MYOB Greentree

Environment Guide

October 2023

Contents

Introduction

This guide identifies the server and client environments on which Greentree is supported and provides hardware and operating system recommendations for running Greentree systems.

To a large extent the supported platforms and recommendations for Greentree systems are those of their underlying Jade platform, a product of Jade Software Corporation Limited. As a result, the guide comprises:

- References to general Jade resources, particularly the white papers that are publicly available on the Jade web site. These are summarised in the Jade Recommendations section on page 4.
- Specific recommendations for Greentree system configuration, such as scaling according to for the number of simultaneous users and whether the Browser client is used.

Version	Summary	Publication Date
1.7	Environment Guide, Hardware Guide, Supported Platforms	December 2018
2	Combined and revised documents	April 2021
2.1	Updated .NET requirement	September 2021
2.2	Updated for Jade 2022, including links to Jade resources	October 2023
2.2.1	Updated to link O/S versions rather than list them	September 2024

Changes made for this version:

- Updated based on reader feedback. Removed list of server OS versions.

Greentree Configuration

This section explains components of the Greentree Solution.

Clients and Servers

Greentree systems are built using Jade's three-tier architecture:

- Each Windows user runs a Jade *thin client* that performs GUI activity.
- An application server performs application logic.
- A database server performs storage and retrieval.

For sites with up to 150 thin clients a single application server is sufficient, and the application and database servers can be located on the same dedicated machine. This configuration allows the two servers to transfer data using shared memory, whereas placing the application server or servers on another machine requires data transfer by a much slower TCP/IP connection.

Multiple application servers can be configured, each listening on a different port for connections. Jade provides fully featured load balancing as detailed in the Jade Thin Client Guide. A simple form can be achieved using Greentree's Connection Manager, which allocates new connections to the least-used application server.

The Jade application and database servers should be run as Windows services under a dedicated service account and configured to start whenever the server starts up.

Remote users can easily run Jade thin client via any TCP/IP network. While thin client can be used over a WAN, testing has shown that network latency above 10ms will start to impact productivity. The client experience is significantly better over WAN connections by utilising Terminal Services, Citrix or Xenapp type services.

Jade supports an alternative arrangement known as *fat client* where the application server's function is performed on the client machine. For performance reasons this is not recommended by MYOB.

Print & Task Queues

Greentree supports the ability to manage tasks such as reporting on a central server via a *task queue*. This means a user can request a report from their workstation and the system will process the request centrally, and print or email the output to the appropriate destination.

Task queues are also used to perform regular system tasks, such as running an automated on-line backup at a pre-determined time. Multiple print and task queues can be defined in the system and these can be configured to run on a server or on a workstation with spare processing capacity.

For more information on how to set up and run print and task queues in Greentree, refer to the Online Help.

Connection Manager

Windows client users run Greentree's Connection Manager application to start their Greentree Windows client sessions. *Connection Manager* is the client-side executable that retrieves the files required for running Jade thin client then launches the Jade thin client executable that connects to an application server.

Connection Administration is the server-side application in which an administrator creates connection groups, assigns them to application servers and identifies files to be pushed to client machines.

The *Connection Server* application must be running on the server to support Connection Manager. This can be started automatically by making use of the ServerApplication entries in the [JadeServer] section of the server's ini file, e.g.
ServerApplication3=JadeConnectionSchema,ConnectionServer

Backups

Greentree provides convenient facilities for managing backups in these modules:

- Instant Secure, which provides hot swapping to a secondary Greentree system on a separate server
- Total Secure, which provides recovery to a point of failure.

A Jade database automatically creates journal files that allow the database to be recovered if there is a power failure or other unplanned shutdown. It is important that the full sequence of journal files is maintained and these should be backed up to separate media.

Greentree provides both online and quiesced backups but recommends online backups.

For more information see the Jade white paper on backups and Greentree Secure in the Online Help.

.Net and C++ Redistributables

Microsoft .NET 4.8 or later is required on server and client machines.

Jade 2022 requires the latest Microsoft Visual C++ Redistributable for Visual Studio 2015-2022. Select the 64-bit option x64 and download vc_redist.x64.exe.

Upgrades, Packages and Packman

Updates of new Greentree system features and problem fixes are released as *packages*.

Updates are applied using the Greentree package manager, Packman. In a single session, Packman can apply a single package or multiple packages. Packages cannot be applied out of sequence and all sites, regardless of customisation, must apply all Greentree packages.

Jade Recommendations

This material applies to Jade 2022, the platform for Greentree version 2023.2 onward. Jade white papers can be downloaded from https://www.jadeworld.com/developer-center/resource-library/white-papers.

Backup

Jade's white paper *Developing a Backup Strategy* (WP_BackupStrategy.pdf) provides the rationale, options and recommendations for making and executing a backup strategy.

Note: Greentree Secure implements this strategy to a large degree.

