



Aras Innovator 12

Platform Specifications

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Document Conventions

The following table highlights the document conventions used in the document:

Table 1: Document Conventions

| Convention | Description |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bold | Emphasizes the names of menu items, dialog boxes, dialog box elements, and commands. Example: Click OK . |
| Code | Code examples appear in <code>courier</code> font. It may represent text you type or data you read. |
| Yellow highlight | Code highlighted in yellow draws attention to the code that is being indicated in the content. |
| Yellow highlight with red text | Red text highlighted in yellow indicates the code parameter that needs to be changed or replaced. |
| <i>Italics</i> | Reference to other documents. |
| Note: | Notes contain additional useful information. |
| Warning | Warnings contain important information. Pay special attention to information highlighted this way. |
| Successive menu choices | Successive menu choices may appear with a greater than sign (-->) between the items that you will select consecutively. Example: Navigate to File --> Save --> OK . |

1 Platforms & Standards

Aras® is committed to standard Internet protocols and common platforms. Aras Innovator® provides businesses with flexible configuration options to manage based on tomorrow's market requirements, not yesterday's decisions.

1.1 Client Specifications

| Operating System | Supported Browser |
|------------------|----------------------|
| Windows 10 | Edge |
| | Internet Explorer 11 |
| | Firefox 60 ESR |
| Windows 8.1 | Chrome 73 (Minimum) |
| | Internet Explorer 11 |
| | Firefox 60 ESR |
| | Chrome 73 (Minimum) |

| Operating System | Supported Browser |
|---------------------|----------------------|
| Windows 7 | Internet Explorer 11 |
| | Firefox 60 ESR |
| | Chrome 73 (Minimum) |
| OS X 10.14 (Mojave) | Firefox 60 ESR |
| | Chrome 73 (Minimum) |

1.2 Innovator Server Specifications

| Operating System | Web Services | Framework |
|----------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Microsoft Windows Server 2016 | IIS 10 | Microsoft .NET 4.7.2 Microsoft ASP.NET Core/.NET Core: Runtime and Hosting Bundle 2.1.8 Microsoft Visual C++ 2015 Redistributable |
| Microsoft Windows Server 2012 R2 | IIS 8 | Microsoft .NET 4.7.2 Microsoft ASP.NET Core/.NET Core Runtime Bundle 2.1.8 Microsoft Visual C++ 2015 Redistributable |
| Microsoft Windows Server 2012 | IIS 8 | Microsoft .NET 4.7.2 Microsoft ASP.NET Core/.NET Core Runtime Bundle 2.1.8 Microsoft Visual C++ 2015 Redistributable |

1.3 Vault Server Specifications

| Operating System | Web Services | Framework |
|----------------------------------|--------------|--------------------------------------------------------------------------------------------|
| Microsoft Windows Server 2016 | IIS 10 | Microsoft .NET 4.7.2 Microsoft ASP.NET Core/.NET Core: Runtime and Hosting Bundle 2.1.8 |
| Microsoft Windows Server 2012 R2 | IIS 8 | Microsoft .NET 4.7.2 Microsoft ASP.NET Core/.NET Core: Runtime and Hosting Bundle 2.1.8 |
| Microsoft Windows Server 2012 | IIS 8 | Microsoft .NET 4.7.2 Microsoft ASP.NET Core/.NET Core: Runtime and Hosting Bundle 2.1.8 |

1.4 Database Specifications

| Operating System | Database |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Microsoft Windows Server 2016 | <ul style="list-style-type: none"> • Microsoft SQL Server 2017 • Microsoft SQL Server 2016 • Microsoft SQL Server 2014 • Microsoft SQL Server 2012 |
| Microsoft Windows Server 2012 R2 | <ul style="list-style-type: none"> • Microsoft SQL Server 2017 • Microsoft SQL Server 2016 • Microsoft SQL Server 2014 |
| Microsoft Windows Server 2012 | <ul style="list-style-type: none"> • Microsoft SQL Server 2017 • Microsoft SQL Server 2016 • Microsoft SQL Server 2014 • Microsoft SQL Server 2012 |

2 Recommendations and Requirements

To optimize Aras Innovator® performance Aras ® Corporation recommends the following software and hardware components. Please keep in mind that the minimum requirements are listed as a baseline and following recommendations ensures system performance. Recommendations also assume that Aras Innovator will be running with minimum additional network activity. Other active applications on the network or on the PCs will affect performance and must be taken into account when selecting hardware.

