

# APNIC eLearning: Reverse DNS Delegation

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# Overview

- What is Reverse DNS?
- Principles of DNS Tree
- Creating Reverse Zones
- PTR Records
- Reverse Delegation
- Whois Domain Objects

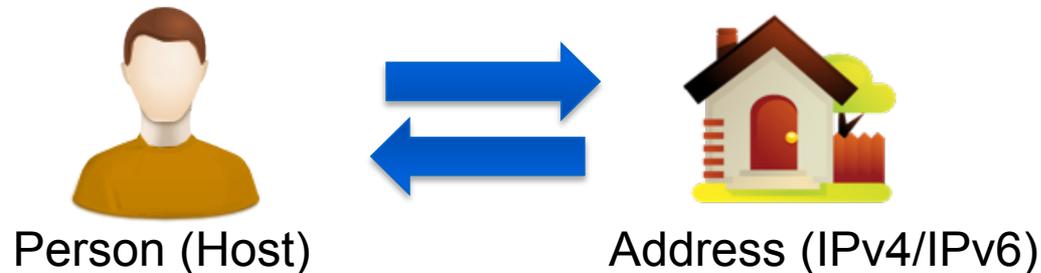
# What is 'Reverse DNS'?

- 'Forward DNS' maps names to numbers

svc00.apnic.net → 202.12.28.131

- 'Reverse DNS' maps numbers to names

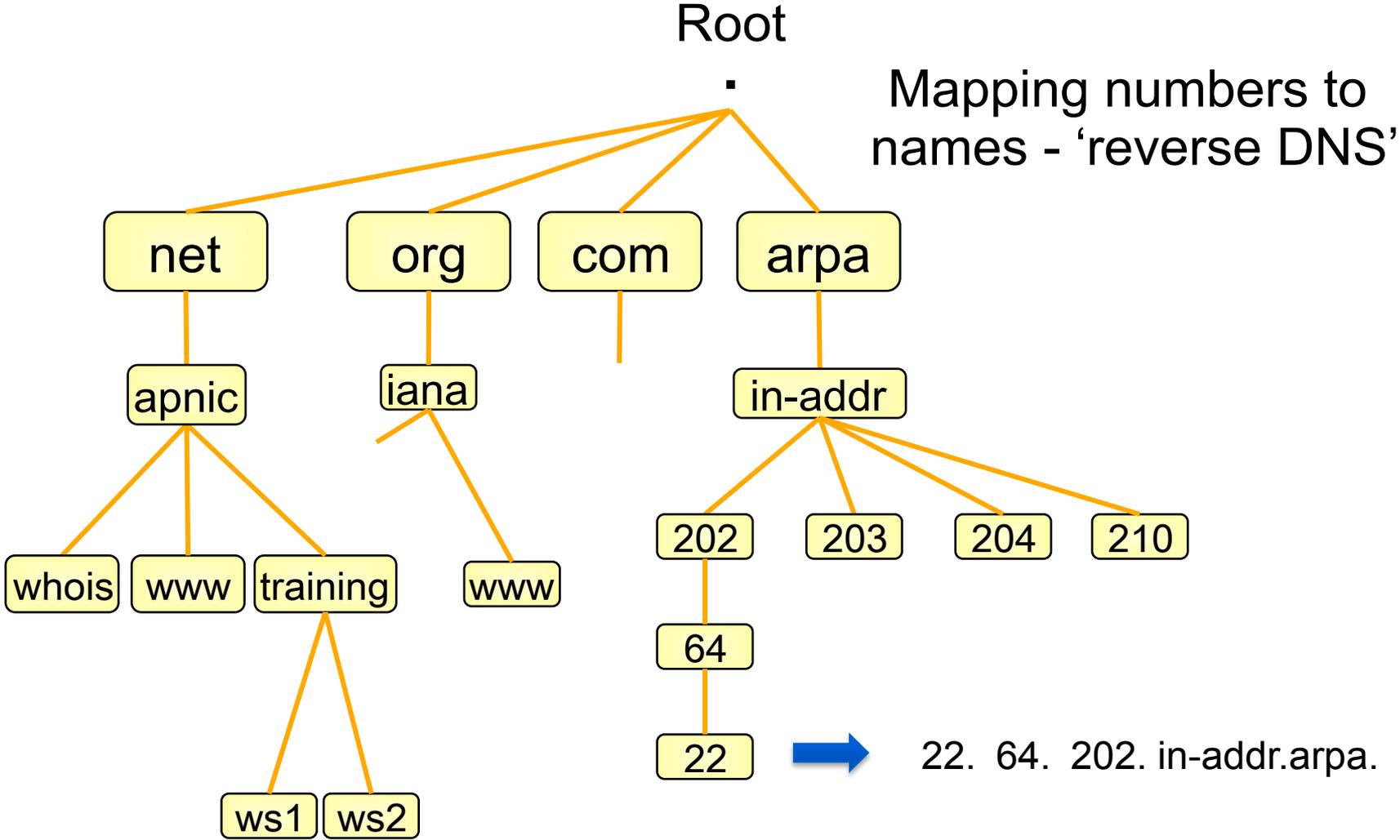
202.12.28.131 → svc00.apnic.net



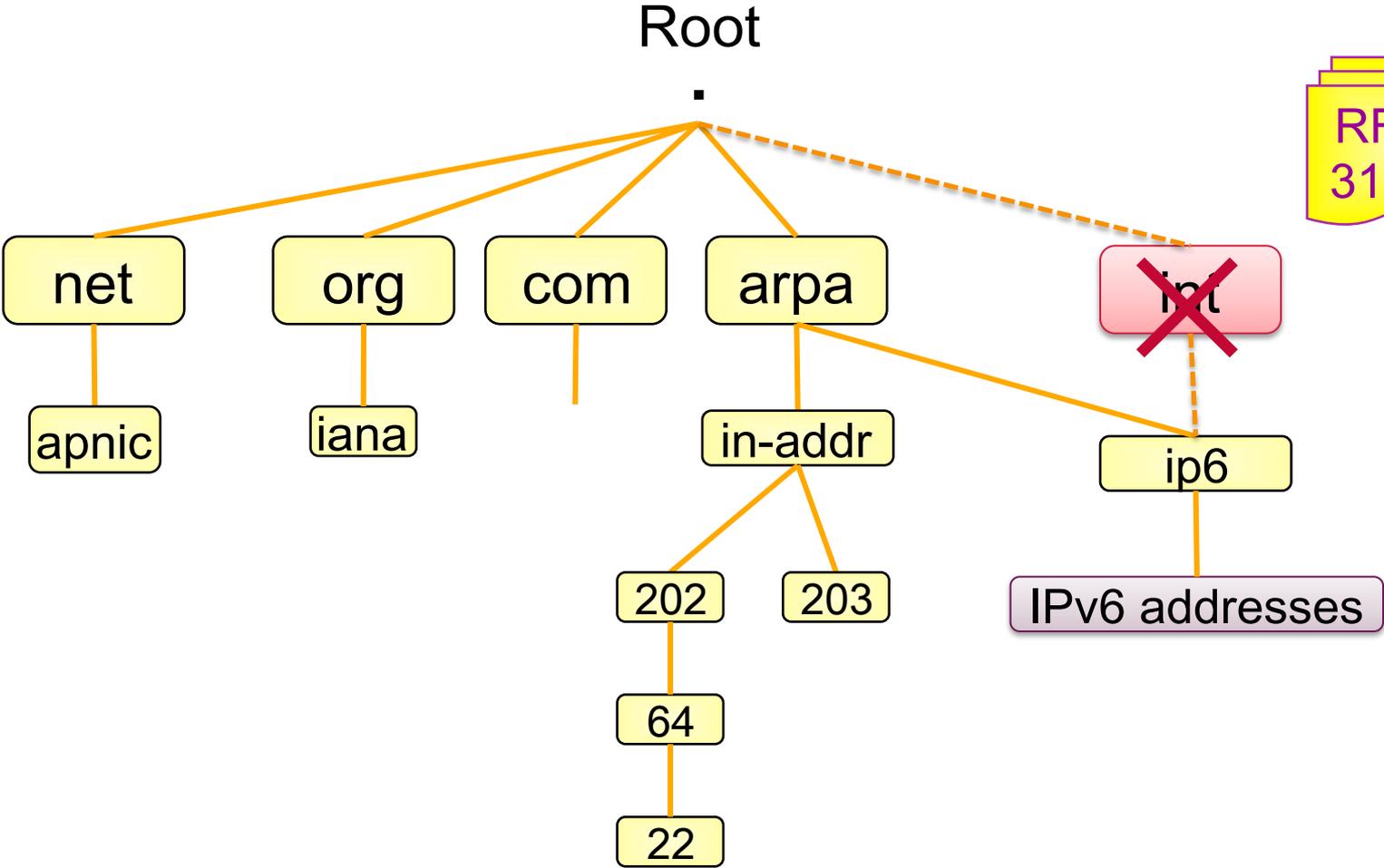
# Reverse DNS - Why bother?

