DNS - How it works

What is DNS

- Resolves a Fully Qualified Domain Name (FQDN) to an IP address
- Resolves an IP address to a FQDN
- Decentralize the management of records
- Hierarchical global access to the DNS servers

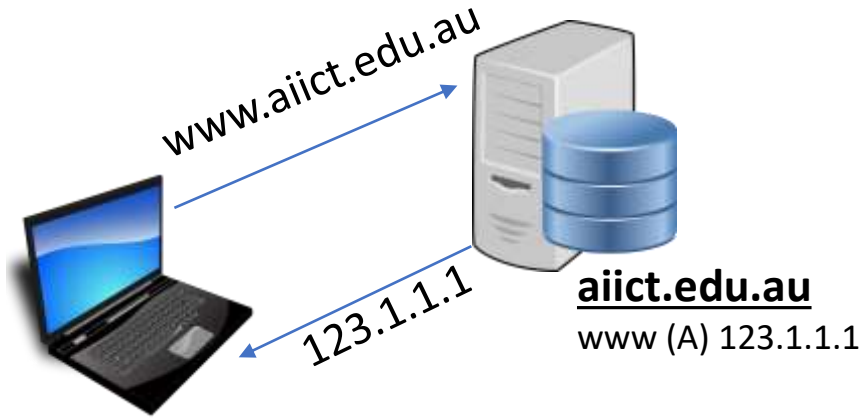
What is a Fully Qualified Domain Name

- www.microsoft.com.
  - This is an FQDN
  - Consists of two parts: Host Name, Domain Name
    - www.microsoft.com.
    - mail.aiict.edu.au.
  - The Host name is the name at the start
  - The Domain name is the rest of the address

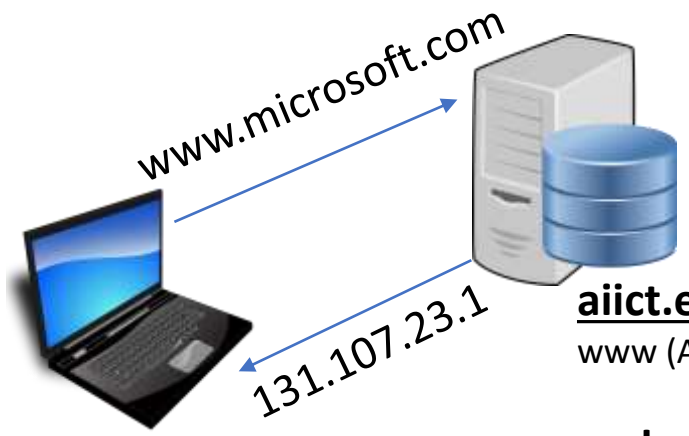
How does DNS work

- DNS Client (Resolver)
  - Try to resolve FQDN locally first
  - Request resolution for a FQDN from a DNS server
- DNS Server
  - Do I own a zone that relates to the FQDN
  - Do I have a Cached answer that can help resolve the FQDN
  - Is there a Conditional Forwarder set for the FQDN
  - If there an Unconditional Forwarder set
  - Are Root Hints configured

DNS local resolution



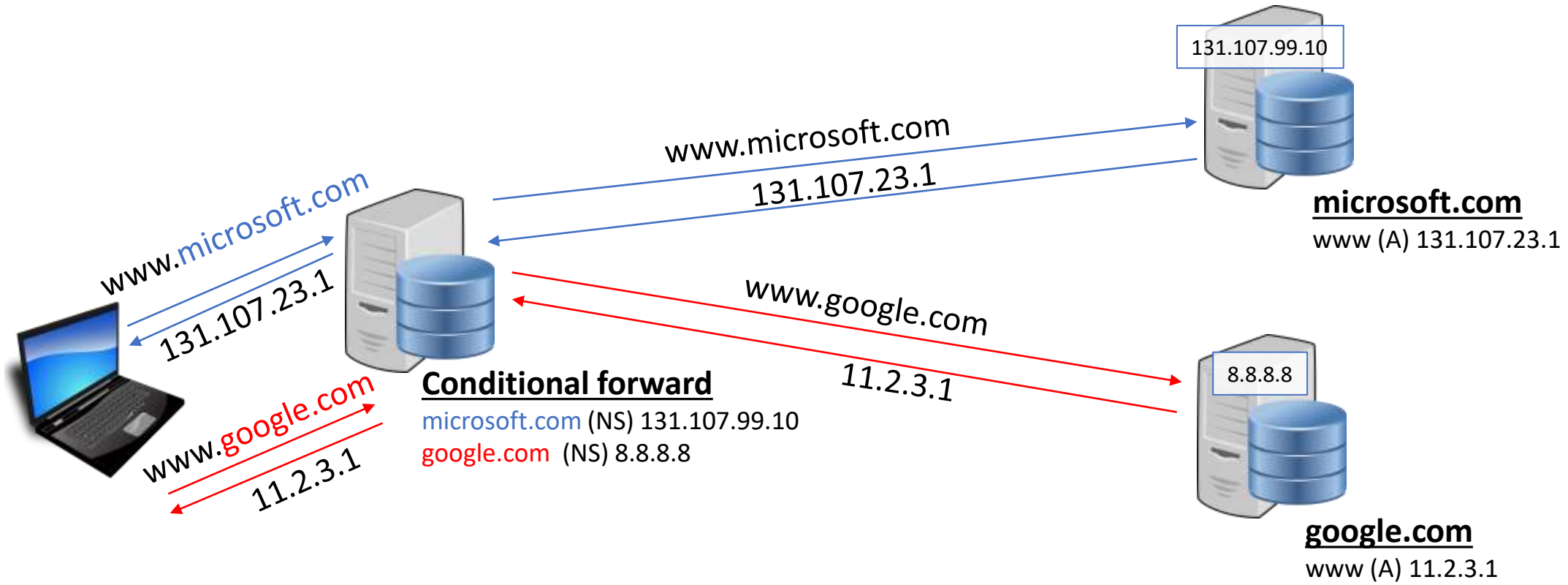
DNS local resolution from cache



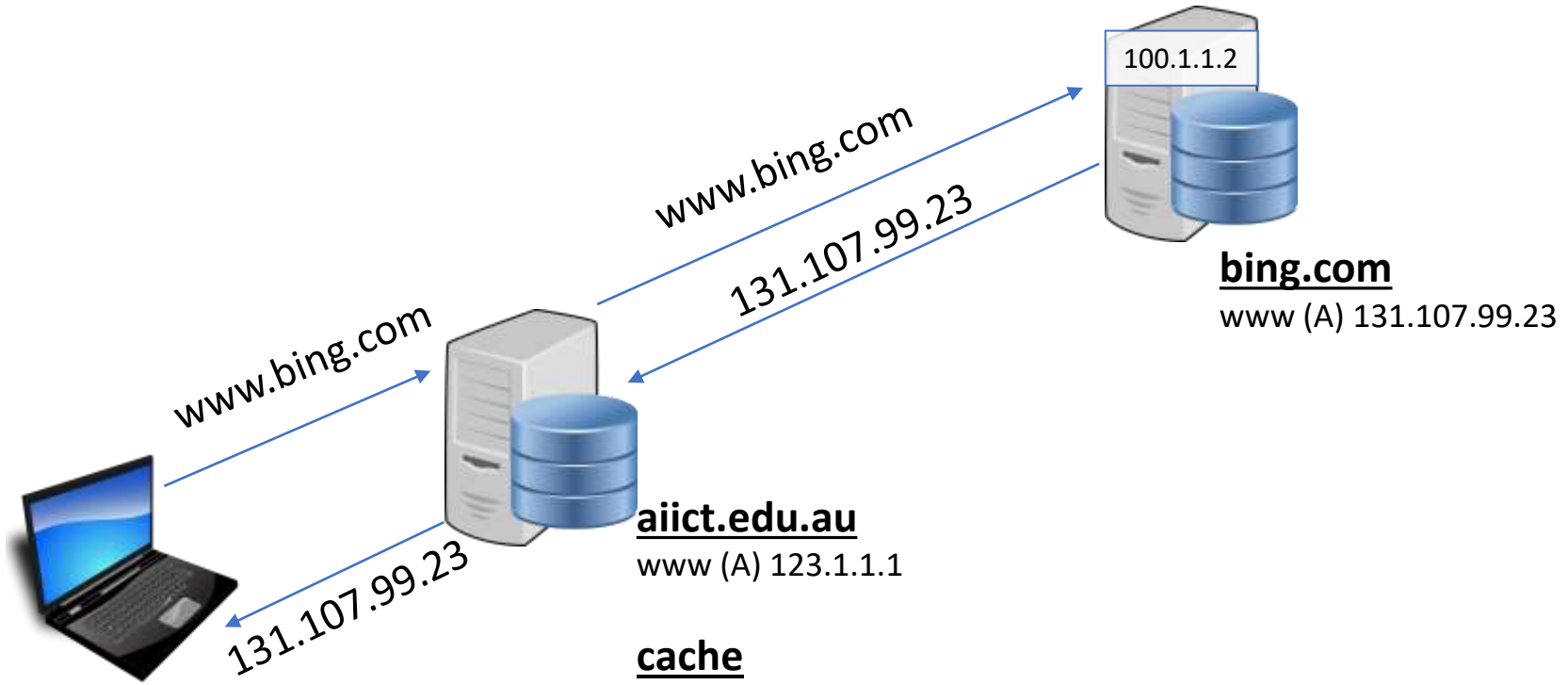
aiict.edu.au
www (A) 123.1.1.1

cache
www.microsoft.com (A) 131.107.23.1 (TTL - 30min)

DNS resolution-conditional forwarding



DNS resolution-unconditional forwarding



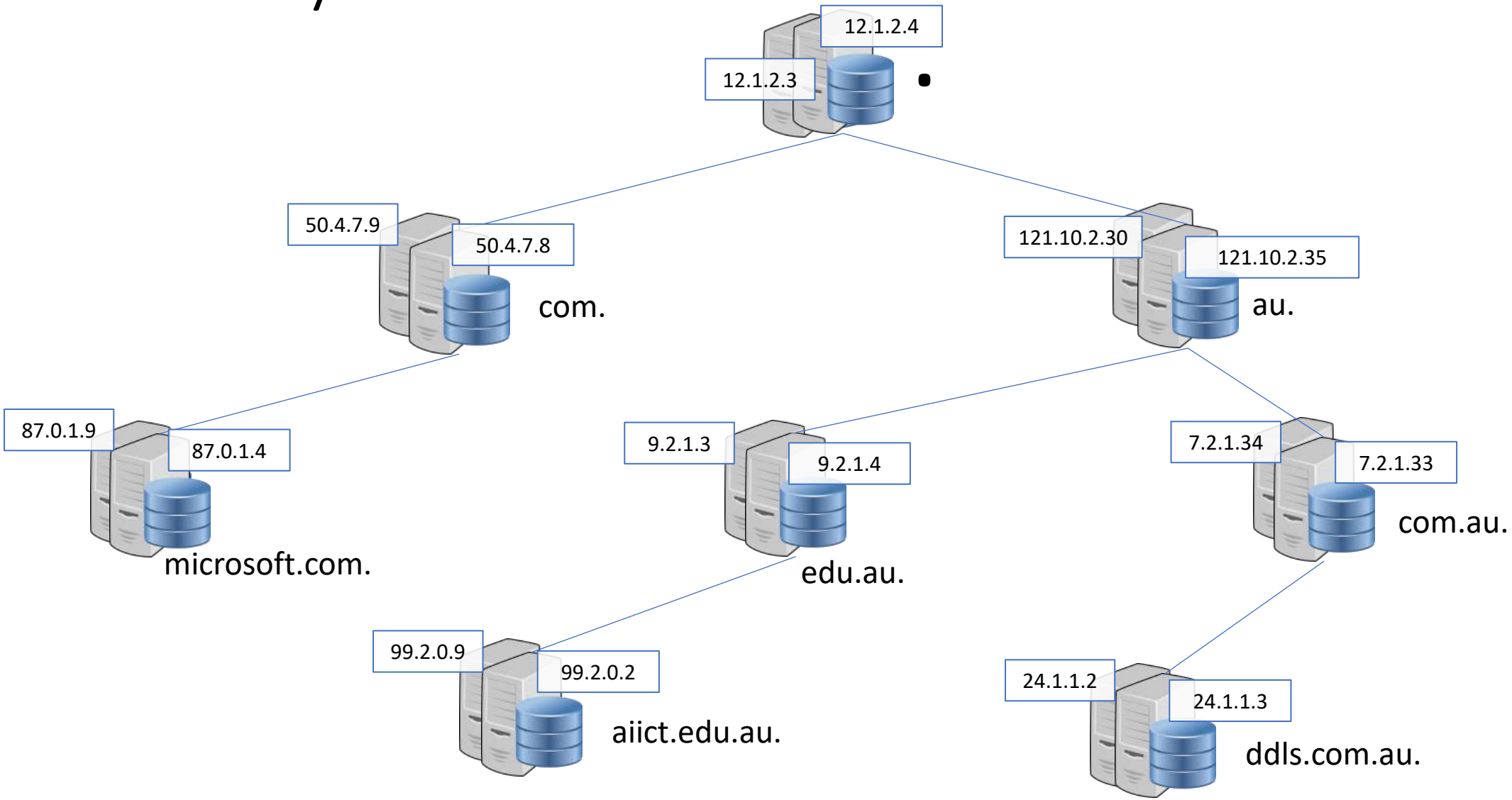
bing.com
www (A) 131.107.99.23

aiict.edu.au
www (A) 123.1.1.1

cache
www.microsoft.com (A) 131.107.23.1 (TTL - 30min)

