

Internet Engineering

241-461

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<http://fivedots.coe.psu.ac.th/~kre>

DNS Examples

Query to find address of fivedots.coe.psu.ac.th

```
;; got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 4
;; flags: qr aa rd ra;
;; QUERY: 1, ANSWER: 1, AUTHORITY: 2, ADDITIONAL: 2
;; QUERY SECTION:
;;   fivedots.coe.psu.ac.th, type = A, class = IN
;; ANSWER SECTION:
fivedots.coe.psu.ac.th. 1W IN A 172.30.0.5
;; AUTHORITY SECTION:
coe.psu.ac.th. 1W IN NS ninedots.coe.psu.ac.th.
coe.psu.ac.th. 1W IN NS fivedots.coe.psu.ac.th.
;; ADDITIONAL SECTION:
ninedots.coe.psu.ac.th. 1W IN A 172.30.0.9
fivedots.coe.psu.ac.th. 1W IN A 172.30.0.5
```

DNS Examples (2)

Query to find address of www.psu.ac.th

```
;; got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 4
;; flags: qr aa rd ra;
;; QUERY: 1, ANSWER: 2, AUTHORITY: 2, ADDITIONAL: 2
;; QUERY SECTION:
;;   www.psu.ac.th, type = A, class = IN
;; ANSWER SECTION:
www.psu.ac.th. 12H IN CNAME s1.psu.ac.th.
s1.psu.ac.th. 12H IN A 192.100.77.61
;; AUTHORITY SECTION:
psu.ac.th. 12H IN NS ns.psu.ac.th.
psu.ac.th. 12H IN NS ns2.psu.ac.th.
;; ADDITIONAL SECTION:
ns.psu.ac.th. 12H IN A 192.100.77.5
```

DNS Examples (3)

Query to find address of oddball.psu.ac.th

```
;; got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 4
;; flags: qr aa rd ra;
;; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 0
;; QUERY SECTION:
;;   oddball.psu.ac.th, type = A, class = IN

;; AUTHORITY SECTION:
psu.ac.th. 12H IN SOA (
ns.psu.ac.th. netadmin.ratree.psu.ac.th.
2001080801 ; serial
10800 ; refresh - 3 hours
1200 ; retry - 20 minutes
1209600 ; expiry - 2 weeks
43200 ) ; minimum - 12 hours
```

DNS Examples (4)

Query to find location of really.stupid.psu.ac.th

```
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 5371
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 0

;; QUESTION SECTION:
;really.stupid.psu.ac.th. IN LOC

;; AUTHORITY SECTION:
psu.ac.th. 10792 IN SOA ns.psu.ac.th. (
netadmin.psu.ac.th.
20110120701 10800 1200 1209600 43200 )
```

◊ Again, the name does not exist

- Again psu.ac.th. zone says that

DNS Examples (5)

Query server for AC.TH to find address of jade.coe.psu.ac.th

```
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 10129
;; flags: qr; QUERY: 1, ANSWER: 0, AUTHORITY: 2, ADDITIONAL: 2

;; QUESTION SECTION:
;jade.coe.psu.ac.th. IN A

;; AUTHORITY SECTION:
psu.ac.th. 7200 IN NS ns.psu.ac.th.
psu.ac.th. 7200 IN NS ns2.psu.ac.th.

;; ADDITIONAL SECTION:
ns.psu.ac.th. 7200 IN A 192.100.77.5
ns2.psu.ac.th. 7200 IN A 192.100.77.2
```

◊ This is a referral.

- The server queried does not know the answer.
- It can say what are the servers for psu.ac.th.

DNS Examples (6)

Query for Mail eXchange for jade.coe.psu.ac.th

```
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 57015
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 0
;; QUESTION SECTION:
; jade.coe.psu.ac.th.      IN      MX
;; AUTHORITY SECTION:
coe.psu.ac.th.  9160   IN      SOA     ninedots.coe.psu.ac.th. (
sysadmin.coe.psu.ac.th.
2010120101
14400
3600
2419200
14400  )
```

◊ There is no MX RR for jade.coe.psu.ac.th

◦ There is NOERROR - the domain name exists

◦ The SOA RR says what zone says MX does not exist

DNS Examples (7)

Query for Name Servers for foo.tp

Query sent to local nameserver without RD set

```
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 37345
;; flags: qr ra; QUERY: 1, ANSWER: 0, AUTHORITY: 13, ADDITIONAL: 1
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags: udp: 4096
;; QUESTION SECTION:
; foo.tp.      IN      NS
;; AUTHORITY SECTION:
.      3600000   IN      NS      G.ROOT-SERVERS.NET.
.      3600000   IN      NS      F.ROOT-SERVERS.NET.
.      3600000   IN      NS      I.ROOT-SERVERS.NET.
..... 10 more just the same ...
```

◊ The server queried knows nothing about the TP domain

▸ Why was the query sent to it?

◊ Answer is a referral to the root servers

DNS Query Types

◊ Can Query for Specific RR Type

- A - IPv4 Address
- MX - Mail Exchange
- NS - Name Servers
- CNAME - Canonical Name
 - Lots more

◊ Can Query for Meta-Type

- ANY - Any RR's owned by the name
- AXFR - All RR's in Zone Named

DNS Responses

◇ No Error

- Answer Provided
 - ▷ ...
- No Answer Provided
 - ▷ No data of requested type exists
- Referral
 - ▷ Try again at one of these servers

◇ Error

- Name Invalid
- Server Error
- Format Error
- Not Implemented
- Refused