

Using Citrix MetaFrame and Windows 2000 Servers with HP e3000 Terminal Emulation

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Short Summary

- Using Citrix MetaFrame along with Microsoft Windows 2000, access to HP e3000 applications from a desktop is streamlined.
- Learn why this is important to you and how you can implement the solutions.

What Attendees Will Learn

- Advantages of using Citrix MetaFrame on Windows 2000 in accessing HP e3000 applications.
- How administrators can easily configure one server or multiple servers in a Server Farm using the Microsoft Windows Installer (MSI) deployment technology making use of transforms.
- How users can make use of roaming profiles with Windows 2000.

Abstract: Using Citrix MetaFrame and Windows 2000 Servers with HP e3000 Terminal Emulation

- The new Windows 2000 server technology lends itself quite well to the new demands of the IT environment. In the old days, everyone had their own PC with individual emulators installed. All the PCs had to be maintained and constantly updated with new versions. Through the combination of Windows 2000 Server and Citrix MetaFrame using a server farm, the following advantages occur:
 - One can easily configure one server or multiple servers in a Server Farm using the MSI deployment technology making use of transforms. One installs on just a few servers instead of thousands of PCs.

- Since all software resides on the server, the user can make use of roaming profiles. From any Macintosh, Win CE, Terminal Server thin client Terminal, a PC running any MS operating system, or even a UNIX workstation, the user can run their applications, using terminal emulation software that supports the Citrix environment. User's files and scripts will all be stored on the Windows 2000 server in their own secure directory. They only need an ICA client to connect.
- The individual user's workstation can use much less power, as the Windows 2000 server is doing all the work. The workstation does not need 256 MB RAM and requires 0 hard disk space.
- One can tailor the user's needs via both the Windows 2000 Server Profiles for the user, and the profiling mechanisms available for the particular emulator.

Citrix MetaFrame & Windows 2000 Server

- With the Citrix MetaFrame on top of the Windows 2000 server encryption of all packets is automatically done.
- The user from work, home, or in a hotel, access the same software with their same directory on the server.
- **Biographical Sketch:** During Victor's 11 1/2 years at WRQ, he has been solving HP e3000 & HP 9000 customers' TCP/IP, NSVT, and other technology challenges. Outside of WRQ, Victor enjoys bicycling and yoga.
- **Additional Assistance:** Teale Miller, Jim Eanes, Sue Lindsey, and Signe Olausen.

Using Citrix MetaFrame & Windows 2000 Servers with HP e3000 Terminal Emulation

- The new Citrix MetaFrame and Microsoft Windows Terminal Server Edition technology lends itself quite well to the new demands of the IT environment. In the old days every one had their own PC with individual terminal emulators installed such as an HP e3000 emulator or a PC X Server on each desktop.



