MrBOOT White Paper

Concepts

Fat Client: means the traditional computer client, (common pc), always it has local mass storage, and launch application and maintain locally.

Terminal System: Server-based computing is a system architecture in which Microsoft Windows client applications are fully installed and performed on the server. Not only their management is effected from there, but also their maintenance, administration, and support take place directly on the server.

Thin Client：Means the device that connect to terminal server, do not have local storage usually, it launch application directly on the server. Merely the user interface, that is, display, mouse, and keyboard information, is transferred between client and server.

Diskless：It support storage capacity for all clients, as like as SAN device. Client connects to diskless through IO system, and launch application locally.

Why you need it

In today's information world, most companies deploy e-business applications on desktop PCs. The desktop computer has evolved from a personal tool to a mission-critical component of the e-business infrastructure. However, the diversified system management, security and reliability issues raised by PC's are the most important facts causing decrease of client efficiency and productivity. The cost of managing and maintaining desktops has also become the expensive part of owning an e-business environment.

As the number of users continue to grow, and many organizations's desktop computing environment is inflexible and non-homogeneous, resulting in heavy administration problems and worse service level of end user support. The unreliable PC's hardware and frequent virus attacks not only affect user operations, but also causing loss of data as well. Moreover, new software is introduced into enterprise periodically. Upgrading software and licensing control on individual PC's are time consuming and labor intensive. Therefore, the proliferation of desktop PC's escalates IT operational costs and challenging administration productivity in a rapidly changing technical environment.

MrBOOT represents a breakthrough in desktop management and software distribution, radically lowering costs, streamlining operations and redefining possibilities.

Benefits from streaming by MrBOOT

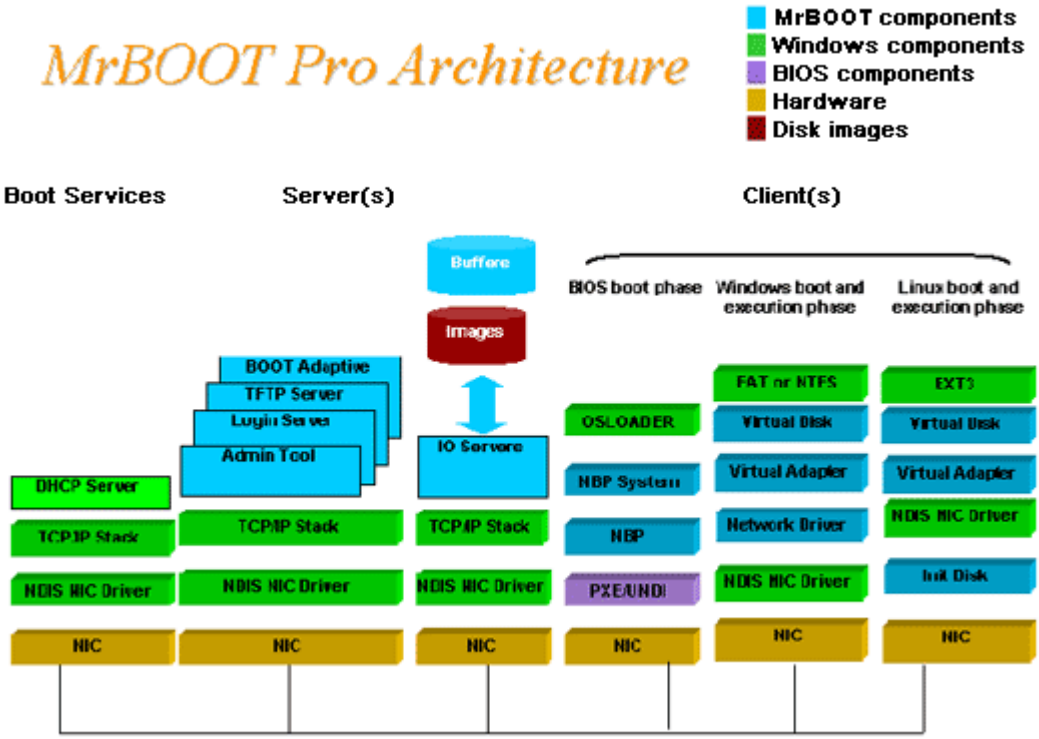
- Instant Desktop software distribution eliminates the hidden management effort in an on-demand world
  1,000s of desktops can get the latest patch in the time that it takes to reboot
- Eliminates the need to insure that patches/upgrades are appropriately applied to 1000s of desktops
  Eliminates the need to make desk-side visits to 1000s of desktops
  Desktops can change personality in the time that it takes to reboot.
- Plug and play into existing architectures protects existing investments
  Software-only solution works with existing hardware and network.
  Customers are extending the life of PCs because OS changes impact local PC less
  Auto discovery capability allows PCs to plug onto the network and start streaming immediately
- Enhanced continuity maximizes productivity and the customers' satisfaction
  Highly available with automatic fail over insures operational excellence.
- Utility/On-Demand better meets the needs of the business' service-level agreements
  Software-only solution fits any architecture and integrates with policy
- COTS (Commercial Off the Shelf) hardware protects the customer's investment

