

# Greentree Environment Guide

*This document outlines information relating to the IT environment required to support Greentree systems.*

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# 1 Supported systems

The following table indicates the current status of Greentree on common platforms:

Platform	Tested	Status	Notes
<b>Workstations:</b>			
Windows 98	Yes	Unsupported	Not supported from package 3@4
Windows NT 4.0 Workstation	Yes	Unsupported	Not supported from 6.2.13, package 3@10
Windows NT Terminal Server Client	Yes	Unsupported	
Windows 2000 Professional (min)	Yes	Unsupported	Not supported from package 3@34
Citrix ICA Client	Yes	Supported	
Windows 2003	Yes	Supported	Supported from package 32
Windows XP	Yes	Supported	XP Professional SP3 is required
Windows Vista	Yes	Supported	Supported from package 3@12 For fat client, Vista Business & beyond is supported. For thin client, Vista Home Edition & beyond is supported.
Windows 7	Yes	Supported	Supported from package 3@34
Platform	Tested	Status	Notes
<b>Servers:</b>			
Windows NT 4.0 Server	Yes	Unsupported	Not supported from 6.2.13, package 3@10
Win2000 Professional	Yes	Unsupported	Not supported from package 3@34
Win2000 Enterprise	Yes	Unsupported	
Windows NT Terminal Server	Yes	Unsupported	Not supported from 6.2.13, Package 3@10
Citrix MetaFrame	Yes	Supported	TS Service Pack 6 recommended
Windows 2003 Server	Yes	Supported	
SBS 2003	Yes	Supported	From Jade Release 6.0.20
Windows 2008 Server	Yes	Supported	Supported from package 3@34
Windows 2008 Server 64bit R2	Yes	Supported	Supported from package 3@34
Windows Small Business Server 2011	Yes	Supported	Supported from package 3@34

## Notes:

- Sites running pre-package 32 (Jade 5) are no longer supported.
- Both 32 and 64 bit servers are supported, though 64 bit machines are supported only after package 3@34. The following exceptions apply:

- Faxing is not currently supported for 64 bit platforms. To work around this, you can use a 32 bit machine to host the fax processor.
- When installing FREE in distributed mode, DCOM server in 64 bit OS has an issue with distributing the service - this is due to some Microsoft restrictions. Therefore, a 64 bit OS cannot be used to host the DCOM server. The solution is to set up the DCOM server in a 32 bit OS. **Note:** The 64 bit OS works fine for DCOM clients.
- Our interoperability with Microsoft Office products is tested as we go through certification for platforms, which results in support for common integration functions. Any issues encountered are investigated and resolved within our normal development process where priority is a factor of impact. With the certification of Greentree for Windows Server 2008 and Windows 7, we will be introducing a more detailed certification program for Microsoft office within which we will document the integration points/functions tested and supported.

