

Centralized IT Solutions with Diskless Thin Clients

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Boston, MA



Symbio Technologies | Overview

- Based in New Rochelle, NY
- Dedicated to centralized computing for 4+ years
- Began as a consulting firm
- Evolved into a diskless thin client R&D, product, and solution company
- Global Value Added Reseller (VAR) channel for product sales, marketing, integration, and support
- Leader in key diskless thin client focused OpenSource community (LTSP)
- Microsoft, Citrix, Redhat and Novell partners

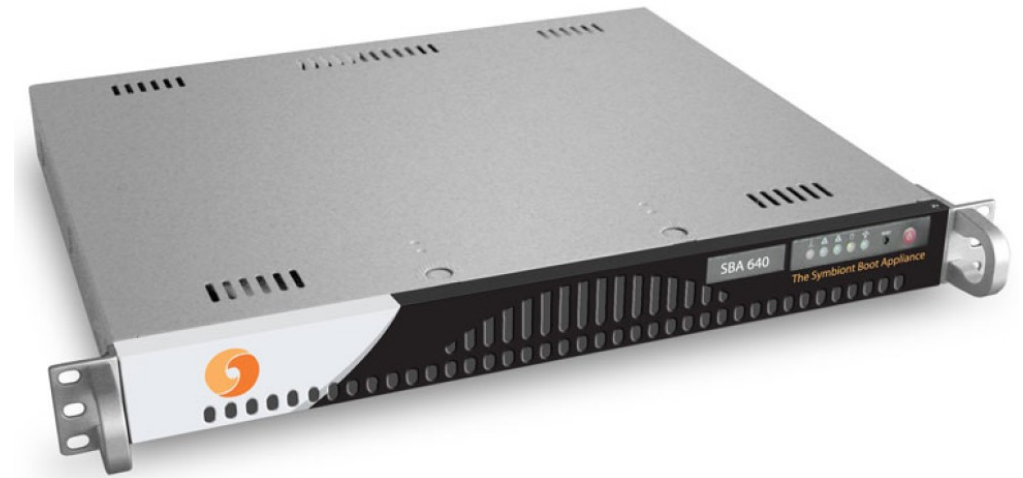


Symbio Technologies | Global Partners



Presentation | Overview

- Our common IT mission
- The big picture (3 IT components)
- The Desktop (PCs vs. embedded vs. diskless)
- Getting to the desktop (Desktop delivery)
- Servers Hardware
- Keep it simple
- Putting it together
- TCO/ROI



Our Common IT Mission

A thin client solution

- Minimize time & money spent on hardware maintenance
- Maintain consistent applications network-wide
- Maximize network and computer uptime
- Centralize “required” IT management – OS patches, firmware upgrades, virus updates, etc
- Give more control to the network administrator(s)

CENTRALIZE EVERYTHING!



The Big Picture

- The basics: Server + Network + Desktop

SERVERS

- Files & data storage
- User Authentication
- Network Services: DNS, DHCP, Proxy, etc.

- Hardware costs are consistent due to high-quality parts.
- Extremely reliable because mgmt. is controlled.

NETWORK

- Transports “bursty” traffic
- NOT fully utilized (maybe 5%)

- Extremely reliable because it only transports data.
- The “boom” created network technology ideal for thin clients.

DESKTOP

- Where the users interact with the network.
- Every PC is a low-quality SERVER !!!
- Variable costs due to low-quality parts.
- The number of problems are multiplied by the number of nodes.
- It's a called a “personal computer”



The Desktop

- The #1 most expensive component
- If everyone uses the same program, why install that program so many times?
- We have been trained to replace desktop hardware every few years! We need to re-educate ourselves.

Personal Computers

- 300 Watt+ Power Supply
- Big chassis
- Many parts
- It's life depends on low-cost cooling fans
- Maybe 5% CPU utilization
- Has a unique identity
- Binds the user to the hardware
- We need to spend money to make them “non-personal” computers
- VERY short life-cycle

- Not too good.

Embedded Thin Clients

- Under 15 Watts
- Smaller chassis
- Fewer parts
- Can be solid-state
- Highly dependent on internal resources
- Requires configuration
- User is not bound to their workstation
- Forces application centralization.
- Pretty good life-cycle

- Not bad!

Diskless Thin Clients (Network Terminals)

- 6 Watts
- Smallest chassis
- Fewest parts
- Always solid-state
- Nothing runs locally
- No local configuration
- User is not bound to their workstation
- Forces total centralization
- VERY long life-cycle
- STATELESS !!!

