

Announcements

- Reading
 - 7.2-7.4
- Homework #2 (Due Tuesday 12/4/01 start of class)
 - Ch4: 21, 22
 - Ch 7: 4, 13, 14
- Homework is worth 4% of your grade (2% each)

DNS (cont.)

- Resource Records
 - DNS is really a distributed, replicated database
- Several types of tuples in the database
 - SOA - Start of Authority information for a zone
 - A - IP Address record
 - MX - Mail exchanger
 - priority and destination (host name) to accept mail
 - NS - Name of the name server for this domain
 - CNAME - Canonical name (DNS name)
 - PTR - alias for an IP Address
 - HINFO - Host Info (CPU and OS type information)
 - TXT - other text information

Name Servers

- A collection of servers is used to run DNS
 - root servers: handle top level domains
 - have pointers to servers for deligated sub-domains
 - areas of the namespace covered by a server called a zone
- Zones
 - has one primary server (zone information stored on disk)
 - secondary name servers (get info from primary)
 - secondary server may be located outside of the zone
- Namelookup
 - start at current name server
 - if not found, resolve down tree to correct zone server
 - data may be cached in servers
 - this information may be out of date
 - **authoritative data** comes from the primary/secondary NS

Simple Network Management Protocol (SNMP)

- **Managed Nodes**
 - things that can be configured or administered via SNMP
 - includes most computers, routers, bridges, network printers
- **Management Stations**
 - computers running the SNMP management software
 - this is where the configuration of managed nodes is done
- **Management Information Base (MIB)**
 - all possible data about all managed devices
 - each device type has a defined set of data it should maintain
- **Management Protocol**
 - what to send over the wire and how to authenticate it
 - proxy agent: third part to speak SNMP for dumb devices
 - traps: events sent to management stations from nodes

The SNMP MIB

- Divided into 10 parts
 - System: device names, manufacturer, model, serial #, etc.
 - Interfaces: network adapters
 - keeps packet, byte, broadcast, and queue size info
 - AT: deleted in SNMPv2
 - ICMP: counts of errors
 - IP: stats about the IP protocol
 - TCP: stats about current and past TCP connections
 - UDP: stats about UDP packets
 - EGP: exterior gateway protocol
 - Media Specific: Ethernet stats, ATM stats, etc.
 - SNMP: stats about SNMP itself

SNMP Protocol

- Six Message Types (plus a response)
 - Get-request: read one or more variables
 - Get-next-request: Request variable following this one
 - Get-bulk-request: Fetch a big table
 - Set-request: Updates one or more variables
 - Inform-request: management-to-manager requests
 - indicates what variables the manager is managing
 - SnmpV2-trap: agent to manager trap request

Email

- Dominate Email is RFC821/822

- X.400 and Lotus notes are also rans for standards

- Basic components

- message: the actual thing sent
- mailbox: place where email is stored (may be a file or a directory)
 - identified by a unique name
 - user@dnhost is the standard format
- transfer agent: something that sends email
 - usually speaks SMTP
 - under UNIX is a program called sendmail
- user agent
 - program for reading and generating mail
 - can be remote: use POP, IMAP, or DMSP to talk to mailbox
- alias
 - a virtual mailbox that maps to one or more real mailboxes
 - may also be a program to handle the inbound mail

Message Envelop Format

- Information associated with mail delivery
- Destination:
 - To: email address of primary recipient
 - Cc: email address of secondary recipients
 - Bcc: address for blind carbon copies
- Origination
 - From: person who created message
 - Sender: email address of actual sender
- In transit
 - Received: added by each MTA along the way
 - Return-Path: added by destination
- Misc Fields
 - Info: Date, Subject, Keyword
 - Handling: Message-id, Reply-To In-Reply-To, References