## 2 System requirements

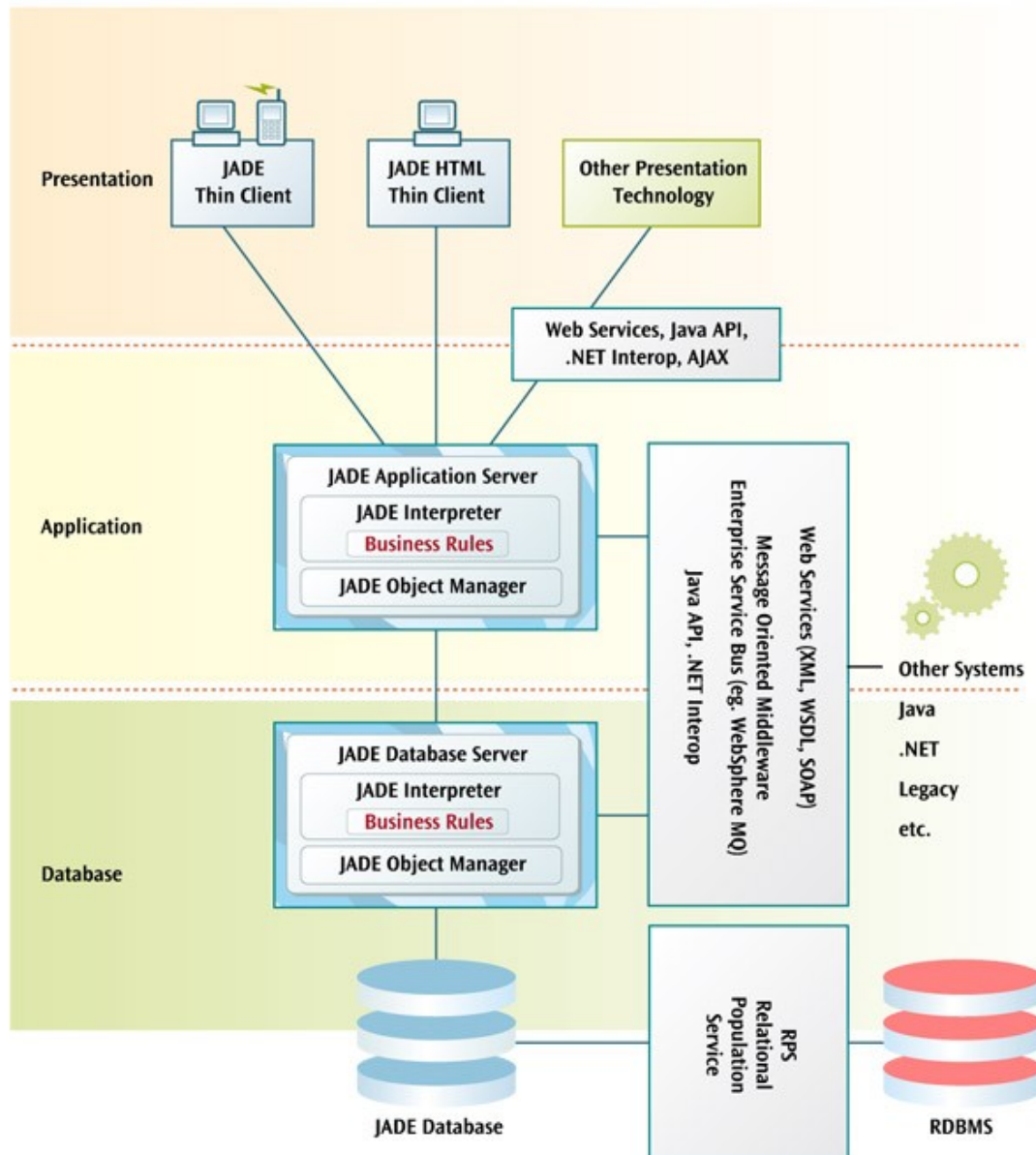
### "Smart Thin Client" Model

The Greentree product operates under a distributed "smart thin client" model, which means most of the data processing is performed on the database server, rather than on individual client workstations.

The Greentree server functions are split into two distinct areas: the **Database Server** and the **Application Server**. The Database Server looks after the storage and retrieval of all information from the JADE database, whereas the Application Server takes care of the processing of Greentree application logic and the presentation of screens.

For most sites (up to 24 users), both the Database and Application Server functions can be located on the same dedicated machine. These functions may also be defined as "services" so they will automatically load whenever the server starts up.

As more users are required, additional Application Server processes must be deployed. Each Application Server process can support up to 20-30 users, depending on load requirements and the type of work each user is performing (refer section below).



### Task and Print Queues

Greentree supports the ability to optionally 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, email, or fax the report to the appropriate destination (printer, email address, or fax number).