- Service denial
  - only allow access when fully reverse delegated
  - Example: anonymous ftp
- Diagnostics
  - Assisting in trace routes
- SPAM identifications
- Registration responsibilities

# Principles – DNS Tree



# Reverse DNS Tree – with IPv6



# Creating Reverse Zones

- Same as creating a forward zone file
  - SOA and initial NS records are the same as normal zone
- Main difference
  - need to create PTR records
- Can use BIND or other DNS software to create and manage reverse zones
  - Details can be different

# Creating Reverse Zones (continued)

- Files involved
  - Forward zone files  
`db.domain.net`
  - Reverse zone files  
`db.192.168.254`
  - Configuration files  
`named.conf`
  - Hints File  
`Root.hints, db.cache, named.cache`

# Start of Authority (SOA) record

```
Domain_name. CLASS SOA hostname.domain.name. mailbox.domain.name (  
    Serial Number  
    Refresh  
    Retry  
    Expire  
    Minimum TTL )
```

- **Serial Number** – must be updated if any changes are made in the zone file
- **Refresh** – how often a secondary will poll the primary server to see if the serial number for the zone has increased
- **Retry** - If a secondary was unable to contact the primary at the last refresh, wait the retry value before trying again
- **Expire** - How long a secondary will still treat its copy of the zone data as valid if it can't contact the primary.
- **Minimum TTL** - The default TTL (time-to-live) for resource records

# TTL Time Values

- The right value depends on your domain
- Recommended time values for TLD (based on RFC 1912)

Refresh	86400 (24h)
Retry	7200 (2h)
Expire	2592000 (30d)
Min TTL	345600 (4d)
- For other servers – optimize the values based on
  - Frequency of changes
  - Required speed of propagation
  - Reachability of the primary server
  - (and many others)

# Pointer (PTR) records

- Create pointer (PTR) records for each IP address

```
131.28.12.202.in-addr.arpa. IN PTR svc00.apnic.net.
```

or

```
131          IN          PTR          svc00.apnic.net.
```

# IPv6 Reverse Lookups – PTR records

- Similar to the IPv4 reverse record

```
b.a.9.8.7.6.5.0.4.0.0.0.3.0.0.0.2.0.0.0.1.0.0.0.0.0.0.0.1.2.3.4.ip6.arpa.  
      IN      PTR    test.ip6.example.com.
```

- Example: reverse name lookup for a host with address 3ffe:  
8050:201:1860:42::1

```
$ORIGIN 0.6.8.1.1.0.2.0.0.5.0.8.e.f.f.3.ip6.arpa.
```

```
1.0.0.0.0.0.0.0.0.0.0.0.0.2.4.0.0 14400 IN PTR host.example.com.
```

# Reverse Zone Example

```
$ORIGIN 1.168.192.in-addr.arpa.  
@      3600  IN SOA test.company.org. (  
                                sys\.admin.company.org.  
                                2002021301      ; serial  
                                1h              ; refresh  
                                30M             ; retry  
                                1W              ; expiry  
                                3600 )         ; neg. answ. ttl  
  
      NS      ns.company.org.  
      NS      ns2.company.org.  
  
1     PTR     gw.company.org.  
      PTR     router.company.org.  
  
2     PTR     ns.company.org.  
  
;auto generate: 65 PTR host65.company.org  
$GENERATE 65-127 $ PTR host$.company.org.
```