Software-only demands no premium for proprietary implementations, works with off-the-shelf servers, network, storage and applications;
Can transform existing server farm into a utility computing environment

What is MrBOOT

MrBOOT is a desktop-streaming system base diskless architecture. MrBOOT represents radically lowering costs, high effect to install/update operating system and software, and provide the speed, flexible, strong desktop service to the client. MrBOOT included terminal server excellence that central storage and maintain directly on server, the client is free-maintain. And include the traditional clients excellence too, launch application with full power locally without affecting the performance of the other clients.

MrBOOT Architecture:



MrBOOT has two components, call server-side, and client-side.
On server side, it has a pool to storage image; it need mass storage space (for all data), and more memory. Please give as more memory as possible in server, it can increase the disk performance of service.
On client side, just need a PXE-support firmware, without any local mass storage. And corresponding driver for each kind of client operating system (the driver will be install into image, and load during desktop-streaming).

MrBOOT How to perform this

It delivers the right operating systems and applications, to the right computer, at the right time - creating a new model for dynamic, cost-effective software deployment. Specifically, in a desktop-streaming model there is a central repository of "golden" OS and application images under administrator control that contain the configuration required to support various business uses or functions (e.g. Middle Management Configuration, Point of Care/Sale, Engineering, Marketing, Accounting) that a computer might perform. When the computer is powered up and the boot sequence is initiated, MrBOOT simply streams the required image – pre-assigned via an administrative dashboard – to each desktop from a central pool of images. Each desktop starts running in the assigned configuration immediately – no waiting to download

the entire OS.
With MrBOOT, the OS and associated applications are delivered to each desktop via desktop streaming. This is similar to video streaming in that rather than downloading the whole OS to each desktop, the desktop-streaming approach sends just enough of the software so that each desktop can begin to execute. As the system requires more libraries, those elements are delivered as needed, on-demand. Importantly, MrBOOT is a software-only solution and can fit into existing hardware infrastructures.

1.Through central management, it mask more easily for installation, updating, and deployment.
2.A given desktop could take on a personality that runs one configuration and upon reboot runs a different configuration.
3.On other side, MrBOOT suggest you put your private data to server, to avoid the loss from client's hard disk problem.
4.MrBOOT increase system security, it don't need windows sharing, reduce the risk from virus. Client can clean the modification and got a golden image again when affect virus.

Difference from MrBOOT and Thin Client or Fat Client

MrBOOT Beats "Thin"

MrBOOT is server-based like thin clients, but the comparison ends there.
Thin client shares most system resources, such as computing power and storage, from a centralized server; only a small footprint OS, minimal software, input devices and display reside at the clients. Most programs execute at the server (server-based computing), user input and application output display is transferred to the client over the network. Multiple program sessions run at the server for each of the multiple clients (multiple users share a single physical machine - CPU, memory and storage). Customized drivers are required for local attached hardware peripherals, such as printers.
Thin clients are not easy to scale and requiring expensive high-power servers which are quickly saturated. Moreover, I/O ports are difficult to share or redirect to multiple users.
MrBOOT clients deliver more predictable client-based computing power with multimedia capability, complete support of local hardware peripherals, and along with extensive flexibility and scalability. Since each client has its independent processing power, no high-power multiple servers are required. Each user can run demanding applications without affecting the performance of the others.