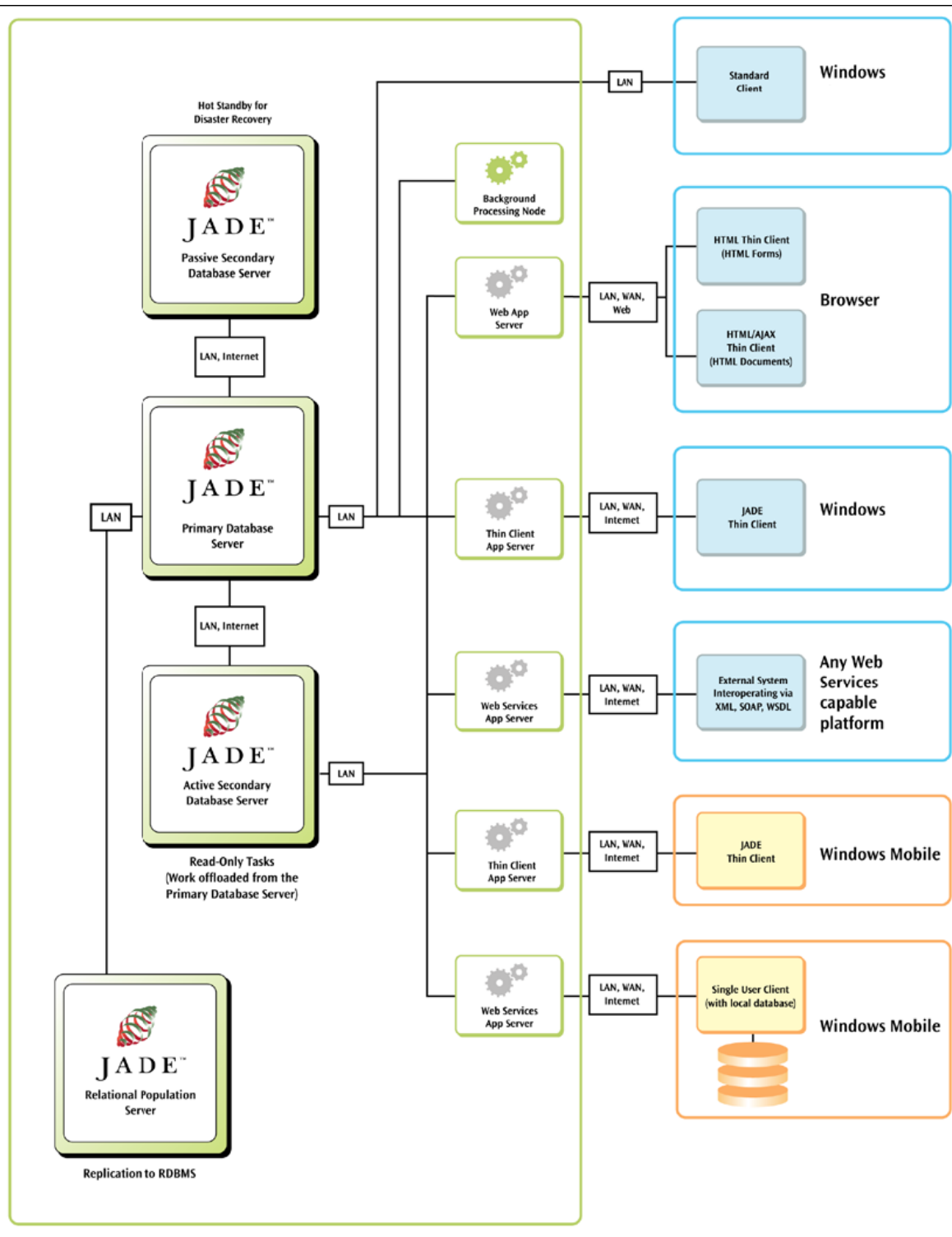
Task queues can also be used to perform regular system tasks, such as running an automated on-line backup at a pre-determined time.

Multiple print and task queues can be defined in the system and these can be configured to run on either 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 System Online Functional Help, accessible within Greentree.

### Multiple Application Servers

For larger sites, the database and application servers can be located on physically separate servers. This allows a larger number of concurrent users to access the system, while reducing the potential for processing bottlenecks. For example:



There is no limit to the number of additional application servers that can be added. These can be used to host local users (via. the local area network) and/or remote users via. a TCP/IP connection such as the Internet.

It is also possible to add additional CPUs and memory to a single server to allow the number of concurrent users supported to be increased. However, the most appropriate route to take will depend on both user requirements and the level of hardware available on site.

Greentree recommends that no more than 25 concurrent users be connected to an application server at any one time, although there is no actual physical limit. More than this number may start to present performance problems. Where more than one application server is running, usage of the Connection Manager will ensure that each application server is used equally - refer Greentree Connection Manager.

### Remote Users

Remote users can easily connect to Greentree via any TCP/IP network. This includes connecting via an ISP (internet service provider) or via a direct connection to the site network. Tools such as Citrix Winframe/Metaframe or Terminal Services can be used to boost connection performance, however Greentree's Smart Thin Client architecture allows a connection to be established even without these tools.

If using a Smart Thin Client direct connection, the JADE runtime is stored on the local machine and can connect directly to the remote server via any TCP/IP connection.

### On-Line System Backups

A useful utility is available that allows Greentree data files to be backed up to an alternate directory, *while Greentree is still operating*. This allows your Greentree system to be fully operational and accessible 24 hours per day, if required (apart from scheduled updates of service packs). Refer to **System Backup** help, accessible directly via the Greentree online help menu: **Process Help / System Backups**.

### Packages

Updates to the Greentree product are managed by the application of *Service Packs*. These are issued periodically by Greentree and are free of charge to all sites as part of the Annual Maintenance fee.

