10.9)	2 latest browser versions at time of release
Safari (OSX 10.10)	2 latest browser versions at time of release

We recommend using the latest version of Chrome, Firefox, and Safari with Relativity. For Chrome, Firefox, and Safari web browsers, Relativity supports:

- The three most recent versions of Chrome and Firefox, for Windows and Mac OSX, at the time of a given Relativity release.
- The two most recent versions of Safari included with Mac OS X at the time of a given Relativity release.

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**Note:** Relativity does not currently support the Linux operating system for any browser, including Chromebooks.

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**Note:** Although Firefox is supported, performance testing indicates that it is slower when rendering the List Page in Relativity. For this reason, we recommend using Chrome.

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### 6.2.0.2 Supported .NET version

- .NET 4.7.2 or 4.8
- .NET 3.5

## 6.3 Relativity Desktop Client

The Relativity Desktop Client (RDC) is a utility used for importing and exporting documents, images, natives, and productions. This utility requires the following software:

The Relativity Desktop Client requires Microsoft .NET 4.7.2 and Visual C++ 2015 Redistributable Update 3 RC.

Your operating system determines whether you need to download the 64-bit or 32-bit version of these applications:

- If you are running a 32-bit machine, you must install the RDC 32-bit and the Visual C++ 2015 Redistributable Update 3 RC. For more information, see [Microsoft Visual C++ 2015 Redistributable Update 3 RC](#).
- If you are running a 64-bit machine, you want to install the RDC 64-bit and the Visual C++ 2015 Redistributable Update 3 RC. You may notice a significant improvement in the speed of the RDC with the 64-bit version. However, a 64-bit machine can have both the x86 and x64 redistributables installed at the same time, and it can run the 32-bit or 64-bit version of the RDC.

## 6.4 Licensing Microsoft products

Relativity requires Microsoft Windows and Microsoft SQL Server, both of which you need to license through Microsoft or one of their resellers. If using Relativity Processing or Native Imaging, you also need to license Microsoft Office, Visio, and Project through Microsoft or one of their resellers.

If Relativity is hosted for external customers, you may need to license Microsoft products through Microsoft's SPLA (Service Provider License Agreement). You can find more information about Microsoft's SPLA program on [Microsoft's Hosting site](#).

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**Note:** We recommend contacting Microsoft, or one of their resellers, for guidance on the licensing options available.

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## 7 Relativity compatibility matrix

### 7.1 Relativity system requirements matrix

The following table breaks down the supported operating systems, framework, IIS versions, browsers, and versions of SQL Server for each of the still-supported versions of Relativity Server. For additional Chrome, Firefox, and Safari supported version details, see [End user browser and operating system requirements on the next page](#).

Software	10.3	Server 2021	Server 2022
<b>Operating systems - Relativity Desktop Client</b>			
Windows 7	✓		
Windows 8 (Desktop Mode only)	✓		
Windows 8.1	✓	✓	✓
Windows 10	✓	✓	✓
Windows 11			✓
<b>Operating systems - servers</b>			
Windows Server 2012 R2	✓	✓	✓
Windows Server 2016	✓	✓	✓
Windows Server 2019		✓	✓
<b>Framework</b>			
Microsoft .NET Version 3.5	✓	✓	✓
Microsoft .NET Version 4.6.2	✓	✓	
Microsoft .NET Version 4.7	✓	✓	
Microsoft .NET Version 4.7.2			✓
Microsoft .NET Version 4.8*			✓
<b>SQL versions</b>			
SQL Server 2012			
SQL Server 2014**	✓		
SQL Server 2016**	✓		
SQL Server 2017**	✓	✓	✓
SQL Server 2019**		✓	✓

**Note:** SQL Server 2019 requires Windows Server 2016 or 2019. It is not compatible with Windows Server 2012.

\*Relativity Server 2022 does not support .NET 4.8.1 or any subsequent versions.

\*\*See [Compatibility considerations for Service Bus for Windows Server on the next page](#).

## 7.1.1 Compatibility considerations for Service Bus for Windows Server

**Note:** The RabbitMQ 3.10 series became unsupported by the vendor on 12/31/2023. We cannot guarantee compatibility of RabbitMQ 3.10.x with Server 2022 or Server 2023 after 12/31/2023 and recommend upgrading to a supported version of RabbitMQ. For details on RabbitMQ's version policies, see [RabbitMQ versions](#). If you are upgrading to 3.12.x, review the [RabbitMQ upgrade overview](#) beforehand to avoid issues during the upgrade process.

While Relativity will continue to support Service Bus for Windows Server for the near future, RabbitMQ is the recommended message broker for Relativity Server 2022. Microsoft has announced that support for Service Bus for Windows Server will end in January 2023 and the product is no longer receiving security updates.

