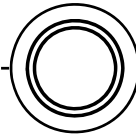
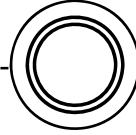


CIS 375: Module 7



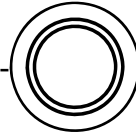
THE SESSION LAYER & NETWORKING DESIGN EXERCISES

Business



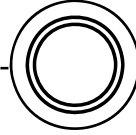
- Take Blackboard quiz.
- Midterm is two weeks from tonight.

Business



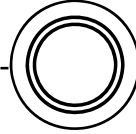
- **Midterm in Three Weeks.**
- **30 MC Questions on blackboard**
 - Which port supports the service HTTP?
 - ✦ 110
 - ✦ 995
 - ✦ 80
 - ✦ 21
 - Which of the following is always a layer 3 device?
 - ✦ Switch
 - ✦ Hub
 - ✦ Router
 - ✦ MODEM

The Session Layer (layer 5)



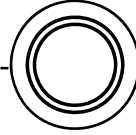
- **Layers so far:**
 - Physical (1)
 - Data Link (2)
 - Network (3)
 - Transport (4)
 - Session (5)
 - Programmers don't need to sleep
 - Understand, layers above 4 are not distinct and applications may span the layers or use them in different ways.

Session Layer



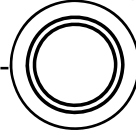
- Handles requests from the applications layer (7)
- Issues requests to the transport layer (when something is coming in).
 - This is where the handshake is really initiated.
 - This is also where the handshake ends (4 way handshake or 3 way handshake). Don't confuse this with session initiation 3 way handshake
 - ✦ Fin (I'm done) >>
 - ✦ Fin Ack (ok) <<
 - ✦ Fin Ack (ok) >>
 - If both systems send fins at the same time (the daemons coordinate this), it is a 4 way handshake

Session Layer



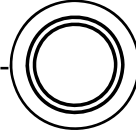
- **4 Way Handshake**
 - **Fin(1) >>**
 - **Fin (2) <<**
 - **Fin Ack (1) >>**
 - **Fin Ack (2) <<**

These are primarily TCP functions



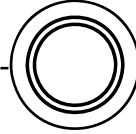
- They are but....
- Other things that may use Session layer
 - Netbios
 - PPTP
 - Etc.
- Remember, these things are theoretical constructs, they can't hurt us.

Design Exercise



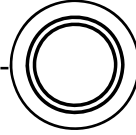
- **Company Intertrode – Initial setup with traditional static model (NO PAT)**
- **Has one border connection to backbone which has static 150.50.0.0 available.**
- **The company wants an intranet designed that will house 6 separate networks**
- **The company has a server (intertrode.net) for web services which also runs FTP and SSH.**

Intertrode



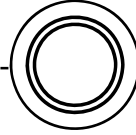
- They also have a mail server, `postoffice.intertrode.net` which supports pop3 email. (exchange uses 110, 995, 465, 25)
- 6 networks represent
 - Sales
 - Marketing
 - Accounting
 - Support/IT
 - Management
 - HR

Network Nodes



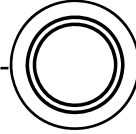
- Sales has 74 staff
- Marketing has 21
- Accounting has 11
- Support/IT has 6
- Management has 15
- HR has 7
- Each network has a printer
- Each network has a copier
- Each network has a fax machine

Devices available



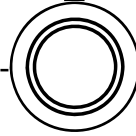
- **Routers**
 - Border router
 - Each network can be routed with it's own router
- **Firewalls**
 - Each network is managed with a CISCO ASA firewall
- **Switches**
 - Used as needed

First problem



- Subnet the network and assign networks using the traditional model

Second problem



- **Revise the network with the assumption of PAT/NAT and only the class C 198.7.244.0-31 addresses available on the outside.**