The application of Service Packs is a fully automated process. Service packs include everything from: bug fixes, enhancements, updated documentation or reference notes, JADE runtime updates, Excel add-in updates, etc. Where updates change the way data is entered or the business logic used has been improved, detailed notes are provided in electronic format, for your understanding and reference.

For more information about the application of service packs, refer to the **Greentree Updates** section with the Technical Support Guide..

## 3 Hardware & space requirements

These recommendations refer to "processor cores." For example: a single core processor provides 1 processor core, 2 quad core processors provide 8 processor cores, etc.

### Greentree Database and Application Server

The following is the minimum server configuration recommended, assuming the server is dedicated to running Greentree (excluding the Queue processor) and is not running other additional applications or major system functions. This configuration would service up to 16 continuous or heavy users.

- 2 x Xeon 2.0GHz processor cores (or greater)
- Refer [Supported systems](#) for required Operation System
- 2 processor cores
- 4Gb ECC RAM (available to Greentree)
- 25Gb Hard Disk SCSI or SATA (available to Greentree)
- Disk Speed 15,000 RPM
- TCP/IP Network Protocol
- 100Mb/s Network
- RAID or Mirrored disk configuration is recommended (**Note:** RAID 5 is not supported, RAID 10 is the preferred solution - refer [Additional Configuration Notes](#))
- Backup unit (for more information, refer to **System Backup** process help, accessible directly via the online Greentree help menu: **Process Help / System Backups**).

ECC memory is mandatory (ECC means Error Checking and Correction). This provides extra protection for early detection and automated correction of memory related errors.

It is also very important that the disk subsystem guarantees writes, and that no write-back caching mechanisms are in place.

### Greentree Dedicated Database Server

The following is the minimum configuration recommended for a server dedicated to managing the Greentree database. This assumes no other additional applications or major system functions (including the Queue Processor) are being run on this machine. This configuration would service up to 16 continuous or heavy users.

- Server Class Pentium III 700 MHz Processor core (or greater)
- Refer [Supported systems](#) for required Operation System
- 4Gb ECC RAM (available to Greentree)
- 50Gb Hard Disk SCSI (available to Greentree) in a RAID array (**Note:** RAID 5 is not supported, RAID 10 is the preferred solution - refer [Additional Configuration Notes](#))
- TCP/IP Network Protocol
- 100Mb/s Network
- Disk Speed 15,000 RPM
- Backup unit (for more information, refer to **System Backup** process help, accessible directly via the online Greentree help menu: **Process Help / System Backups**).

If archival recovery is enabled (refer to **System Backup** process help, accessible directly via the online Greentree help menu: **Process Help / System Backups**) then log files should be located on a separate disk subsystem. A separate disk subsystem should be used for disk resident backups.

### Greentree Dedicated Application Server

The following is the minimum configuration recommended for a dedicated Application Server. This assumes no other additional applications or major system functions (including the Queue Processor) or being run on this machine. The connection between the Database and Application Servers must be 100Mbps.

- Server Class Pentium III 700 MHz Processor core (or greater)
- Refer [Supported systems](#) for required Operation System
- 4Gb ECC RAM (available to Greentree)
- 4Gb Hard Disk SCSI (available to Greentree)
- TCP/IP Network Protocol
- 100Mb/s Network
- Disk Speed 10,000 RPM

These guidelines should be adjusted upwards accordingly for larger numbers of continuous or heavy users. Each group of 20-30 users will require a separate Greentree Application Server process to be run on the server (there can be more than one application server process running on a physical server). An additional CPU should also be added for each additional Application Server process being run on the machine.

If your system is configured to have multiple application servers, then a dual or quad processor will give improved performance.

### Greentree Dedicated Queue Processor

The Greentree Queue Processor can be run on either a separate dedicated workstation or on the same server as the Greentree database.

If the Queue Processor is to be run on the same machine as the Database and Application Servers (ie. a smaller site), it is recommended that the RAM be increased by 1Gb.

