



RAMA UNIVERSITY

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FACULTY OF ENGINEERING & TECHNOLOGY

BCA-302 Computer Networks

Lecture-36

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OUTLINE

➤ **TROUBLESHOOTING YOUR NETWORK**

➤ **TROUBLESHOOTING TECHNIQUES**

➤ **APPROACHES TO TROUBLESHOOTING**

➤ **UTILITIES USED TO VERIFY TCP/IP CONNECTIVITY**

➤ **THE PING COMMAND**

➤ **THE TRACERT COMMAND**



TROUBLESHOOTING YOUR NETWORK

1) Step 1 – Gather information

- 1) Question the individual who has the problem
 - 1) end user experiences
 - 2) observation by the user
 - 3) error messages

2) Step 2 – Collect information about affected equipment

- 1) look at log files
- 2) changes
- 3) warranty information
- 4) network monitoring tools
 - 1) used for larger networks



TROUBLESHOOTING TECHNIQUES

Use OSI layered approach

Top-down

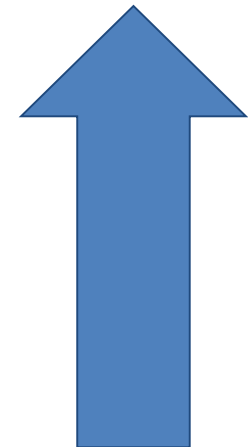
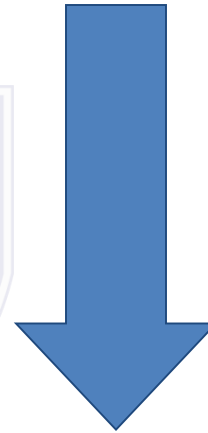
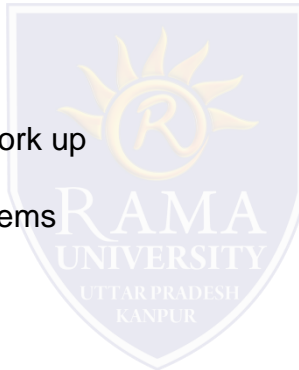
- start at application layer
- work down until faulty error occurs

Bottom-up

- start at physical layer and work up
- hardware, cabling, etc problems
- more complex

Divide and Conquer

- begins in the middle layers
- based on experience



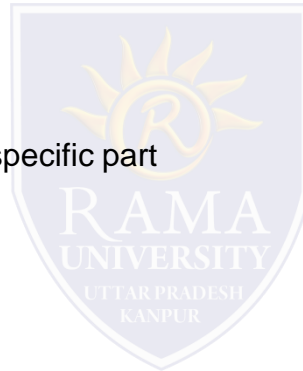
APPROACHES TO TROUBLESHOOTING

Trial and Error

- relies on an individual's knowledge
- educated guess based on past experiences
- if it doesn't work, try, try again

Substitution

- problem assumed to be caused by a specific part
- the solution – replace the part
- used for inexpensive items
 - cables, etc



UTILITIES USED TO VERIFY TCP/IP CONNECTIVITY

Use CLI

IP Config

- checks to make sure correct IP and subnet mask

Ping

- verifies connectivity to other hosts

Tracert

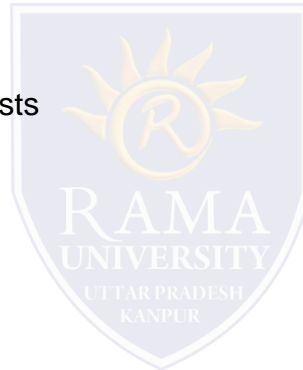
- traces the route of the packet

Netstat

- show what networks are active

Nslookup

- asks the name server for information



THE PING COMMAND

- Used to determine whether or not the host is reachable
- Can be used with either an IP address or name of destination

