

Computer Network

Lecture-48

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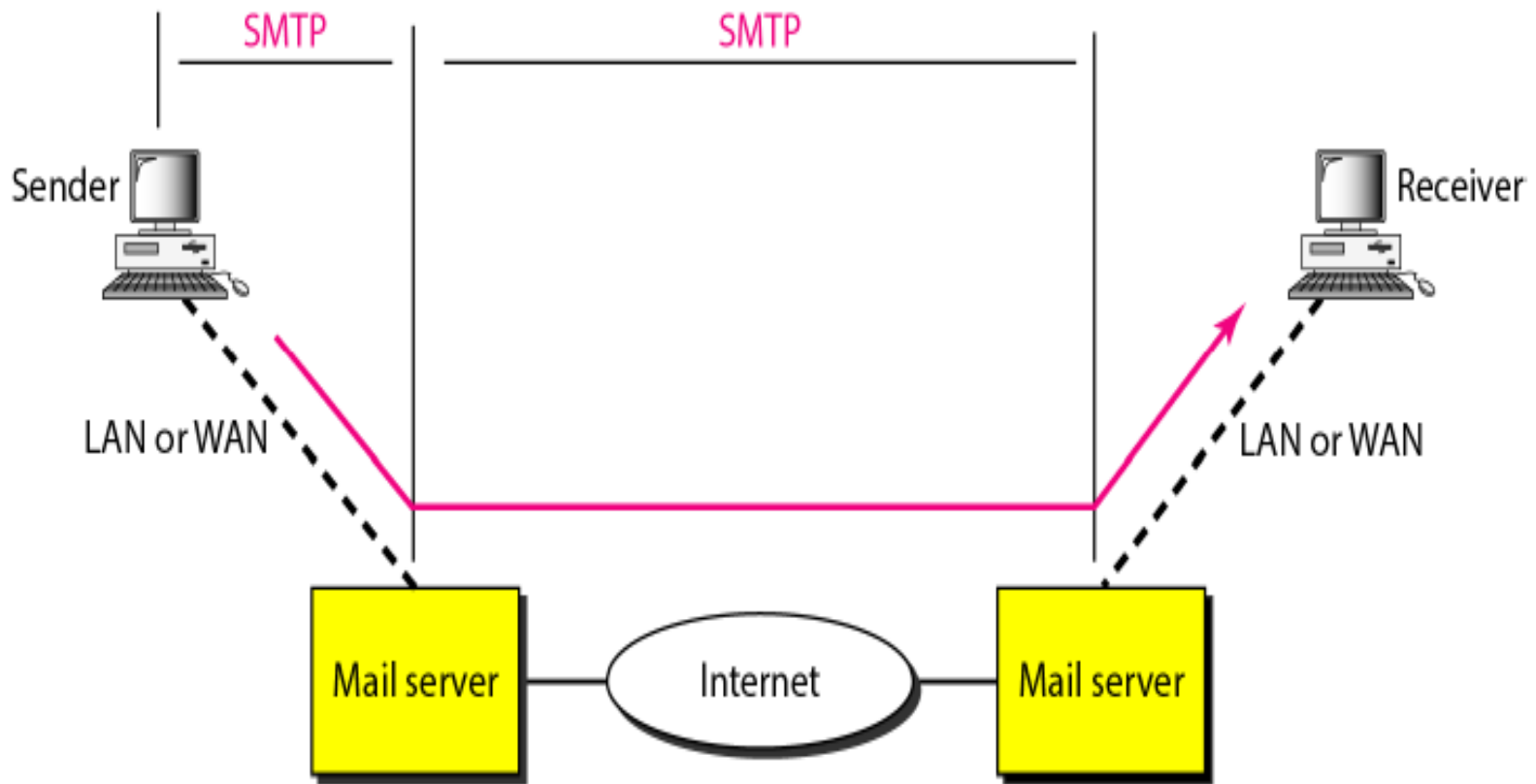
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Message Transfer Agent: SMTP

- SMTP is a message transfer agent.
- The actual mail transfer is done through message transfer agents.
- To send mail, a system must have the client MTA, and to receive mail, a system must have a server MTA.
- The protocol that defines the MTA client and server in the Internet is called the Simple Mail Transfer Protocol (SMTP).