- Best



The Desktop Continued

- “Embedded thin clients (eTCs) are slow stripped-down personal computers”
- Personal computers and eTCs get and run their OS, Drivers, Applications, etc. from a local “hard drive”.
- Diskless thin clients boot from a Boot Appliance. (more on this soon) and are no more complex than a mouse. File system is NEVER loaded (“pushed”) to the desktop.



Desktop Delivery

- All Thin Client solutions require “delivery protocols”
- Windows Terminal Services (RDP): Good bandwidth, true color, easy to setup, good price.
- Citrix (ICA): Great bandwidth, true color, higher upfront price, more mgmt. tools available.
- X (X): ok bandwidth (best user experience), true color, zero-cost, very “tweakable”, Linux desktop delivery.
- NX (NX): Similar to Citrix, but for Linux. ... and it's free (as in speech). FreeNX is free (as in beer)

The Symbiont Boot Appliance supports just about every delivery protocol made! ... and we keep the connectivity utilities up-to-date.

NOTE: You do not choose your delivery mechanism – the applications and nature of your business dictates what you should use.



Servers | The Backend

- We need application servers
- The application servers replace your PCs and provide IT centralization
- Application servers run applications and nothing else.
- Need more speed? upgrade the app. servers.
- When it's time to deploy a new application, just install it on your app. servers. Very quick and easy! --- and YES !! you can SAVE on software licensing !!!
- Run the best OS for your environment: Windows, Novell Linux Desktop (NLD), Ubuntu, Fedora, etc. These servers do not boot diskless thin clients.



Keep it Simple!

- Analyze your software needs vs. wants
(Some people need PCs – Multimedia and personal input devices are better suited for PCs)
- The number of nodes that you support is independent of the number of workstations.
- Two servers is like giving two computers to each user – keeping your operating system and applications up-to-date is simple.

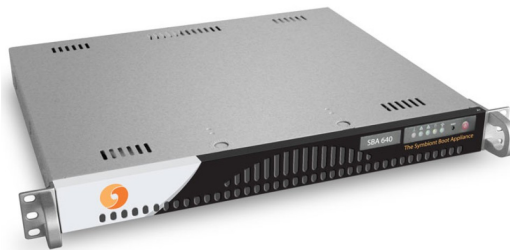


Putting it Together | Basics

- What do I need?
 - Application Server(s) (The Backend)
 - A 10/100Mbps LAN
 - A Boot Appliance & Diskless Thin Clients



Windows 2003 Std. Server
or
Any Linux OS



Symbiont Boot Appliance
Boots diskless thin clients
and connects them to
servers running: RDP, ICA, X,
NX, etc.