Database Server

| | |
|-----------------|--------------------------------------------------------------------------------------------------------------------|
| Database Engine | Microsoft SQL Server 2017, Microsoft SQL Server 2016, Microsoft SQL Server 2014, or Microsoft SQL Server 2012 |
| Network OS | Any supported O/S platform for the selected database |
| CPU | Recommend for up to 1000 users 32 logical cores Minimum for up to 250 users 16 logical cores |
| Memory | Recommend for up to 1000 users 64 GB RAM Minimum for up to 250 users 32 GB RAM |
| HDD | Recommend RAID using 4 to 6 physically separate disks (RAID 0/1) – Striping data across disks improves performance |

Note: NEVER use OS based mirroring of the database – The OS should be on a separate disk from the Database

It is recommended that the Operating system and virtual memory file be separated from the SQL server data and log files. Optimal SQL server performance is achieved when SQL server log files also reside on a separate physical disk. The following recommended guideline is a good price/performance compromise:

- Operating System disk(s) – could be RAID 1
- SQL Server data files (RAID 5 array, minimum of 3 drives)
- SQL Server log files (RAID 1 array, 2 drives)
- There should be 1 temp database per physical core up to but not more than 8 temp databases
- Disks for data and log files should be higher than 1000 IOPS – Disk speed impacts performance of concurrent users

Application Server

| | |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Network OS | Windows Server 2016, Windows Server 2012 R2, or Windows Server 2012 |
| Web Server | IIS version 8 or higher |
| .NET | Microsoft .NET 4.7.2 and Microsoft .NET Core 2.1.8 |
| CPU | Recommend for up to 1000 users 8 physical cores and 16 logical cores Minimum for up to 250 users 4 physical cores and 8 logical cores |
| Memory | Recommend for up to 1000 users 32 GB RAM Minimum for up to 250 users 16 GB RAM |
| HDD | Recommend 2.0 GB free disk space – Aras Innovator will use approximately 400 MB for the production instance |
| Redistributable | Microsoft Visual C++ 2015 Redistributable |

| | |
|-------------------|------------------------------------------------------------------------------------------------------------------|
| Connectivity | Internet connection suggested for online support and update downloading – recommend VPN to support remote access |
| Server Clustering | Recommend introducing additional app servers in high availability cluster if more than 1000 users |

Vault Server

| | |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Network OS | Windows Server 2016, Windows Server 2012 R2, or Windows Server 2012 |
| Web Server | IIS version 8 or higher |
| .NET | Microsoft .NET 4.7.2 and Microsoft ASP.NET Core 2.1.8 |
| CPU | Recommend for up to 1000 users 4 physical cores and 8 logical cores Minimum for up to 250 users 2 physical cores and 4 logical cores |
| Memory | Recommend for up to 1000 users 16 GB RAM Minimum for up to 250 users 8 GB RAM |
| HDD | Recommend RAID array – Vault disk capacity planning should consider 2-year growth of total file space consumption. |

Note: End-user predictions of Vault Server data volume are typically underestimated and quickly surpassed

| | |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Recommend 1.0 GB free disk space for the OS and software – Aras Innovator will use 50MB Disks for storing vaulted files should be higher than 500 IOPS – Disk speed impacts performance of concurrent users |
| Redistributable | Microsoft Visual C++ 2015 Redistributable |

Conversion Server

| | |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Network OS | Windows Server 2016, Windows Server 2012 R2, or Windows Server 2012 |
| Web Server | IIS version 8 or higher |
| .NET | Microsoft .NET 4.7.2 and Microsoft ASP.NET Core 2.1.8 |
| CPU | Recommend 8 physical cores and 16 logical cores Minimum 4 physical cores and 8 logical cores |
| Memory | Recommend 32 GB RAM Minimum 16 GB RAM |
| HDD | Disks for checking out files to be converted should be higher than 500 IOPS – Disk speed impacts conversion throughput |
| Application | The Conversion Server recommendations are subject to change based on the converter application requirements being executed on the server |
| Redistributable | Microsoft Visual C++ 2015 Redistributable |