Environmental Considerations

Jade's white paper *Environmental Considerations* (WP_EnvConsiderations.pdf) covers storage requirements, business-critical versus non-critical systems, RAID, Stable Media, FUA and Write-through, Write Ordering, compression and Network File Systems.

Installation and Configuration

Jade's *Installation and Configuration Guide* (InstallConfig.pdf) documents hardware and software requirements for running Jade servers and clients. Topics include end-to-end encryption, network protocols, ODBC connections and web servers.

Presentation Client

Jade's *Thin Client Guide* (ThinClient.pdf) provides guidance on administering and securing Jade thin client connections.

Supported Platforms

Servers

Jade servers run on 64-bit Windows systems. This is detailed in Jade's release documentation, which can be downloaded from https://www.jadeplatform.tech/developer-centre/resources/documentation. The list of supported server versions can be accessed using this direct link to the release documentation library online: https://secure.jadeworld.com/developer-centre/JADE2022/OnlineDocumentation/#resources/installconfig/ch1installunderwindows/mswindowsoprqmtsiag1.htm.

Clients

Greentree Windows Client

Jade provides presentation clients in several modes. Greentree supports its Windows Client using the 64-bit Jade thin client mode, which runs on 64-bit Windows operating systems.

Greentree Browser

Greentree Browser is supported in these combinations:

- Chrome (from latest-1) on Windows, Android 4, OS 9 and OS-X (from latest-1)
- Edge on Windows
- Firefox (from latest-1) on Windows
- Safari (from latest-1) on OS 9 and OS-X (from latest-1).

Greentree Browser cannot be used on the native browser on Android devices.

Greentree FREE

Greentree's FREE function uses Jade's 64-bit fat client, which runs on 64-bit Windows operating systems. This requires DCOM setup for efficient communication between client and server.

Greentree eModules

Greentree's eApprovals, eCRM, eHR, eRequisitions, eServer and eTimesheets modules are supported on these browsers:

- Chrome (from latest-1) on Windows, Android 4, OS 9 and OS-X (from latest-1)
- Edge on Windows
- Firefox (from latest-1) on Windows
- Safari (from latest-1) on OS 9 and OS-X (from latest-1).

Hardware Requirements

Choosing appropriate hardware for a Greentree installation depends on many factors. Please ensure you first carefully review this guide and the Jade Recommendations.

The most important factor is the system architecture. Here are some considerations.

- The conventional solution separates the application server or servers from the database server. However, in practice this is less common than placing them on the same machine and using Hybrid Pipe Shared Memory for communication between the database nodes. HPSM is a standard feature explained in Jade documentation.
- It is possible to run Greentree's queue processor on a separate machine. For similar reasons this is uncommon. This guide assumes the queue processor is configured to run on the database server.
- It is possible though not recommended to run non-Greentree applications on the same server(s). Server specifications given in this guide ignore this possibility. Note that some server-based applications (such as Microsoft Exchange / SQL) will, by default, pre-allocate available free memory resources to themselves at start-up. This may lead to excessive disk paging due to insufficient available memory and reduce the system's performance. It is advisable to move these types of processes to a separate server.

Server Processors

The speed and number of processor cores in servers will have a direct bearing on the performance of the system. If all other components are within specification, a faster processor core will produce better response times and be able to handle peaks in load as long as the system is not bottlenecked by any other hardware resource limits.

Server Memory

The amount of memory that we recommended in the previous sections is a good basis for acceptable performance. However, the amount of memory available in the server will have a significant impact on the performance of the server and, up to a point, more memory will improve performance with regards to caching and number of concurrent users. Server memory must always be of type ECC (Error-correcting code).

Storage

These recommendations supplement the importance guidance given in the Storage Requirements section of Jade's white paper on Environmental Considerations.

Specifications

Greentree recommends the following database storage performance for a **10 concurrent user** Greentree environment:

- 500 IOPS (700 if running Greentree browser clients) Data throughput of 8MBps
- Average storage I/O response time of 30msec
- Storage usage pattern: 16k I/O Size, 70% read operations / 30% write operations 100% random I/O operations

Stripe sizes

Like most database applications Greentree systems primarily generate random disk activity, rather than larger sequential reads and writes. It is recommended to use 16, 32, 64 or 128KB stripe sizes rather than larger options. Your hardware vendor should be able to provide guidance regarding how to best configure your RAID Controller.

Ideal RAID configuration

It is recommended that the disk subsystem should be configured closely to the table below.

Operating System (c: drive)	RAID 1
Greentree Binaries & Database (d: drive)	RAID10
Greentree Database Logs (l: drive)	RAID10
Greentree Backups (x: drive)	RAID0, 1 or 5

Solid State Drives

SSDs represent the best storage solution in terms of speed. It is economically viable to install a raid 10 array of SSDs as the primary storage for Greentree and we highly recommend this configuration for any installation. If SSDs are not available then 15,000rpm 2.5" SAS drives are strongly recommended. Online RAID calculators can show you size and performance of differently configured RAID arrays. For instance, see http://www.thecloudcalculator.com/calculators/disk-raid-and-iops.html

Ideally the storage subsystem that holds the Database files should be separate from any other storage subsystem for performance and recovery reasons. This also applies to storage for database journals.