Where the Queue Processor is run on a separate workstation, the following is the recommended specification for this workstation:

- Pentium III 700 MHz Processor core (or greater)
- Refer [Supported systems](#) for required Operation System

- 1GB ECC Ram (available to Greentree)
- 5GB Hard Disk
- TCP/IP Network Protocol
- 100Mb/s Network

### Greentree Workstation

The following is the minimum configuration recommended for a workstation connecting to a Greentree Server via a thin-client connection:

- Pentium III 700 MHz Processor core (or greater)
- Refer [Supported systems](#) for required Operation System
- 64Mb for Win 98, 128Mb for Windows NT, 256Mb for Windows XP (must be ECC for fat clients). **Note:** ODBC and FREE (Excel Addin) operate as fat clients. This is the requirement for RAM available to Greentree.
- 5 Gb Hard Disk – enough to store a local bin (JADE runtime) directory
- TCP/IP Network Protocol
- 100Mb/s Network

### Memory

Recommended memory will normally be sufficient on workstations where Greentree is the only major application open at any one time. Where a number of other applications (such as Word, Excel and Mail) are open on the desktop at the same time as Greentree, significant performance improvement can be gained by increasing memory to 128Mb, especially when switching between applications.

ECC memory is essential to ensure high quality data management, however it is not mandatory for thin client connections.

### Disk Performance

Generally, as the bulk of the data transfer is through the network, little performance improvement will be attained by using high performance disk interfaces such as SCSI – 2 or enhanced IDE Mode 5.

### Network Performance

A 100Mb/s (or higher) network is mandatory and will provide improved performance during peak load and start-up where all other parameters are within specification. The database server and application servers should be connected via a switch (rather than a hub). A performance improvement may be noticed if the clients (particularly fat clients) are also connected via a switch.

### Space Requirements

A blank Greentree system requires approximately 2Gb. This will grow as data is entered.

### Windows Platform Notes

The version of the Windows operating system you are running is also very important in terms of requirements. The following applies:

Operating Server	Max Ram	Max Processor Cores
Windows Server 2003 Standard	4GB	4 (with multi threading off) or 2 quads
Windows Server 2003 Enterprise	32GB	8 (with multi threading off) or 4 quads
Windows Server 2003 Datacentre	64GB	64 (min 8)
Windows Server 2003 Web Edition	2GB	2 (can't be a domain controller)

For example, if a site is using Windows Server 2003 Standard and they have 8GB of RAM, 4GB will not be used.

## 4 Greentree configuration notes

The majority of Greentree configuration options are determined by the settings in the **jadegt.ini** file referenced in the Greentree system start-up icon. The default settings in this file as supplied will be correct for the majority of sites.

The following additional notes relate to Greentree configuration:

### Server Processors

The speed and number of processor cores in the servers will have a direct bearing on the performance of the system. As long as all other components are within specification, a faster processor core will produce better response times and be more able to handle peaks in load.

### Server Memory

The quantity of memory that we recommend ([Hardware & space requirements](#)) is a good basis for acceptable performance. However, the amount of memory available in a server will have a significant impact on performance and, up to a point, more memory will improve performance.

Memory must always be of type ECC (Error Checking and Correcting).

Where a Greentree server is running a number of other non-Greentree applications (this is not recommended), the memory and CPU requirements of the other applications must also be taken into consideration.

Note that a number of server-based applications (such as Microsoft Exchange) will, by default, pre-allocate all available free memory resources to themselves at start-up. This may lead to excessive disk paging and reduce the system's performance. It is advisable to move these types of processes to a separate server.

### Disk Performance

Using high performance disk interfaces such as SCSI-2 or enhanced IDE Mode 5 drives will provide performance improvements during disk-intensive operations such as start-up and large changes. During normal running, the use of client and server memory cache, as well as NT's disk cache will reduce the impact of disk performance changes.

Rotational speed of the disk and seek times also have a direct bearing on the performance of the database server.

### Network Performance

A 10Mb network is NOT recommended. A 100Mb/s network will provide improved performance during peak load and start-up and is highly recommended.

1Gb/s networks are becoming the standard and should be considered in any new installation. Some switches can provide 1Gb/sec (optical) links to local servers and 10/100Mb/s links to desktops, providing a good solution for existing networks with a mix of network interface cards and cat5 cabling.

Using Greentree configured with a local runtime reduces the impact of performance differences on the network and is recommended, particularly where a 10Mb network must be used.

Use of a Switching HUB will provide performance improvement if the Greentree database server is on a different machine from the Application server/s or queue processors.

### Support Tools

It is recommended that either the server or one of the workstations has a CD-writer installed. This will assist with creating a quick backup copy of the database for off-site analysis, testing or support if required.

It is also recommended that high-speed Internet (ie. broadband) connection be available on-site. This is required to download Greentree support packs on a regular basis, and these can sometimes be quite large files (up to 10Mb).

### Windows Terminal Server, MetaFrame 1.0 or MetaFrame 1.8

It is *not* recommended that the Greentree Database Server be configured to run on a Terminal or MetaFrame server.

