

LPIC-1 102-500 – Lesson 16

109.4 Configure client side DNS



Associating hostnames with IP addresses in */etc/hosts*

- The `/etc/hosts` file is used to associate hostnames with IP addresses and it is a simple way to resolve hostnames in networks without DNS or in cases where you do not have access to the DNS server. You can also set easy to remember names for hosts you use often.

- `$ cat /etc/hosts`

```
127.0.0.1      localhost
127.0.1.1      name-lpi
69.64.38.128   web01.example.com web01
```

- `$ ping malena`

```
PING web01 (69.64.38.128) 56(84) bytes of data.
64 bytes from web01 (69.64.38.128): icmp_req=1 ttl=50 time=189 ms
64 bytes from web01 (69.64.38.128): icmp_req=2 ttl=50 time=189 ms
^C
```

```
--- web01 ping statistics ---
```

```
2 packets transmitted, 2 received, 0% packet loss, time 1000ms
rtt min/avg/max/mdev = 189.017/189.067/189.117/0.050 ms
```



Set name resolution systems with */etc/nsswitch.conf*

- The **`/etc/nsswitch.conf`** file configures the name resolution systems to be used and their priority that should be obeyed when resolving names of users, groups, password and hostnames
- **`$ cat /etc/nsswitch.conf`**
`passwd: files # resolve user names from /etc/passwd`
`shadow: files # resolve passwords from /etc/shadow`
`group: files # resolve group names from /etc/group`
`hosts: files dns # resolve hostnames from /etc/hosts`
first and then DNS



Set name resolution systems with */etc/nsswitch.conf*

- `$ cat /etc/nsswitch.conf`

```
passwd:  files ldap # resolve usernames from
                # /etc/passwd first and then LDAP
shadow:  files ldap # resolve passwords from
                # /etc/shadow first and then LDAP
group:   files ldap # resolve group from /etc/group
                # and then LDAP
hosts:   files dns ldap # resolve hostnames from
                # /etc/hosts first, then
                # DNS and then LDAP
```
- We can use the **getent** utility to resolve entries defined in **nsswitch.conf**.



Configure DNS client with */etc/resolv.conf*

- The `/etc/resolv.conf` is used to configure nameservers (DNS resolvers) and search domains. Example:

```
search example.com # you can resolve example.com hosts by name
nameserver 192.168.10.1 # IPv4 DNS Server
nameserver fd64:d180:8b30::1 # IPv6 DNS Server
```

Note: on **systemd** systems there is an internal caching DNS, **systemd-resolve**. In this case the `/etc/resolv.conf` may be synlinked to `/run/systemd/resolve/resolv.conf`.



Query DNS servers with `host`

- The **host** command queries DNS servers for DNS records
- `$ host theo-andreou.org # query for A, CNAME (and MX if exist) records`
- `$ host theo-andreou.org 8.8.8.8# send query to a public DNS sever instead of the local resolver`
- `$ host www.ubntucy.org # CNAME (alias) example`
- `$ host -v google.com # verbose mode`
- `$ host -t SOA theo-andreou.org # search for the authoritative DNS server of the theo-andreou.org domain`
- `$ host -t NS theo-andreou.org # look for the theo-andreou.org DNS servers (aka nameservers)`
- `$ host 8.8.8.8 # Reverse DNS lookup (PTR)`

Query DNS servers with `dig`

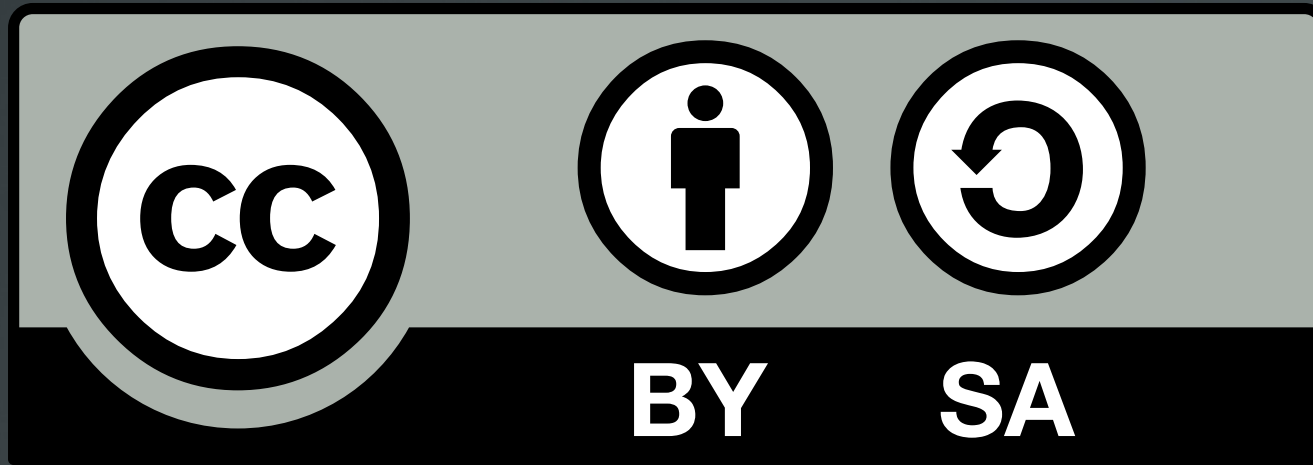
- The **dig** command is a somewhat more powerful alternative to **host**
 - `$ dig theo-andreou.org # show A, CNAME and NS records`
 - `$ dig theo-andreou.org @8.8.8.8 # send query to the 8.8.8.8 DNS server instead of the default system resolver`
 - `$ dig www.ubuntu.org # CNAME (alias) example`
 - `$ dig mx theo-andreou.org # find mail servers for theo-andreou.org`
 - `$ dig ns theo-andreou.org # find DNS servers for theo-andreou.org`
 - `$ dig soa theo-andreou.org # find authoritative DNS server for theo-andreou.org`
 - `$ dig -x 8.8.8.8 # Reverse DNS (PTR) query to find the hostname, given the IP address`
- 

The `getent` utility

- `$ getent passwd theo # query user theo`
`theo:x:1000:1000:Theodotos`
`Andreou,,,:/home/theo:/bin/bash`
- `$ getent group www-data # query group www-data`
`www-data:x:33:`
- `$ getent hosts mypc # query a hostname in /etc/hosts.`
- `$ getent hosts dns.google # query a DNS record.`
- `$ getent services # List all services from /etc/services.`
- `$ getent services ssh # Query the ssh service`



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