MrBOOT Beats "Traditional PC (fat client)"

MrBOOT provide the same performance as like as traditional pc, because of that it launch application locally too.
But the management mode are difference, when using traditional pc, it need to maintain each client, it need to operate many times to perform patch/update for software when exist many clients. Although it can solve part of problem though distribute tool, but these tool has some lack when updating anti-virus software or operating system patch. Once the client hardware crash, it need to reinstall all system, and lost the old dates.
MrBOOT creates the image of the operating system – technically it is referred to as a Virtual Disk or VDisk – and multiple clients receive their streamed image from MrBOOT server. While updating, it just needs to update on a client remotely, and the other clients can use the update after reboot. When the client means software problem, just reboot to recover the environment, when hardware problem happing, just change the new machine, and setting it to use the old account, it can still keep old data.
The most important is that MrBOOT make client can select the OS & Application & Data that it want easily, It is difficult to implement for traditional fat client.

	MrBOOT	Thin Client	Fat Client
Maintain cost	A client (update to image)	For a server	Heavy, for many clients
Performance	Good, Launch locally	Low when has many	Good, Launch locally

		clients	
Server	Low-level server	Expensive High-level server	N/A
Compatible	100% compatible	Some restrict by user policy	100% compatible
External Cost	MrBOOT, and a cheap server hardware, but saving local storage	Expensive Windows Terminal Server License, and Server hardware	N/A
Client-side Local Storage	N/A	Like DOM to storage a base shell (mini OS)	Hard disk
Crash Risk	Low	Low	High

Features

Unparalleled Manageability

A Client Management

There is absolutely no software needed to install on the client. OS updates and changing configurations just needed to be done at sample client only. The changes will be reflected on entire, a specific group of desktops or a specific client desktop instantly. MrBOOT desktop streaming offers an easy way to manage your desktop network through client-less administration.

Easy Software Installation and Upgrade

MrBOOT eases the burden of installing and upgrading software on thousands of desktops by doing the repeated process only once at a single location. For organizations with multiple sites, administrators can easily install software into the servers located in separate sites remotely. This centralized system-management saves tremendous time and labor cost, while reducing administration headaches.

Simplified Storage Management

As each user on the server has owned a specific directory, diskless clients can be maintained to guarantees centralized data storage. Backup is only required at the server, saving time from backing up individual client desktops and eliminating chances to leave out important data.

Web-based Management Console

An easy-to-use and intuitive web interface, MrBOOT provide a web-based GUI to enable single point management and monitoring of the entire MrBOOT cluster from any location. From anywhere with a browser and authorized access, administrators can securely connect to the MrBOOT server to manage any desktop in the network.

Ultimate Reliability

Eliminate Data Loss

Data stored in desktop local hard drive are difficult to manage and easily get corrupted. MrBOOT turns desktop PC's into diskless clients, which eliminates the chance of data loss. Even a sudden power down at clients will not cause data corruption or physical hardware damage.

Extend Hardware Lifetime

MrBOOT client eases the maintenance cost of hard drives, and increases the reliability and lifetime of PC hardware by reducing the load of power supply that lowering electricity consumption of air conditioning systems.

Fail-Safe Stateless Client-Server Design

With its stateless client-server connection design, MrBOOT allows continuous operation of the clients without loosing data during server reboot or network disconnection. MrBOOT clients will operate as usual and unsaved data can be stored as soon as server is recovered or network is reconnected. This design removes the single point of failure from the client environment.

Utilize Server-Side Protection

Central server data protection and redundancy facilities can be fully utilized for the whole MrBOOT client network.

Once the server uses RAID and UPS, all system files, applications and everyone's valuable data will also be protected.

Unbeatable Scalability and Performance

Run High-Demand Applications

As a distributed processing system, MrBOOT makes the clients run OS and applications (e.g. office suite, e-mail client, web browser) by using their own computing power. They are fully capable to deliver high performance to run demanding applications, such as multimedia, streaming video, graphics design, and industrial CAD/CAM software.

Highly-Scalable Network Expansion

Server just uses its memory to enhance disk I/O performance. Moreover, the client does not rely on server and using its own CPU and memory for computing. Therefore, both local processing model and stateless client-server connection of MrBOOT makes the client network computing architecture very scalable.