unconditionally forward
(NS) 100.1.1.2

DNS Hierarchy



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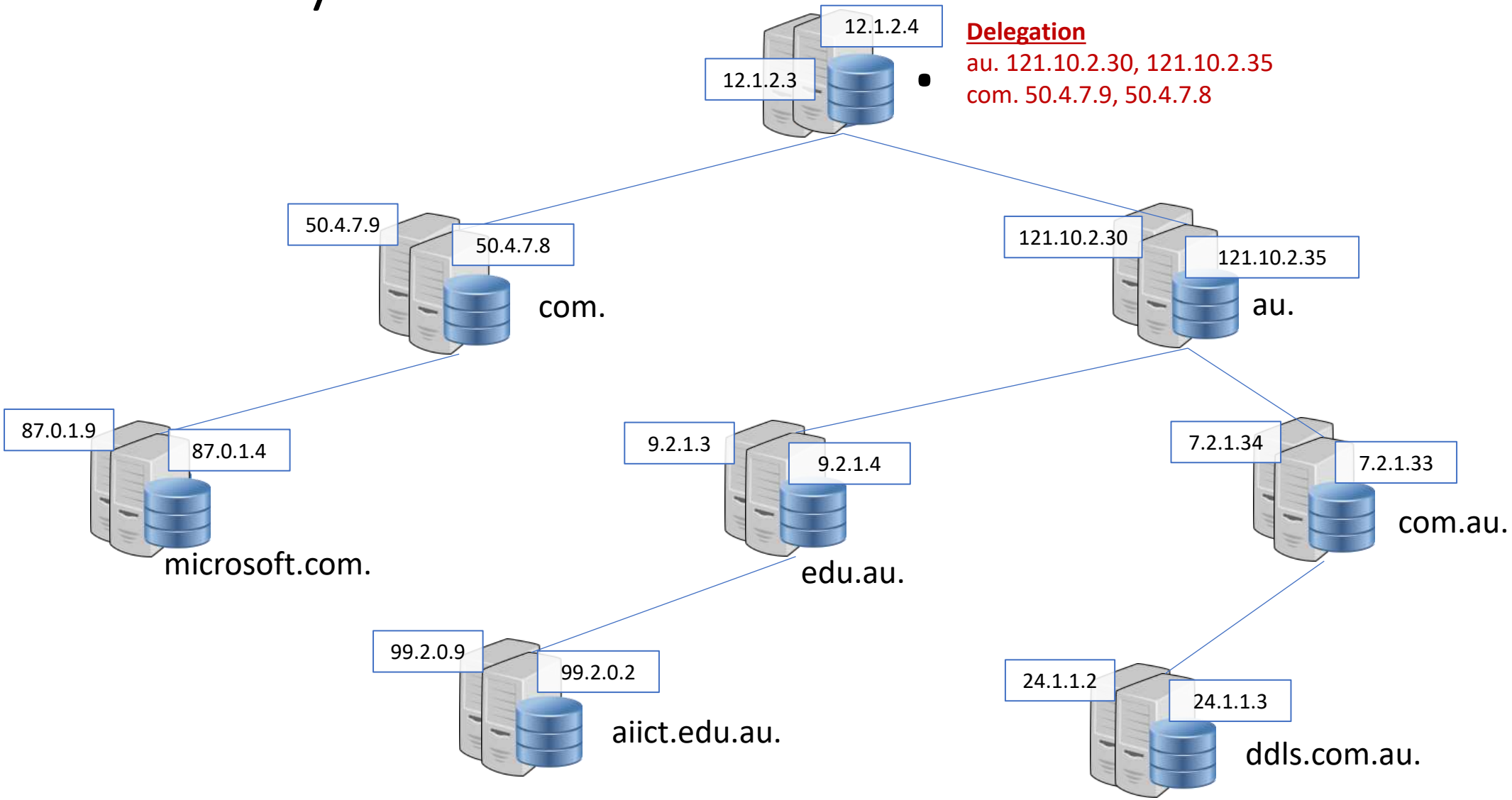

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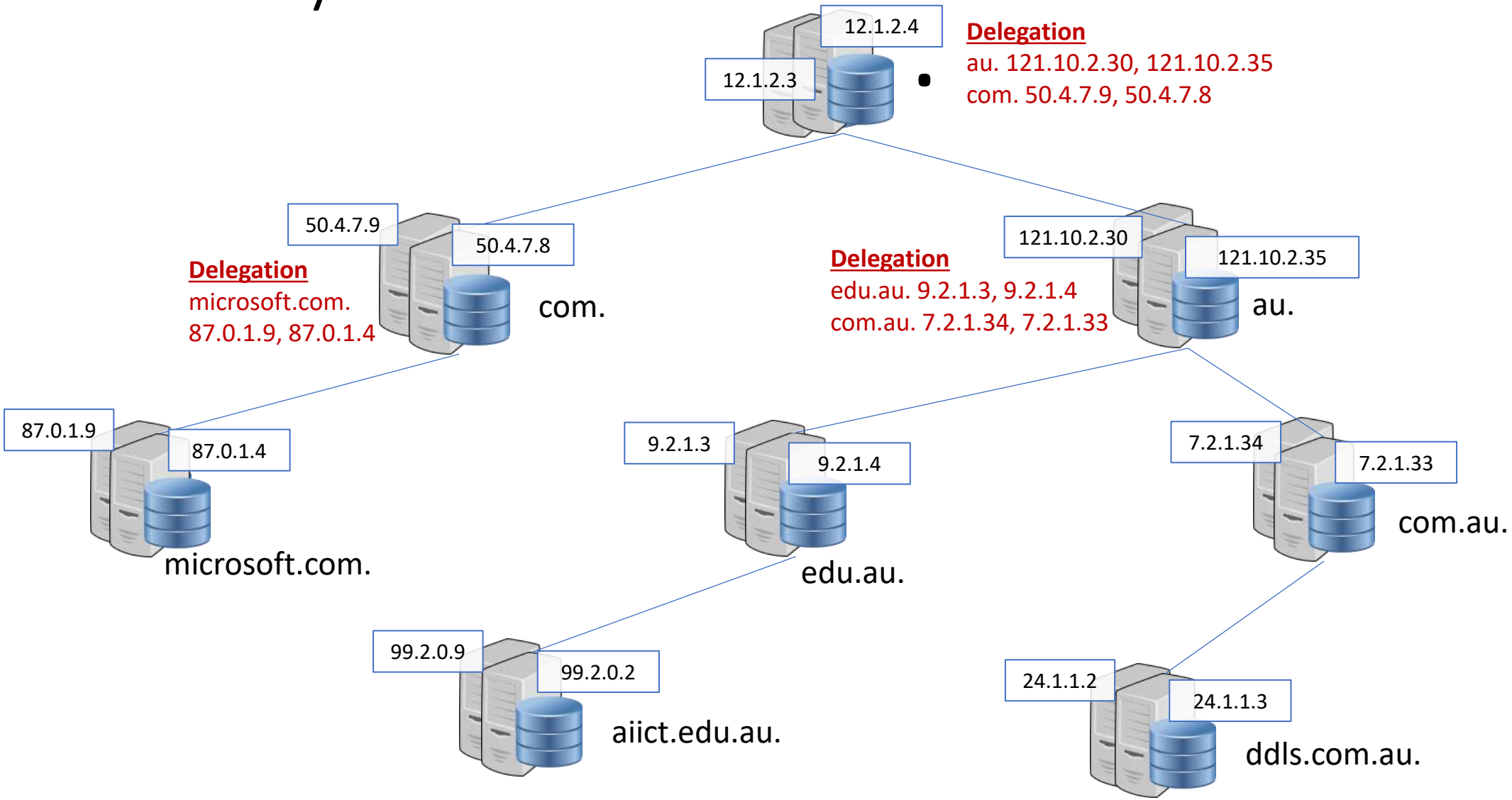

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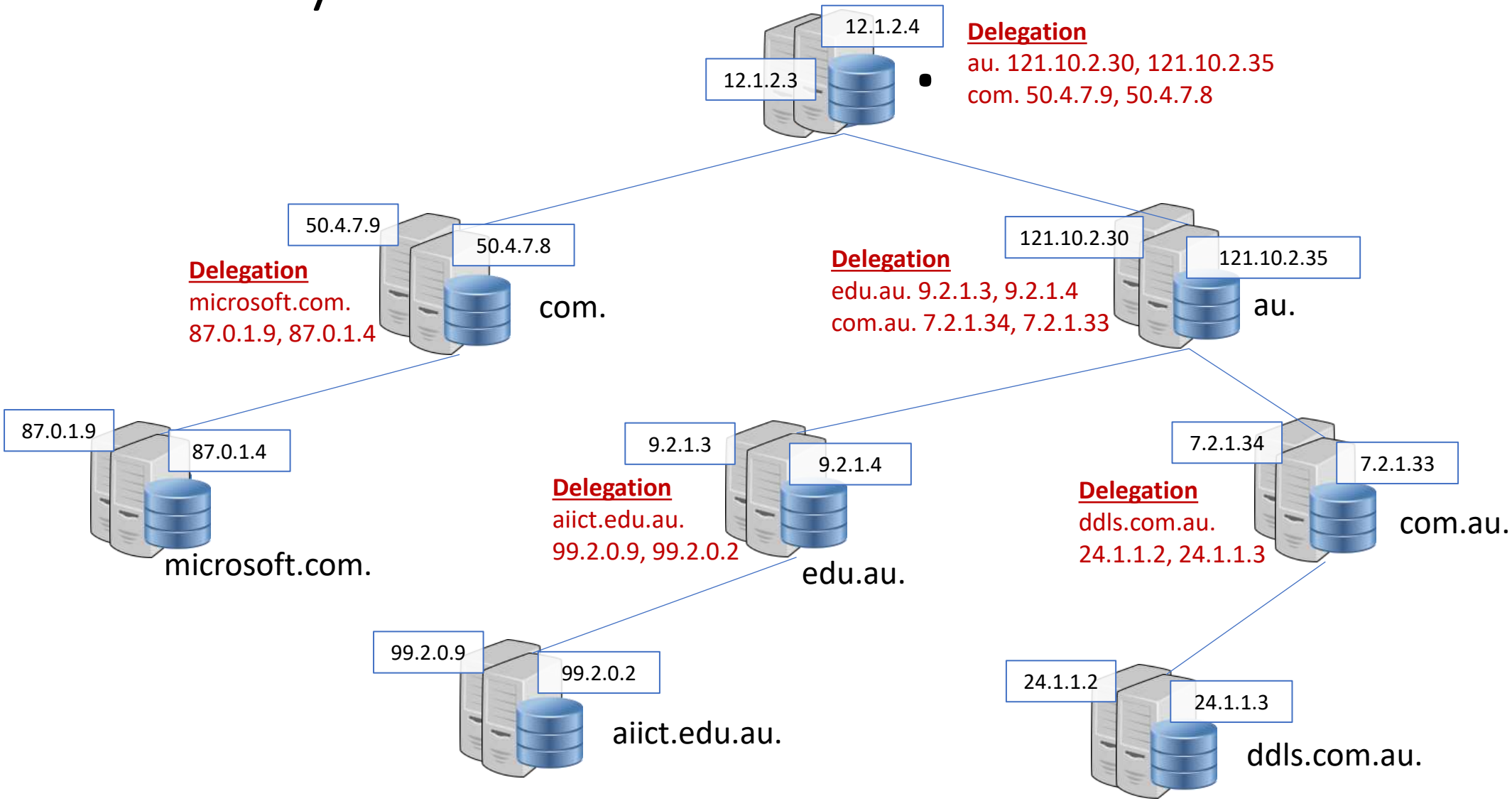

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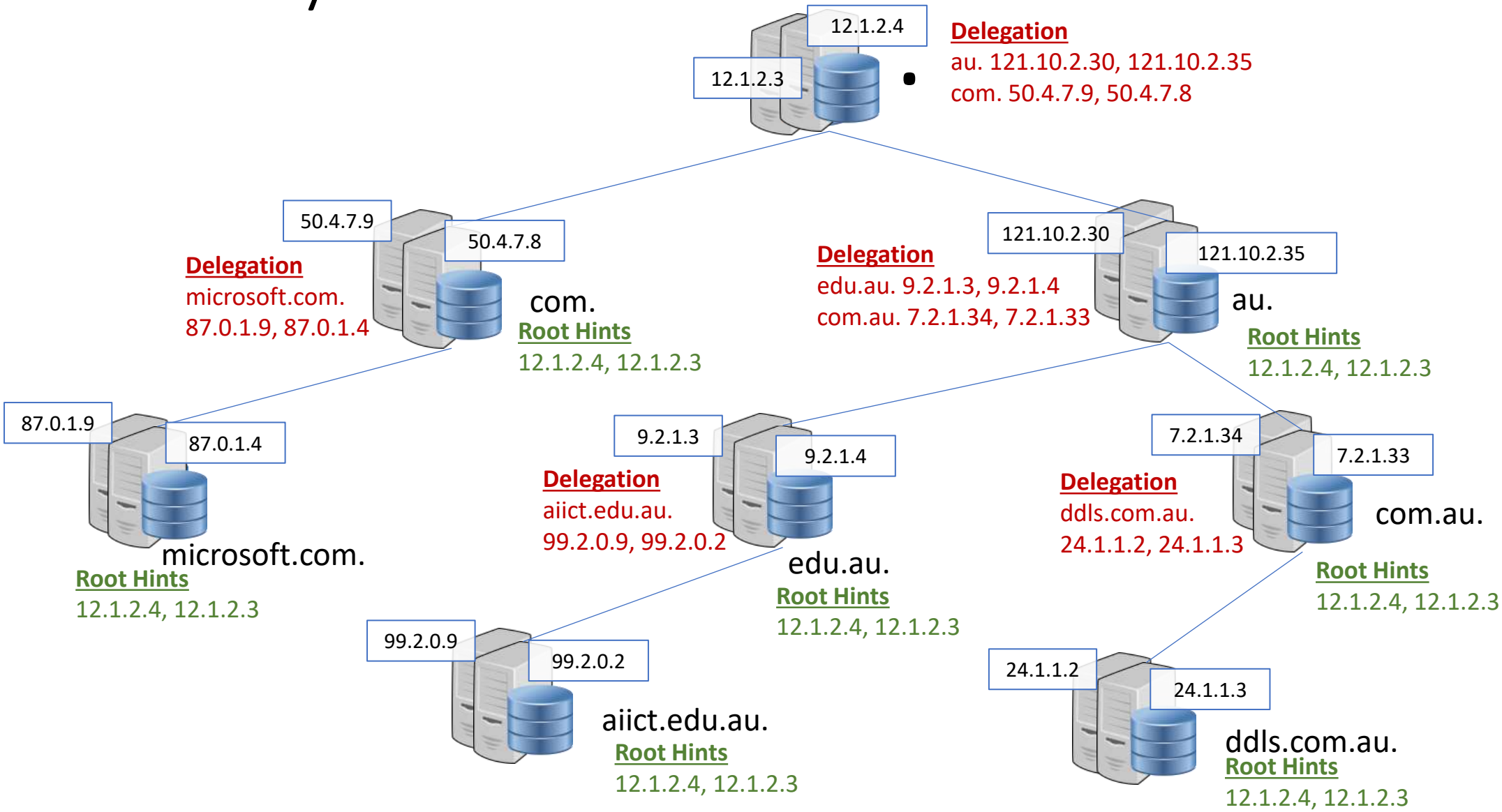