While we aren't aware of any issues with Service Bus for Windows Server with the Service Bus TLS 1.2 update running on any of the supported Windows Server/SQL Server combinations for Server 2022, Relativity can't guarantee compatibility outside of Microsoft's official support matrix. Future updates from Microsoft may impact the stability of your infrastructure if you aren't running the service bus on a supported OS and SQL platform.

**Note:** For information on service bus compatibility, see the Workarounds for Service Bus 1.1 with TLS 1.2 section for your version of Relativity in the Upgrade Guide.

## 7.2 End user browser and operating system requirements

**Note:** Beginning in Server 2022, we no longer support Internet Explorer (IE). Beginning in Server 2022, we now support Microsoft Edge.

Software	10.3	Server 2021	Server 2022
Chrome (for Windows and Mac OSX)	✓latest version	✓latest version	✓latest version
Edge (for Windows and Mac OSX)			✓latest version
Firefox (for Windows and Mac OSX)	✓latest version	✓latest version	✓latest version
Safari (OSX 10.9)	✓	✓	✓
	v. 11+	v. 11+	v. 11+
Safari (OSX 10.10)	v. 11+	v. 11+	v. 11+

**Note:** Relativity does not currently support the Linux operating system for any browser.

## 7.3 Relativity release matrix

The following table lists the Invariant (worker manager server) and Outside In versions released with each Relativity release. Along with the Relativity Analytics engine and Secret Store versions compatible with each release of Relativity.

Relativity version	Relativity release date	Outside In version	Invariant version	Analytics engine version	Secret Store version
Server 2022 12.1.431.2	December 13, 2022 (early access)	2021.5.0	7.1.431.1	4.6.0	1.2.603.5



## 8 Elasticsearch system requirements

Depending on your infrastructure tier, you have different server specifications and recommendations for the Elasticsearch cluster available to you. Elasticsearch is built on a distributed architecture made up of many servers or nodes. A node is a running instance of Elasticsearch (a single instance of Elasticsearch running in the JVM). Every node in an Elasticsearch cluster can serve one of three roles.

- Master nodes are responsible for managing the cluster.
- Data nodes are responsible for indexing and searching of the stored data.
- Client nodes are load balancers that redirect operations to the node that holds the relevant data, while offloading other tasks.

Set up an entirely separate cluster to monitor Elasticsearch with one node that serves all three roles: master, data, and client. While this setup doesn't take advantage of the distributed architecture, it acts as an isolated logging system that won't affect the main cluster.

### 8.1 Infrastructure considerations

Consider the following factors when determining the infrastructure requirements for creating an Elasticsearch environment:

- **Infrastructure tier** – When you build out your initial Relativity environment, we use these measures to determine a tier level of 1, 2, or 3. This tier level takes into consideration the number of users, SQL sizes, and the amount of data and activity in your system.
- **Virtual versus physical servers** – Although Elastic recommends physical servers, our implementation doesn't require physical servers. Virtual servers can be implemented for all nodes.
- **Storage type** – Elasticsearch is a distributed system and you should run it on storage local to each server. SSDs are not required.
- **Network connectivity** – Because of the distributed architecture, network connectivity can impact performance, especially during peak activity. Consider 10 GB as you move up to the higher tiers.
- **Client nodes** – Larger clusters that do not perform heavy aggregations (search against your data), may perform better without client nodes. Simply use a master and data node configuration with a load balancer to handle data in your cluster.

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**Note:** Elasticsearch won't allocate new shards to nodes once they have more than 85% disk used.

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### 8.2 Other considerations

- Shield is one of the many plugins that comes with Elasticsearch. Shield provides a username and password for REST interaction and JWKS authentication to Relativity. JWKS is already running on your Relativity web server.
- The Elasticsearch cluster uses the certificate from a Relativity web server or a load balanced site for authentication to Relativity.

- You can set up the nodes for TLS communication node to node. TLS communication requires a wild card for the nodes that contains a valid chain and SAN names. This is highly recommended for clusters that are in anyway exposed to the internet. You can request a script which can be used against an installation of OpenSSL to create the full chain that is not readily available. All of the certificates are contained within a Java keystore which is setup during installation by the script. To request this script, contact [Relativity Support](#). If you have a chain of certificates with a wild card certificate and private key that contains SAN names of the servers, you can use those certificates to build the Java keystore for TLS.

## 8.3 Elasticsearch cluster system requirements

The number of nodes required and the specifications for the nodes change depending on both your infrastructure tier and the amount of data that you plan to store in Elasticsearch.

### Notes:

- These recommendations are for audit only.
- Disk specs for data nodes reflect the maximum size allowed per node. Smaller disk can be used for the initial setup with plans to expand on demand.