No High-Power Server Needed

Unlike thin client, MrBOOT client does not use server-processing power; therefore, no high-power server is needed to run desktop streaming. Once the programs are stream from the server to the clients, they will run the same as they do on traditional PC's. Since the clients will use very limited server resources, thus the loading of server is very low.

Robust Security

Resistance to Unknown Viruses

In server-side, all data are packing as MrBOOT image format, immune to viruses infected by client.

Improved Data Protection and Physical Security

While servers may be well protected, but desktops are more susceptible from hacking and infiltration. Most data and applications stored at PC's local hard drive can be accessed by any users easily, thus physical access to desktop PC's is a security risk. MrBOOT solves this problem by storing all data at server and maintaining dataless clients. It provides a high level of physical security by keeping valuable and sensitive data in the safe custody of server.

Technical Information

Flexible configuration mode, MrBOOT can auto accept new client, or add client information manually.
Easily to manage the configuration of image and client, disk.
Update image easily by "Update Mode" or "Store To" function. Just need to update on sample client once time, all clients can share the updated too.
Can import physical disk as image, just need to pick the client disk to server, not needed to upload.
Can using multiple images at the same time; the clients can stream from difference image that it wanted.
Support various hardware configuration, one image can fit with multiples hardware configurations, make easy for compatible with new hardware client later.
Support data disk size up to 2TB.

Support windows client, as Win2000/XP/Vista.
Support Linux client.
Compatible with various DHCP network.
Support union servers management.
Load Balancing between servers, making a large server cluster.
Support route, VLAN, free for adjust network switch device.
Support multiple network adapters in server, and load balancing between networks.
Support hot server backup with SAN device, making high availability
Can make multiple restore-point for image, can restore to special version when image been damaged.
Provide version for image, make sure not effect other client running when updating image.

Can support image synchronization between server, make easy for manage and serve the clusters.
Allow user to select which image and private data to use when booting.
Support login with username, client can login with their username to access their private OS/Application/data from any workstation.
Separate Image and private data, protect private data while image destroy.
Allow any amount client data private disk.
Allow user to keep the data on image, but not force clean while rebooting.
User can select force clean modification to image when booting. So user can repair system easily by himself without assistance from administrator.
Support boot order select (local hard disk, or network disk) when client booting.
When the client boot from local hard disk, still using MrNetdisk from access the private and shared data from MrBOOT server.

Support boot the clients though 100Mbps Ethernet network by “BT booting” technology.
Support vista super fetch, to improve experience to launch applications.
Embedded Super Cache technology, to improve hard disk performance for server’s hard disk.
Without depends with third party component independence, more easy to install. (Windows iSCSI Initiator not needed).
Special Read/Write architecture: can distribute load to multiples hard disks.
Preload function, can preload data into memory, to speed for client running.
In client-side, can use local memory as cache, can improve disk performance for client that has large memory.
Put windows page file to special swap disk, speed the windows running.

Application

MrBOOT is suitable to improve the IT enivorment, to reduce the cost of maintain.

- Education. use for Lab, media class, teacher office.
- Enterprise. provide office data security and avoid the risk from invalid-software.
- Net coffee. Decrease maintain task, more easily to update the game and movie.
- Government. Make more security.
- Customer service. such as bourse computer for customer.
- Hotel. make room computer more easily to recovery (just tell the customer to reboot it).
- KTV. Pprovide the free-maintain for room clients.

Hardware requirement

	100 Clients	50 Clients
Server Hardware Configuration		
CPU	P4 3.0Ghz *2 (or HT)	P4 4.0Ghz
Memory	2GB	1.5GB
Disk System	6*SATA	3*SATA
Network Adapter	1Gbps *2	1Gbps
Server Software Configuration		
Operating System	Windows 2003 Server Linux Enterprise Server	Windows XP Windows 2003
Network		
Switch	Giga network	Giga network recommended For MrBOOT Standard can work at 100Mbps Ethernet
Client Hardware Configuration		

CPU	Celeron 1Ghz	Celeron 1Ghz
Memory	256MB	256MB
Network Adapter	100Mbps or higher	100Mbps or higher
MrBOOT Setting		
MrBOOT Super Cache	1.6GB	1.2GB
Storage Setting	2 SATA Raid0 for Image storage 4 SATA Raid0 for Client Storage	1 SATA for Image storage 2 SATA Raid0 for Client Storage