# Reverse Delegation Requirements

- /24 Delegations
  - Address blocks should be assigned/allocated
  - At least two name servers
- /16 Delegations
  - Same as /24 delegations
  - APNIC delegates entire zone to member
  - Recommend APNIC secondary zone
- < /24 Delegations
  - Read “Classless IN-ADDR.ARPA delegation” (RFC 2317)



# APNIC & ISPs Responsibilities

- APNIC
  - Manage reverse delegations of address block distributed by APNIC
  - Process organisations requests for reverse delegations of network allocations
- Organisations
  - Be familiar with APNIC procedures
  - Ensure that addresses are reverse-mapped
  - Maintain nameservers for allocations
  - Minimise pollution of DNS

# Reverse Delegation Procedures

- Standard APNIC database object,
  - can be updated through myAPNIC
- Nameserver/domain set up verified before being submitted to the database.
- Protection by maintainer object
  - (current auths: CRYPT-PW, PGP).
- Any queries
  - Contact [helpdesk@apnic.net](mailto:helpdesk@apnic.net)

# Reverse Delegation Procedures

[Home](#) | [Resources](#) | [Administration](#) | [Training](#) | [Tools](#)

[IPv4](#) | [IPv6](#) | [ASN](#) | [Whois updates](#) | [Certification](#) | [Maintainers](#) | [IRTs](#) | [Correspondence](#)

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## Add reverse DNS delegation

**Reminder**  
Please [register](#) your whois maintainer.

Important: The information you provide in the form below will be used to create your domain object in the APNIC Whois Database. Please make sure that your name servers are running and are authoritative for the zone, or your reverse DNS delegation might not function correctly.

**Address range:**  
Use CIDR address prefix notation. Multiple range allowed, one range per line.

Example:  
202.12.28.0/22  
202.120.0.0/20

**Name servers:**  
List fully qualified domain name of at least one server.

Important: Do not list IP addresses or reverse DNS names.

Example:  
ns1.example.com  
ns2.example.com

**Maintainer:**

Example:  
MAINT-AU-EXAMPLE

[Next](#)

# Whois domain object

```
domain:      28.12.202.in-addr.arpa
Descr:      in-addr.arpa zone for 28.12.202.in-addr.arpa
admin-c:    NO4-AP
tech-c:     AIC1-AP
zone-c:     NO4-AP
nserver:    cumin.apnic.net
nserver:    tinnie.apnic.net
nserver:    tinnie.arin.net
mnt-by:     MAINT-APNIC-AP
mnt-lower:  MAINT-AP-DNS
changed:    inaddr@apnic.net 20021023
changed:    inaddr@apnic.net 20040109
changed:    hm-changed@apnic.net 20091007
changed:    hm-changed@apnic.net 20111208
source:     APNIC
```

Reverse Zone

Contacts

Nameservers

Maintainers

# Questions

- Please remember to fill out the feedback form
  - `<survey-link>`
- Slide handouts will be available after completing the survey



# APNIC Helpdesk Chat

The screenshot displays the APNIC website's Helpdesk page. At the top left is the APNIC logo. The navigation bar includes Home, Services, Community, Events, Publications, and About us. The main content area features a 'Services' sidebar with a list of services including Registration services, Informing the community, Routing Registry, Resource certification, Training & education, Policy development, and Helpdesk (which is highlighted). The Helpdesk section provides contact information for Monday-Friday, 09:00 to 21:00 (UTC +10), and lists contact methods: Email (helpdesk@apnic.net), Phone (+61 7 3858 3188), VoIP (helpdesk@voip.apnic.net), and Fax (+61 7 3858 3199). A 'Multi-language phone support' section lists languages: Bahasa Indonesia, Bengali, Cantonese, English, Filipino (Tagalog), Hindi, and Mandarin. A 'Frequently asked questions' link is also present. On the right, a 'Request Live! Support' chat window is open, showing the APNIC Helpdesk Chat interface with input fields for Name, Email, and a question, and a 'Chat' button. The chat window footer indicates it is powered by PHP Live! v3.3 © OSI Codes Inc.

# Thank you!

End of Session

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