#### 8.3.0.1 Test (500 GB)

Node type	# of nodes needed	CPU	RAM	DISK (GB)
Primary/Data	1	4	32	500

#### 8.3.0.2 Tier 1 (1 TB)

Node type	# of nodes needed	CPU	RAM	DISK (GB)
Primary/Data	1	4	32	1000
Data	1	4	32	1000

#### 8.3.1 Tier 2 (3TB)

Node type	# of nodes needed	CPU	RAM	DISK (GB)
Primary/Data	3	4	32	2000

#### 8.3.2 Tier 3 (4-15 TB)

Node type	# of nodes needed	CPU	RAM	DISK (GB)
Data	1-15 (scale on demand)	4	32	2000
Primary/Data	3	4	8	2000

To assess the sizes of a workspace's activity data and extracted text, contact [Relativity Support](#) and request the **AuditRecord and ExtractedText Size Gatherer** script.

If you have further questions after running the script, our team can review the amount of activity and monitoring data you want to store in Elasticsearch and provide a personalized recommendation of monitoring nodes required.

## 9 Processing system requirements

The following information displays the system requirements for the Processing infrastructure.

### 9.1 Processing worker hardware specifications

The following table displays the hardware specifications for Processing workers. These requirements are determined by the number of workers needed to achieve a specified range of throughput (# of GB/day).

Worker Specifications	
<b>CPU</b>	8 core
<b>RAM</b>	16 GB
<b>Network</b>	1 Gbps
<b>Storage</b>	Windows Temp SSD
<b>Server</b>	Virtual or Physical*
<b>Expected throughput</b>	100-150 GB/day **

\* The primary reason for using physical workers is for performance. The overhead from virtualization can cause degradation in performance, particularly during text extraction and other CPU-intensive operations. If you do choose to virtualize your workers, beware of over-committing resources on the host. If you have hyper-threading enabled on the host, you may need to allocate 16 vCPUs to each worker to achieve optimal results.

\*\* Processing source data and system load may impact performance.

#### 9.1.1 Worker manager server software requirements

In addition to meeting the processing system requirements, we recommend referring to the Worker Manager Server Installation Guide for information about other required and optional software on the processing worker.

### 9.2 Tier hardware requirements

The following table displays the supporting infrastructure per number of workers you want to deploy. Refer to an applicable tier to locate the necessary hardware components to complete your processing infrastructure.

	<b>Tier 1</b> <i>Entry Level Environment</i>	<b>Tier 2</b> <i>Mid Level Environment</i>	<b>Tier 3</b> <i>Large Scale Environment</i>	<b>Tier 4</b> <i>Extra Large Scale Environment</i>
<b># of Workers</b>	1 - 2	3 - 7	8-12	13-30
<b>GB/day (source data)</b>	100 GB - 300 GB	300 GB - 800 GB	800 GB - 1 TB	1+ TB
<b>Invariant (worker manager server) SQL Server</b>	<ul style="list-style-type: none"><li>■ Processor: 4 cores</li><li>■ Memory: 16 GB</li></ul>	<ul style="list-style-type: none"><li>■ Processor: 4 - 8 cores</li><li>■ Memory: 32 GB</li></ul>	<ul style="list-style-type: none"><li>■ Processor: 4 - 8 cores</li><li>■ Memory: 64 GB</li></ul>	<ul style="list-style-type: none"><li>■ Processor: 16 cores</li><li>■ Memory: 64 GB - 128 GB</li><li>■ Storage I/O</li></ul>

	<b>Tier 1 Entry Level Environment</b>	<b>Tier 2 Mid Level Environment</b>	<b>Tier 3 Large Scale Environment</b>	<b>Tier 4 Extra Large Scale Environment</b>
<b>File Server</b>	■ Storage I/O (Gbps): 4	■ Storage I/O (Gbps): 4 - 8	■ Storage I/O (Gbps): 4 - 8+	(Gbps): 4 - 8+
	■ Commodity NAS	■ Dedicated NAS (write-back cache available)	■ Enterprise class NAS (SSD tier available)	■ Enterprise class NAS (SSD tier available)
	■ 1+ Gbps network	■ 4+ Gbps network	■ 10+ Gbps network	■ 10+ Gbps network

**Note:** By default, when you install Relativity, each worker in your environment is designated to do all available work (processing and imaging).

## 9.3 Required Microsoft Visual C++ redistributables

The following table breaks down which versions of Microsoft Visual C++ are required for which versions of Relativity/Invariant. Note that you are required to install each version of Microsoft Visual C++ only if you are upgrading to the Relativity/Invariant version listed and not if you are installing it for the first time.

		<b>Required Microsoft Visual C++ version (Redistributable x86 and x64)</b>			
		<b>2010</b>	<b>2012</b>	<b>2013</b>	<b>2015</b>
<b>Relativity/Invariant version</b>					
10.3.287.3/5.3.282.2	✓		✓	✓	✓
Server 2021/ 6.1.1798	✓		✓	✓	✓
Server 2022/7.1.431.1	✓		✓	✓	✓

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