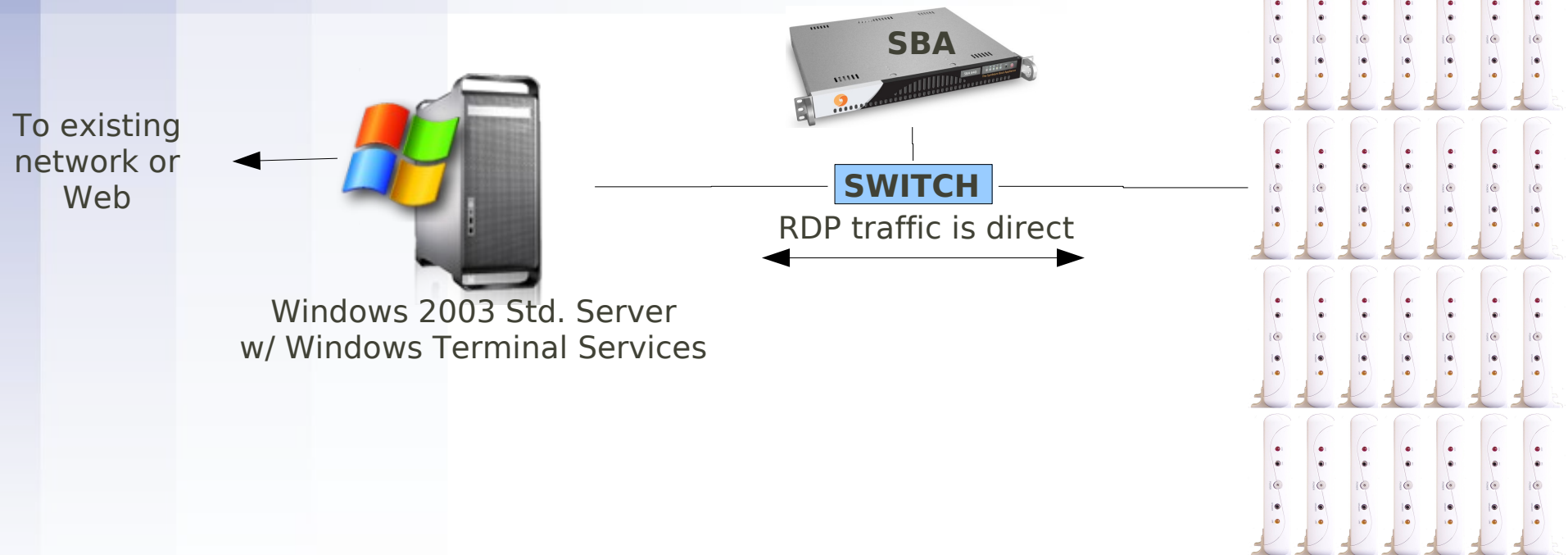


Diskless thin clients just need
to be plugged in – no
configuration or management



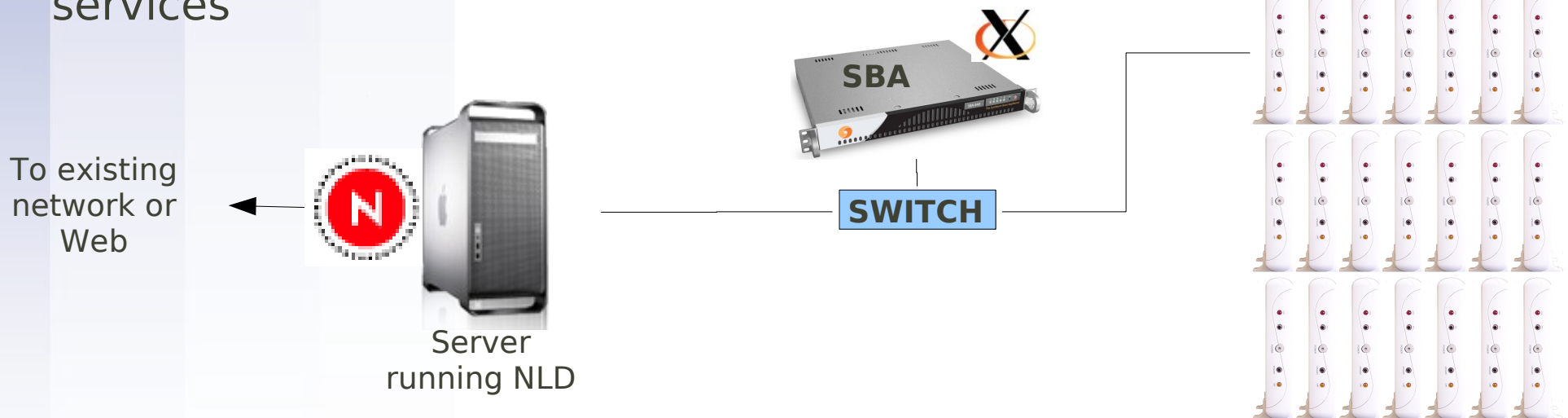
Putting it Together | Example 1

- A Windows desktop deployment
- The SBA is not used as a router
- Multiple servers can be used or blades
- Single point of management
- Zero desktop administration