Petra's PC
FTP Client
System Administrator

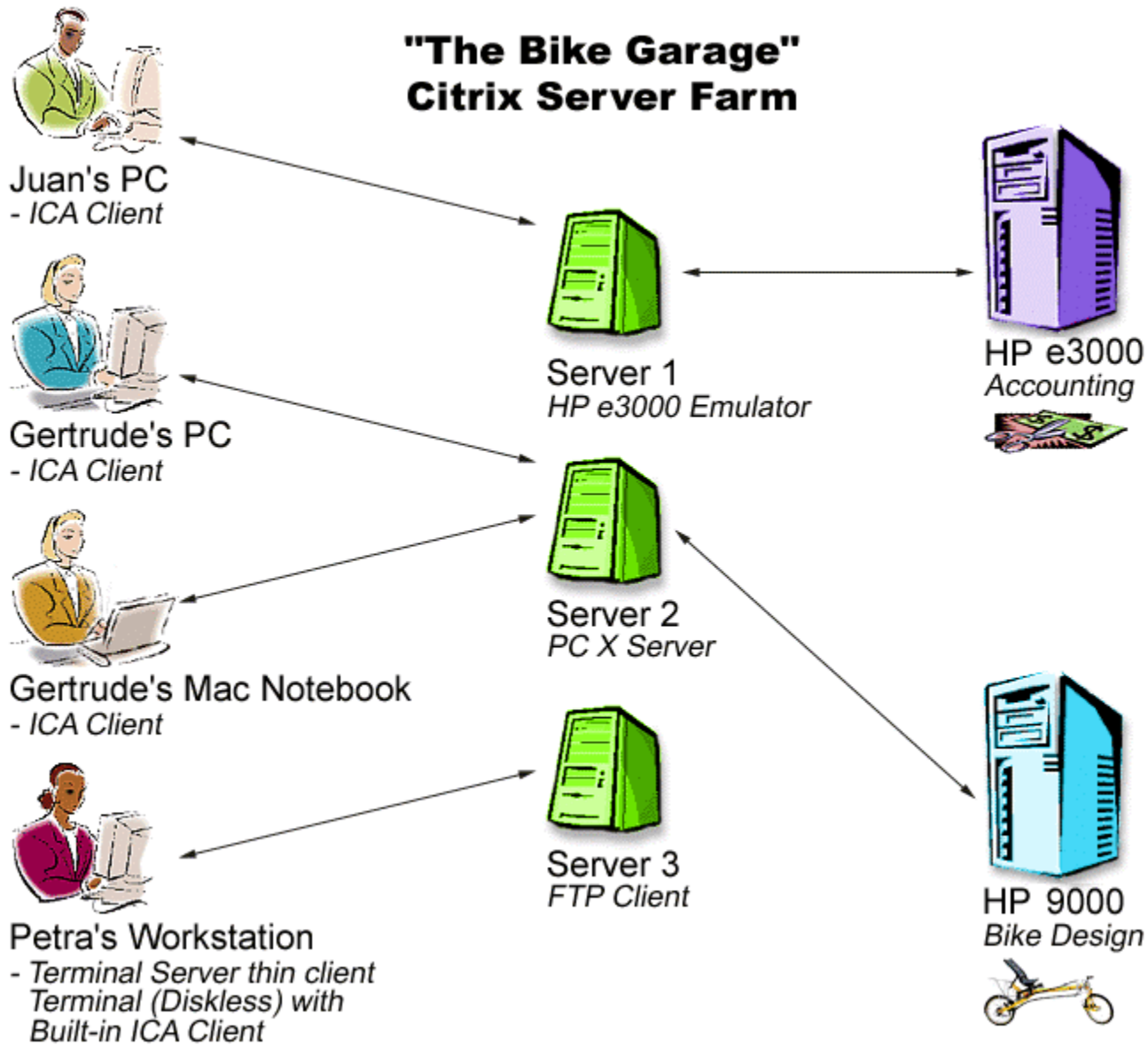


Juan's PC
HP e3000 Emulator
FTP Client
Chief Accountant



Gertrude's PC
PC X Server
Mechanical Engineer

"The Bike Garage" Citrix Server Farm



Citrix MetaFrame

- A company will have a Citrix server farm. This is simply a collection of Servers running the Citrix MetaFrame software. The current version of this software is:
 - MetaFrame 1.8 for Windows 2000 Servers or
 - MetaFrame 1.8 for NT 4.0 Servers
- In the future there will be an XP product from Citrix that will be released as the newer version of this. Typically a company will have 10 to 1000 MetaFrame servers.

Ease of Access Via Serial, Dialup, or Network

- The user can dial up from a modem at home and get access to the Citrix server.
 - No extra software is required aside from the standard Citrix client for that device (Macintosh, Win CE, Terminal Server thin client Terminal, a PC running any MS operating system, or even a UNIX workstation). Many devices come with this client built in such as diskless thin client Windows terminals.
 - Note: the connection will work over TCP/IP, IPX, Banyan Vines, VPN, and most major network protocols in addition to direct serial or telephone line.

History of Terminal Server Thin Client Terminals

- They have come a long way since the original Client DOS diskless workstation.
- These machines had to be booted off a server typically a NOVELL or UNIX host.
- They used protocols of IPX or BOOTP. If you had to change the IP address assigned to a machine or add a protocol to the network card, the entire machine would have to be re-imaged.
- This was a very lengthy, complicated, and expensive process.

Former Diskless Workstation

DOS Diskless Workstation

Unix or Novell Server
to boot off of
(create images by hand)

Files to change:

autoexec.bat

protocol.ini

config.sys

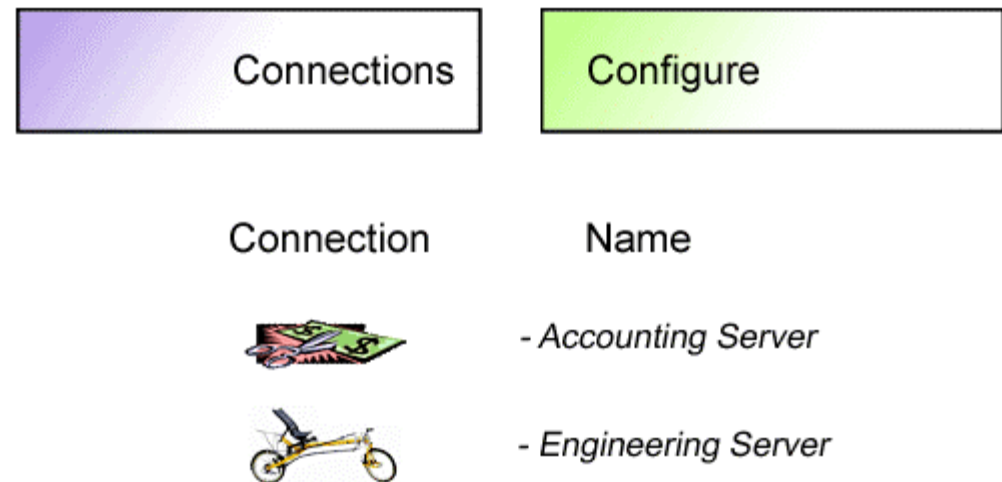
win.ini

system.ini

Today's Thin Client Terminal

- Today's thin client terminals typically have a scaled down version of 32 bit Windows operating system built into them. You can easily navigate to change the IP address of the thin client or the NT domain it logs into.