SMTP

Following figure shows the range of the SMTP protocol

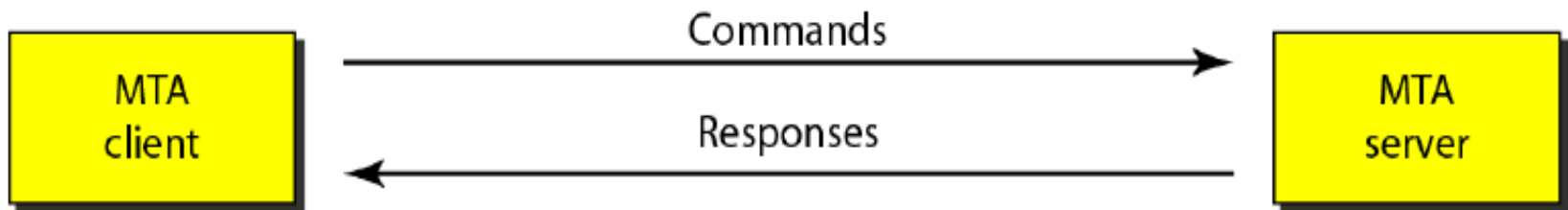


SMTP

- SMTP is used two times, between the sender and the sender's mail server and between the two mail servers.

Commands and Responses

SMTP uses commands and responses to transfer messages between an MTA client and an MTA server.



- Each command or reply is terminated by a two-character (carriage return and line feed) end-of-line token.

SMTP

Commands

Commands are sent from the client to the server. The format of a command is shown in following figure:-

Keyword: argument(s)

- It consists of a keyword followed by zero or more arguments.
- SMTP defines 14 commands. The first five are mandatory; every implementation must support these five commands. The next three are often used and highly recommended. The last six are seldom used.

SMTP

Commands

<i>Keyword</i>	<i>Argument(s)</i>
HELO	Sender's host name
MAIL FROM	Sender of the message
RCPT TO	Intended recipient of the message
DATA	Body of the mail
QUIT	
RSET	
VERFY	Name of recipient to be verified
NOOP	
TURN	
EXPN	Mailing list to be expanded
HELP	Command name
SEND FROM	Intended recipient of the message
SMOL FROM	Intended recipient of the message
SMAL FROM	Intended recipient of the message

SMTP

Responses

Responses are sent from the server to the client. A response is a three digit code that may be followed by additional textual information. Following table lists some of the responses:-

<i>Code</i>	<i>Description</i>
Positive Completion Reply	
211	System status or help reply
214	Help message
220	Service ready
221	Service closing transmission channel
250	Request command completed
251	User not local; the message will be forwarded
Positive Intermediate Reply	
354	Start mail input
Transient Negative Completion Reply	
421	Service not available
450	Mailbox not available
451	Command aborted: local error
452	Command aborted: insufficient storage

SMTP

Responses(continue)

<i>Code</i>	<i>Description</i>
Permanent Negative Completion Reply	
500	Syntax error; unrecognized command
501	Syntax error in parameters or arguments
502	Command not implemented
503	Bad sequence of commands
504	Command temporarily not implemented
550	Command is not executed; mailbox unavailable
551	User not local
552	Requested action aborted; exceeded storage location
553	Requested action not taken; mailbox name not allowed
554	Transaction failed

➤ As the table shows, responses are divided into four categories. The leftmost digit of the code (2, 3, 4, and 5) defines the category.

SMTP

Mail Transfer Phases

The process of transferring a mail message occurs in three phases: connection establishment, mail transfer, and connection termination.

Example

Let us see how we can directly use SMTP to send an e-mail and simulate the commands and responses we described in this section. We use TELNET to log into port 25 (well known port for SMTP). We then use the commands directly to send an e-mail. In this example, forouzanb@adelphia.net is sending an e-mail to himself. The first few lines show TELNET trying to connect to the Adelphia mail server.

After connection, we can type the SMTP commands and then receive the responses, as shown below. We have shown the commands in black and the responses in color. Note that we have added, for clarification, some comment lines, designated by the "=" signs. These lines are not part of the e-mail procedure.

SMTP

\$ telnet mail.adelphia.net 25

Trying 68.168.78.100 . . .

Connected to mail.adelphia.net (68.168.78.100).

===== Connection Establishment =====

220 mta13.adelphia.net SMTP server ready Fri, 6 Aug 2004 . . .

HELO mail.adelphia.net

250 mta13.adelphia.net

SMTP

```
===== Mail Transfer =====  
MAIL FROM: forouzanb@adelphia.net  
    250 Sender <forouzanb@adelphia.net> Ok  
RCPT TO: forouzanb@adelphia.net  
    250 Recipient <forouzanb@adelphia.net> Ok  
DATA  
    354 Ok Send data ending with <CRLF>.<CRLF>  
From: Forouzan  
TO: Forouzan  
  
This is a test message  
to show SMTP in action.  
•
```

```
===== Connection Termination =====  
    250 Message received: adelphia.net@mail.adelphia.net  
QUIT  
    221 mta13.adelphia.net SMTP server closing connection  
Connection closed by foreign host.
```