

Pipeline Program-Technical Self-Study Guide

Thank you for your interest in InMotion Hosting and our Technical Support positions. Our technical support associates operate in a call center environment, assisting customers over phone, email, and chat with their web hosting needs. If you have found yourself reading this guide you are interested in learning more about the Web Hosting and Linux technologies needed to be successful in our environment.

The information below is meant to serve as a self-study guide to prepare you for the hosting industry operating in a Linux environment. To advance through our interview process, it is key to understand the industry technologies and platforms introduced throughout the guide.

At the end of this guide you will also find a quiz, that will assist you in determining areas that further self-study may be needed. An answer key follows the quiz for self grading.

Web Hosting:

The World Wide Web is an exhaustive collection of web sites hosted on servers all over the world. The company that provides and maintains the web server where the web site's html files, graphics, etc. reside is known as the web host. Web hosting clients simply upload their web sites to a shared (or dedicated) web server, which the host maintains to ensure a constant, fast connection to the Internet.

The broad concept of hosting can be reviewed at:

<http://en.wikipedia.org/wiki/Webhosting>

At InMotion we concentrate our services around the following three elements; shared servers, virtual private servers, and dedicated servers.

Shared Servers:

InMotion Hosting's Personal and Business class hosting accounts provide an affordable solution for individuals or businesses setting up an Internet presence. A shared server houses hundreds of accounts and all of these accounts share a Central Processing Unit(CPU), Memory, Bandwidth and Disk Space.

Shared Servers are like dorm rooms. While you have your own personal space, you can't have the music turned too loud, stay in the shower too long, take other people's food, or do whatever you please. If you find yourself not getting along with your dorm mates or needing more freedom to do what you please, then it may be time for you to move away from the shared hosting platform.

VPS (V-Dedicated) Servers :

Virtual Private Servers or VPS is still a shared environment, but provides for more independence. While VPS customers are still sharing a server with others, there are fewer people on the server, and they have some resources that are dedicated to their accounts (such as memory). There are still restrictions regarding the amount of CPU, Bandwidth, and Disk Space that are utilized, but more flexibility than on the shared platform. The users on these servers are privileged to have their own installations of Linux, Apache, MySQL, etc.

VPS are like apartments. You can take a long shower, eat anything in the refrigerator, have an assigned parking spot, and can do just about what you please as long as you're not disturbing your neighbor. While there are some things the super will fix, you are responsible for a fair amount of your own maintenance.

Dedicated Servers :

Dedicated Servers provide complete independence. As the name implies, the server is dedicated to you and your account only. You get to do whatever you want and you don't have to worry about disturbing other customers. You can use as much hard drive space and CPU as the machine can handle.

Dedicated Servers are like a house; on a big hill; in the middle of the field. You don't bother any one else because you are away from everyone else. The space is completely yours, you are free to hold parties, and do what you want, within the limits of the law. You are responsible for your own maintenance and can install your own installations of Linux, Apache, MySQL, etc.

cPanel:

InMotion servers use the proprietary software cPanel which acts as a front end and back end to server management. cPanel manages most major services on the server including MySQL, Apache/PHP, and Courier IMAP. Cpanel is of the most popular tools in the field. You should be well acquainted with it. You can read over the features and use a demo at the following links:

Resources:

<http://etwiki.cpanel.net/twiki/bin/view/AllDocumentation/CpanelDocs/WebHome>
<http://cpanel.com/products/cpanelwhm/try-demo.html>

Email:

All of our accounts come with email services. Much of our correspondence with customers is related to setup, configuration and management of these services. While we have many articles and self help content (such as <https://support.inmotionhosting.com/cgi-bin/kb.cgi?do=read&id=97>) we regularly troubleshoot issues with common email and webmail clients. Familiarity with these email client applications is encouraged.

Provided below are some resources explaining the foundation of email technology. You should know the difference between POP, IMAP, and SMTP along with the pros and cons of each.