Terminal Connection Manager



After Clicking on 'Configure' You See:

Edit Connection

Server	Logon	Firewall	Options
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Connection

Name



- *Accounting Server*

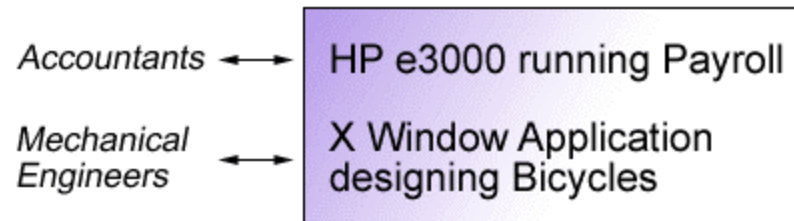


- *Engineering Server*

Server Farms: Publishing Applications to Different User Groups

- Typically a company will have one Server Farm with many servers in it.

Server Farm for "The Bike Garage"



- There will be different user groups that will have access to various applications.

- Citrix has a mechanism called Publishing whereby certain applications are made available to various user groups. For the accountants we have Published the HP e3000 emulator, and for the Mechanical Engineers the PC X Server. All applications live inside the Citrix Program Neighborhood. After logging into the Citrix server, the user will only see icons for their Published applications.

After being authenticated by the Citrix Server we see:

For Example:

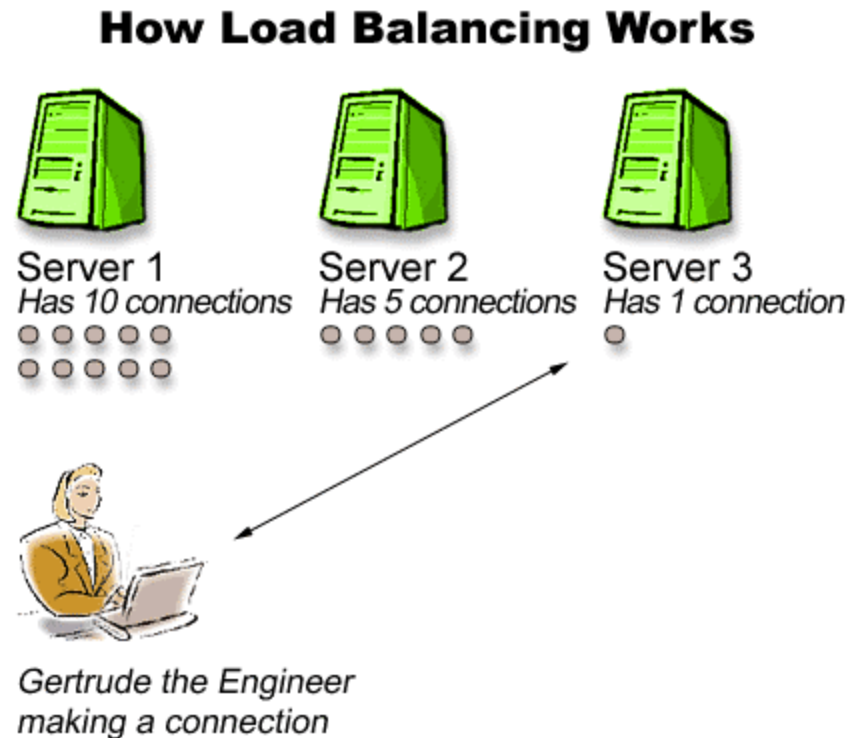
Juan the Accountant sees



Gertrude the Engineer sees

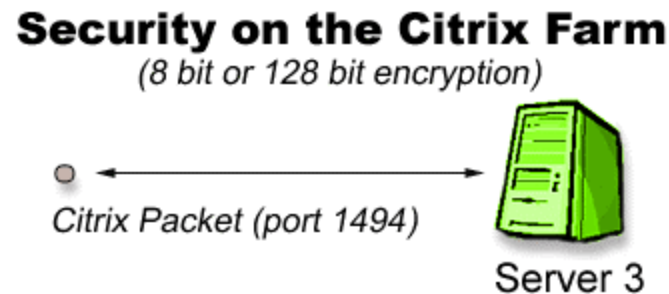


- Citrix MetaFrame comes with load balancing software. The load balancing software decides which particular server in the Server farm will run the published application asked for. For example suppose we have Published the PC X Server on 3 servers.
- In this case, the engineer making the connection will get connected to Server 3 since it is the most available. Server 3 has won the election.



