



Network Station Manager Version 2

Separation of Servers



Network Computer Division
IBM Network Station Education
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Objectives



- **What is Separation of Servers?**
- **What are the different servers and their roles?**
- **What are the main benefits?**
- **How to configure for it?**
 - Using NVRAM
 - Using DHCP
- **How does it work?**

Notes



The topic of this presentation is separation of servers.

The objective of this section is to explain what the separation of servers function consists of, its benefits and how it works.

This section is mainly for the benefit of those who may not have already reviewed the Architecture topic or the Planning and Design topic, and who only want a brief overview of what this function provides.

What is Separation of Servers?



- **The ability to use more than one (logical and/or physical) machine to provide the server services required by an IBM Network Station**
- **These services include:**
 - Obtain network configuration data
 - Provided by a **DHCP server**, BOOTP server (or local NVRAM)
 - Obtain an operating system (kernel) and application modules
 - Provided by a **boot server** (also called a **base code server**).
 - Obtain station configuration information
 - Provided by a **terminal configuration server**
 - Validate a user and provide a home directory
 - Provided by an **authentication server**
 - Obtain user/group configuration files
 - Provided by an **user configuration or preferences server**

Notes

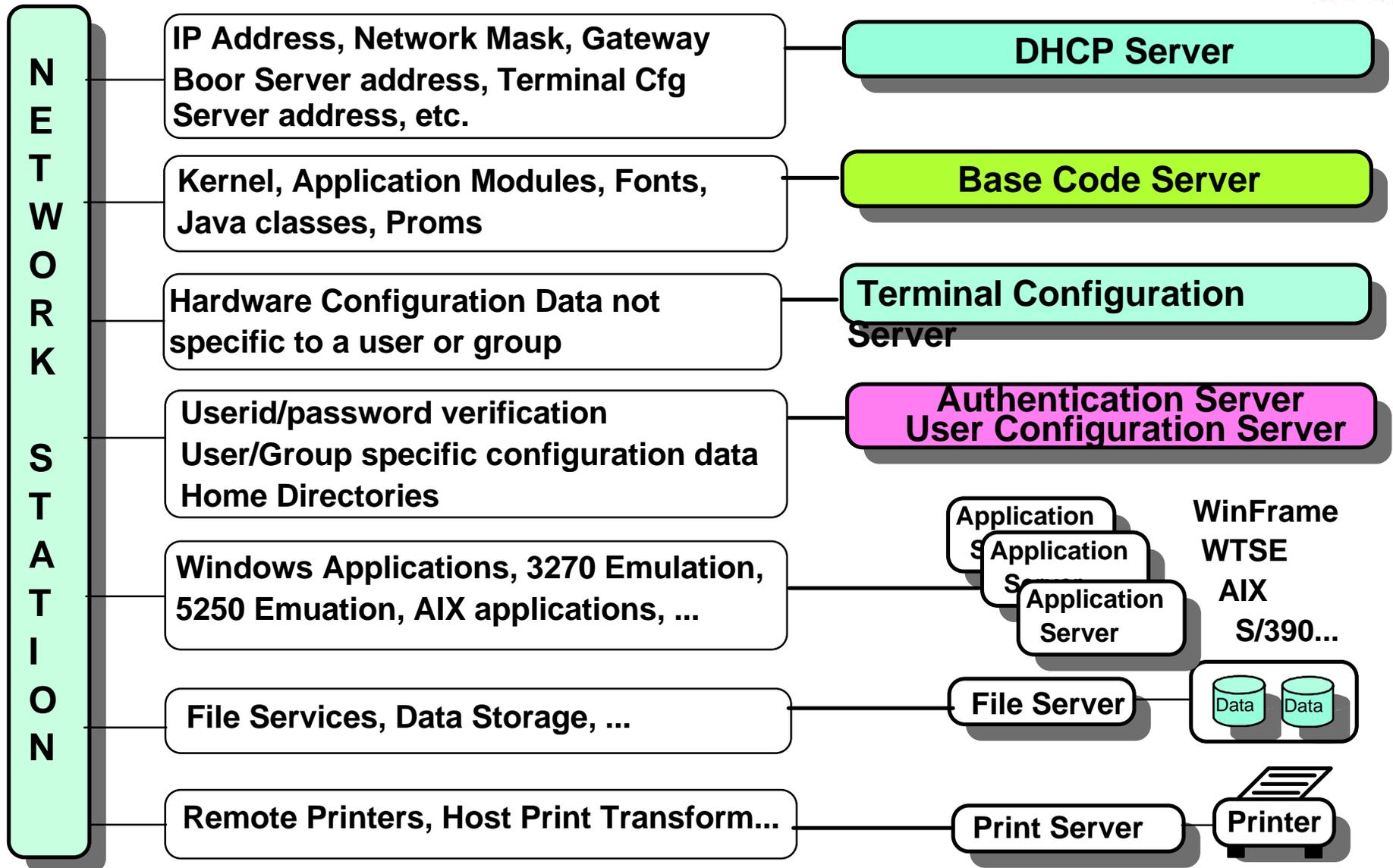


The separation of servers is the ability to use more than one logical or physical machine to provide the services required by a Network Station to operate.

What services does a Network Station requires?

- First, it must obtain its network configuration data, and that can be provided by a DHCP server, or a BOOTP server, or local NVRAM.
- Then, obtaining an operating system id done from a boot server. This is also sometimes called a base code server.
- Once the kernel is in control, it obtains the terminal configuration data from a terminal configuration server
- The next major step is to validate the identity of the user by using an authentication server. This is also where the user's home directory resides.
- Finally, user specific configuration data and group configuration data can be obtained from a user configuration server, also sometimes called a user preferences server. This is also usually the same server as the authentication server.

Server Roles





The servers we described in the previous foil are the servers that are considered essential in ensuring that the network station can become operational, and these are represented in this chart as the first four servers on the right hand side.

However, as applications are started on the Network Station, these applications may be using other types of servers.

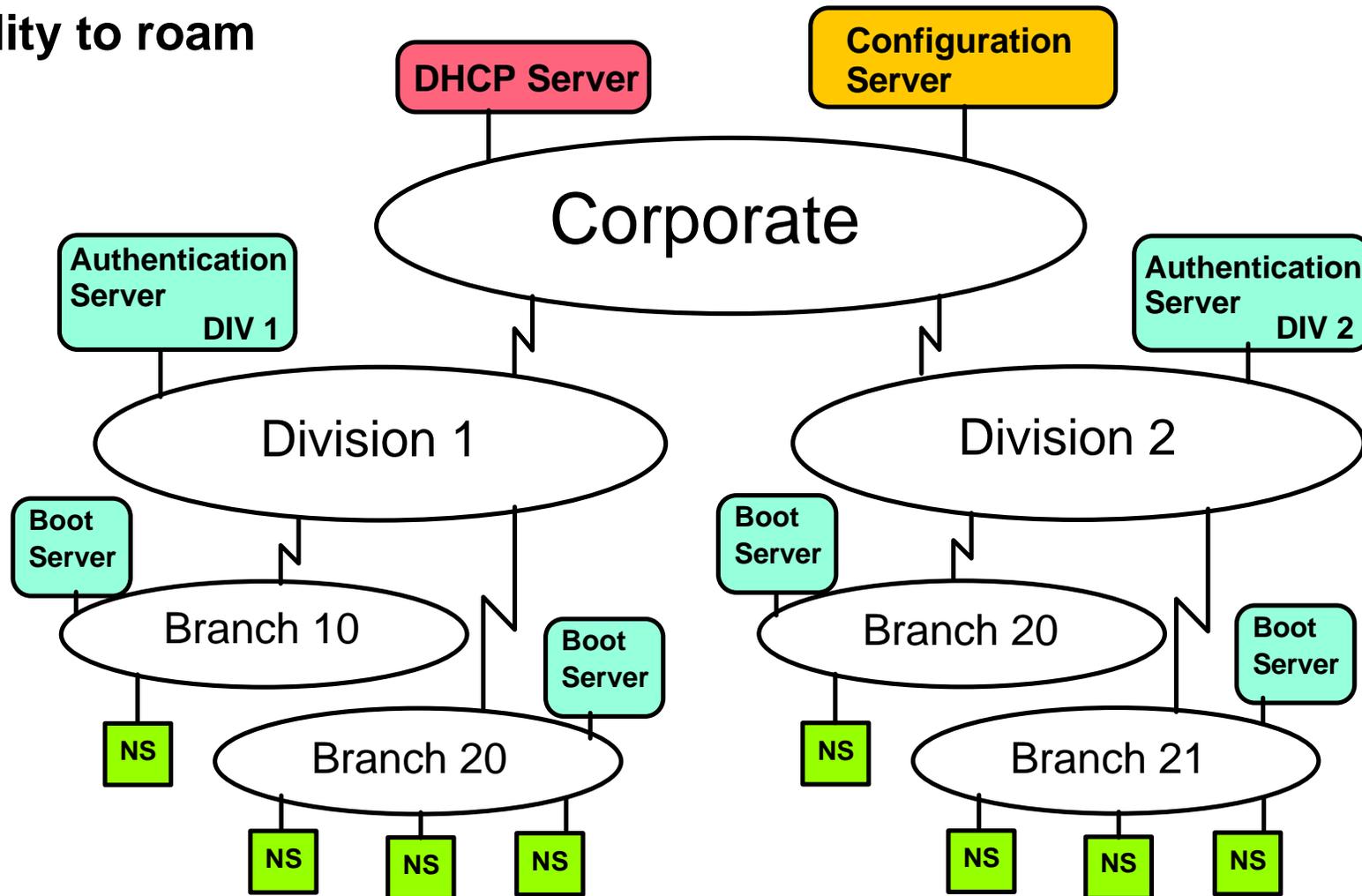
These are, for example:

- Application servers, such as a WinFrame or WTSE server, or S/390, or AS/400 etc. dependent on the application.
- The application may also need to access a file server other than the boot server or the authentication server because it needs access to files or databases.
- Or, applications may need to access different print servers on the network.

Separation of Servers - Benefits



- Load balancing and flexibility in network design
- Centralized administration
- Ability to roam



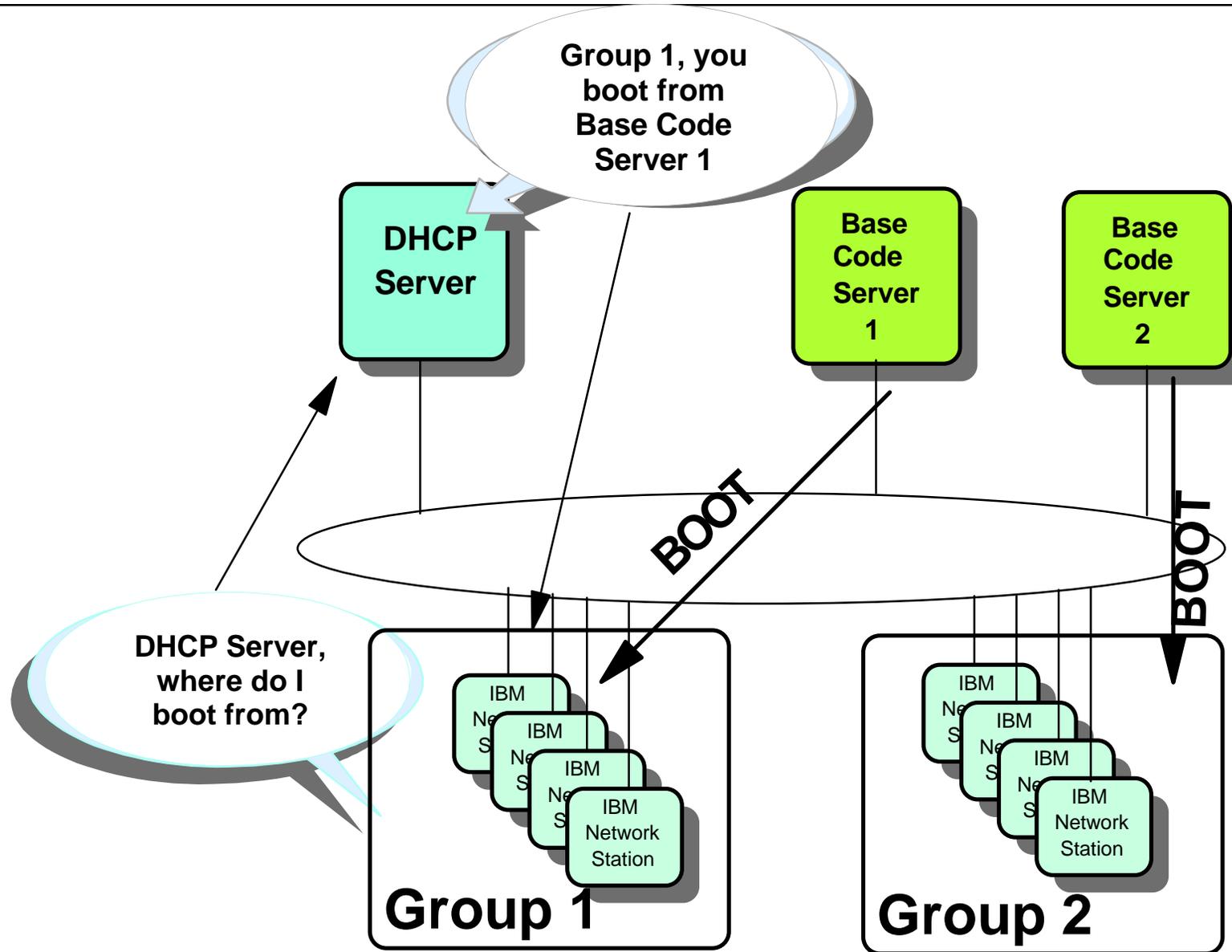


This chart illustrates a typical corporate environment where Network Stations might be installed.

The three main benefits of using separate servers are:

- Load balancing and flexibility in network design. Because each type of server provides the station with a different amount of data and files, it is important to have the ability to place these servers in the network where it makes most sense from a network design and performance perspective.
- Centralized administration by being able to adapt to the organization's policies on centralization or decentralization of network control.
- And roaming allows mobile users to be able to roam freely while still be able to retain their unique user characteristics.

What is Load Balancing?



Notes



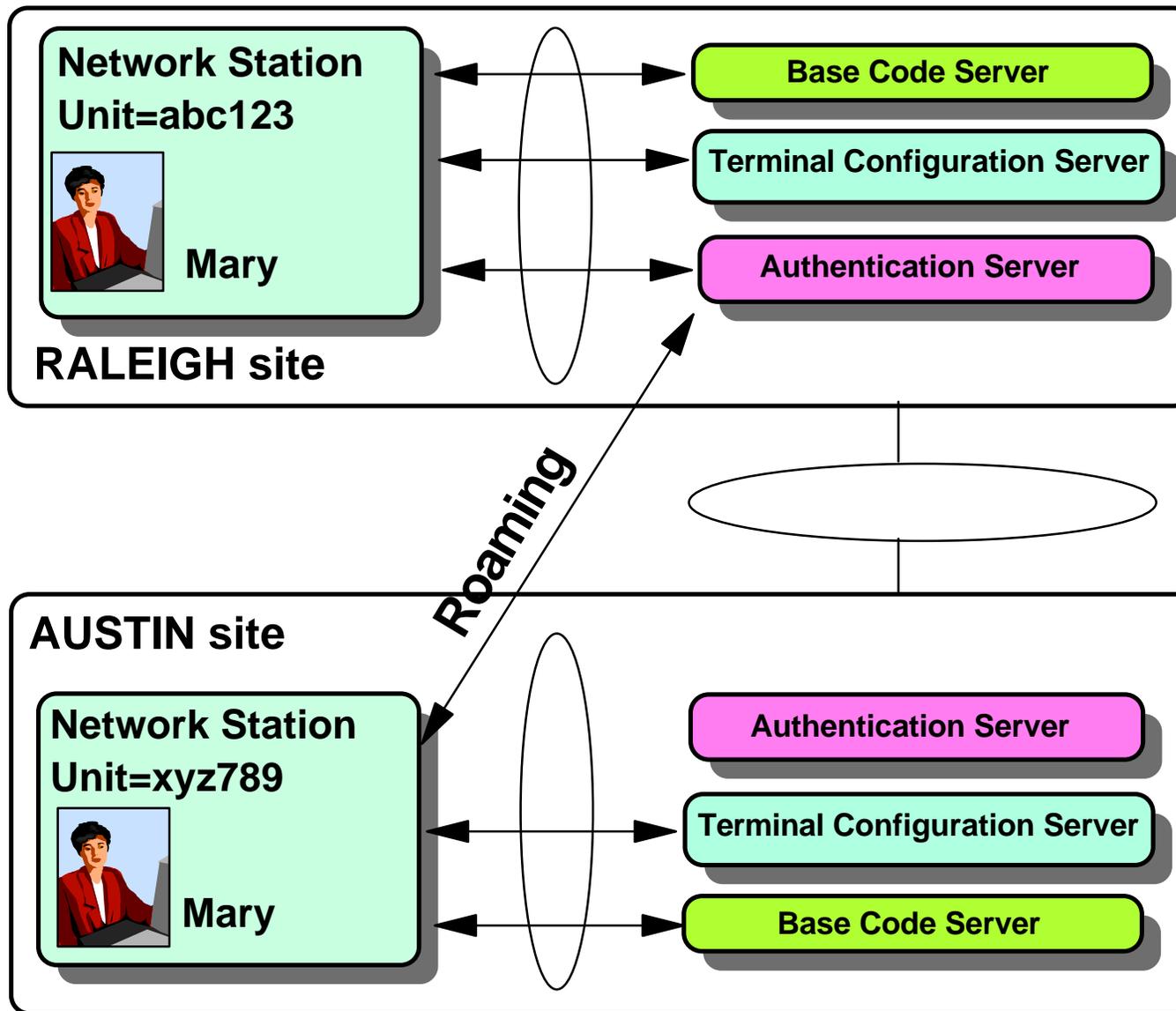
Specifically, load balancing is the ability to easily change the server from which a Network Station should boot in order to spread the boot load across many servers.

