



MINISTRY OF EDUCATION
TVET Federal Agency
Ethiopia

ICT543 - System and Network Administration

Information Sheet 1.2: Workgroup, Domain and Server Management

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Master of Science in ICT Teachers Education

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Learning Objectives: At the end of the topic, the students will be able to:

- Learn the foundation of network and system administration
- Know the scope, duties and responsibilities of network and system administrator
- Know the network operation system that support system administration
- Distinguish the support of each network operating system

Host management

- Critical hardware needs to be **protected from accidental and malicious damage.**
- Not all organizations have the luxury of choosing ideal conditions for their equipment, but all organizations **could dedicate a room or two to server equipment.**
- Any server room should have, at the very least, a **lockable door**, probably cooling or ventilation equipment to prevent the temperature from rising above about **20 degrees Celsius and some kind of anti-theft protection.**

Computer startup and shutdown


- With any kind of **mechanical device with moving parts**, there has to be a procedure for shutting it down.
- One does not shut **down any machine in the middle of a crucial operation**,
- With a **multitasking operating system**, the problem is that it is never possible to predict when the system will **be performing a crucial operation** in the background

Partitioning

- Disks can be divided up into partitions. Partitions physically **divide the disk surface** into separate areas which do not overlap
- Disks are partitioned so that files with **separate purposes cannot be allowed to spill over** into one another's space.
- .If partitions overlap, data will be **destroyed and the system will sooner or later get into deep trouble**, as it assumes that the overlapping area can be used legitimately for two separate purposes
- Linux Partition: **/dev directory, e.g. /etc/sd1a, /etc/sd1b, /dev/dsk/c0t0d0s0 etc.**

Formatting and building filesystems

- Disk formatting is a way of **organizing** and finding a way around the surface of a disk
- On a disk surface, it makes sense to **divide up the available space** into sectors or blocks.
- The way in which different operating systems choose to do this differs, and thus one kind of formatting is incompatible with another.

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- The nomenclature of formatting is confused by differing cultures and technologies. Modern hard disks have intelligent controllers which can map out the disk surface independently of the operating system which is controlling them. This means that there is a kind of factory formatting which is inherent to the type of disk.

Installation of the Server operating system

- Today, installing a new machine is a simple affair. The operating system comes on some removable medium (like a CD or DVD) that is inserted into the player and booted. One then answers a few questions and the installation is done.

Factors:

- We must decide a name for each machine.
- • We need an unused Internet address for each.
- • We must decide how much virtual memory (swap) space to allocate.
- • We need to know the local netmask and domain name.
- • We need to know the local timezone.
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Dual boot

- There are many advantages to having both **Windows and GNU/Linux** (plus any other operating systems you might like) on the same PC.
- This is now easily achieved with the installation procedures provided by these two operating systems. It means, however, that we need to be able to **choose the operating system** from a menu at boot time.
- However, that it is highly advisable to install Windows before installing GNU/Linux, since the latter tends to have more respect for the former than vice versa! GNU/Linux can preserve an existing Windows partition, and even repartition the disk appropriately.

Cloning systems

- A system administrator usually has to **install ten, twenty or even a hundred machines** at a time.
- He or she would also like them to be as far as possible the same, so that users will always know what to expect

Cloning systems

- A few **Linux-like operating systems** provide a solution to this using package templates so that the installation procedure becomes standardized.
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- • The hard disks of one machine can be physically **copied and then the hostname and IP address** can be edited afterwards.
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- • All software can be placed on one host and shared using NFS, or another shared filesystem

Free and proprietary software

- Unlike most other popular operating systems, **Linux grew up around people who wrote their own software** rather than relying on off-the-shelf products.
- The Internet now contains **gigabytes of software** for Linux systems which cost nothing

Software installation

- We also need to install third party software in order to get useful work out of the host.
- However, third party software originates from a different source than the operating system; it is often bound by license agreements and it needs to be distributed around the network.

LINUX:

Method 1: By getting the application over the internet

```
host# sudo apt-get install vsftpd
```

Method 2: By Downloading the package (.deb) and install in manually

```
host# sudo dpkg -I postfix.deb
```

Software installation

- Software should be separated from the operating system's installed files, so that the **OS can be reinstalled or upgraded** without ruining a software installation.
- Linux-like operating systems have a **naming convention**. **Compiled software can be collected in a special area**, with a bin directory and a lib directory so that binaries and libraries conform to the usual Linux conventions.
- Home-grown files and programs which are special to our own particular site can be kept **separate from files** which could be used anywhere.

Workgroup Vs. Domain

- A **workgroup** is a type of peer-to-peer network. It is essentially the name for a Windows based **peer-to-peer** computer network
- A **domain**, on the other hand, is a **client/server** network in which the security and resource management is centralized

Workgroup Vs. Domain

- Domains and workgroups are two different methods for organizing computers in a network. The main difference between the two is in the **manner they operate, chiefly how the computers and other resources** on the networks are managed.
- To create a domain, you have to **designate a server computer** as the domain controller and configure user accounts. Workgroups are much easier to administer.
- In fact, you don't have to do anything to create a workgroup except decide on the name you want to use. Although you can have as many workgroups as you want on a **peer-to-peer network**, most networks have just one workgroup.

Difference between workgroup and domain

	Workgroup	Domain
Network type	Peer-to-peer Windows computer network	Client/server network
Log in	User needs to have separate log in id and password at each workstation	User can log on at any workstation via their account and access domain resources
Workstations	Computers are limited to maximum 10	There can be up to 2000 computers
Administrator	Each user controls the resources and security locally on their PC's	One administrator to administer the domain and its users and resources.
Location	All computers must be on the same local network or subnet.	The computers can be on different local networks, i.e. anywhere in the world.
Computer's settings	Each user controls the settings on their own computer. No central settings.	One can make only limited changes to a computer's settings because network administrators often want to ensure consistency among computers.
Changes	Each computer must be changed manually or once changed must be transferred to each computer.	Changes made to one are automatically made to all computers

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Thank You!!!