These products can however be used in conjunction with Greentree for workstation access, if required.

The Terminal Server client requirements are negligible (1.5MB disk and 4.5MB RAM). Refer to the MetaFrame Administration guides for guidelines as to the configuration requirements for MetaFrame client configuration requirements.

### **Terminal Server v. JADE Smart Thin Client**

As mentioned earlier, the JADE Smart Thin Client can be used to connect remote users via any TCP/IP connection (including the Internet). However, our experience has shown that Terminal Server will give better performance over a modem connection.

Our experience also indicates that Citrix provides even better performance for remote users and provides better remote printing capabilities.

Remember, if you are connecting remote users, thought must be given to as to how those users will use products such as Excel for financial reporting. The DCOM interface may be configured on the server to assist with this.

### **NT and Novell coexistence on network**

Greentree must be implemented on a NT server (ie. it will not operate on a Novell server). However, both NT and Novell servers can be configured to coexist on the same LAN. This means that if a site already has a Novell network in place, Greentree can be implemented by adding a new NT server to the existing network.

The new NT server needs to be configured with a common protocol between the existing Novell server(s), which could be TCP/IP or IPX/SPX. Because Greentree is a TCP/IP based application, you need to configure the NT server to use the TCP/IP protocol as a minimum:

- If the Novell server(s) have been installed with IPX/SPX (Novell's propriety protocol), configure the NT server with TCP/IP (for Greentree) and Novell compatible IPX/SPX (for communication with Novell).
- If the Novell server(s) have been installed with TCP/IP then just configure the NT server with TCP/IP protocol only.

On the client side, you need to configure the desktops with the same protocols. For example, if you are only using TCP/IP on the servers then you need to use TCP/IP protocol on the desktops also.

You can configure as many protocols as are required on the desktops. It is recommended that on desktop you use Novell's IPX/SPX protocol along with Novell's Intranetware client or Zen Works.

Access to the NT server will be dependent upon how the server is configured. You will also need to add the "Client for Microsoft Network" service in the network setup.

### **JADE Thin Client vs. Fat Client**

JADE's thin client technology moves most of the data processing from the user's workstation onto the Application Server. This means there is less network traffic because a smaller amount of data is being transferred between the Application Server and the user's workstation. As a result, the workstation hardware requirements are considerably reduced with a small Pentium processor core being sufficient for thin client operation.

It is also possible to configure Greentree to run as a fat client, which means the Application Processor is by-passed and this function is performed on the client workstation. A mix of both thin and fat clients can be configured, and this may provide some benefit for selected functions that are processor and memory intensive (and which may therefore affect the performance experienced by other users).

An example of this is the Accounts Payable Payment Selection Process. If this is run on a fat client workstation, the intensive processing task is done at the workstation, thus not impacting other users.

### Remote File Storage

It is not recommended that the Greentree Database files or transaction logs be stored on a remote network file system.

### Caching Disk Controllers

Do not enable write caching unless the hardware vendor assures you that the write back cache implementation takes into account all possible causes of discarding dirty cache data, which would thus be safe for use by a database server.

### Disk Sub-system Allocation Strategies

The following except is taken from the "Environment Considerations for Deploying JADE" article available on the web site for JADE at [www.discoverjade.com](http://www.discoverjade.com):

RAID (Redundant Array of Inexpensive Disks) is an important component for servers used for business critical data processing. RAID systems have several configurations (levels) that have different performance profiles and fault tolerant capabilities. In general, we recommend the use of mirroring (RAID 1) to achieve redundancy combined with striping (RAID 0) for performance. The RAID levels 3 through 5, which implement different forms of parity, provide poor write performance and are not recommended for hosting database and transaction log files. On the other hand, a RAID 5 sub-system is suitable for database backups.

The following allocation strategy employs a combination of RAID levels depending on the types of files.

RAID Level 1, 0+1 or 1+0

Database files  
Transaction logs  
Operating system files

RAID Level 0

Transient database files  
Operating System Page files

RAID Level 5 or Level 0

Database backups  
Transaction log backups

Greentree recommend use of mirrored or RAID disk sub-systems for all servers used in conjunction with the Greentree database.

### Vista Certification and PDF

With the release of Vista certification, a new ini file configuration is defined to have the following fixed value:

```
[JadePrinting]
PrintFileFormat=EMF
```

This ensures the site uses advanced PDF instead of the original basic function. Refer to Greentree's online functional help for more detailed information about this feature - accessed via: Help > Functional Help > System Setup and Utilities.