This chart illustrates the fact that a DHCP server can be configured in such a way as to serve the address of a boot server to a client station based on the subnet address of the station as an example.

This way, a group of stations, like those in group1 here, can be directed to boot from server number 1 whereas those from group 2 can be directed to boot from server2, effectively balancing the load between server1 and server2.

This is not total dynamic and on the fly load balancing, based on the workload of the server at the time that the boot takes place, but it is static kind of load balancing designed to be implemented at network design time.

What is Roaming?



- **Roaming** allows a user to specify a remote authentication server
- **Used mainly for** accessing a server "back home"
- **Benefits:**
 - Avoids defining all users on all auth. servers
 - Allows a user to retain his own desktop preferences

Notes



Roaming is the ability for a user to access the same authentication server no matter which physical Network Station he uses.

In this example, Mary, who is normally a user located in Raleigh boots her station from servers all physically located in Raleigh.

However, if she travels to Austin and needs to use a station at that site, the station she uses will boot from servers physically located in Austin, but she has the ability to roam by specifying that the authentication server to use is her own normal server back in Raleigh.

This way, Mary gets to benefit from having all her usual desktop references remain in effect despite the fact that she uses a station that is not usually her own.

The added administrative benefit is that she does not have to be issued with a userid and password on an Austin server and have her preferences files maintained in two sites.

Authentication Server - Specifying



IBM Network Station Login

Username:

Password:

Server name nsedv2r1 at (9.24.104.218)

- This is the default authentication server
- If unspecified, it is the boot server

Enter Network Address:

- To change temporarily, use the Roam function

Notes

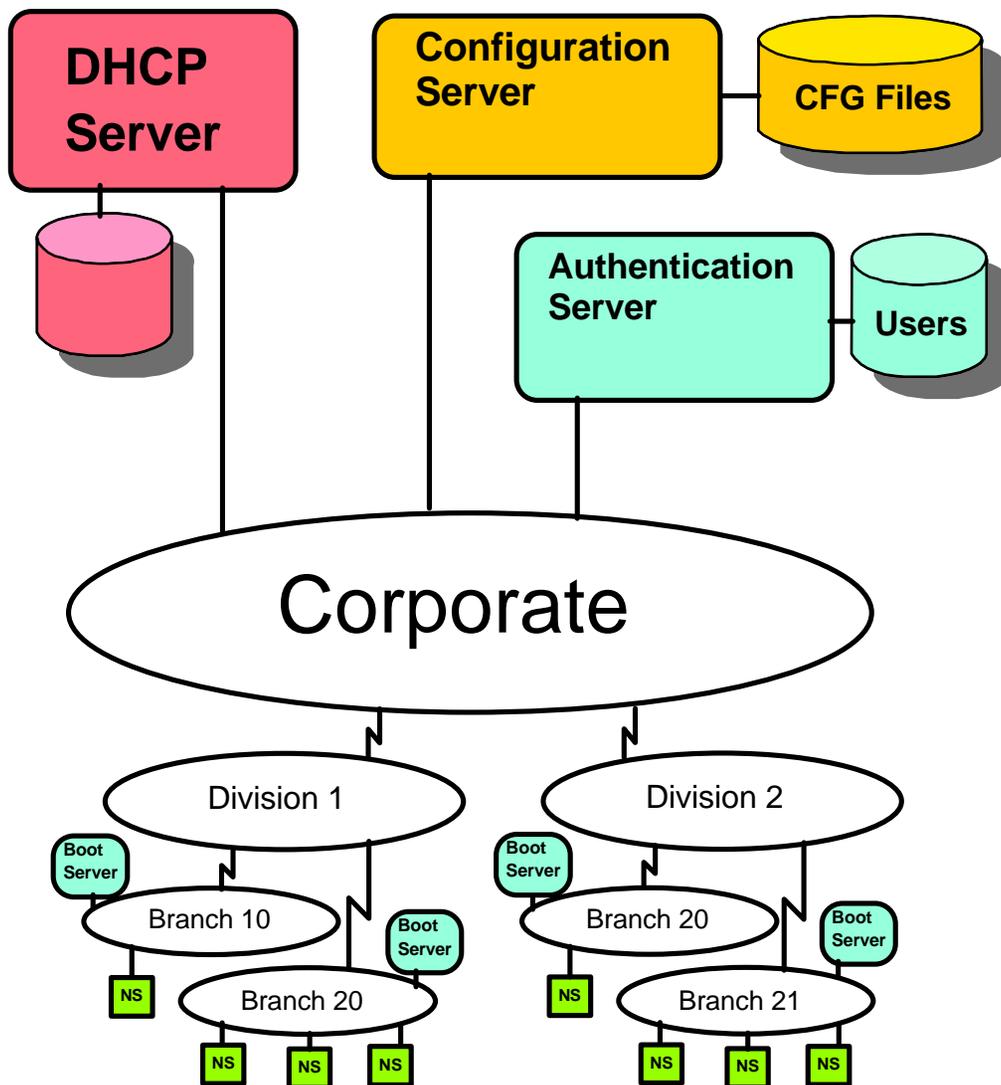


This is the panel where the user enters his name and password.

Notice that the panel identifies the server that is currently the default server for the authentication of this user. In this example it is called nsedv2r1.

Notice also the ROAM button at the bottom of the panel which is the way for the user to specify a different server for his login. This is the way that Mary can logon to her Raleigh server instead of the local Austin server.

Centralized Administration



- Very dependent on corporate policies
- Allows centralized or decentralized control of portions of the network
- Separate files for:
 - IP addresses
 - Boot servers
 - System wide configuration files
 - User names/password
 - User configuration files
- All these servers can be across a WAN but boot server should be on local LAN