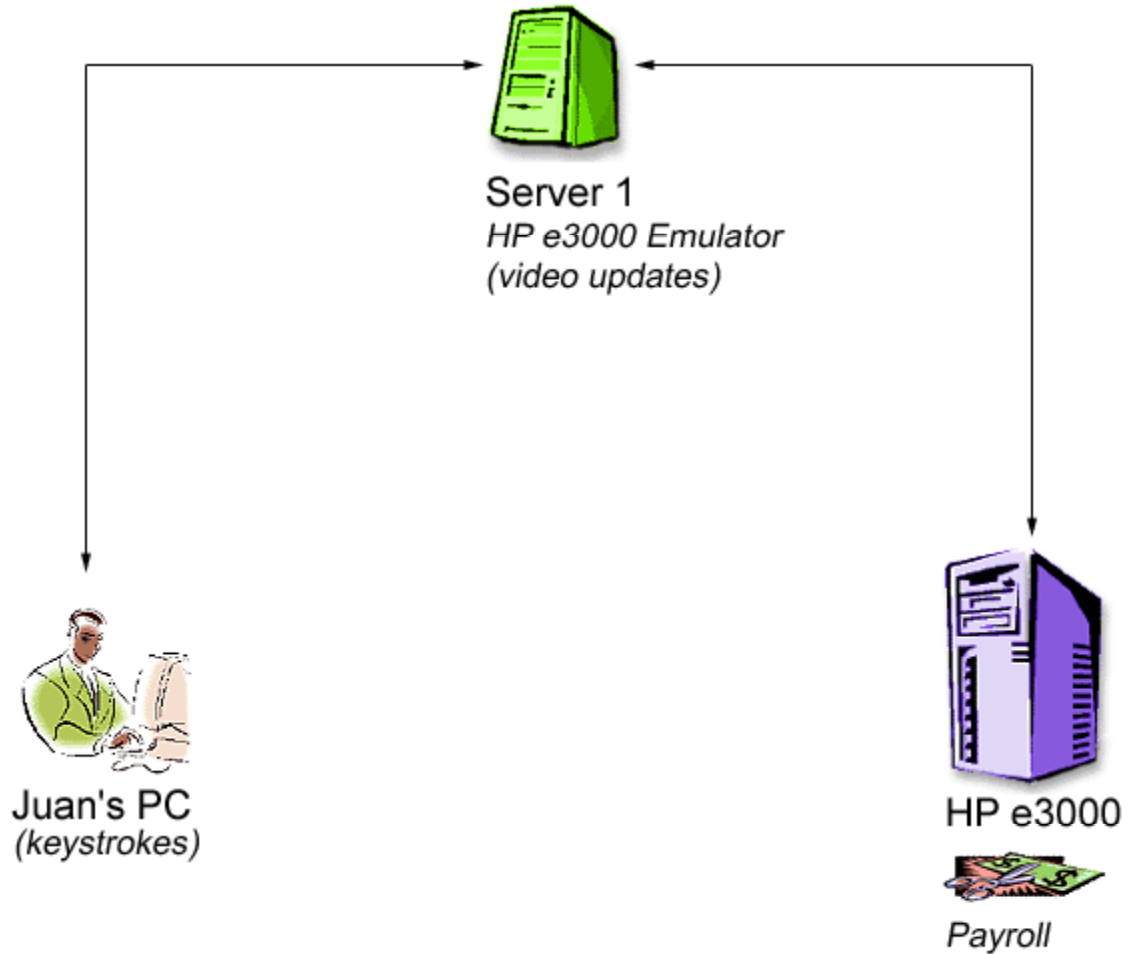
Security on the Citrix Farm

- Security encryption is a technique used to encode the packets going between the Server and the client, so that if they are read they are unintelligible.