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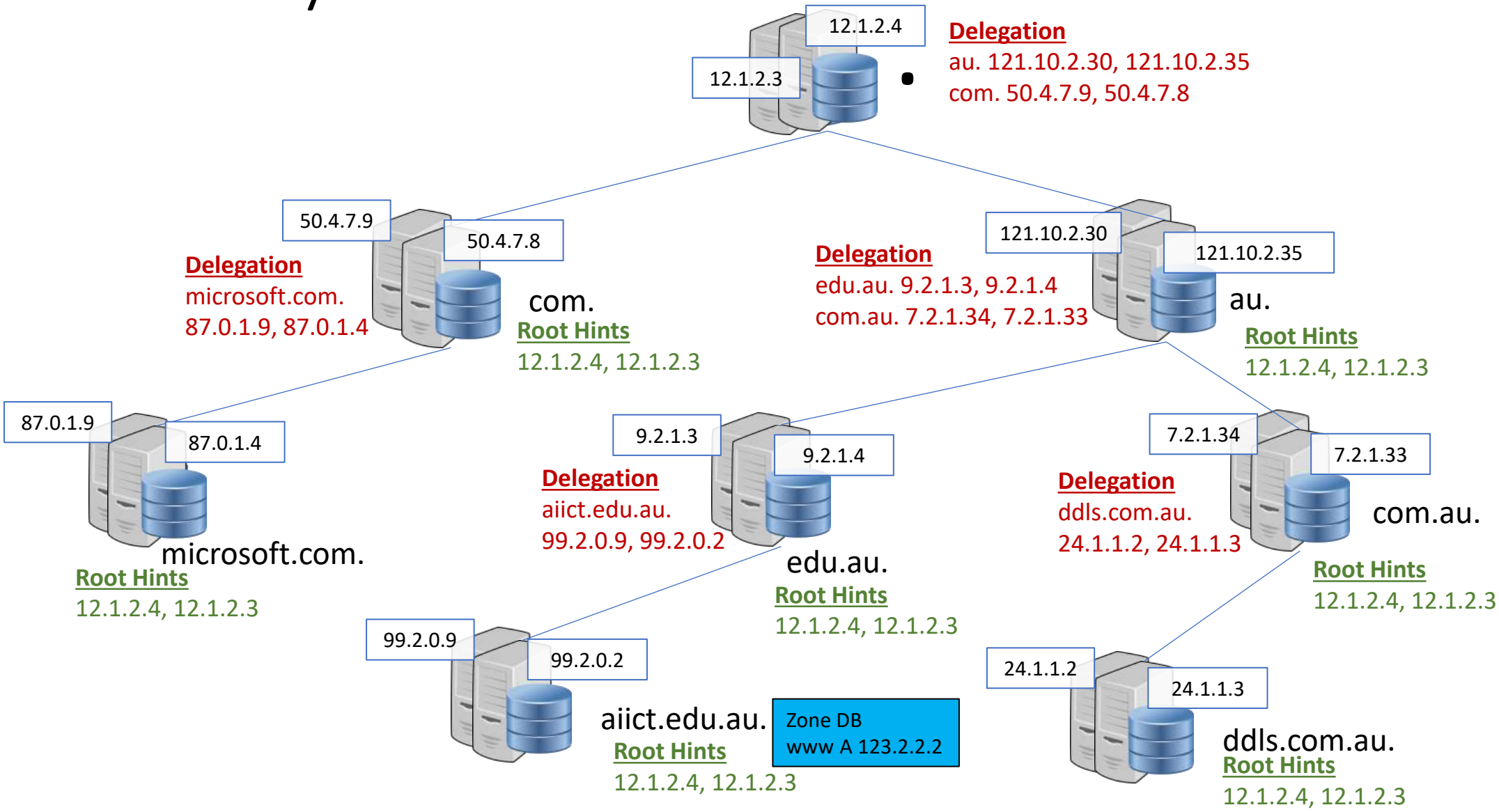

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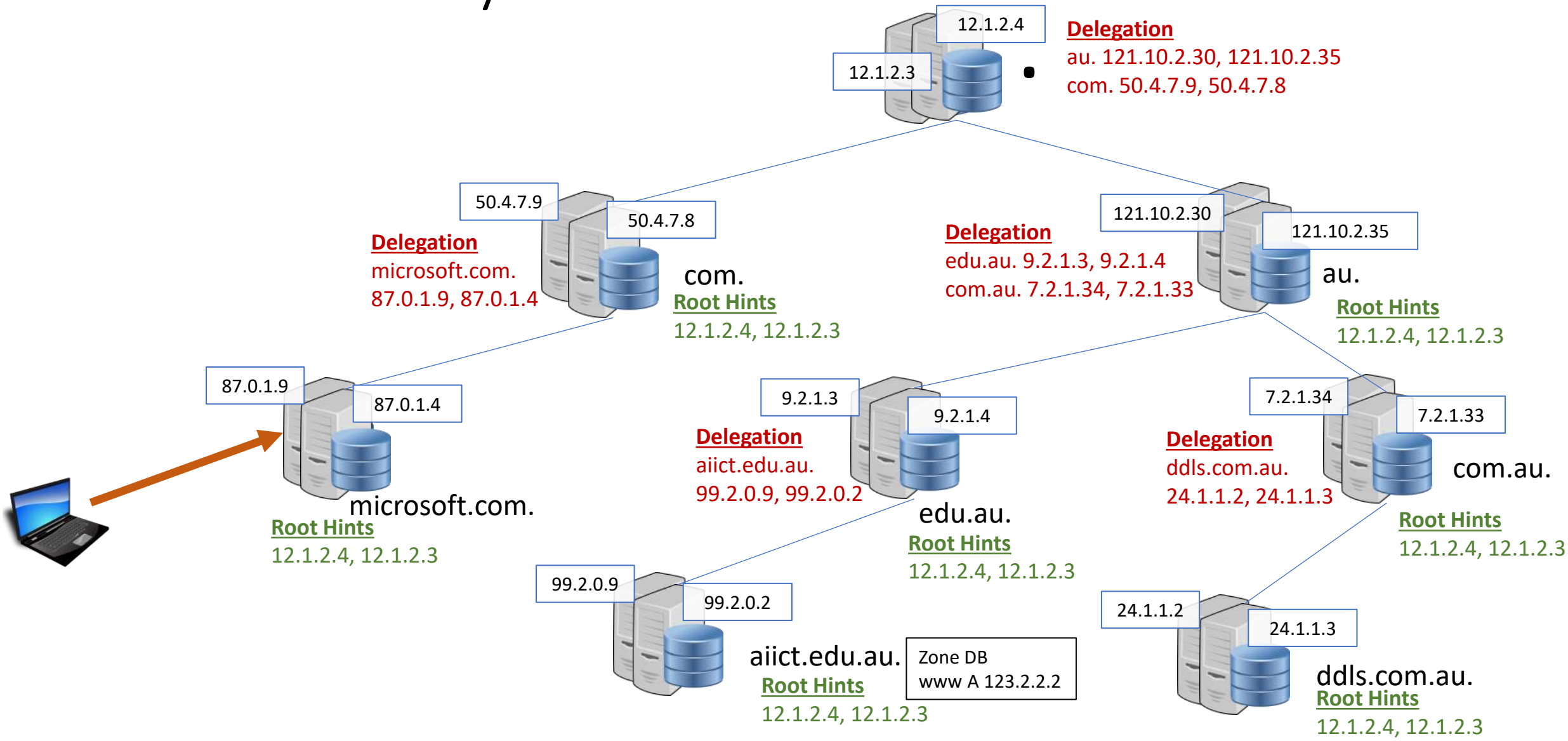

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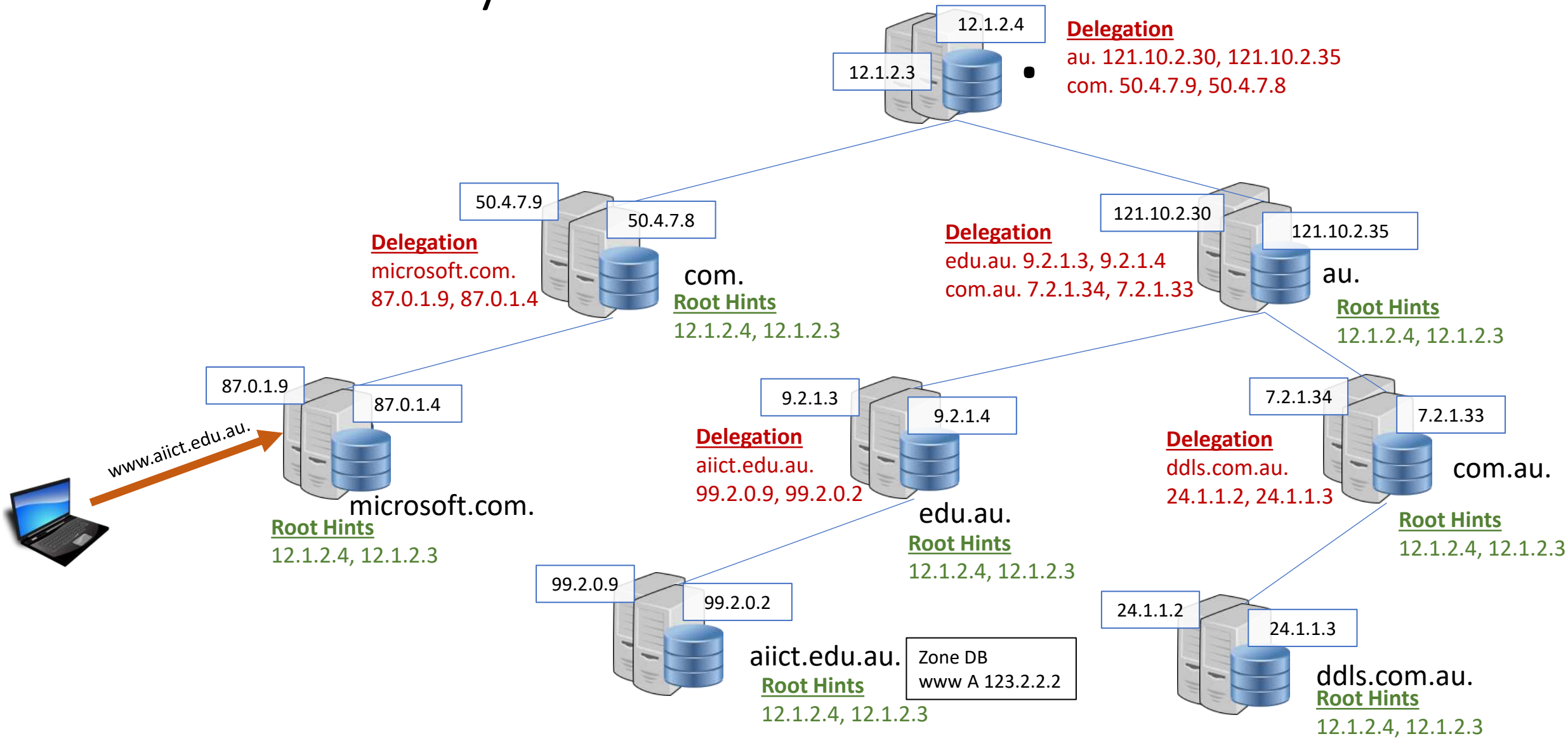