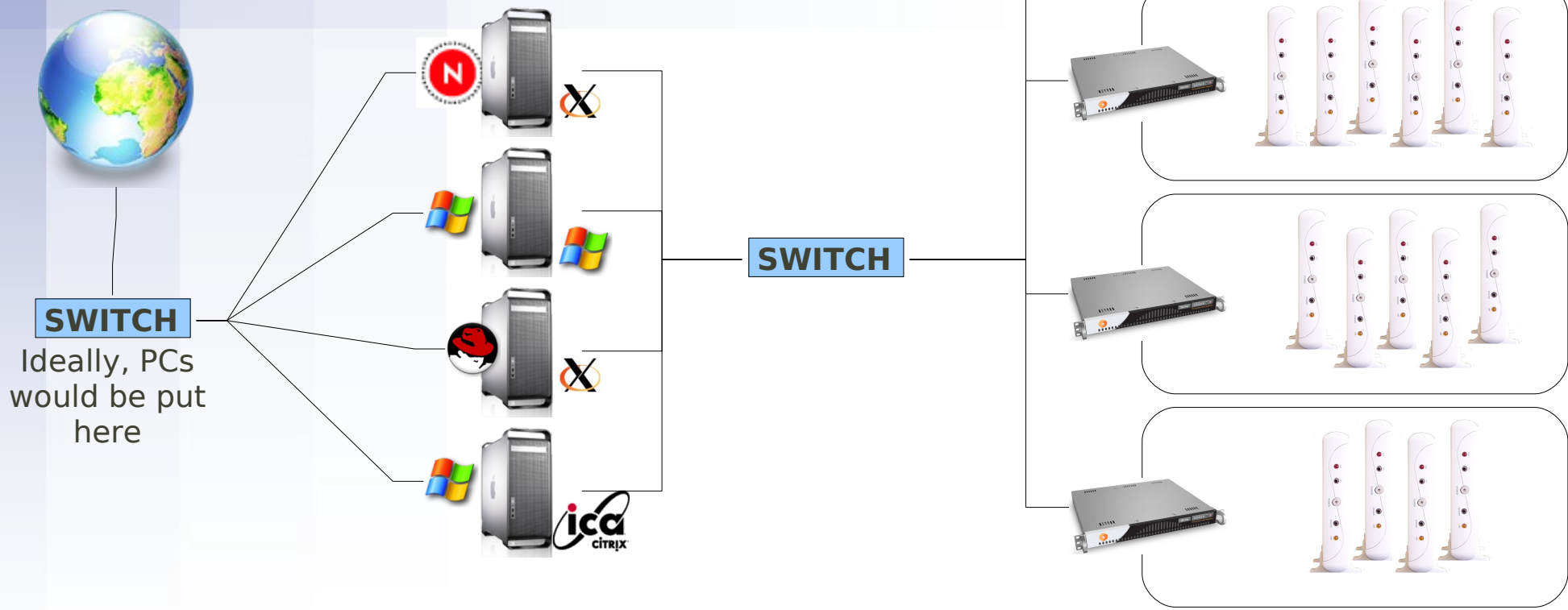
Putting it Together | Example 2

- A Novell Linux Desktop (NLD) deployment
- The SBA is not used as a router
- Diskless thin clients (DTCs) boot up regardless of application server status. You can connect the DTCs to multiple servers concurrently.
- Your NLD server is fully supported by Novell because there is no need for 3rd party software on the server.
- DTCs do not boot from NLD server – very secure and the server is not running unnecessary processes and services



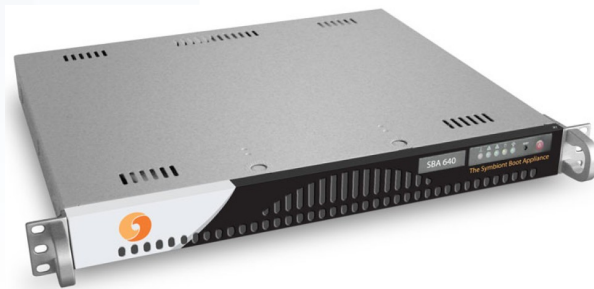
Putting it Together | Example 3

- Multi-server deployment
- The SBA is used as a router
- Any DTC can be connected to any server
- 4 points of management



Summary | TCO

- The Symbiont Boot Appliance eliminates the need to configure your application servers
- DTCs are booted-up regardless of application server status, OS type, or number of servers.
- Application servers do NOT boot DTCs, therefore servers can be swapped, repaired, updates/upgraded, etc. independent of DTC booting.
- Power consumption of a DTC ~14% of a PC.
- DTC setup is approximately 2 minutes each
- Application upgrades are done once (on the app. servers)
- “A 15 node PC network has ~500% higher support costs”
- No need to install applications at every workstation (PCs) – You only need licenses for the maximum concurrent users
- There's always a workstation available – Users log in anywhere