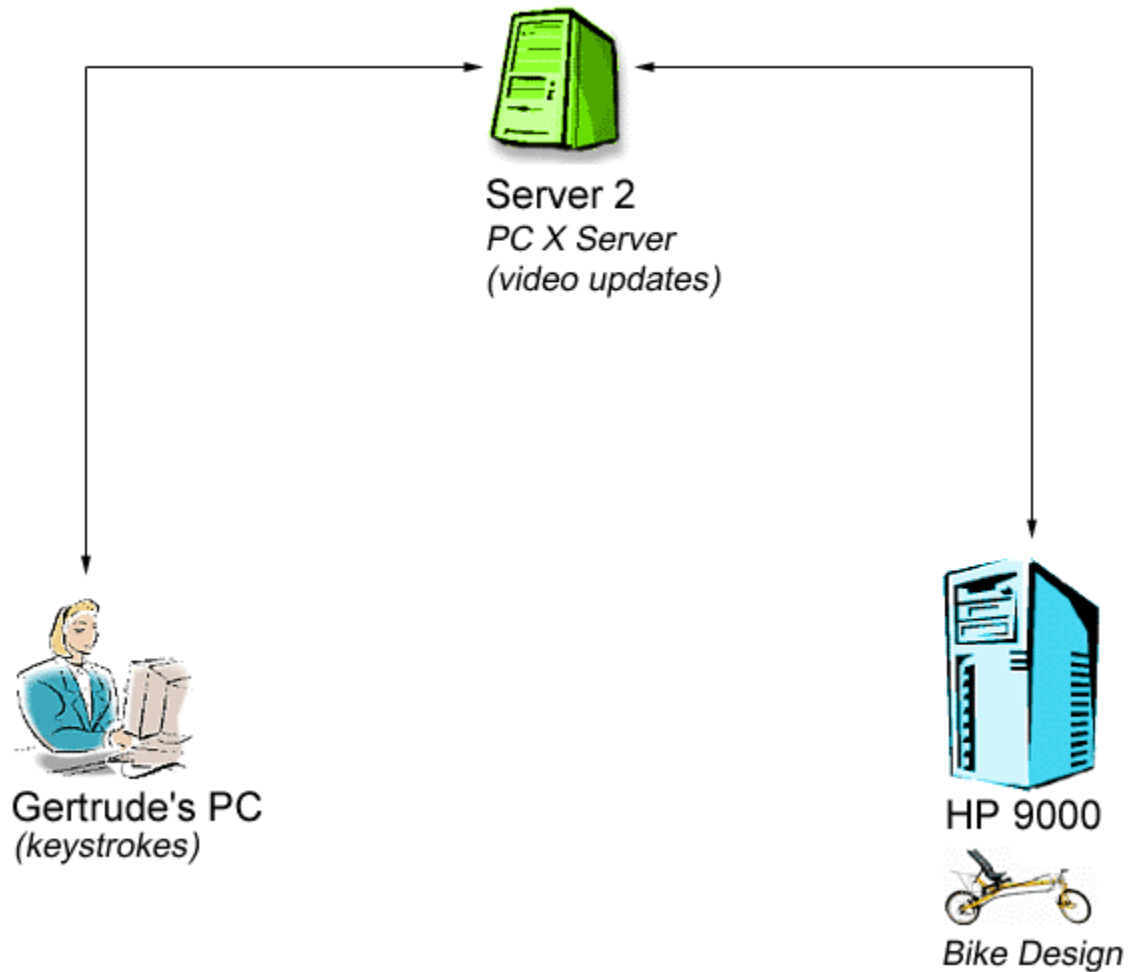


- With Citrix MetaFrame on top of the Windows 2000/NT 4.0 server encryption of all packets is automatically done. The normal is 8-bit encryption, but 128-bit encryption can also be obtained. The Citrix packets use port 1494.

Economics of Citrix Farm - Who does the work?



Economics of Citrix Farm - Who does the work?





Juan's Workstation
*Terminal Server thin client
terminal (diskless) with
built-in ICA Client*

- Juan being a frugal accountant decided to save “The Bike Garage” money by switching to a diskless thin terminal client. This is now his workstation.
- Let us return to Juan’s workstation which is connected via the ICA client to Server 1.
 - In this scenario the Citrix/Terminal server is doing all the work. The application executable files reside there and stay there.
 - Juan’s workstation is only being fed video updates from the server.
 - Juan's workstation feeds keystrokes to the Server 1.
 - So the power resides on the Citrix Server Farm.
 - Juan's workstation needs nothing more than a decent video card of resolution 800 x 600.
 - The hard drive is unnecessary.
- So if a company wanted to save money, all PCs could be replaced with thin terminal clients such as Juan now has.

Configuring Multiple Servers in a Citrix Farm

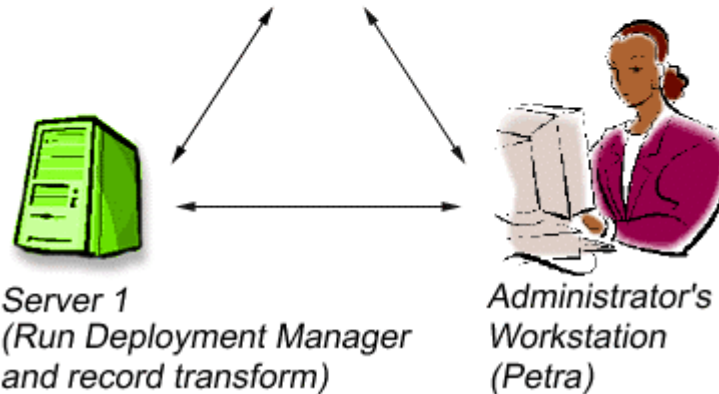


Admin Install (MSI)

(Anywhere on network that is secure)

Save transform `InstallEmulator.mst`

emulator.msi (database for installing product)