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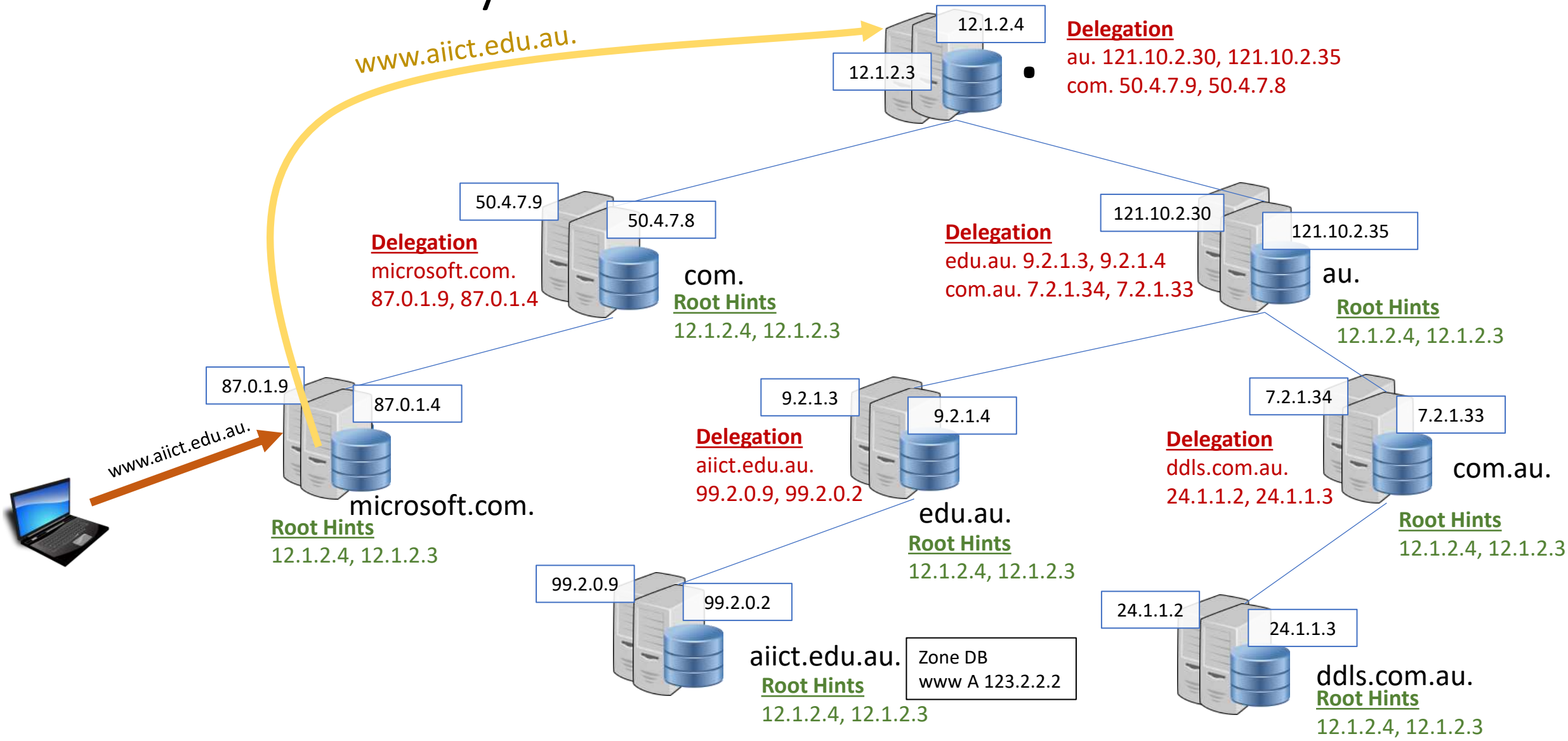

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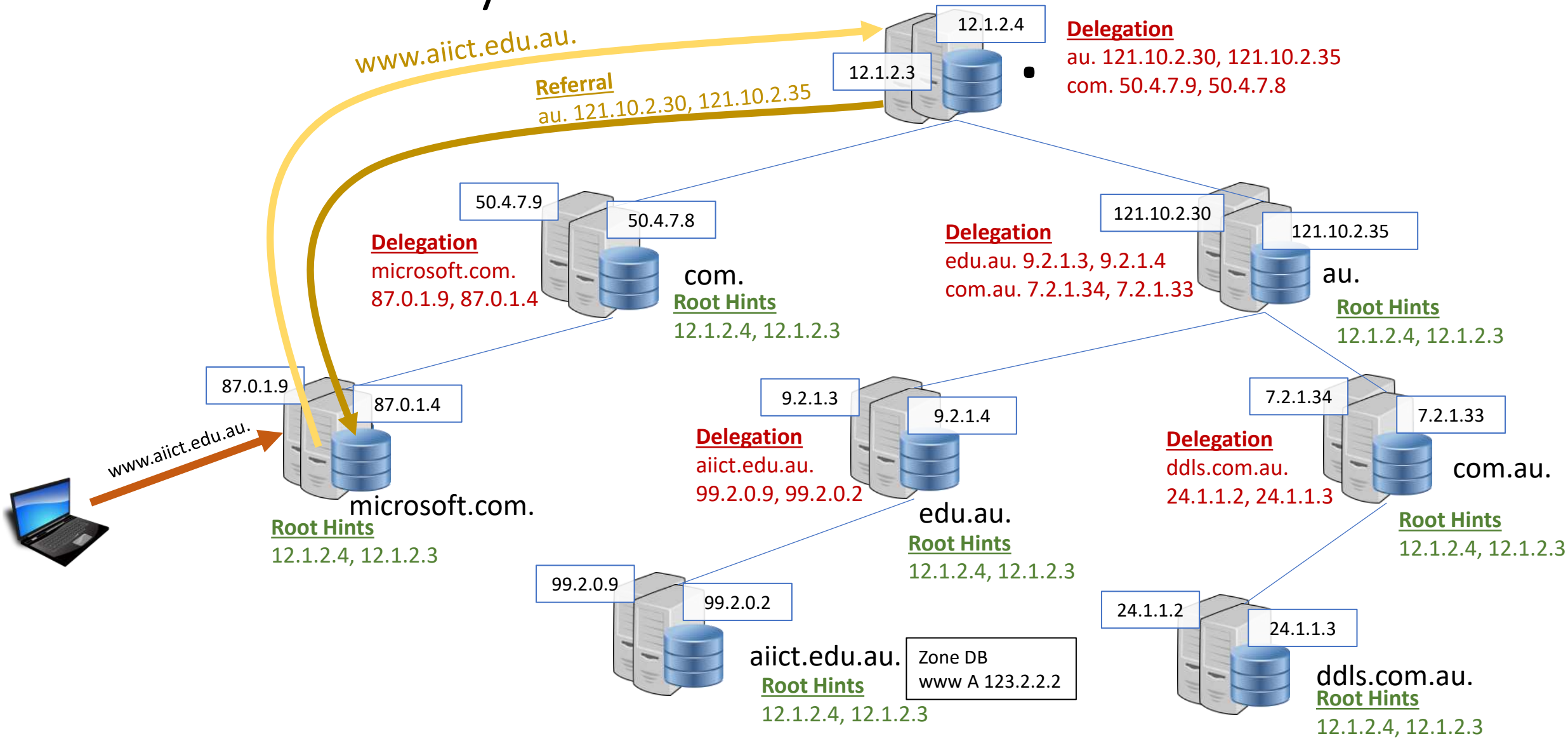

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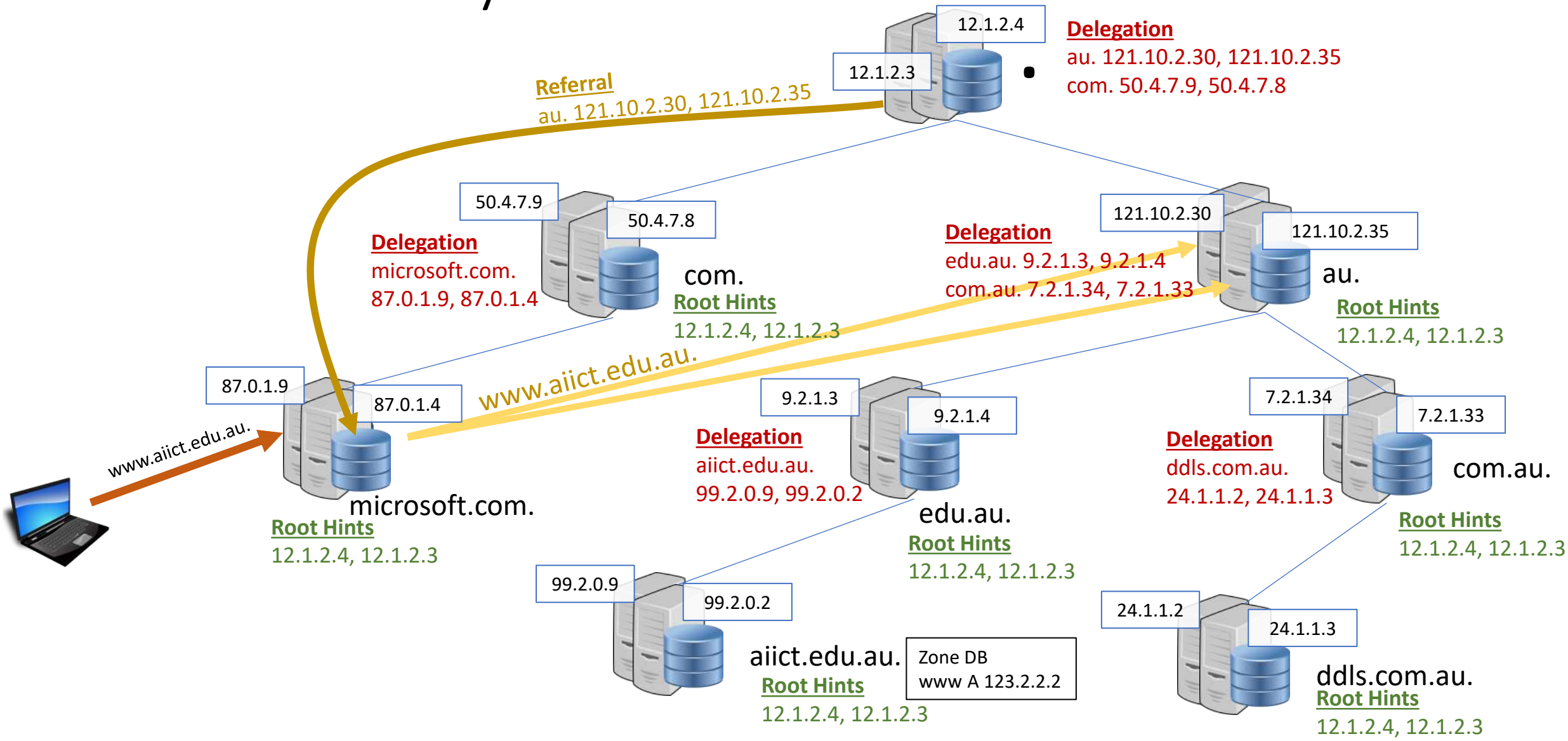

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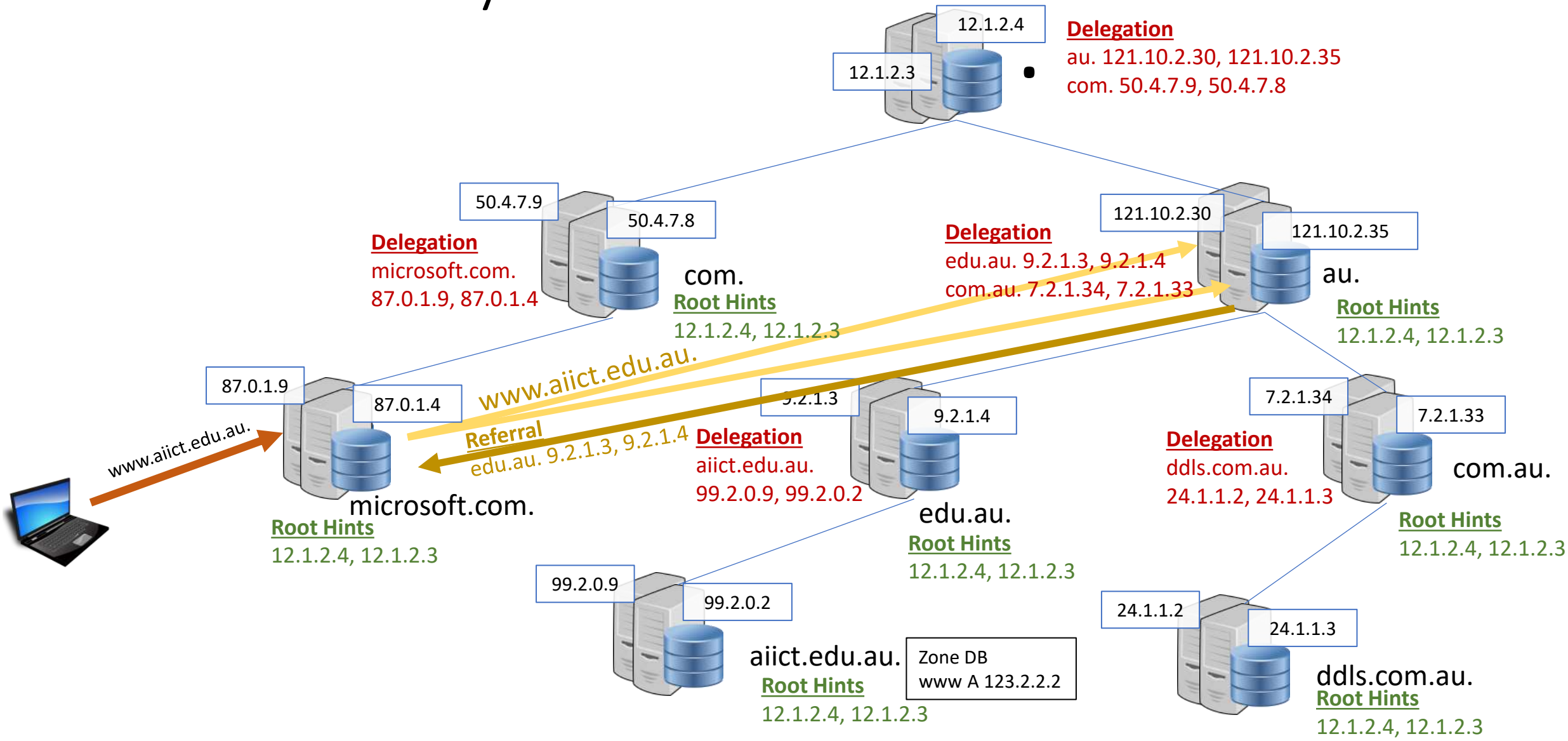