Clients

| | |
|-----------|-----------------------------------------------------------------------------------|
| Client OS | Windows 10, Windows 8.1, Windows 7, or Mac OS X 10.14 (Mojave) |
| Browser | Edge, Internet Explorer 11, Firefox 60 ESR, or Google Chrome (Minimum version 71) |
| CPU | Minimum requirement CPU 2.0 GHz or higher |
| Memory | Recommend 8 GB RAM Minimum requirement 4 GB RAM |

HDD Minimum requirement 80 MB free disk space for Internet temporary folders
Monitor Recommend 1280 x1024 monitor and adapter – Minimum requirement 1024 X 768

Network

Recommend 100 mbps network between Application Server and Clients
Recommend dedicated sub-LAN of minimum 1.0 GB between the Application Servers and Database Server

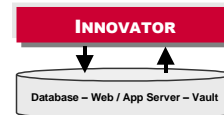
Backup Equipment Aras Corporation recommends investment in a reliable backup system

3 Hardware Configuration

Aras Innovator® offers a number of configuration options designed to meet your business requirements and technology environment with the ability to scale to meet future needs. Migrating from one configuration to the next is designed to be straightforward.

Option 1: Single Server

250 Users
Combined Database, File Vault,
and Web / App Servers



| | CPU | RAM | HDD ^{1,2} |
|-------------------------------|------------------|-------|--------------------|
| Single Combined Server | 16 Logical Cores | 32 GB | 1000 IOPS |

¹ HDD capacity requirements depend directly on the CAD, EDA and document formats employed in conjunction with the aggregate file count and total size.

² Disk speed is recommended for the Database Server Tier. Please see Section 2 "Recommendations and Requirements" for more details

Option 2: Separate Servers

1000 Users
Separate Database, File Vault,
and Web / App Servers



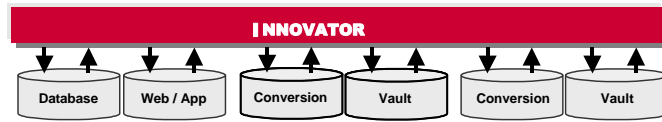
| | CPU | RAM | HDD |
|-------------------------------------|----------------------------------------|-------|-----------|
| Database Server ² | 32 Logical Cores | 64 GB | 1000 IOPS |
| Web / App Server | 4 Physical Cores with 8 Logical Cores | 32 GB | |
| Vault Server ¹ | 4 Physical Cores with 8 Logical Cores | 16 GB | 500 IOPS |
| Conversion Server | 8 Physical Cores with 16 Logical Cores | 32 GB | 500 IOPS |

¹ HDD capacity requirements depend directly on the CAD, EDA and document formats employed in conjunction with the aggregate file count and total size.

² Please see Section 2 "Recommendations and Requirements" for more details

Option 3: Distributed Servers

1000 Multi-site Users
Multiple Vault and Conversion,
Single App and Database Server



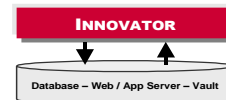
| | CPU | RAM | HDD |
|------------------------------|----------------------------------------|-------|-----------|
| Database Server ² | 32 Logical Cores | 64 GB | 1000 IOPS |
| Web / App Server | 4 Physical Cores with 8 Logical Cores | 32 GB | |
| Vault Server ¹ | 4 Physical Cores with 8 Logical Cores | 16 GB | 500 IOPS |
| Conversion Server | 8 Physical Cores with 16 Logical Cores | 32 GB | 500 IOPS |

¹ HDD capacity requirements depend directly on the CAD, EDA and document formats employed in conjunction with the aggregate file count and total size.

² Please see Section 2 "Recommendations and Requirements" for more details

Option 4: Development Server

Used for Customization, Testing,
or Training Environments



| | CPU | RAM | HDD |
|----------------------------------------|-----------------|--------|------|
| Single Development Server ¹ | 4 Logical Cores | 8.0 GB | 4 GB |

¹ A development server is not meant to be an environment for a large number of concurrent users, but rather is meant to be an all-in-one, self-contained environment for developing and testing new applications before deploying them to the production environment.