LE 517
Data Communications and Networks

Week 14:- Additional Network Protocols

By

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Additional Network Protocols

- TCP Applications
  - Client-Server Model
  - Virtual Terminal
  - TELNET
  - File Transfer
  - SNMP
- Integrated Services Digital Network (ISDN)
  - ISDN Architecture
  - ISDN Protocols

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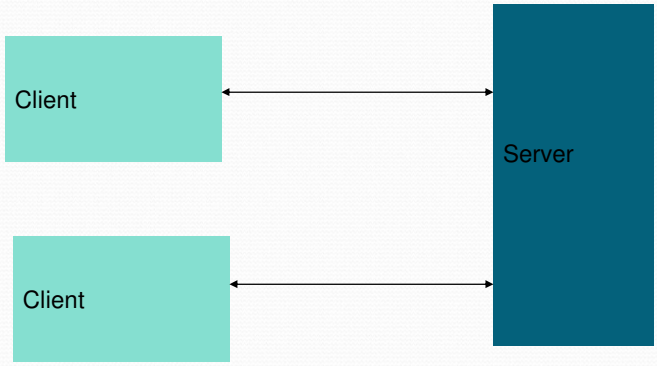
Client-Server Model



Client-Server Model

- Application
  - File Server
  - Print Server
  - Communication Server
  - ...

Client-Server Model

- RPC (Remote Procedure Call)
  - Client & Server could be different computers
  - Client must pass all parameter
  - Server organize the request

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Virtual Terminal

- Refer to Client-Server model
  - Application/Data/Software to update information on server.
  - This should be real-time or transaction based?
  - E.g. edit text file on server
    - Every typing must be update on server?
    - It could be wait until finish and save the complete file.
    - Alike the accounting, database and etc.

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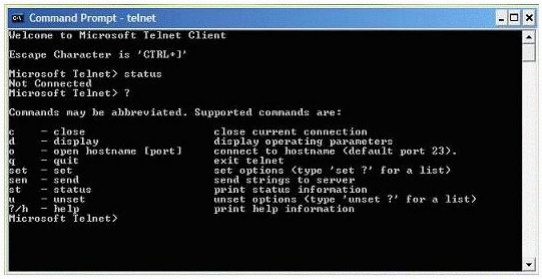
TELNET

- TELNET is virtual terminal protocol which designed for TCP/IP



TELNET

- Please refer WAN lecture for architecture.

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File Transfer

- FTP protocol

`bye`	*to exit the FTP environment (same as `quit`)*	
`cd`	*to change directory on the remote machine*	
`close`	*to terminate a connection with another computer*	
	`close brubeck`	closes the current FTP connection with `brubeck`, but still leaves you within the FTP environment
`delete`	*to delete (remove) a file in the current remote directory (same as `rm` in UNIX)*	
`get`	*to copy one file from the remote machine to the local machine*	
	`get ABC DEF`	copies file `ABC` in the current remote directory to (or on top of) a file named `DEF` in your current local directory.
	`get ABC`	copies file `ABC` in the current remote directory to (or on top of) a file with the same name, `ABC`, in your current local directory.
`help`	*to request a list of all available FTP commands*	
`lcd`	*to change directory on your local machine (same as UNIX `cd`)*	
`ls`	*to list the names of the files in the current remote directory*	
`mkdir`	*to make a new directory within the current remote directory*	
`mget`	*to copy multiple files from the remote machine to the local machine; you are prompted for a y/n answer before transferring each file*	
	`mget *`	copies all the files in the current remote directory to your current local directory, using the same filenames. Notice the use of the wild card character, *.
`mput`	*to copy multiple files from the local machine to the remote machine; you are prompted for a y/n answer before transferring each file*	
`open`	*to open a connection with another computer*	
	`open brubeck`	opens a new FTP connection with `brubeck`; you must enter a username and password for a `brubeck` account (unless it is to be an anonymous connection).
`put`	*to copy one file from the local machine to the remote machine*	
`pwd`	*to find out the pathname of the current directory on the remote machine*	
`quit`	*to exit the FTP environment (same as `bye`)*	
`rmdir`	*to to remove (delete) a directory in the current remote directory*	

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SNMP

- SNMP (Simple Network Management Protocol)
  - Management protocol
  - To ensure that device is working well
  - Locating the problem and adjusting
  - It operates on top of UDP

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ISDN Architecture

- ISDN (Integrated Service Digital Network)
  - A digital communication
    - B channel – 64 kbps
    - D channel – 16 kbps
  - E.g. 2B+D :- B channel for data or voice and D for control

ISDN Architecture

- T1 using 23B + D
  - 23 B channel
  - 1 D Channel
- European standard 30B + D
  - 30 B Channel
  - 1 D channel
  - 2.048 Mbps

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ISDN Protocols

- ISDN basic service which support
  - Telephone
  - Fax
  - PC
  - Video Conference
  - Control
  - Alarm system
  - Water meter
  - Electric meter
  - ....

ISDN Protocols

- In-band Signaling
  - E.g. dial number from telephone is sent via D channel
- Out-of-band Signaling
  - E.g. transmitting voice or data over B channel
  - In B channel, treating all bits as pure data.
  - Different protocol will be transparent to ISDN

Reference

- http://www.cs.colostate.edu/helpdocs/ftp.html

Q & A