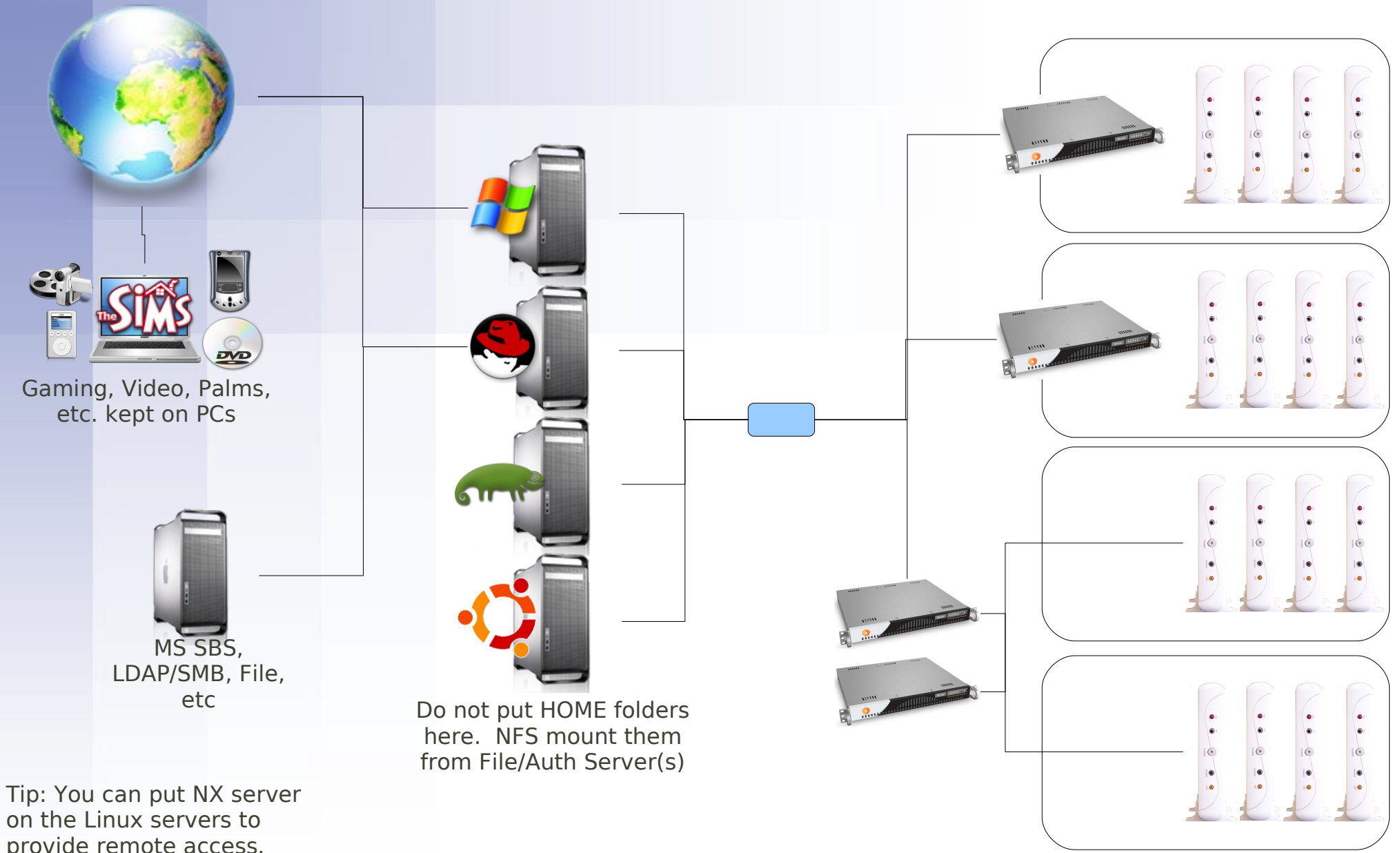


Overall Benefits

- Uptime – Redundancy and load-balancing is achieved with multiple Symbiont Boot Appliances (SBAs).
- Security – Diskless means there is “nothing of value” inside the desktop hardware.
- Faster – Applications running on application servers utilize server-grade hardware and resources. The SBA eliminates NFS refreshes from the app. server.
- Application consistency – Applications are installed once on the app. servers. No need for 3rd party apps. that will complicate server maintenance and vendor support.
- Latest Delivery protocols – No need to worry about the latest client-side delivery protocols on your app. servers. We built it all into the Symbiont Boot Appliance.
- Session Migration – Any user can log in at any workstation and have their session travel with them. (NX, RDP, and ICA only)
- Remote Access – Terminal services inherently supports remote desktop access.
- Virtually ZERO desktop hardware costs



Questions



Tip: You can put NX server on the Linux servers to provide remote access.



More info.

www.symbio-technologies.com

www.TheSymbiont.com

www.LTSP.org

www.microsoft.com (search for 'terminal services')

www.citrix.com (ICA client)

www.novell.com (commercial OpenSource solutions)

www.redhat.com (commercial OpenSource solutions)

www.nomachine.com (OpenSource low-bandwidth product)

www.disklessthinclients.com

