

15 Application Layer

15.1 Application, Presentation, and Session

- OSI Model - Application Layer Protocols: exchange Data between programs (HTTP, FTP, TFTP, IMAP, DNS)
- OSI Model - Presentation Layer: Formatting, compressing, encrypting (mkv, mpg, mov, gif, jpg, png)
- OSI Model - Session Layer: create and maintain dialogs between source and destination applications

Protocols

- Name System: DNS (TCP, UDP 53)
- Host config: BOOTP, DHCP (UDP 68, 67)
- Email: SMTP (TCP 25), POP3 (TCP 110), IMAP (TCP 143)
- File Transfer: FTP (TCP 20, 21), TFTP (UDP 69)
- Web: HTTP (TCP 80, 8080), HTTPS (TCP, UDP 443)

15.2 Peer-to-Peer

- Client-Server Model: Client / Server processes
- Peer-to-Peer (P2P) Networking Model: no dedicated server
- P2P-Application: Server+Client
- P2P Filesharing Protocol
 - Gnutella (ganze Dateien)
 - BitTorrent (Teile von Dateien)
 - Direct Connect
 - eDonkey
 - Freenet

15.3 Web and Email Protocols

- http (GET, POST, PUT), https
- SMTP, POP3, IMAP

15.4 IP Addressing Services

- DNS: FQDN, A (IPv4 end device), NS (Authoritative name server), AAAA (IPv6 end device), MX (mail exchange)
 - FQDN
 - Record Types: A (IPv4 end device), NS (Authoritative name server), AAAA (IPv6 end device), MX (mail exchange)
 - Hierarchy: Root (.), TLD, Second Level Domain
 - nslookup (set type=mx)
- DHCP
 - DHCPv4: DISCOVER, OFFER, REQUEST, ACK
 - DHCPv6: SOLICIT, ADVERTISE, INFORMATION REQUEST, REPLY

15.5 File Sharing Services

- FTP: Control 21, Data 20
- SMB: file sharing, printer