Configuring Multiple Servers in a Citrix Farm

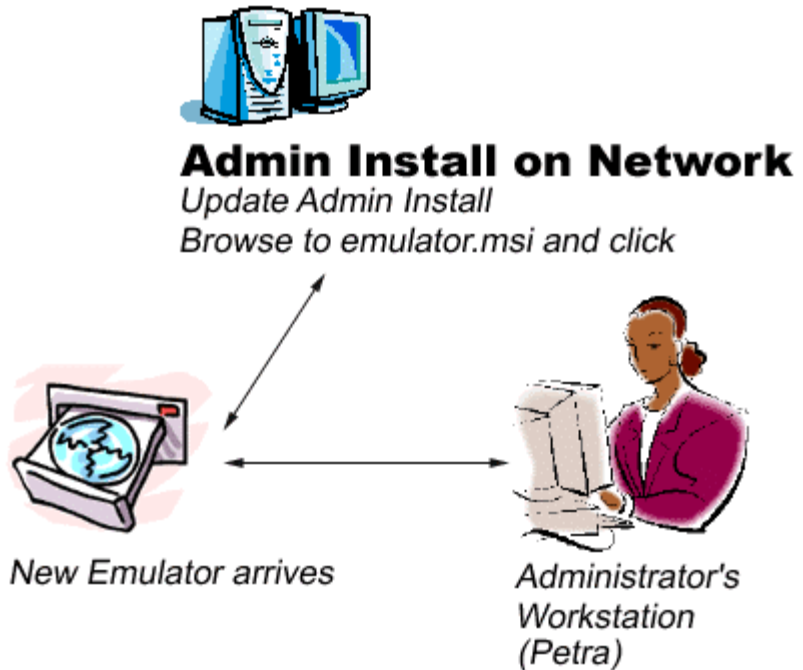
- One can easily configure one server or multiple servers in a Server Farm using the Microsoft Windows Installer (MSI) deployment technology making use of transforms.
- A transform is simply a recorded set of instructions for installing a software product.
- Furthermore, patches can easily be applied.
- One installs on just a few servers instead of thousands of PCs.

How to Create a Batch File to Install on Multiple Servers

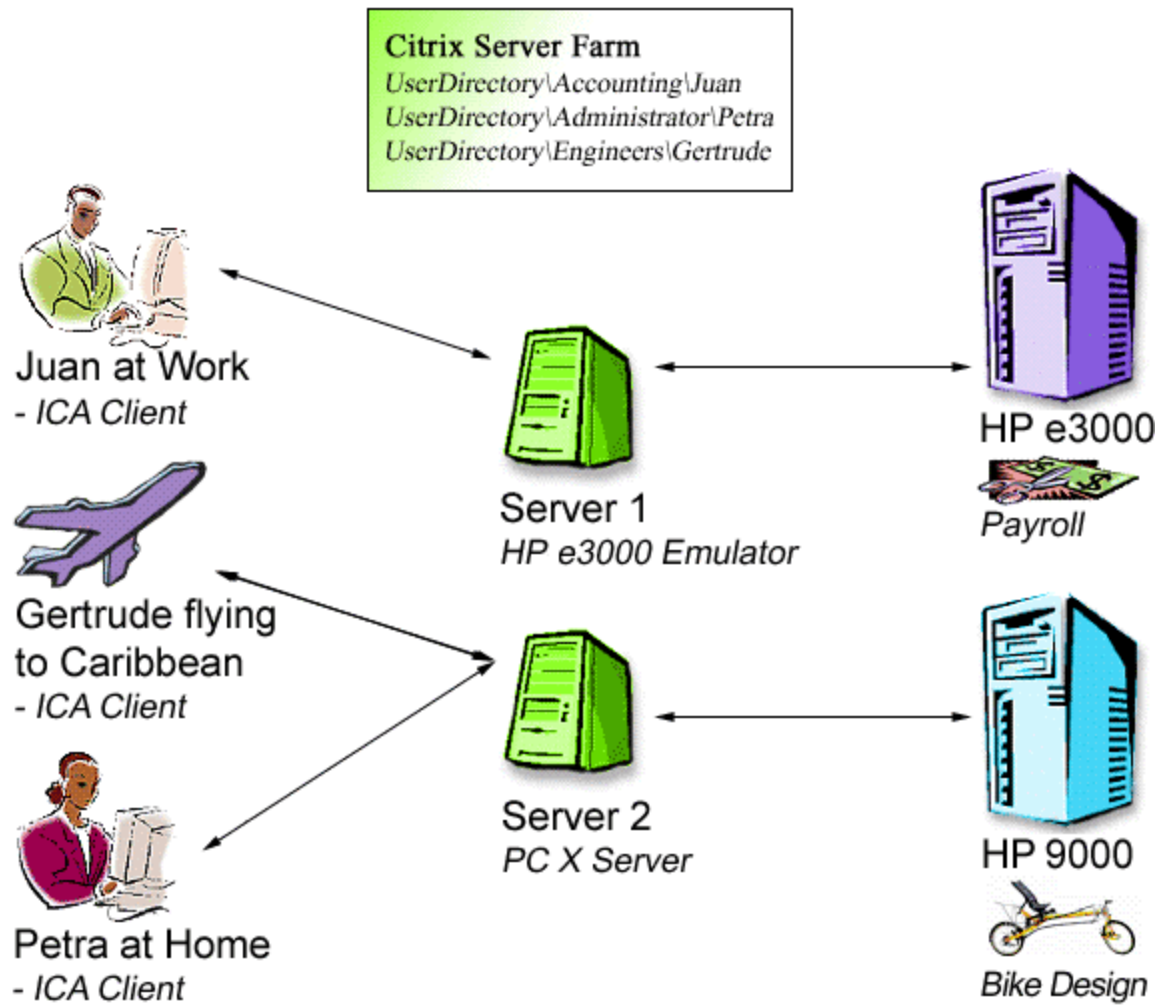
- Test Transform making sure it worked. If it did then create a 3 line batch file called InstallCitrixHpe3000.bat:
Change user /install
Setup /I emulator.msi TRANSFORM
="<path to transform>InstallEmulator.mst" /qb
Change user /execute
- This batch file can then be published as a Citrix application which only one group could use, the Administrators group.
 - An Administrator would simply click on this icon for each server they wanted the HP e3000 emulator installed on.
 - Alternatively, the batch file could be scheduled to run every 6 months when a new update of the emulator is released.