What is POP?

http://en.wikipedia.org/wiki/Post_Office_Protocol

What is IMAP?

http://en.wikipedia.org/wiki/Internet_Message_Access_Protocol

Pros and Cons:

Advantages of POP - POP is useful for keeping mailbox sizes low and because of its fairly simple transaction method (login, download, log out) it is very quick.

Disadvantages of POP - Due to the fact that POP will download all messages and remove them from the server, if someone has an email account configured as POP and that system crashes, all email will be lost. Note that it is possible to use POP and leave messages on the server, however if these messages are not removed it will fill the server, possibly causing issues if one has quotas set or the person attempts to use webmail.

Advantages to IMAP - IMAP is very good for people who need to the ability to check their email from many locations and have their data preserved on the server. Due to how it syncs, one can also organize the email on the server itself, as opposed to organizing it solely on the client software. Additionally, if one system that syncs with this account crashes, the emails will be preserved on the server.

Disadvantages to IMAP - As a result of the fact that IMAP needs to check all folders, the process of checking for new messages takes longer and can take some time if the mailbox is very large. If the amount of data an IMAP client is pulling down is too large, a customer can risk action needing to be taken by System Administration, as the large file transfer can bog down a server.

What is SMTP?

http://en.wikipedia.org/wiki/Simple_Mail_Transfer_Protocol

Port 25 Blocking:

http://en.wikipedia.org/wiki/Anti-spam_techniques#Port_25_blocking

File Transfer Protocol:

FTP is the most common way for users to upload and download files. Just like http is the connection protocol for web pages to be transmitted, FTP is the connection protocol for the transferring of files from one computer using an FTP client to a FTP Server. You should know what FTP is and what information a customer needs to connect with it.

Resources:

<http://support.inmotionhosting.com/cgi-bin/kb.cgi?do=read&id=102>

<http://en.wikipedia.org/wiki/FTP>

Domain Names:

Domain registering, transferring and management comes hand in hand with hosting. You should know the rules and regulations relating to domain registrations, transferring and the whois record.

Resources:

http://en.wikipedia.org/wiki/Domain_name_registrar

http://en.wikipedia.org/wiki/Domain_name

<http://en.wikipedia.org/wiki/Whois>

Domain Name System(DNS):

DNS is a very important part of web hosting. While in many cases we aren't going to have a customer ask us a direct question about DNS, checking DNS settings is a very important step in troubleshooting many issues. DNS can be complex, which means we need to understand it enough not only to solve a problem but also to educate the customer. You should know generally how it works, the function of the name server and the different types of DNS records.

Resources:

<http://en.wikipedia.org/wiki/DNS>

http://en.wikipedia.org/wiki/Name_server

http://en.wikipedia.org/wiki/List_of_DNS_record_types

PHP and MySQL:

Development and programming experience is not a requirement for working in hosting. The majority of websites we host however, use these technologies. You should be familiar with what they are and the role they play in web applications.

Resources:

<http://en.wikipedia.org/wiki/MySQL>

<http://en.wikipedia.org/wiki/Php>

Linux

All InMotion servers run Linux. Our “flavor” of Linux is CentOS which is an enterprise Linux distribution geared for servers. Command line Linux is the foundation for much of the troubleshooting that you will do in your daily tasks. While experience in command line is not a requirement for our 1st level technical positions, having knowledge and experience is a plus.

We recommend installing Linux on a system to become comfortable with both command line and the GUI. If you currently have a computer that you can dedicate to this, we would encourage you to format the hard drive and start from scratch installing debian.

Packages and instructions and be found here:

<http://www.debian.org/releases/stable/installmanual>

If you currently have windows installed and would like to dual boot windows/Linux then using wubi to install Ubuntu may be a better option. Packages and instructions and be found here:

<http://www.ubuntu.com/download/ubuntu/windows-installer>

Linux Shell:

Most of your work in hosting will be completed in a command line prompt. The following seven short guides introduces you to the most simplistic of these functions. Knowing how to navigate in a Linux file system, where key files are stored, the ownership of those files, and permissions that restrict the files/users access should be your first focus. If you are not already familiar with these concepts then please read over these carefully.

