Automization of Services Using Shell Script for Server Deployment

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Abstract

Atomizing the services using shell script for server deployment is a concept for doing the Automation for server deployment. We know that nowadays each company has its own server and intranet for doing his own work. Many companies prefer Linux based servers because it has many advantages over windows server. When a sever Administrator perform server configuration like FTP, DHCP, TELNET, DNS, HTTP they perform these task manually. If sometime sever crashes they again perform these task manually. And it is a time consuming process. So the concept is that Atomization of task for System Administrator and server deployment using Shell Script i.e. instead of doing manual configuration of severs we can do it through Scripting and once Script is created we can use it later again and again and very less time consuming as compared to manual configuration hardly 20 seconds to 30 seconds. So finally this proposed idea will resolved the problem of system administrator and reduce the work load.

Keywords: - Repository, Install Servers for Linux, Firewall Chains, NFS Server.

1. INTRODUCTION

A shell script is a computer program designed to be run by the UNIX shell, a command-line interpreter. The various dialects of shell scripts are considered to be scripting languages. Typical operations performed by shell scripts include file manipulation, program execution, and printing text we know that from smart phones to cars, supercomputers and home appliances, the Linux operating system is everywhere. It's been around since the mid '90s, and has since reached a user-base that spans industries and continents. For those

in the know, you understand that Linux is actually everywhere. It's in your phones, in your cars, in your refrigerators, your Roku devices. It runs most of the Internet, the supercomputers making scientific breakthroughs, and the world\'s stock exchanges. But before Linux became the platform to run desktops, servers, and embedded systems across the globe, it was (and still is) one of the most reliable, secure, and worry-free operating systems available. Now a day each company has its own server and intranet for doing his own work. Many companies prefer Linux based servers because it has many advantages over windows server. When a sever Administrator perform server configuration like FTP, DHCP, TELNET, DNS, HTTP they perform these task manually. If sometimes sever crashes they again perform these task manually. And it is a time consuming process.

The Linux OS is comprised of a number of pieces:

2. RELEGATED WORK

Existing System

Now days each companies has its own server and intranet for doing his own work. Many companies prefer Linux based servers because it has many advantages over windows server. When a sever Administrator perform server configuration

like FTP, DHCP, TELNET, DNS, HTTP they perform these task manually. If some time severs crashes they again perform this task manually. And it is a time consuming process.

Proposed system

Atomization of task for System Administrator and server deployment using Shell Script i.e. instead of doing manual configuration of severs we can do it through Scripting and once Script is created we can use it later again and again and very less time consuming as compared to manual configuration hardly 20 seconds to 30 seconds.

3. IMPLEMENTATION

Repository

A repository is a collection of software for a Linux distribution on a server. You grab information on the software that is available on server using the packaging tool (in Red hat it is yum or in Ubuntu it is apt-get) and download the software directly from those server. As there are many folders in the web, they need to be kept separate. Keeping the repository split from each other ensures that your system will stay safe and non-break due to incompatible software. In Red Hat Linux yum is the primary tool for getting, installing, deleting, querying, and managing Red Hat Enterprise Linux RPM software packages from official Red

Hat software repositories, as well as other third-party repositories. Yum is used in Red Hat Enterprise Linux versions 5 and later

The configuration file for yum and related utilities is located at */etc/yum.conf*. This file contains one mandatory [main] section, which allows you to set Yum options that have global effect, and can also contain one or more [*repository*] sections, which allow you to set repository-specific options. However, it is recommended to define individual repositories in new or existing .repo files in the */etc/yum.repos.d/* directory. The values you define in individual [*repository*] sections of the */etc/yum.conf* file override values set in the [main] section.

This section shows you how to:

- o set global Yum options by editing the [main] section of the */etc/yum.conf* configuration file;
- o set options for individual repositories by editing the [*repository*] sections in */etc/yum.conf* and .repo files in the */etc/yum.repos.d/* directory;
- o use Yum variables in */etc/yum.conf* and files in the */etc/yum.repos.d/* directory so that dynamic version and

architecture values are handled correctly;

- o add, enable, and disable Yum repositories on the command line; and,
- o set up your own custom Yum repository
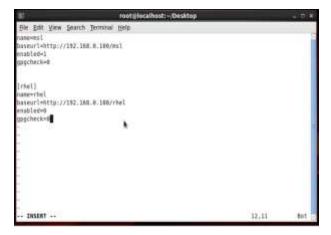
Repository Configuration File

Fig:-1 Installation of Required Packages and Configuration of Server

Whenever we want to configure a particular server on linux we have to install required packages for that server. And we have to configure the configuration file properly. Based on the different Linux distribution the method for packages installation differs. For example in redhat we have to configure yum repository which can be either local or global repository whereas in ubuntu we configured online repository.

The recommended method for Servers for Linux installation and maintenance.