Notes

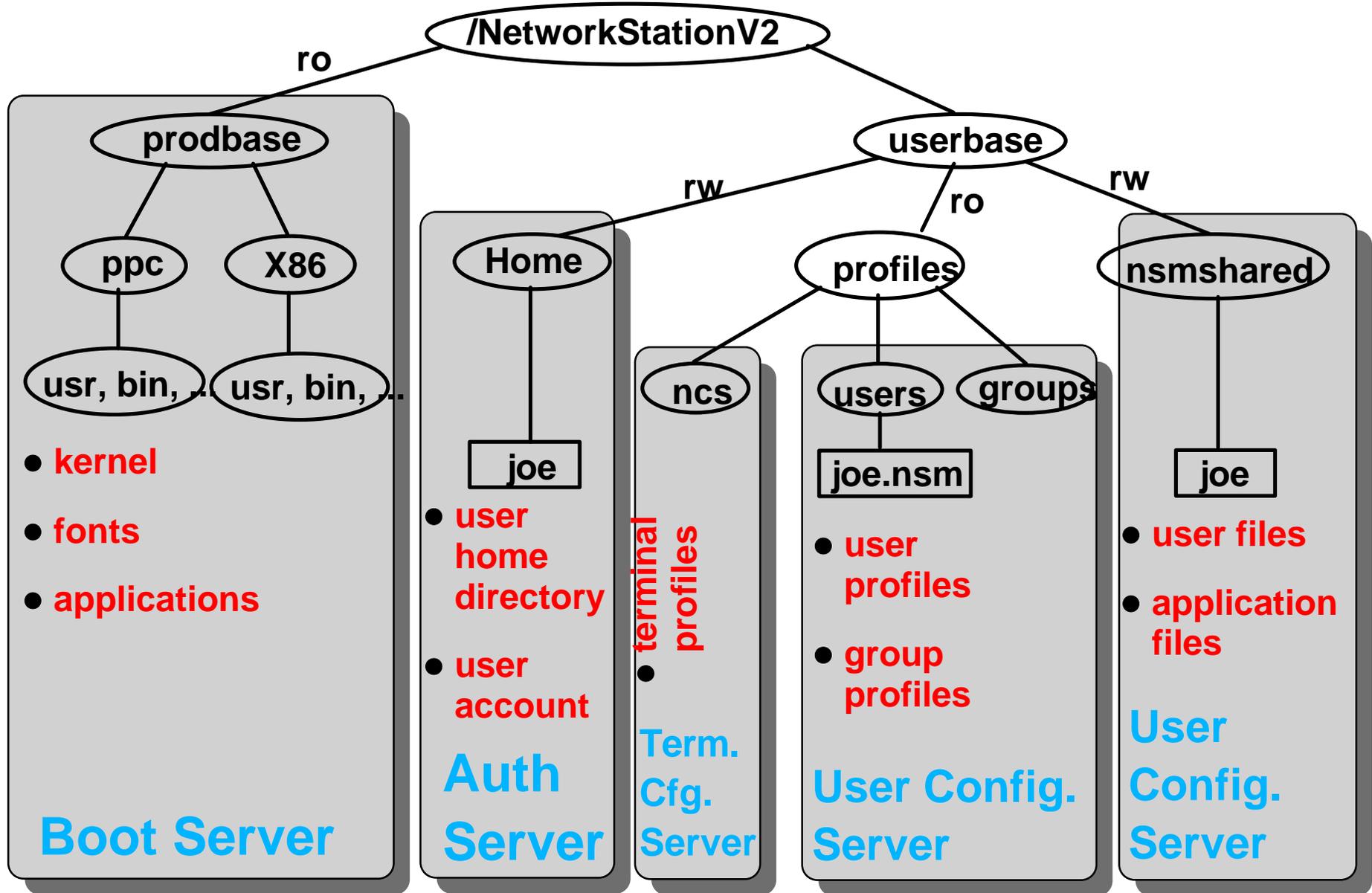


Centralized or decentralized administration is the ability to locate and control configuration files at either a centralized corporate location or in different divisions or departments of a corporation.

This is dictated most of the time by the policies of the organization in effect for network management as opposed to being dictated by technical considerations.

The ability to separate servers allows the flexibility to adapt to whatever the policies of the organization are in terms of centralized or decentralized control.

Server File System - Separation





This chart illustrates the directory structure of a server that plays the role of all the servers. At the top is a tree representation of the directory structure on which we have superimposed a list of the types files that reside in each branch and the type of logical server that these files are associated with.