Resources:

What is "the shell"?

<http://linuxcommand.org/lts0010.php>

Navigation in Linux

<http://linuxcommand.org/lts0020.php>

Looking Around

<http://linuxcommand.org/lts0030.php>

A Guided Tour / File Structure

<http://linuxcommand.org/lts0040.php>

Manipulating Files

<http://linuxcommand.org/lts0050.php>

I/O Redirection

<http://linuxcommand.org/lts0060.php>

Permissions

<http://linuxcommand.org/lts0070.php>

Permissions/Ownership

In any hosting server it is important that only the correct user has access to the files on the server and can only access them in the ways the administrator wants. Therefore, understanding permissions and file ownership is critical. In the link above you scratched the surface. The following links will let you dive in a little deeper:

Resources:

http://en.wikipedia.org/wiki/Filesystem_permissions

<http://en.wikipedia.org/wiki/Chown>

http://en.wikipedia.org/wiki/Root_user

<http://en.wikipedia.org/wiki/Sudo>

Package Management

There are many ways to install applications on a Linux computer. One of the most common ways to do this is with a package manager. If you install Ubuntu then you would generally use apt-get or their built in Software Center. On our servers using CentOS however, you would use RPM or YUM to install applications. A general understanding of these tools would be helpful. Below are some basic overviews for review.

Resources:

<https://help.ubuntu.com/8.04/serverguide/C/apt-get.html>

<http://www.ibm.com/developerworks/linux/library/l-lpic1-v3-102-5/?ca=drs->

man Pages

When learning command line Linux your best friend is the “man” command. If you type man followed by the command you wish to learn more about then it will open a “Manual” for that command. You can use “Page Up and “Page Down” to navigate and Ctrl + Z to close the man page. For more information on the man command along with some history you can read the following:

Resource:

http://en.wikipedia.org/wiki/Man_pages

Advanced Topics:

Installing LAMP (Linux, Apache, MySQL and PHP) on our servers is done by our systems team. A great deal of knowledge can be found in setting up and configuring these softwares on your own.

If you have installed Ubuntu or Debian the following instructions will assist you in getting started with installing LAMP:

Resource:

<http://wiki.debian.org/LaMp>

Another challenge that you may wish to undertake to gain a better understanding of applications installed on Linux, is to compile a program from source. For a better understanding of what this means please read the following:

Resource:

<http://luv.asn.au/overheads/compile.html>

Advanced Technical Skills

If you want to demonstrate you really *get* Linux you should aim to install a properly difficult distribution. Examples would be:

ArchLinux: <http://www.archlinux.org>

Slackware: <http://www.slackware.com>

Gentoo: <http://www.gentoo.org>

These two distributions are much more difficult to install but conversely are exceptionally customizable and a successful, fully working installation of this (including the installation of a Graphical User Interface) is a good demonstration of strong proficiency with Linux. If you are really up to a challenge you can install OpenBSD or FreeBSD. While these are not Linux, they are UNIX which is pretty much the same and exceptionally difficult to install and configure.

FreeBSD: <http://www.freebsd.org>

OpenBSD: <http://www.openbsd.org>

You should also take care to naturally backup anything important you have on the computer with these running, it's easy to get it wrong and need to start from scratch, losing all the data.

Now then if you don't want to be that outgoing with your Linux installs you can also look at installing some other server software onto your system:

Ruby on Rails: <http://www.rubyonrails.org> (for serving Ruby scripts)

Node.js: <http://www.nodejs.org>

Django: <https://www.djangoproject.com/> (if you use Python)

If you can get some sort of DNS set up you should also consider setting up DNS routing to your system if you set it up as a server.

Self Study Quiz

1.) If I want to go up one directory from my current location, what would I type?

- a) `cd ./`
- b) `cd ..`
- c) `chdir ..`
- d) `pwd ..`

2.) If I want to change from my current directory to a directory called "blog", what do I type?