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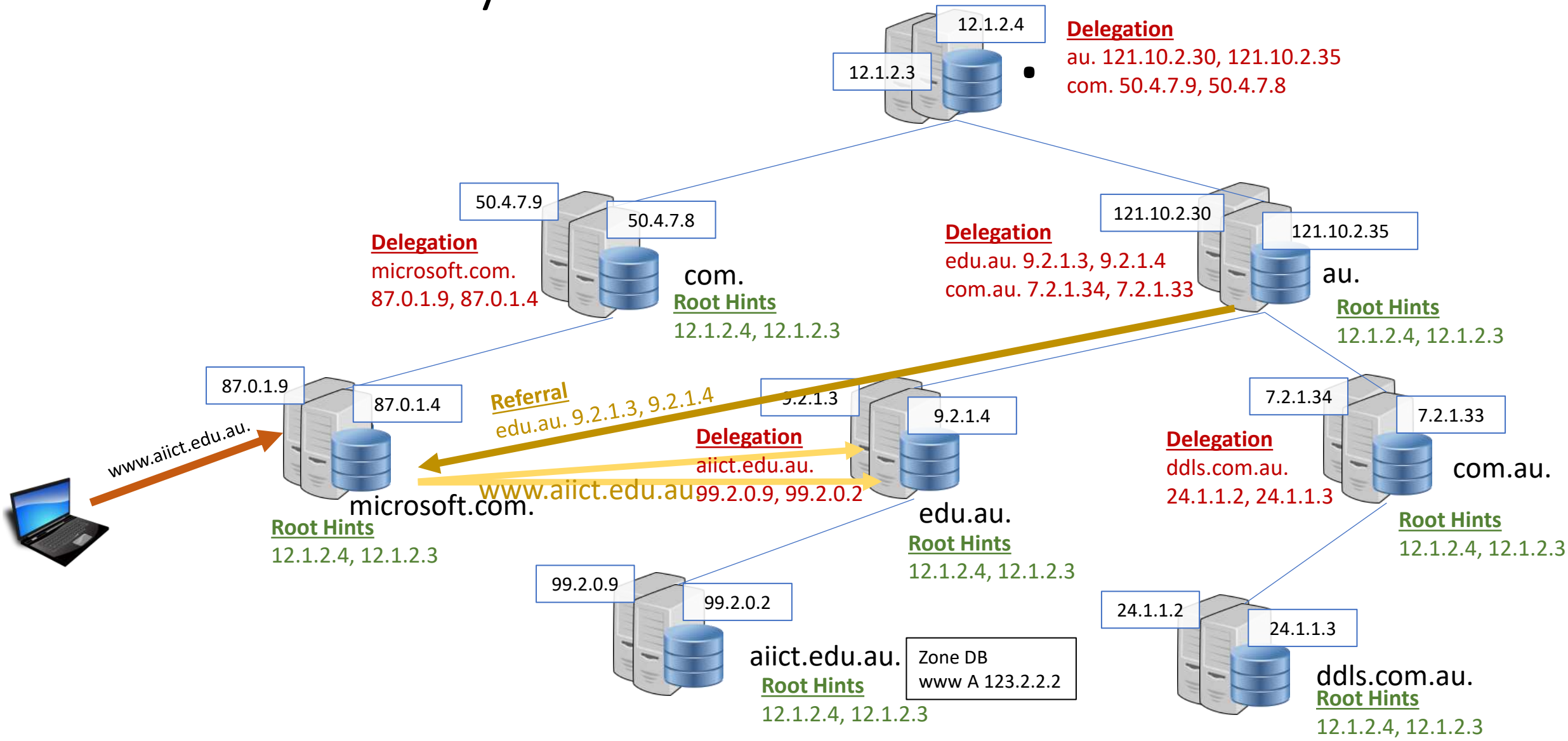

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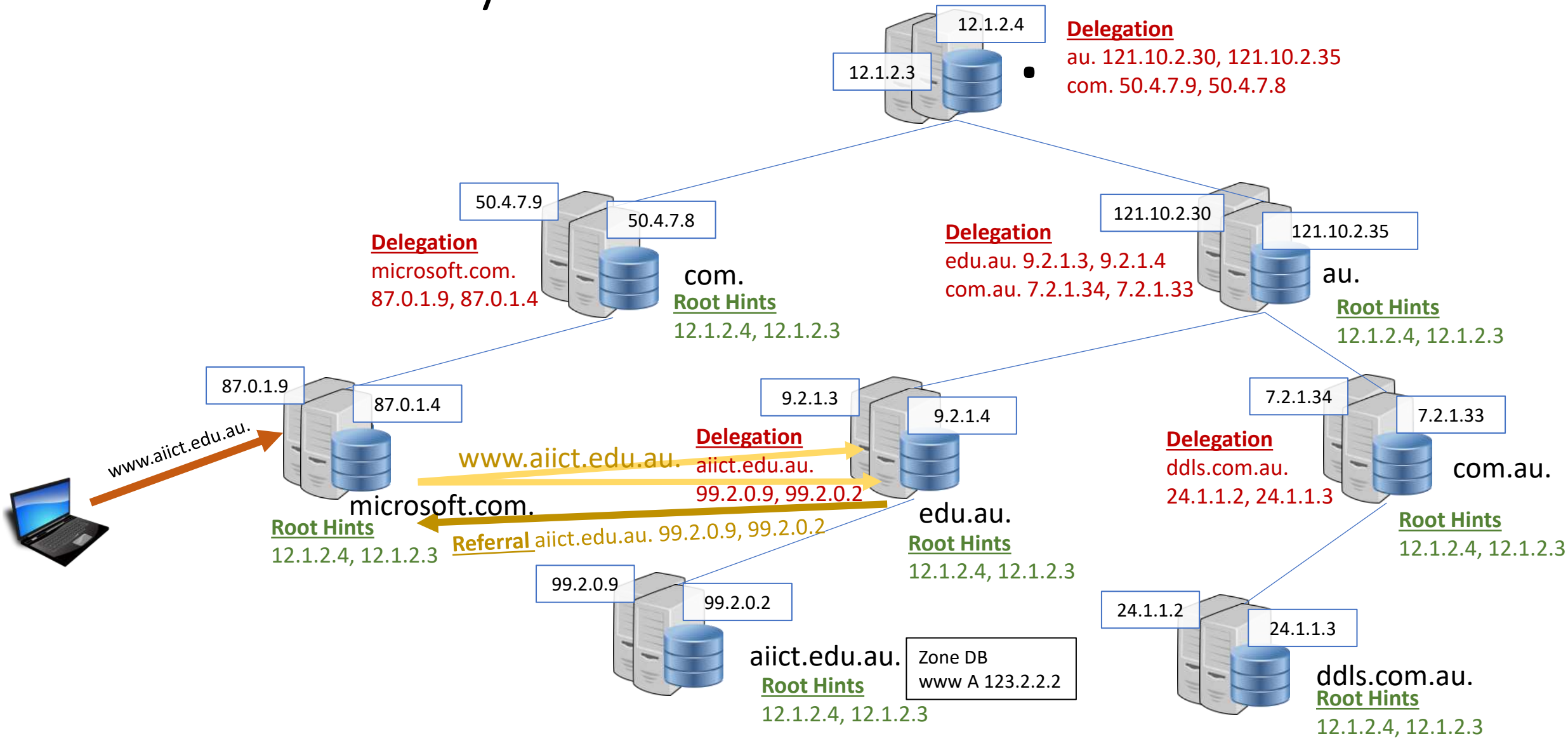

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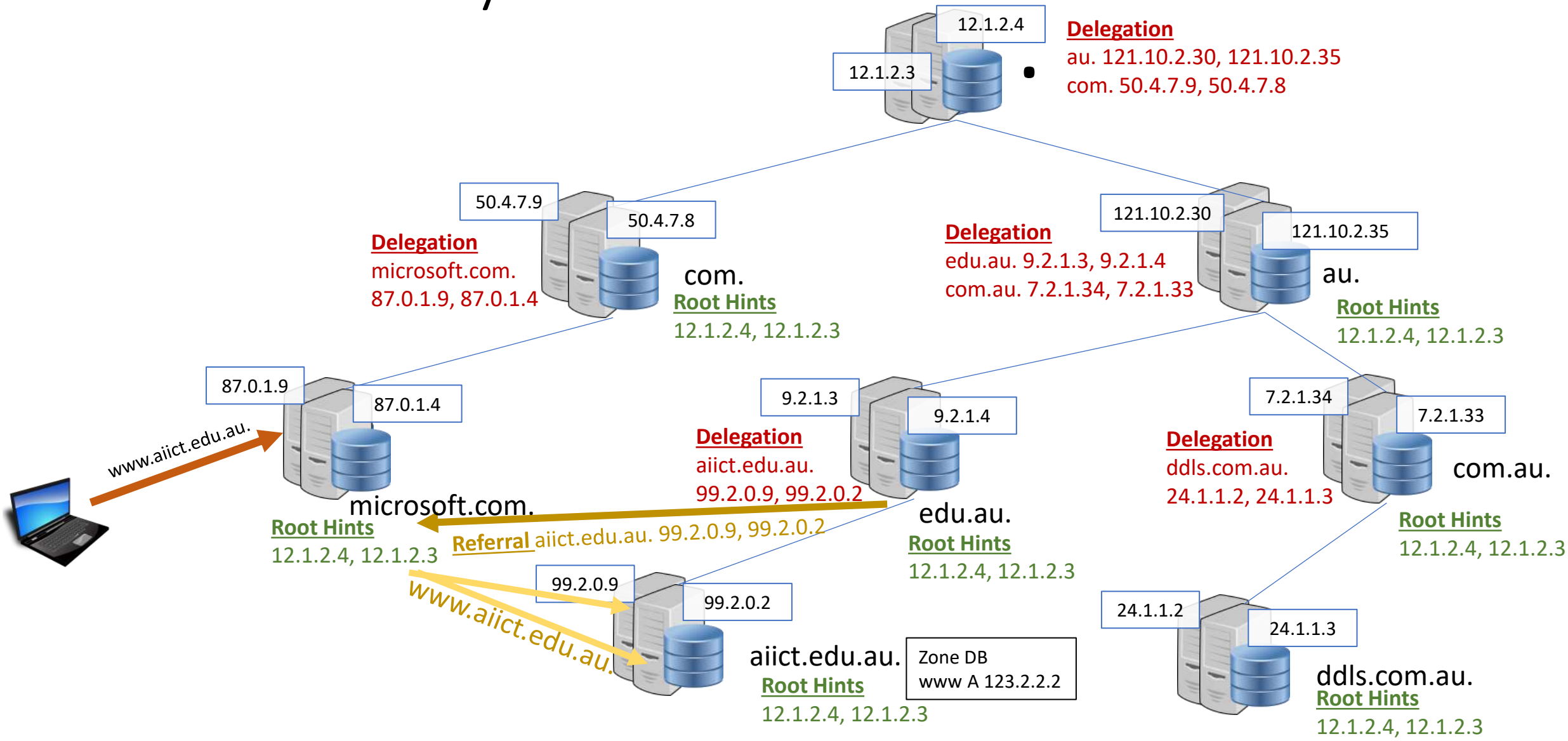

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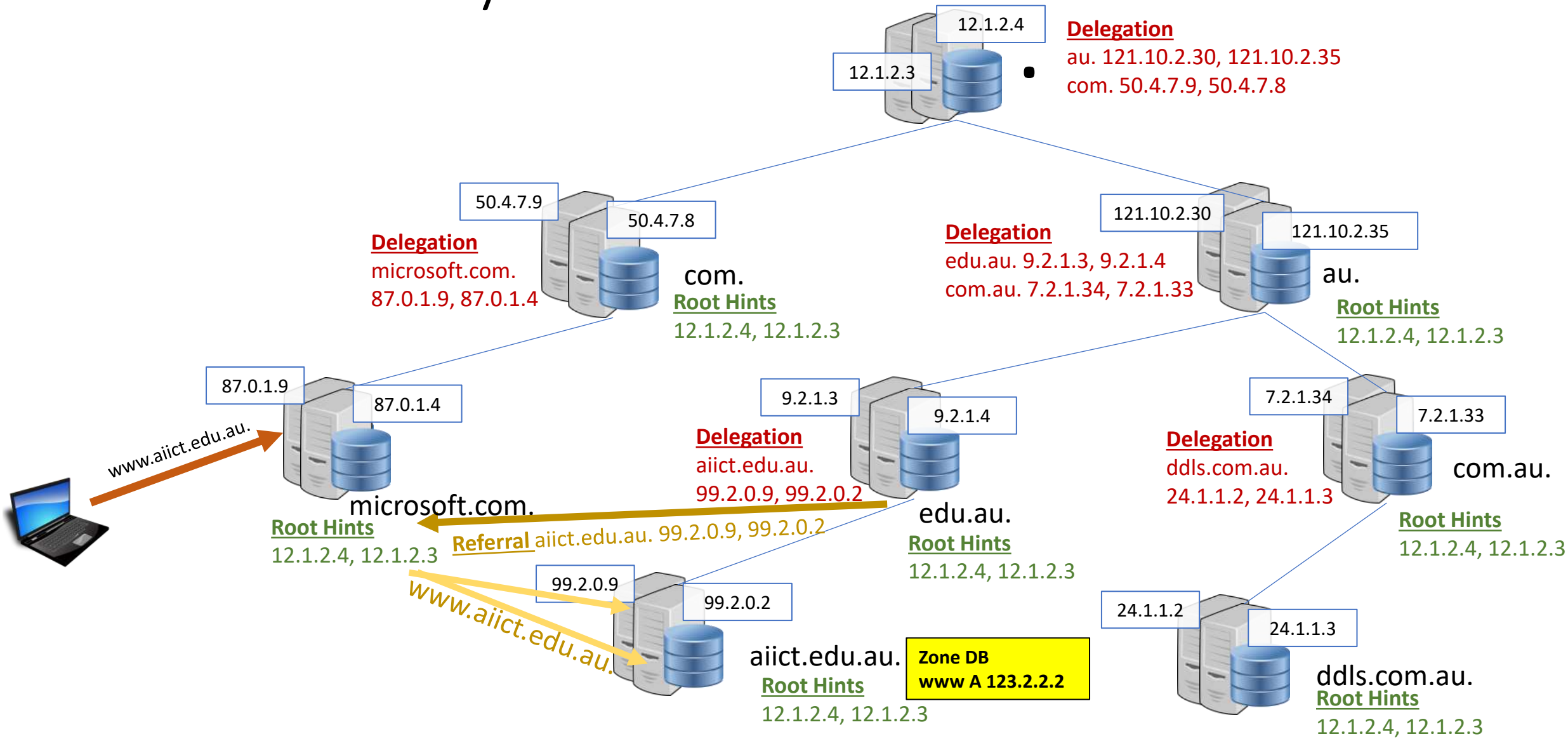