▪**Echo request** – ping sent

▪**Echo reply** – destination host responds

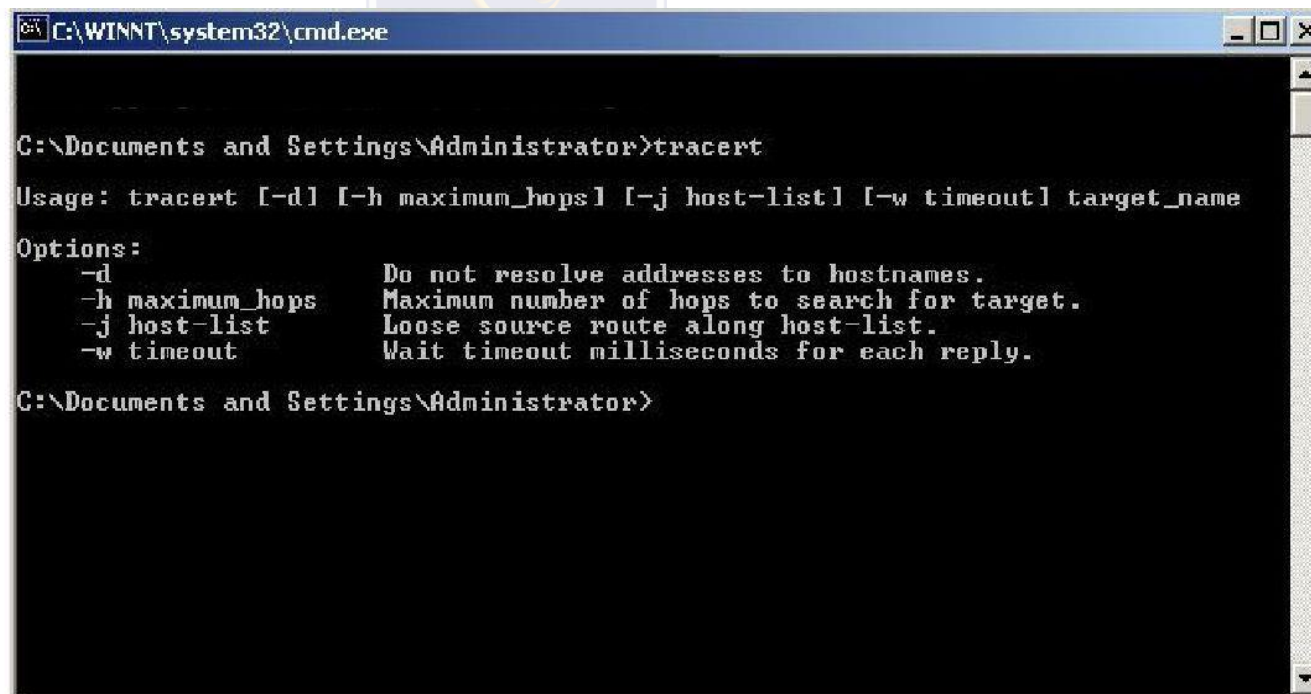
▪**Ping issues**

1. able to ping both IP and name, but unable to access application
2. problem likely at destination host
3. Unable to ping both IP and name
4. network connectivity problem
5. if able to ping default gateway, problem not at local level



THE TRACERT COMMAND

- shows each hop along the way
 - tells how long it takes for the packet to be sent and get a response (round trip time)
 - 30 hops – network/user deemed unreachable
1. default settings
 2. can be changed



```
C:\WINNT\system32\cmd.exe

C:\Documents and Settings\Administrator>tracert
Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout] target_name
Options:
  -d          Do not resolve addresses to hostnames.
  -h maximum_hops  Maximum number of hops to search for target.
  -j host-list  Loose source route along host-list.
  -w timeout    Wait timeout milliseconds for each reply.

C:\Documents and Settings\Administrator>
```


Multiple Choice Question

MUTIPLE CHOICE QUESTIONS:

Sr no	Question	Option A	Option B	OptionC	OptionD
1	Which one of the following is not used to generate dynamic web pages?	PHP	ASP.NET	JSP	CSS
2	The term that is used to place packet in its route to its destination is called _____	Delayed	Urgent	Forwarding	Delivering
3	A second technique to reduce routing table and simplify searching process is called _____	Network-Specific Method	Network-Specific Motion	Network-Specific Maintaining	Network-Specific Membership
4	Next-Hop Method is used to reduce contents of a _____	Revolving table	Rotating Table	Routing Table	Re-allocate table
5	Several techniques can make size of routing table manageable and also handle issues such as _____	Maturity	Error reporting	Tunneling	Security

REFERENCES

- <http://www.engppt.com/2009/12/networking-fourzan-ppt-slides.html>

