Project Proposal for GSoC 2015_16 for CentOS

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1. Executive summary

AUTOMATED NETWORK INSTALLATION OF LINUX SERVER (ENHANCING PXE BOOT).

2. Abstract of the summary

We know CentOS already has a PXE which is generally not recommended and comparatively slower as compared to the below approach that I jotted down below

In this approach, to install a Linux server on a PC WITHOUT ANY DVD OR ANY EXTRA BOOTABLE DRIVES, we will be only using a LAN network from 1 system to another.

3. Existing problem/Linux features we are using:

The Kickstart method of Fedora Linux installation can greatly reduce the length of time it takes to install the operating system. Time is saved not only because a network connection can be faster than using CDs, but also because it can be left unattended to install a predetermined Linux configuration.

A Kickstart server connected to an isolated wireless network dedicated to the purpose may be a good idea for data centers with hundreds of Linux servers.

A recent standard called PXE allows you to run kickstart without a CD ROM if you configure the NIC card to do a network boot from a specially configured DHCP server. The topic is beyond the scope of this document, but it may be interesting for readers with more complex projects to research this option more.

4. Solution/Advantages of Enhance PXE Boot:

This Enhances the PXE Boot functionality as a solution and has the following advantages:

1: Users with no info on how to install the LINUX server are able to install it without any settings to be done all partitioning and rest settings like password set or KDUMP setting are done automatically.

2: Less Time than DVD and any other bootable drives, through Network installation takes 1/2 the time of installation then through DVDs and BOOTABLE Drives.

3: Trivial step, (then existing CentOS PXE boot) and not replace the existing OS bootloader from the targeted system. This is one of the bottlenecks at the user's end who will install the Linux server whether our existing OS should remain or not, Through this Network Installation, it DUAL BOOT the System with Existing Server and OS.

4: With 1 System main we can install any server with many systems simultaneously without any DVDs or Bootable Drives. Not having any fear/danger, risk-free boot, and always recommended if possible.

5. Implementations & Timelines:

Phase 1: (3 Weeks)

· First, set up a create a yum server and download the desired rpm (Redhat Packet Manager).

This initial step also requires setting up multiple clients and servers of different bandwidths that will eventually help us to test & extend the final solution across different Linux machines of variable bandwidths.

· We will be using all bootable files, Kickstart files, and anaconda cfg files in making this project's initial skeleton repo. The major change for enhancing the PXE boot functionality.

· Integrating the Trivial File Transfer Protocol (TFTP) protocol, the fastest to-date protocol for transferring the booting files. This would be a significant change as the way it will be written must be machine agnostic.

Phase 2: (3 Weeks):

• We can also integrate the CLI capabilities but to make it robust we can generate an executable file or JAVA jar to make the process fully automated and error-free.
• After this, we convert it into a yum plugin that can work the whole and enhance the PXE BOOT functionality of CentOS.

Phase 3: (final phase - 3 Weeks)

· Testing the code and performance metrics generation for the final Report.
· Testing the solution on different bandwidths across clients and servers.
· Refactoring and changes adhering to the GSoC & CentOS standard and final mentor's feedback.

Past experience(s):

I've developed quite a few projects for my Academics such as the OnlineExams application portal/my website (below mentioned) and various Academic projects but now I find it interesting and developed a passion for building Linux application clients/servers. Thus, I come up with this project proposal, Looking forward to your feedback and response!

About me:

I am a 2nd-year student at Jaypee Institute of Information Technology (aka JIIT) based out of INDIA. I learned and worked on LINUX (Red Hat) stuff for more than a year now then routed my focus to deep dive about Linux and its networking on the INTERNET. This is not part of my Academics.

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