A Distributed Multicast DNS System

Dessel :

File Edit View Scrollback Bookmarks Settings Help

.csl.tjhsst.edu got a msg from 198.38.18.81: join:glados.csl.tjhsst.ed

Dan Johnson

TJHSST Computer Systems Lab 2009-2010

Abstract:

There exists a need for less dependance on the single point of failure that is DNS servers. It is quite possible for a computer to be completely connected to the internet, but run slowly or not at all in the case of a malfunctioning DNS server. My goal was to allow a group of workstations as present on a mediumsize subnet to survive complete loss of a DNS server through collaboration. The syslab workstations provide an example of an appropriate size.

sel.csl.tjhsst.edu got a msg from 198.38.18.114: list:bessel.csl.tjhsst.ed .198.38.18.114 8.38.18.114 dos.csl.tjhsst.edu,198.38.18.8 dos.csl.tjhsst.edu got a msg from 198.38.18.83: join:heinrich.csl.tjh dos.csl.tjhsst.edu got a msg from 198.38.18.114: list:bessel.csl.tjhs 8.38.18.114 dos.csl.tjhsst.edu,198.38.18.81 rich.csl.tjhsst.edu,198.38.18.83 l.csl.tjhsst.edu got a msg from 198.38.18.84: join:hex.csl.tjhsst.edu .tjhsst.edu got a msg from 198.38.18.84: join:hex.csl.tjl sel.csl.tjhsst.edu got a msg from 198.38.18.114: list:bessel.csl.tjhsst.e jhsst.edu got a msg.from 198.38.18.114: list:bessel.csl.tjhs a 114 os.csl.tjhsst.edu,198.38.18.81 csl.tjhsst.edu,198.38.18.84 dos.csl.tjhsst.edu,198.38.18.81 Code Writeup .csl.tjhsst.edu,198.38.18.84 nrich.csl.tihsst.edu.198.38.18.83 rich.csl.tjhsst.edu,198.38.18.83 sel.csl.tjhsst.edu got a msg from 198.38 ados.csUutjhsstledu got a msg from 198.38.18.84: m:send 198.38.18.84 says sen 198.38.18.84 says send 🔳 besse 🔳 glados \odot \odot 🔳 💽 hex File Edit Gentoo image is maintained by Chris Reffet **n@heinrich ~/techlab \$.**/runscript.sh it any requests at http://bugs.tjhsst.edu .csl.tjhsst.edu got a msg from 198.38.18.83 problems can be mailed to sysad rich.csl.tjhsst.edu got a msg from 198.38.18 .**Odjohnson@hex ~ \$** cd techlab/ 1**OdjohnSon@hex 4/techtabo**\$017rühSchipt.Sh .98.38.18.114 s.csl.tjhsst.edu,198.38.18.81 ich.csl.tjhsst.edu,198.38.18.83 .csl.tjhsst.edu got a msg from 198.38.18.114: list:bessel.csl.tjhsst.ed ich.csl.tjhsst.edu got a msg from 198.38.18.84: join:hex.csl.tjhsst.edu 38.18.114 rich.csl.tjhsst.edu got a msg from 198.38.18.<mark>114: list:bessel.csl.tj</mark>hsst ados.csl.tjhsst.edu,198.38.18.8 .csl.tjhsst.edu,198.38.18.84 dos.csl.tjhsst.edu,198.38.18.81 rich.csl.tjhsst.edu,198.38.18.83 x.csl.tjhsst.edu,198.38.18.84 nrich.csl.tjhsst.edu,198.38.18.83 nrich.csl.tjhsst.edu got a msg from 198.38.18.84: m:send c.csl.tjhsst.edu got a msg from 198.38.18.84: m:senc 198.38.18.84 (savs) send ===== 198.38.18.84 savs send ≕ heinrich

📔 💿 glados :

File Edit View Scrollback Bookmarks Settings Help

 \odot

Introduction:

I will be using python for the initial proof-ofconcept simulation and to make sure the protocol will allow for all necessary features. After the simulated nodes can function properly, I will translate the protocol and implementation into a network version. Eventually, I will implement a NSS (Name Service Switch) module in order to allow a native linux system to take advantage of these features, or implement the regular DNS protocol and allow the current host to query us on the localhost address (127.0.0.1 or ::1)

Benefits:

The benefits of offloading routine and emergency duties from the nameserver has several practical benefits. First, in the event of a nameserver outage, not all systems need to fail. While noncached entries may not be available, those that have seen high use (google.com, for example) will still be available. This helps to eliminate one instance of a single point of failure. With a sufficient number of hosts, processing queries on the main nameserver can lead to performance issues. By dividing responsibility for name lookups among hosts, the speed and scalability of lookups can be improved.



Hopefully this project can be taken past the proof of concept stage and be good enough to put into production in UNIX computer labs around the world. With enough effort and review, it should be possible to gain acceptance into the community, assuming the security requirements and social requirements are met.

Results:

Nodes can join "interest" groups and ask for and share DNS records with their groups.