













1/3: network load while original VM still in service

L12.7



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| 4.1 Foundations Protocols Types of communication 4.2 Remote procedure call 4.3 Message-oriented comm Socket communication Messaging libraries Message-Passing Interface (M Message-queueing systems Examples 4.4 Multicast communication Flooding-based multicasting Gossip-based data dissemination | Content consists of review and additional building on Ch 2/3 unication PI) n |
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| Application protocol Presentation Session Session Session Transport Data link Data link Data link protocol Instruction Physical protocol Instruction Network Physical layer: just sends bits Data link layer: Groups bits into frames Provides error correction via <u>checksum</u> Special bit pattern at start/end of frame | OSI MODEL REVISITED | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Physical layer: just sends bits Data link layer: Groups bits into frames Provides error correction via <u>checksum</u> Special bit pattern at start/end of frame February 27, 2019 TCSS558: Applied Distributed Computing [Winter 2019] School of Engineering and Technology, University of Washington - Tacoma L12.13 | Application Application protocol 7 Presentation Presentation protocol 6 Session Session protocol 5 Transport Transport protocol 4 Network Network protocol 2 Physical Physical protocol 1 | |
| Data link layer: Groups bits into frames Provides error correction via <u>checksum</u> Special bit pattern at start/end of frame February 27, 2019 TCSS558: Applied Distributed Computing [Winter 2019] School of Engineering and Technology, University of Washington - Tacoma | Physical layer: just sends bits | |
| Special bit pattern at start/end of frame TCSS558: Applied Distributed Computing [Winter 2019] School of Engineering and Technology, University of Washington - Tacoma | Data link layer: Groups bits into frames Provides error correction via checksum | |
| February 27, 2019 TCSS558: Applied Distributed Computing [Winter 2019] School of Engineering and Technology, University of Washington - Tacoma L12.13 | Special bit pattern at start/end of frame | |
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| OSI MODEL | 5 | Pr Pr | Application [resentation [Session [Transport [Network [| Application Applic | ation protocol ntation protocol sion protocol port protocol ork protocol | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----|--|
| Other transpor Real-time tranguarantee Streaming Cor | t protocols sport protocol (RTP): ntrol Transmission Pr | real-time da | Physical (): alte | o data de | twork elivery | > | |
| Higher layers Session layer: Presentation I Application lay Most protoco Application p | rarely used ayer: meaning of the yer: protocols that do vis: FTP, SFTP, HTTP, etc protocols | bits; n't fit into ot c. etc. | her la | yers | | | |
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| | SOCKETS |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Communica Application Analogous | ation end point is can read / write data to to file streams for I/O, but <u>network streams</u> |
| Operation | Description |
| socket | Create a new communication end point |
| bind | Attach local address to socket (IP / port) |
| listen | Tell OS what max # of pending connection requests should be |
| accept | Block caller until a connection request arrives |
| connect | Actively attempt to establish a connection |
| send | Send some data over the connection |
| receive | Receive some data over the connection |
| close | Release the connection |
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| SOCKETS - 2 | | | | |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| Servers exec Methods ref Mappings ac | cute 1 st - 4 operations (socket, bind, listen, accept) er to C API functions cross different libraries will vary (e.g. Java) | | | |
| Operation | Description | | | |
| socket | Create a new communication end point | | | |
| bind | Attach local address to socket (IP / port) | | | |
| listen | Tell OS what max # of pending connection requests should be | | | |
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| QI | UEUEING ALTERNATIVES | |
|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------|
| Cloud servi Amazon S Azure servi | ces Simple Queueing Service (SQS) vice bus | |
| Open source Nanomsg ZeroMQ | e frameworks | |
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