4. EXPERIMENTAL RESULTS

Install Servers for Linux.

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Execute the following command as root:

yum install vsftpd   (for File Transfer Protocol sever)

yum install nfs-utils (for Network File System server)

Then configure the configuration file and start or restart the services

For example

/etc/init.d/vsftpd start   (It will start FTP server)

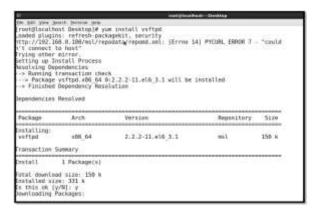/etc/init.d/nfs start (It will start NFS server)

Fig: -2 Installation and Dependencies for packages

Firewall Configuration

Iptables is a simple firewall installed on most Linux distributions.

The Linux manual page for Iptables says it is an administration tool for IPv4 packet filtering and NAT, which, in translation, means it is a tool to filter out and block

Internet traffic. Netfilter is a host-based firewall for Linux operating systems. It is included as part of the Linux distribution and it is activated by default. This firewall is controlled by the program called Iptables. Netfilter filtering take place at the kernel level, before a program can even process the data from the network packet.

Iptables Configuration File:-

The default configuration files for RHEL / CentOS / Fedora Linux are:

- /etc/sysconfig/iptables – The system scripts that activate the firewall by reading this file.

Type the following two commands to turn on/off firewall:

~] # chkconfig Iptables on

~] # serices Iptables strat

~] # services iptable stop

Firewall Chains

INPUT – The default chain is used for packets addressed to the system. Use this to open or close incoming ports (such as 80,25, and 110 etc) and ip addresses / subnet (such as 202.54.1.20/29).

OUTPUT – The default chain is used when packets are generating from the system.

Use this open or close outgoing ports and ip addresses / subnets.

FORWARD – The default chains is used when packets send through another interface. Usually used when you setup Linux as router. For example, eth0 connected to ADSL/Cable modem and eth1 is connected to local LAN. Use FORWARD chain to send and receive traffic from LAN to the Internet.

RH-Firewall-1-INPUT – This is a user-defined custom chain. It is used by the INPUT, OUTPUT and FORWARD chains.

Packet Matching Rules

1. Each packet starts at the first rule in the chain.

2. A packet proceeds until it matches a rule.

3. If a match found, then control will jump to the specified target (such as REJECT, ACCEPT, DROP).

Target Meanings

1. The target ACCEPT means allow packet.

2. The target REJECT means to drop the packet and send an error message to remote host.

3. The target DROP means drop the packet and do not send an error message to remote host or sending host.

Server Deployed Using Script

1. File Transfer Protocol (FTP server)

2. Network File System (NFS serve)

3. Dynamic Host Configuration Protocol with PXE booting (DHCP & PXE)

File Transfer Protocol (FTP Server)

FTP stands for File Transfer Protocol. It was written by **Abhay Bhushan** and published in 1971. FTP is supported by all the operating systems and browsers. It is a client-server based protocol.

How FTP works

Step a: Client connects to server on port 21.

Step b: Server responds and asks for authentication.

Step c: Client decides whether to connect passively or actively and authenticate with credentials (user name password).

Step d: If it is an active connection, server opens port 20 for data transfer and gives ftp prompt after successful authentication.

#Package for FTP server

```
~] # yum install vsftpd
```

#Configuration file

```
~] # vim /etc/vsftpd/vsftp.d
```

#for service start/stop command

```
~] # /etc/init.d/vstpd start
```

Network File System (NFS Server)

NFS (Network File System) is basically developed for sharing of files and folders between Linux/Unix sys tems by Sun Microsystems in 1980. It allows you to mount your local file systems over a network and remote hosts to interact with them as they are mounted locally on the same system. With the help of NFS, we can set up file sharing between UNIX to Linux system and Linux to UNIX system. For example NFS server could be a Linux system and UNIX could be a client. But it can't be a window system because window is not NFS compatible. The NFS server exports one or more directories to the client systems, and the client systems mount one or more of the shared directories to local directories called mount points. After the share is mounted, all I/O operations are written back to the server, and all clients notice the change as if it occurred on the local file system. NFS allows local access to remote files...

5. CONCLUSION

The project presents a methodology for Automizing the services using Shell script for server deployment. Finally we have deployed the server like File Transfer Protocol, Network File System and Dynamic Host configuration Protocol with Pre Execution Environment (PXE) successfully. We have also seen that manually configuration of these servers takes at least 30 minutes to 1 hour. But we have done it within 30 second with the help of scripting. In a sentence we can call it "**Automation for server deployment**". So finally we can use this concept in industries it will reduce the work load of the system administrator and saves time. And easily configure the server. A person who is the fresher or doesn't have deep knowledge at the starting they can also run the script and easily configure the server.

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