Network Performance

A minimum 100Mbps network is recommended. A 1Gbps network will provide improved performance during peak load and start-up and is highly recommended.

Server Specifications

This section details server requirements for the recommended system configuration where the database server, application server and web server are on separate machines. The base figures support 10 concurrent users. The Scaling topics estimate the increases required for additional users. The Database Sizing topic estimates disk space requirements for the database server.

The requirements are based on servers exclusively dedicated to running Greentree. Capacity for other services and applications must be considered.

For a ten-user site that is *not* running Browser clients it would be suitable to run the database server and application server on the same machine, which should be a server-class machine with a Single Quad-core Xeon processor running at 2.1GHz with 12GB ECC RAM.

Requirements common to all configurations:

- Server class hardware
- TCP/IP Network running at a minimum of 100Mbps
- Data backup hardware (a backup hard disk / tape drive or optical drive).

Database Server

Jade's Installation and Configuration Guide identifies the *minimum* hardware requirements for running a database server as:

- 2GB ECC RAM plus 128MB for each Jade node

MYOB's recommendations for Greentree systems are:

	Not running Browser clients		**Running Browser clients**	
	Minimum	**Recommended**	**Minimum**	**Recommended**
Cores	2x Intel Xeon or compatible; 2.4Ghz or faster	4x Intel Xeon or compatible; at 2.4GHz or faster	4x Intel Xeon or compatible; at 2.4GHz or faster	
RAM	16GB ECC		12GB ECC	
Disk	25GB	25GB	25GB	

Note: See "Database Sizing" on page 10 to estimate disk space requirements for a database server.

Application Server

Jade's Installation and Configuration Guide identifies the *minimum* hardware requirements for running an application server as:

- 2GB ECC RAM plus 128MB for each Jade node

MYOB's recommendations for Greentree systems are:

	Not running Browser clients		**Running Browser clients**	
	Minimum	**Recommended**	**Minimum**	**Recommended**
Cores	2x Intel Xeon or compatible; 2.4GHz or faster	4x Intel Xeon or compatible; at 2.4GHz or faster	2x Intel Xeon or compatible; 2.4GHz or faster	
RAM	8GB ECC	12GB ECC DDR2	8GB ECC	
Disk	5GB	5GB	5GB	

Web Server

Microsoft Internet Information Server (IIS) is required when running Greentree Browser clients, eModules or the Greentree API using reverse proxy. MYOB's recommendations for the web server are:

	Not running Browser clients		**Running Browser clients**	
	Minimum	**Recommended**	**Minimum**	**Recommended**
Cores	N/A	N/A	2x Intel Xeon or compatible; 2.4GHz or faster	
RAM	N/A	N/A	4GB ECC RAM	
Disk	N/A	N/A	5GB	

Database Sizing

JADE recommends that you have available disk space of four times the expected database size to allow for growth. A blank Greentree system requires approximately 2GB of disk space. A demo Greentree system requires approximately 7GB of disk space.

Scaling Systems not Running Browser Client

As the number of users who concurrently access the Greentree environment increases, consider the following generic scaling recommendations for planning purposes. The recommended hardware increases per additional 10 concurrent users are:

- 1x additional Intel Xeon Processor Core or compatible
- 1GB ECC RAM
- 100 IOPS, 2MBps disk throughput.

Scaling Systems Running Browser Client

The following tables contain recommendations for the database server's CPU and RAM in typical scenarios. User counts are concurrent. All configurations require a single application server.

Windows Client Users	Browser Client Users	Web Worker Nodes	DB Server Processor Cores	DB Server Memory
8	6	2	4	12GB
20	15	3	8	16GB
40	30	5	8	24GB
60	45	7	16	64GB
100	75	11	16	128GB

Client Specifications

Greentree Windows Client

The recommended connection to Greentree for Windows users is via Jade's presentation client, known as *thin client* mode. This mode uses less memory, disk and network traffic than Jade's fat client mode.

Jade's Installation and Configuration Guide identifies the *minimum* hardware requirements for running presentation clients as:

- 512MB RAM
- Screen resolution of 800x600 or higher.

MYOB recommends this configuration:

- 1x Intel Processor Core or compatible; 1.7Ghz or faster
- 4GB RAM
- 5GB Hard Disk.

Greentree Browser Clients on Tablets

Device	CPU	RAM
iPad Air 2, 16 GB or above	N/A	N/A
Windows Surface Pro 2 or above	i3 or above	4GB
Android devices Min: Android 4.2.x (Kit Kat / Jelly Bean)	1.9gHz or above	2GB