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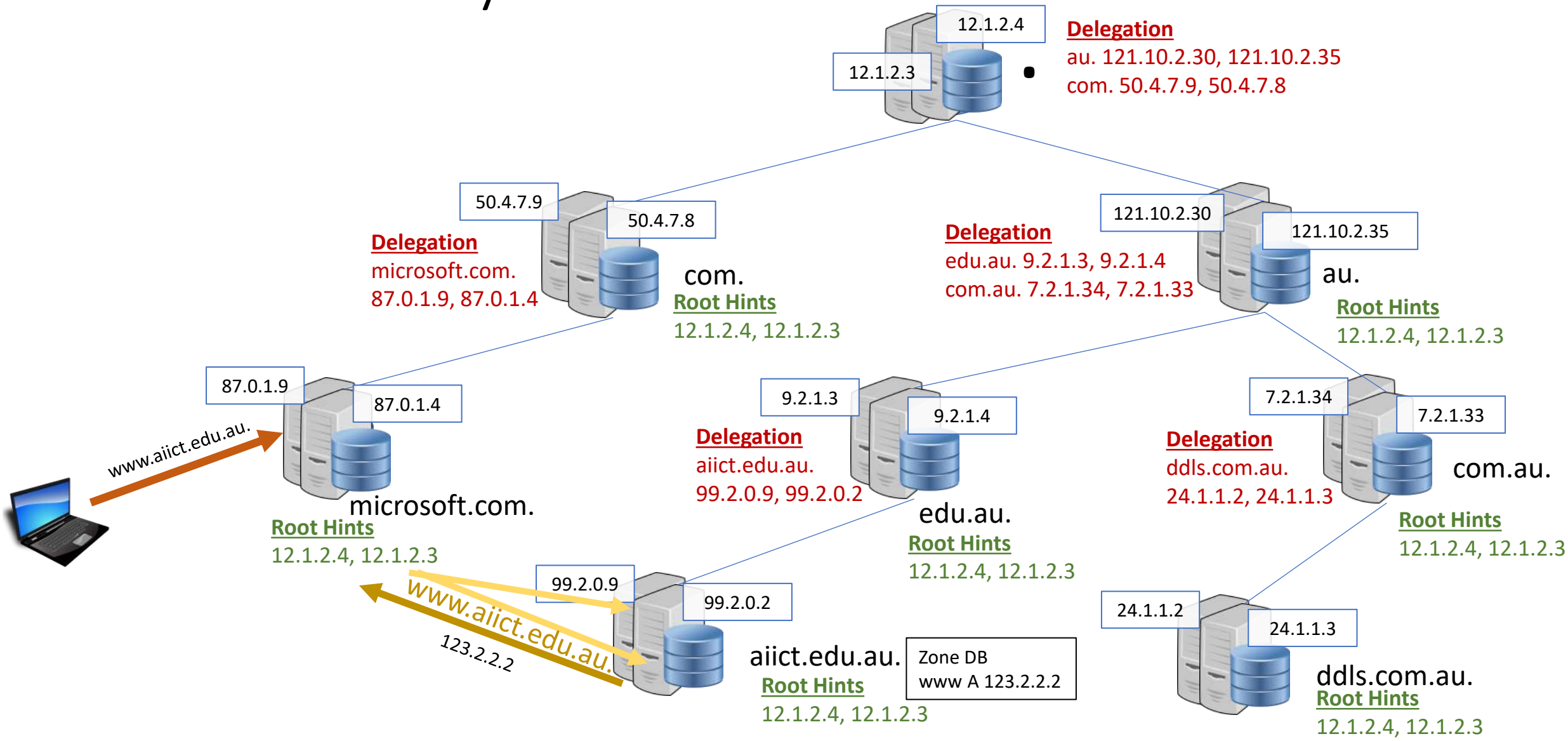

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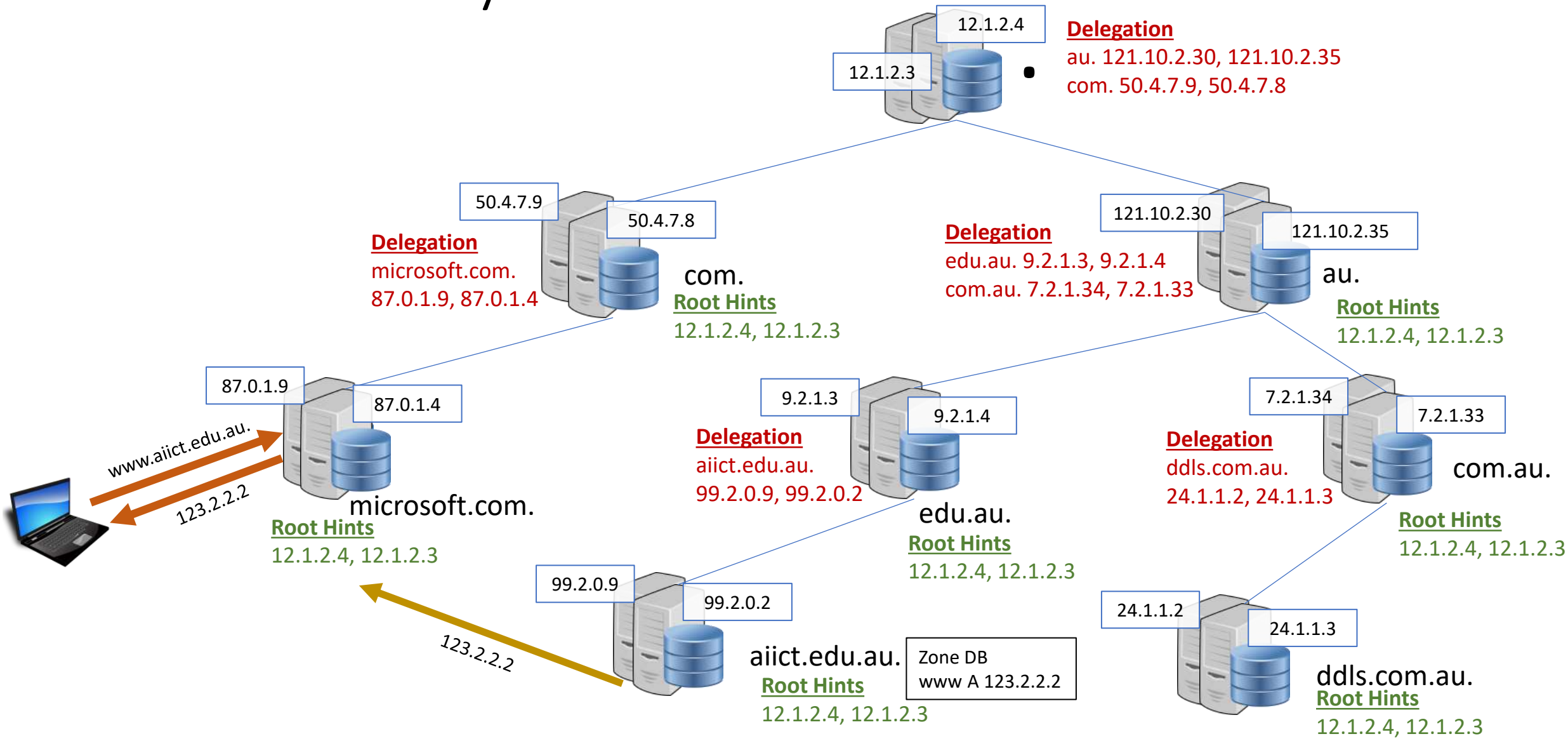

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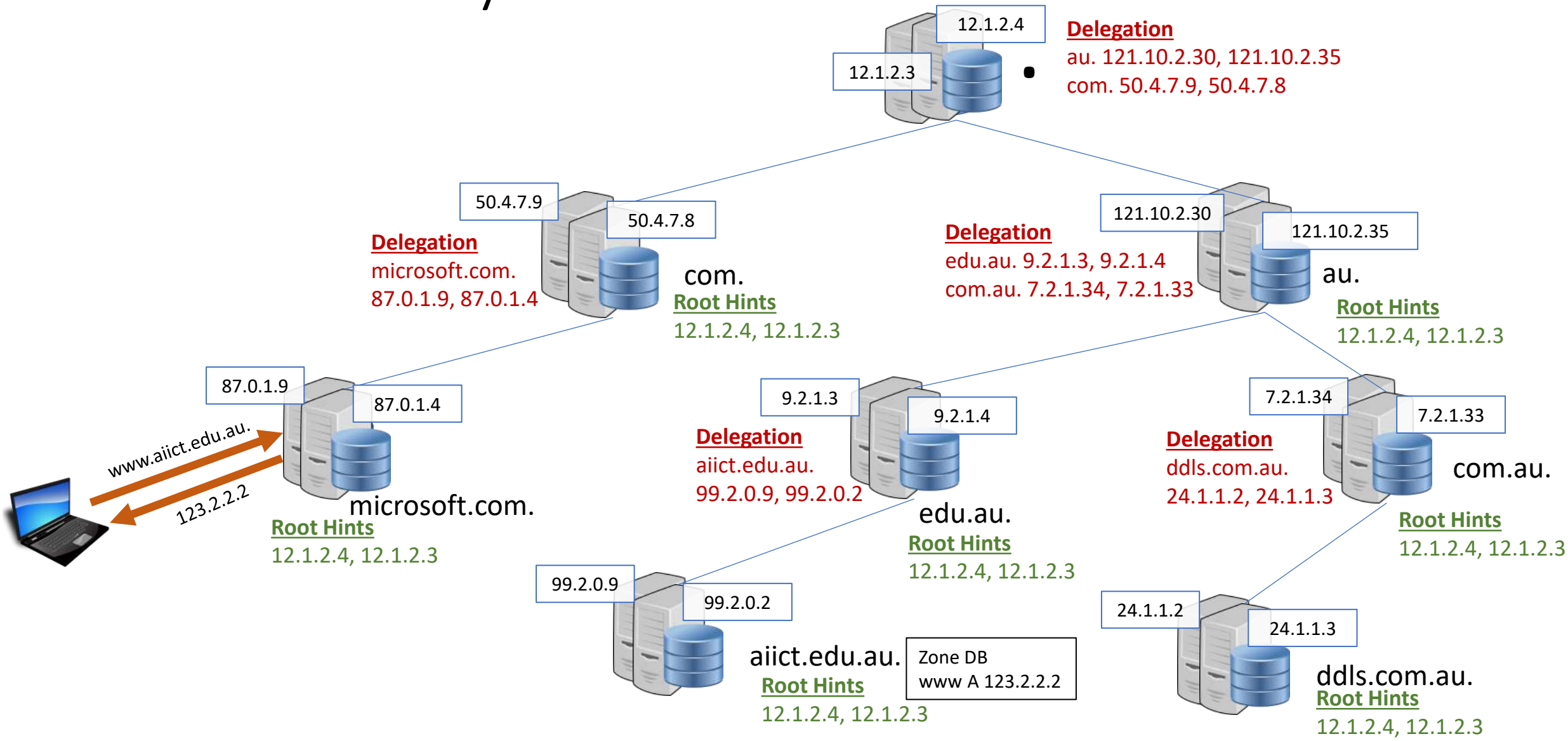
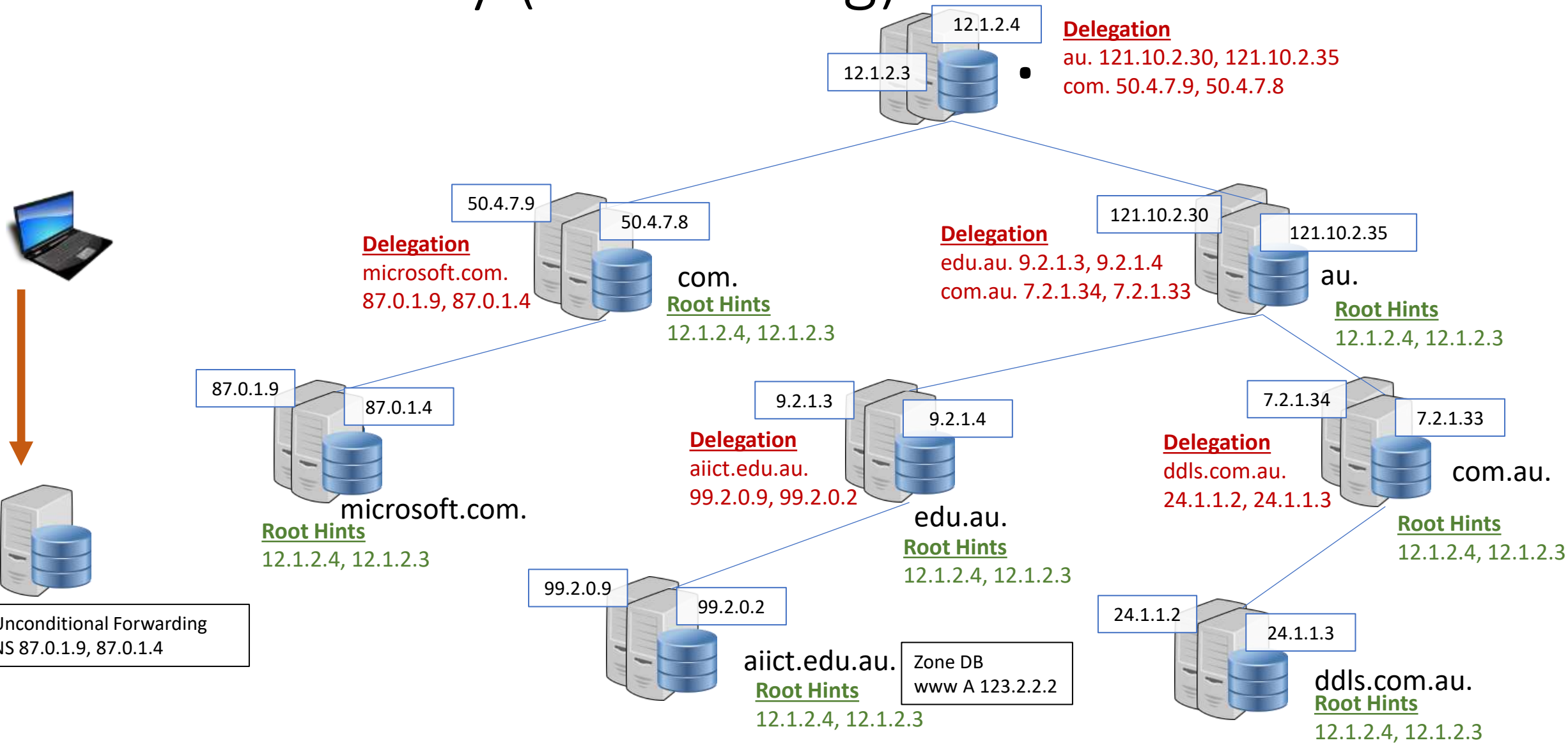