Ease of Updating Your Emulation Package

- When a new version of the HP e3000 emulator is released:
 - Update the Admin Install on the network.
 - Rerun the Published Batch file to update each desired Citrix Server.



Using Roaming Profiles



- In today's world, one never knows where one can be. Since all the software resides on the Server, the user can make use of roaming profiles. Roaming profiles offer these advantages:
 - User can run their application, from any device (Macintosh, Win CE, Terminal Server thin client Terminal, a PC running any MS operating system, or even a UNIX workstation).
 - User files and scripts will be all stored on the Windows 2000/NT 4.0 server in their own secure home directory.
 - Users can have same access from home, work, or even on an airplane to the Caribbean.
 - Large companies may want to have multiple servers devoted for User directories.

Providing the User with the Access They Need to HP Applications

- Tailoring the user's needs:
 - Use the Group Policy Editor on Windows 2000/NT 4.0 Citrix server.
 - Decide which user group sees which Published applications. (Using Publication Application Manager on Citrix.)
 - Use Emulator's Profiler if available. Many emulators have user profiling built in.
 - Profiling is the process by which the administrator decides which features are best for the user to see. For example:
 - File Transfer
 - Use of Macros: Editing or Running
 - Access to Help Files

Support for International Customers

- If your emulator supports language switching on the fly, then individual users can switch languages, so that Gertrude can work in German, and Juan can work in Japanese, all with the same copy of the HP e3000 emulator on the Citrix MetaFrame server. Usually this involves installing on the Server with Multilanguage support.
- Windows 2000 has multilingual support based upon locale.

Getting to the Citrix Program Neighborhood From a Web Browser

- The administrator's job can be made still easier by launching your HP Published Applications from a Web Server. This is another way of using the same Citrix Program Neighborhood you are now familiar with via the Web.
- This is done through a new technology called Nfuse from Citrix. The user is first authenticated to the NT domain and then authenticated to the Citrix server.

- Advantages to the administrator are:
 - Automatically update the Citrix ICA connection client for the connecting device (Macintosh, Win CE, Terminal Server thin client Terminal, a PC running any MS operating system, or even a UNIX workstation).

All connecting devices must be using at least Internet Explorer 5.0.

- For added security, one Web Server can be used for those internal to the company, and a second Web Server can be used for those outside the company firewall.
- Note: you will still be using your HP e3000 Terminal Emulator or PC X Server software running on your Citrix Server Farm.



Web Server
Outside Firewall
(Port 80)



Juan at Home
(ICA client)

Firewall with SSL for Security



Server 1
HP e3000 Emulator
(Port 1494)
UserDirectory\Accounting\Juan
UserDirectory\Administrator\Petra
Citrix XML Service



Petra at Work
(ICA client)