- a) `cd blog`
- b) `mv blog`
- c) `pwd blog`
- d) `chdir blog`

3.) Look at the following output:

```
/home/imhtra5/public_html-bash-3.2$
```

What command was entered to cause this output?

- a) `swd`
- b) `cd`
- c) `ls`
- d) `pwd`

4.) Let's say I want to clear my screen of all text on it. What do I type?

- a) `clearscreen`
- b) `clear`
- c) `wipe`
- d) `cls`

5.) You have a small file (three lines) that you want to quickly look at, but make no modifications to, you will use?

- a) `nano`
- b) `vim`

- c) cat
- d) more

6.) You want to see the start date of a log, which is very long, without pulling up the whole file, you will run...

- a) tail
- b) head
- c) less
- d) more

7.) You have a large text file you want to read through, and possibly go back and reference parts you looked at earlier, but make no changes, you will use...

- a) less
- b) cat
- c) head
- d) more

8.) You have a file you want to modify, what should you use?

- a) less
- b) nano
- c) cat
- d) more

9.) You want to look at the last ten lines of a file to see what the file ends with, you will type...

- a) end
- b) cat
- c) tail
- d) more

10.) What does an A record specify?

- a) What name server is being used.
- b) What IP address a host name goes to.
- c) It shows what the primary IP for a server is.
- d) It will always show where the website traffic goes.

11.) What does the MX Records specify?

- a) The MX Record specifies what IP address mail will go to.
- b) It is the host name that can be used to send mail.
- c) The host name that mail will be routed to when delivered to an address at a particular domain.
- d) It is the name of the place that mail will go to for spam checks before being routed back to our servers.

12.) If I wanted to see the "Manual" page for the grep command I would type the following:

- a) grep man
- b) man grep
- c) grep -help
- d) help -man

13.) If I were to search for the MySQL package with yum what command would I use?

- a) yum MySQL -search
- b) yum --search MySQL
- c) yum search MySQL
- d) yum MySQL search

14.) Say I found the package I was looking for named "MySQL-server.x86_64" how would I install this package?

- a) yum MySQL -install
- b) yum --install MySQL
- c) yum install MySQL
- d) install MySQL yum

15.) Someone set their index.html page to 777 permissions. How would I set them back to 755?

- a) chmod 755 index.html
- b) setperms 755 index.html
- c) chmod index.html 755
- d) setperms index.html 755

16.) In our analogy VPS hosting is like:

- a) a dorm
- b) a apartment
- c) a house
- d) a bunk bed

17.) After you create a domain you must wait 60 days before transferring it to another register.

- a) True.
- b) False, you must wait 30 days.
- c) False, you can transfer a domain whenever you want.
- d) True but you may have to pay a fee to the current register.

18.) Many Internet Service Providers block port 25 in order to:

- a) Force people to use their ISP's mail servers.

- b) Prevent people from running mail servers/relays on the ISP's IP address
- c) Force all sent emails through one port to make it easier to track
- d) Stop people from using old mail sending protocols.

19.) IMAP downloads the email from their server to your local computer and deletes them off the server.

- a) True.
- b) True by default, however there is an option in most clients to leave a copy on the server.
- c) False.
- d) False, IMAP is used to send email not receive.

21.) Who is the registrar for the domain inmotionhosting.com?

- a) Inmotion Hosting
- b) MelbourneIT
- c) Godaddy
- d) None of the above

22.) What is the default port number for FTP?

- a) 25
- b) 21
- c) 22
- d) 587

Self Study Quiz- Answer Key

- 1.) B
- 2.) A
- 3.) D
- 4.) B
- 5.) C
- 6.) B
- 7.) A
- 8.) B
- 9.) C
- 10.) B
- 11.) C
- 12.) B
- 13.) C
- 14.) C
- 15.) A
- 16.) B
- 17.) A
- 18.) B
- 19.) C
- 20.) C
- 21.) D
- 22.) B