DNS Hierarchy (Forwarding)



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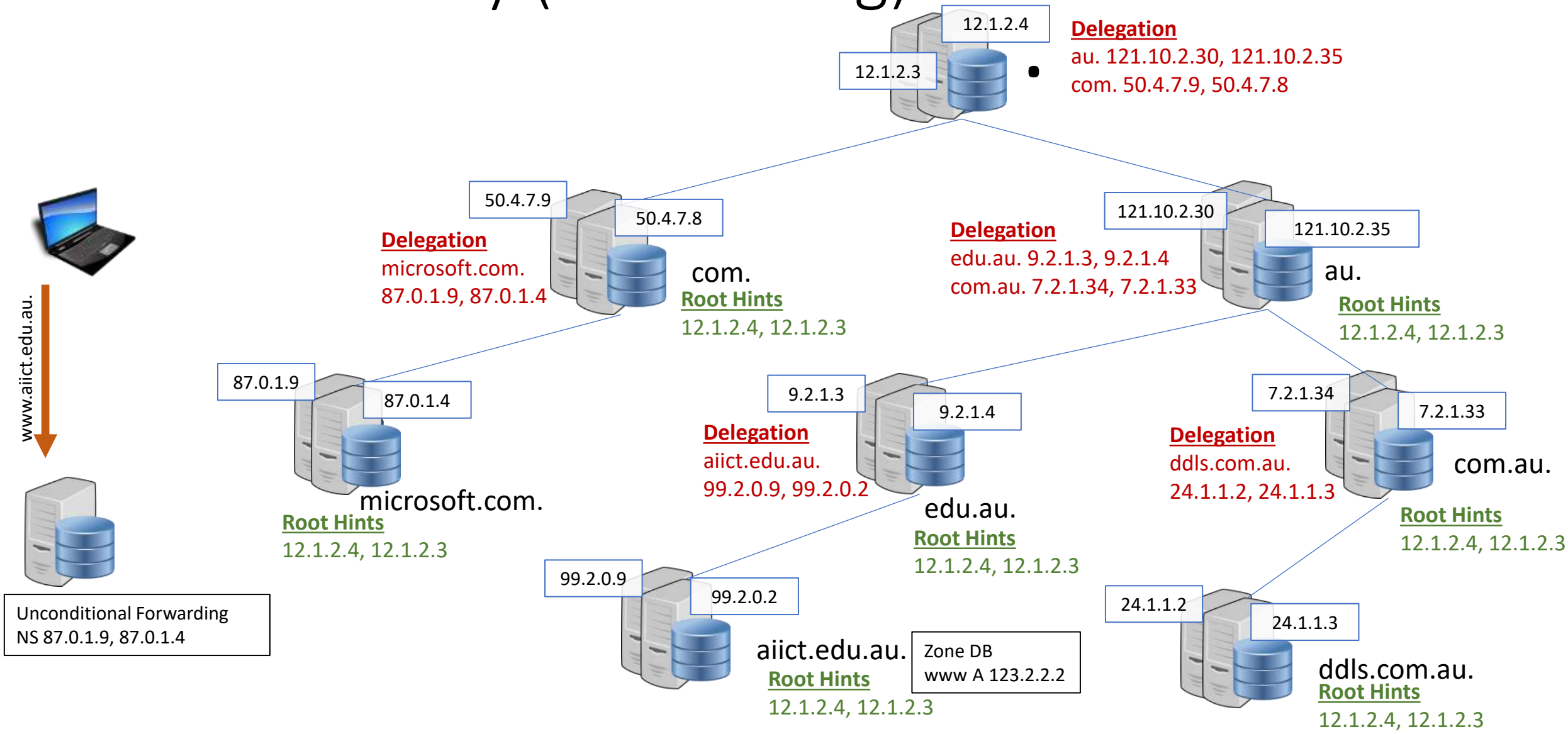

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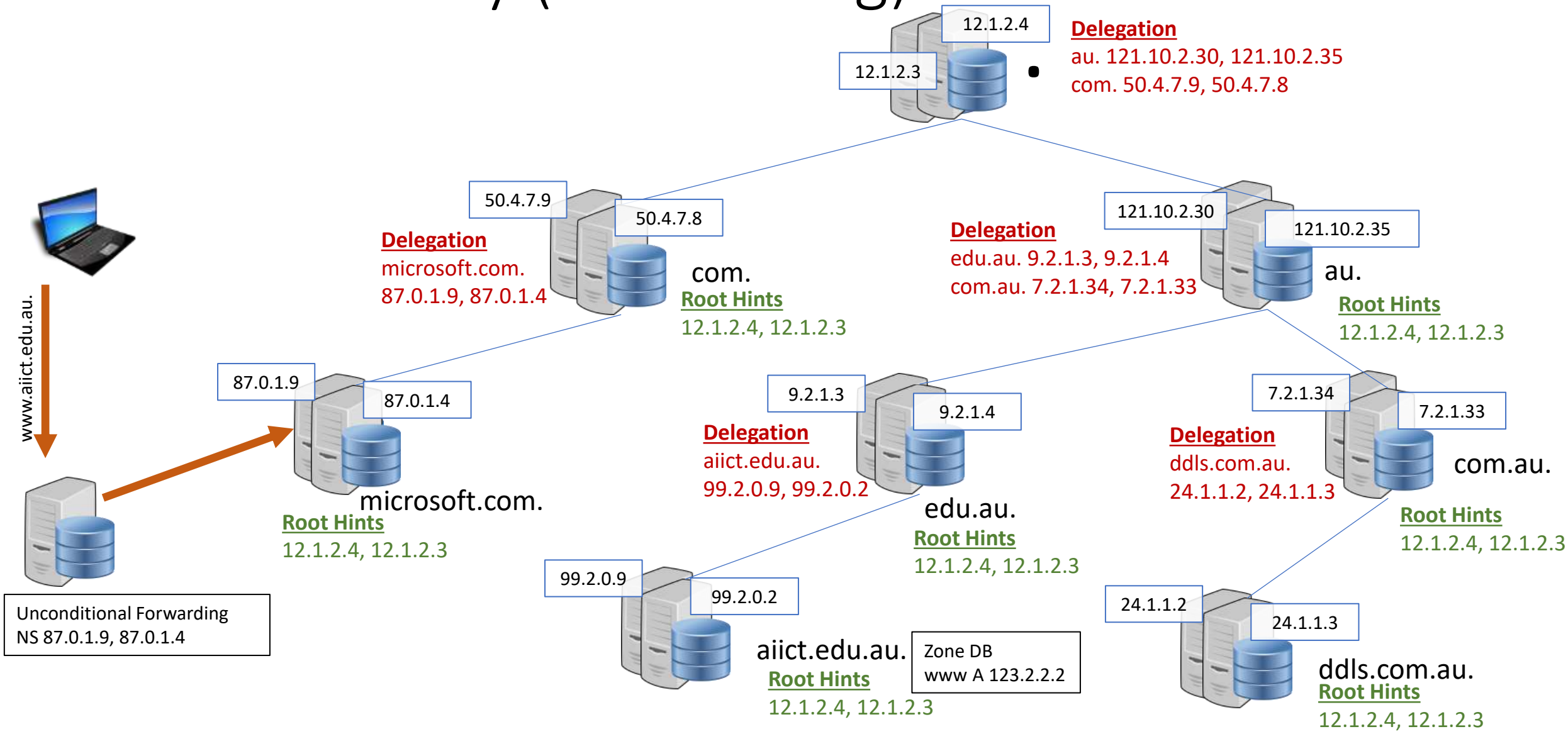

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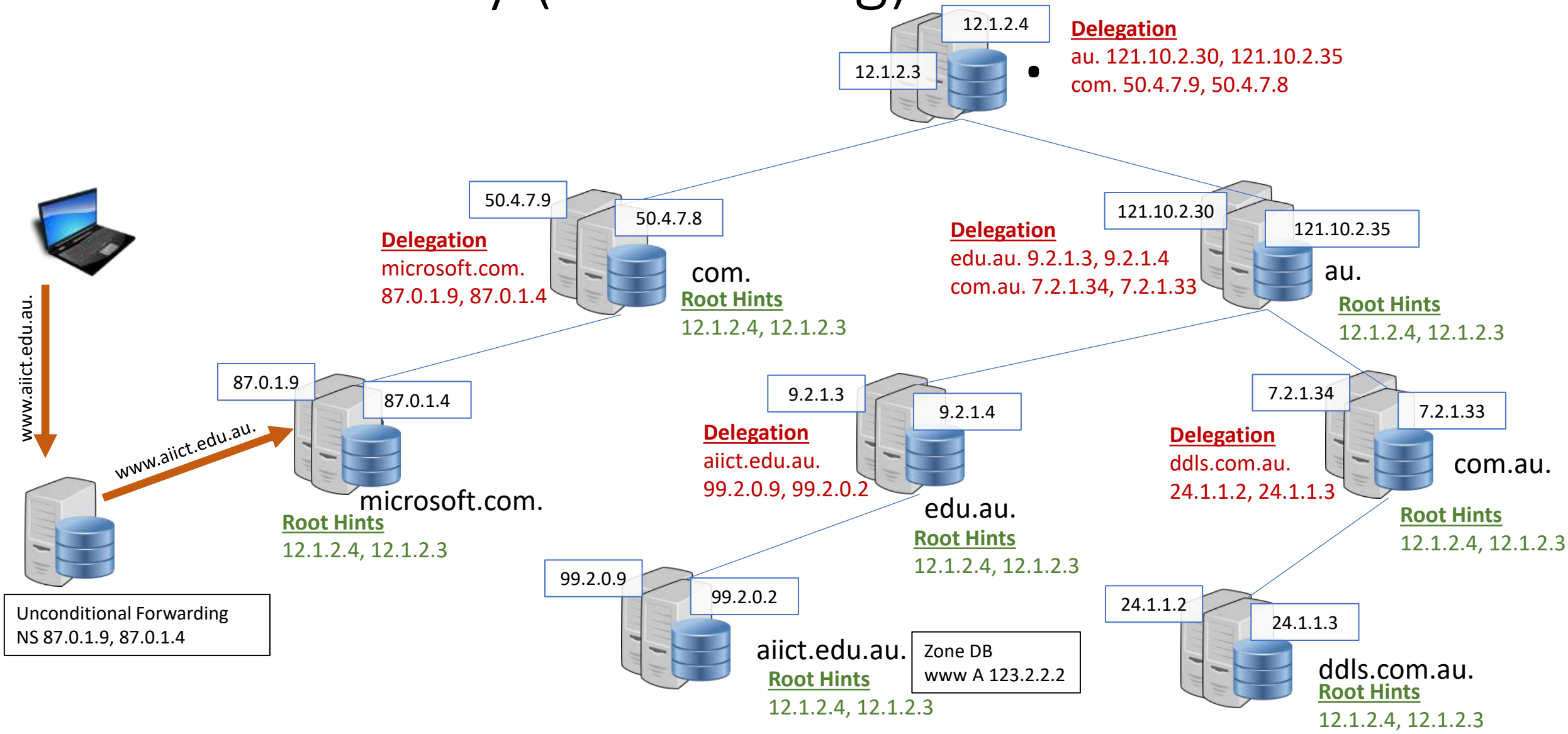