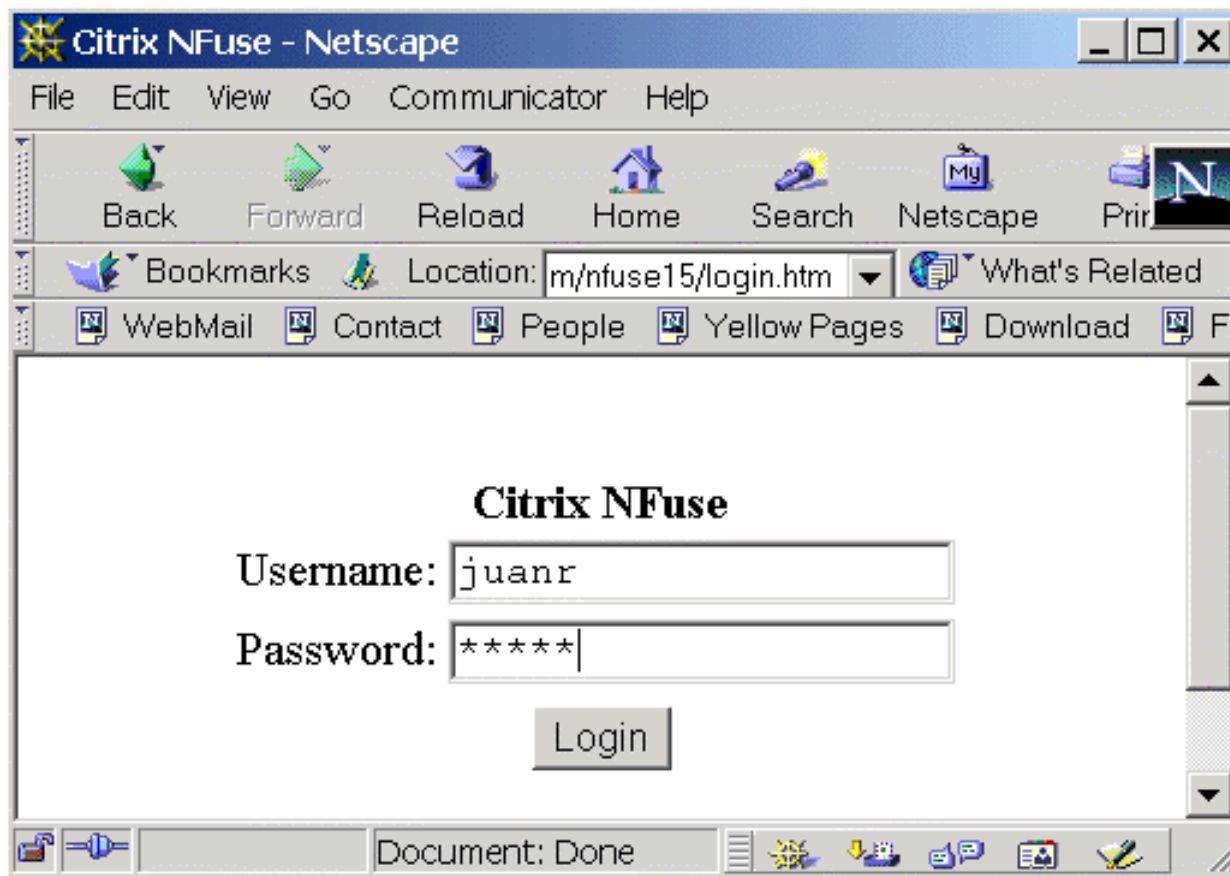


Web Server
Inside Firewall
(Port 80)

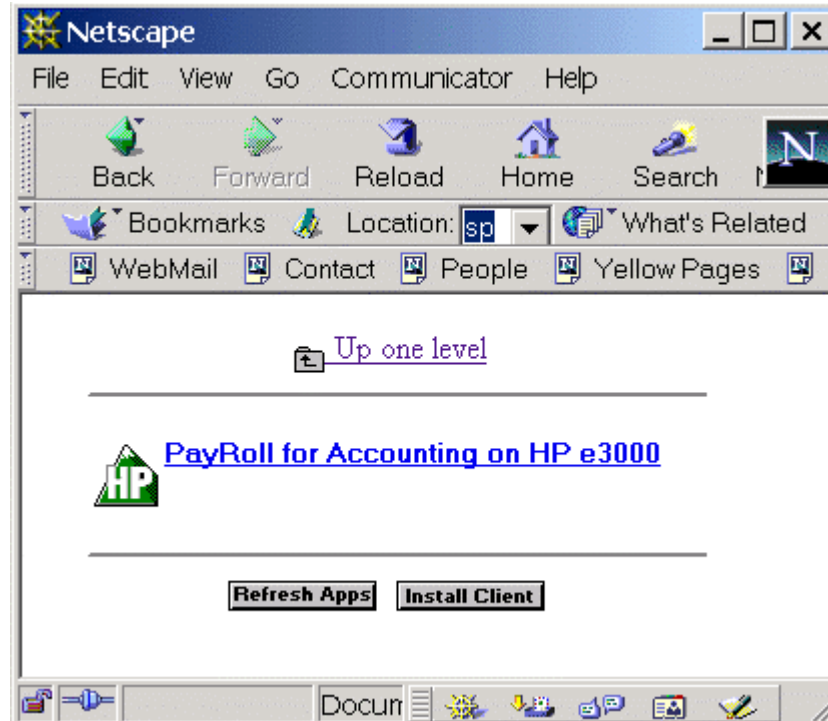
How Nfuse Works

- The initial connection to the Web Server is made via Port 80 with the Citrix XML Service running on the Server Farm.
- For added security you can change this to another port, and add SSL (Secure Socket Layer) software.
- Once the person logs in and then successfully launches the Citrix connection the connection to the web browser drops.
- A direct connection is then established between the ICA Client user and the Citrix Server on Port 1494.
- Remember for added security you can also implement the 128 bit encryption on your Citrix Server Farm.

You Will Then See Something Like This:



After Logging In, You Will See:



In Conclusion

- Installing a Citrix Server Farm with emulation software that supports this, greatly simplifies the administrator's life.
- It is easy to install, update, and tailor to the user's needs.

- A Citrix Server Farm is a very cost effective solution, which is universally accessible from home, work or on the road:
 - Ease of Access via Serial, Dialup, or Network
 - Today's Thin Client Terminal
 - Server Farm Architecture
 - Load Balancing
 - Security
 - Economics
 - Configuring Multiple Servers for installation
 - Ease of Updating your Emulation Package or PC X Server

- Using Roaming Profiles
- Providing the User with the access they need to HP Applications
- Support for International Customers
- Getting to the Citrix Program Neighborhood from a Web Browser

Thank you all for coming here today!