



#### Deploying GT.M applications with xinetd

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### **GT.M** philosophy

- "Small is beautiful"
  - Applies to conceptual simplicity not to capability (GT.M today runs the largest real time core processing system live at any bank anywhere in the world)
  - An ecosystem of components where each does its job well, and uses other components for what they do well
  - An enhancement or fix to a component is immediately available to all that use it
  - Also the UNIX/Linux philosophy



#### The bazaar vs. the cathedral

- So many choices
  - inetd / xinetd
  - sh / ksh / bash / csh ...
  - AIX / Solaris / HP-UX / Linux
    - Red Hat / SuSE / Ubuntu ...
- Vs. just choose one vendor to provide the whole ball of wax
  - Fly on auto pilot, no need to think



### Simple setup

- TCP port in /etc/services
- Service in a file in /etc/xinetd.d
- Shell script or program to provide service

(Walk through example)



#### Benefits of xinetd – Internet superserver

- Access control
- Protection against denial of service attacks
- Logging
- Bind services to IP addresses
- Simplified application server logic
  - Process starts with STDIN/STDOUT (\$Principal)
    connected to client
  - Only needs to implement application specific communication
  - Only requires normal user privileges



#### **Access control**

- Address, name, domain name of remote host
- Time of access



#### **Protection against DOS attacks via limits**

- Number of servers for each service
- Number of process forked
- Size of log files
- Number of connections from a single host
- System load

<u>Security is based on layers of protection – an Internet superserver like xinetd is just one more layer.</u>



## **Optional logging**

- For all connection attempts, successful as well as failing
  - Time server was started
  - Remote host address
  - Remote user id (if supported by remote server not likely for an attacker)
- How long server ran
- More



# ¿¿Questions?? ¡¡Comments!!

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