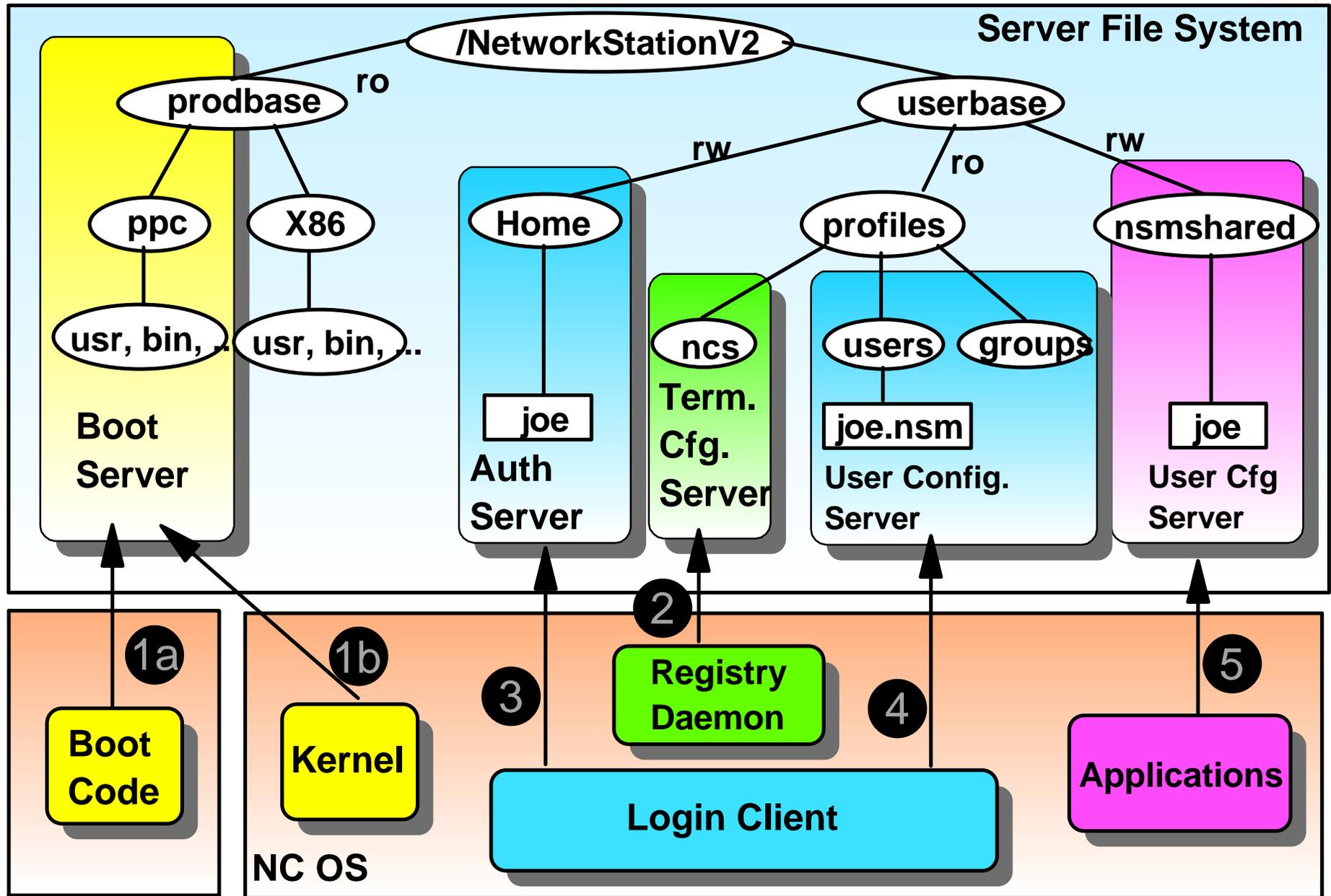
For example, the prodbase directory and its subdirectories contain the operating system files, the fonts and the applications modules and these components are normally provided by a boot server.

The userbase directory contains the configuration profiles for the terminals, groups and users.

The terminal profiles reside on a terminal configuration server and the user and group profiles on a user configuration server.

The user's home directories are normally on the authentication server and the nsmshared directories on the user's configuration server.

Server File System - Separation





Now that we know the directory structure and which components belong on which server, let us take a look at how the different servers are accessed from the Network Station during the boot process.

- As indicated by 1a in the diagram, the boot monitor code accesses the boot server to get the operating system according to the server address that was configured either in NVRAM or that was received from a DHCP server.
- As soon as the operating is loaded, it mounts its root file system on the boot server, as indicated in 1b
- The registry daemon then accesses the terminal configuration server (2) to download the terminal configuration profile and populate the registry with that information
- The login client then authenticates the user with the authentication server (3) and mounts the user's home directory
- The login client then accesses the user configuration server to retrieve the user configuration profile (4)
- Finally, applications may access the user configuration server (5) to store user preferences when they are changed by the user.

Where to Go for More information



- **Main Web Site**

- www.ibm.com/nc

- **Current Network Station Redbook**

- **SG24-5844 Network Station Manager V2R1 Guide**

- **Previous Network Station Redbooks**

- **SG24-5187 AS/400 - Techniques for Deployment in a WAN**

- **SG24-5221 Windows NT - NSM Release 3**

- **SG24-5212 Printing**

- **SG24-2127 Windows NT/WinCenter**

- **SG24-4954 S/390, SG24-2016 RS/6000, SG24-2153 AS/400**

- **Product Publications**

- **SC41-0684 Installing NSM for AS/400**

- **SC41-0685 Installing NSM for RS/6000**

- **SC41-0688 Installing NSM for Windows NT**

- **SC41-0690 Using NSM**

- **IBM Network Station Advanced Information (On the Web Site)**

Notes



Use this Web site, these redbooks and other publications for additional information.