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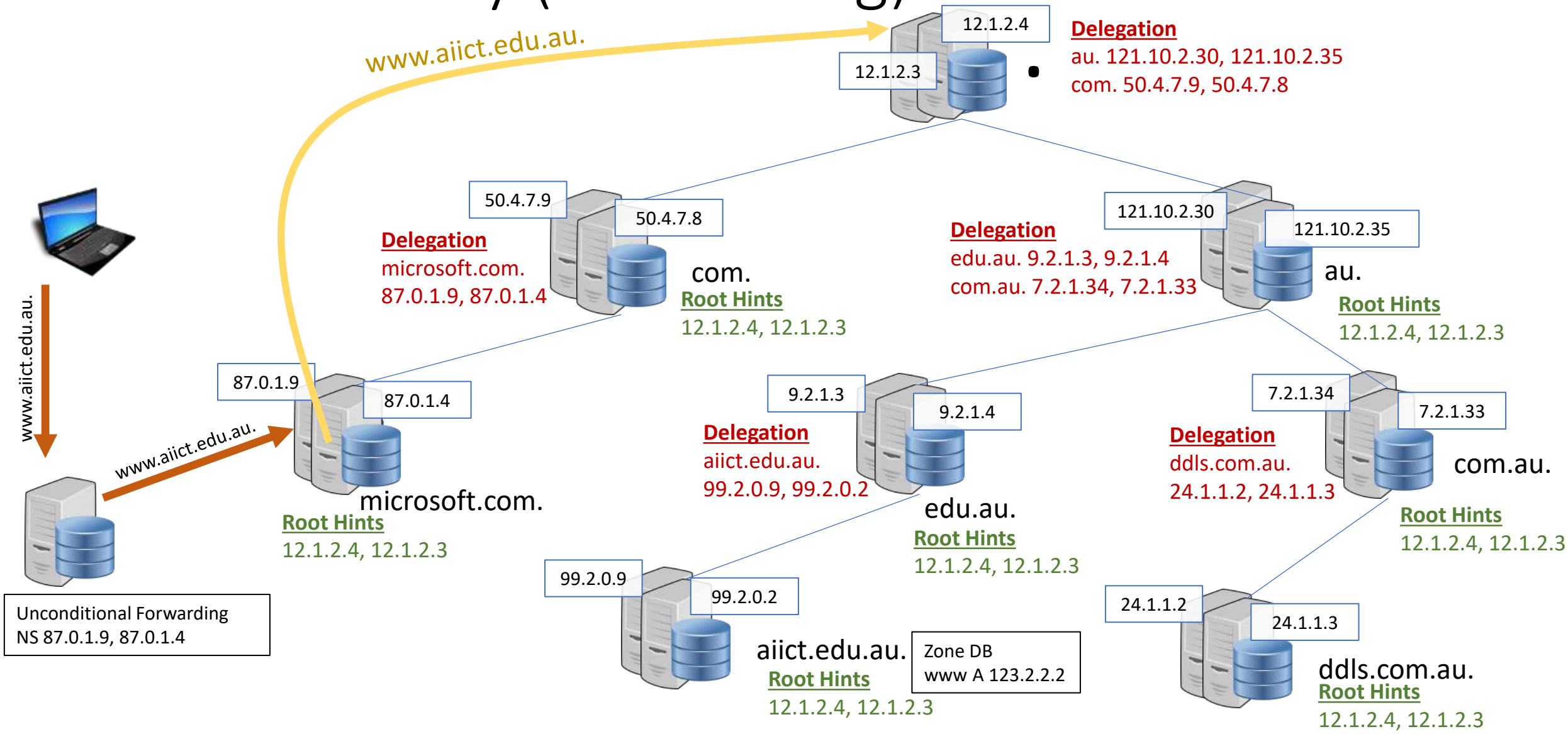

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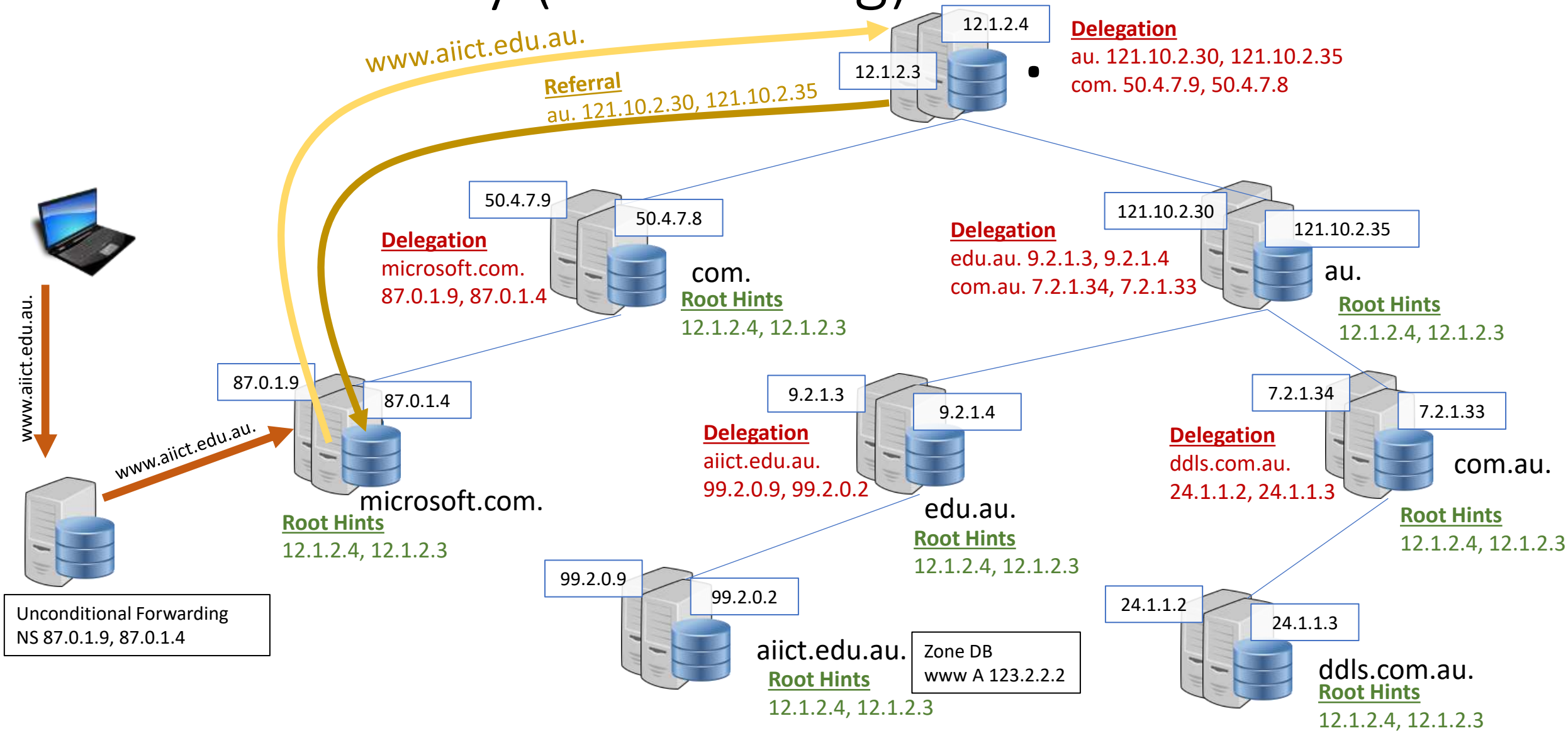

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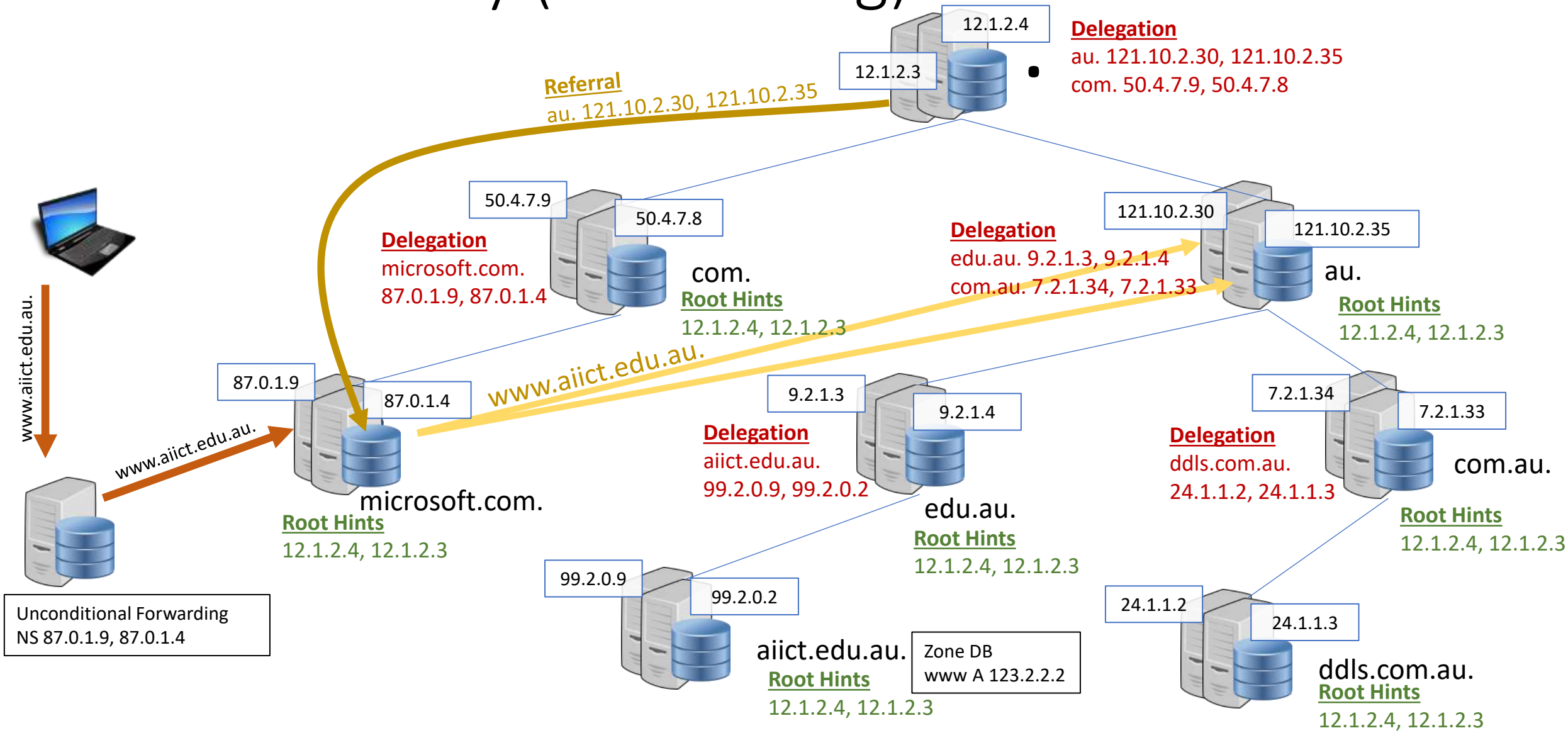

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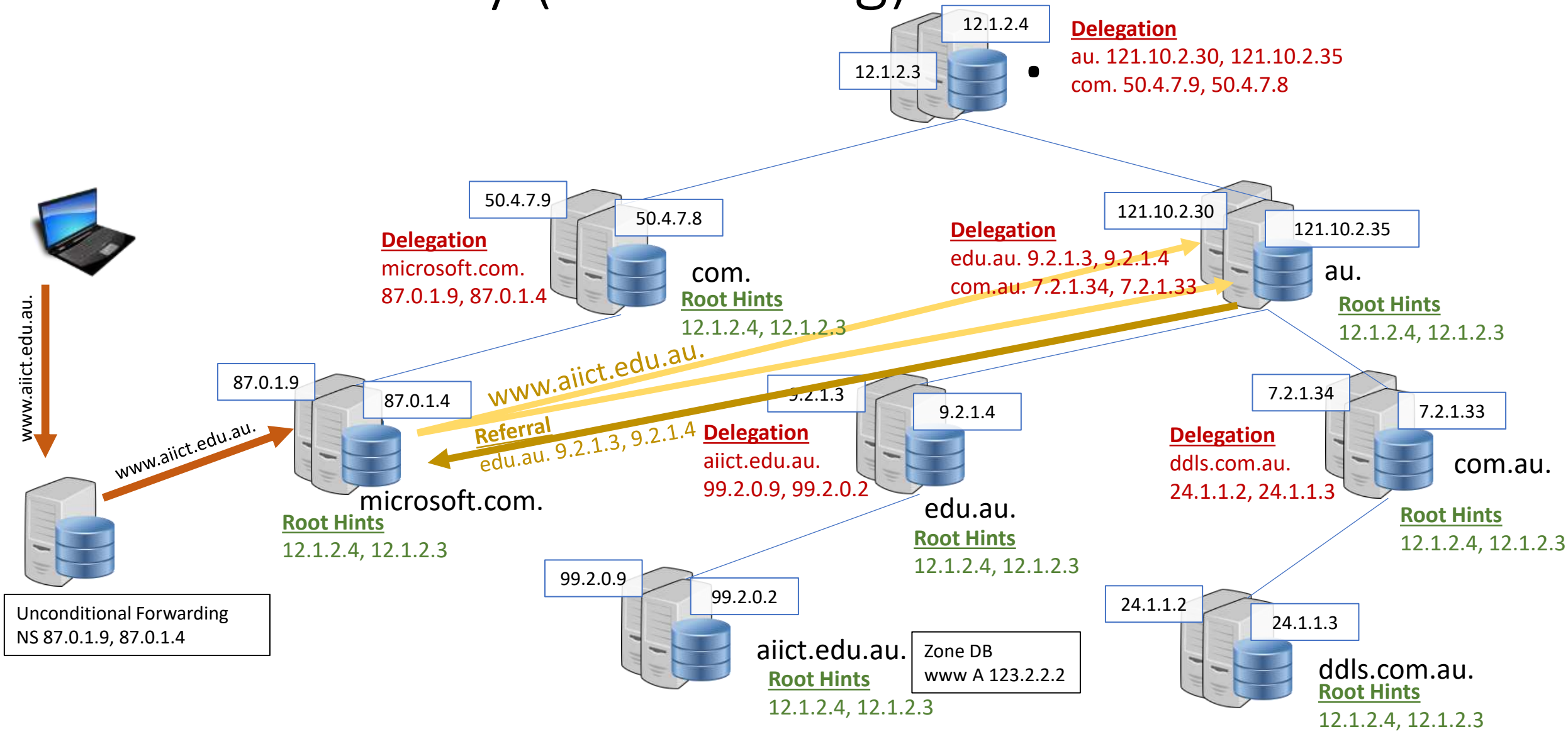

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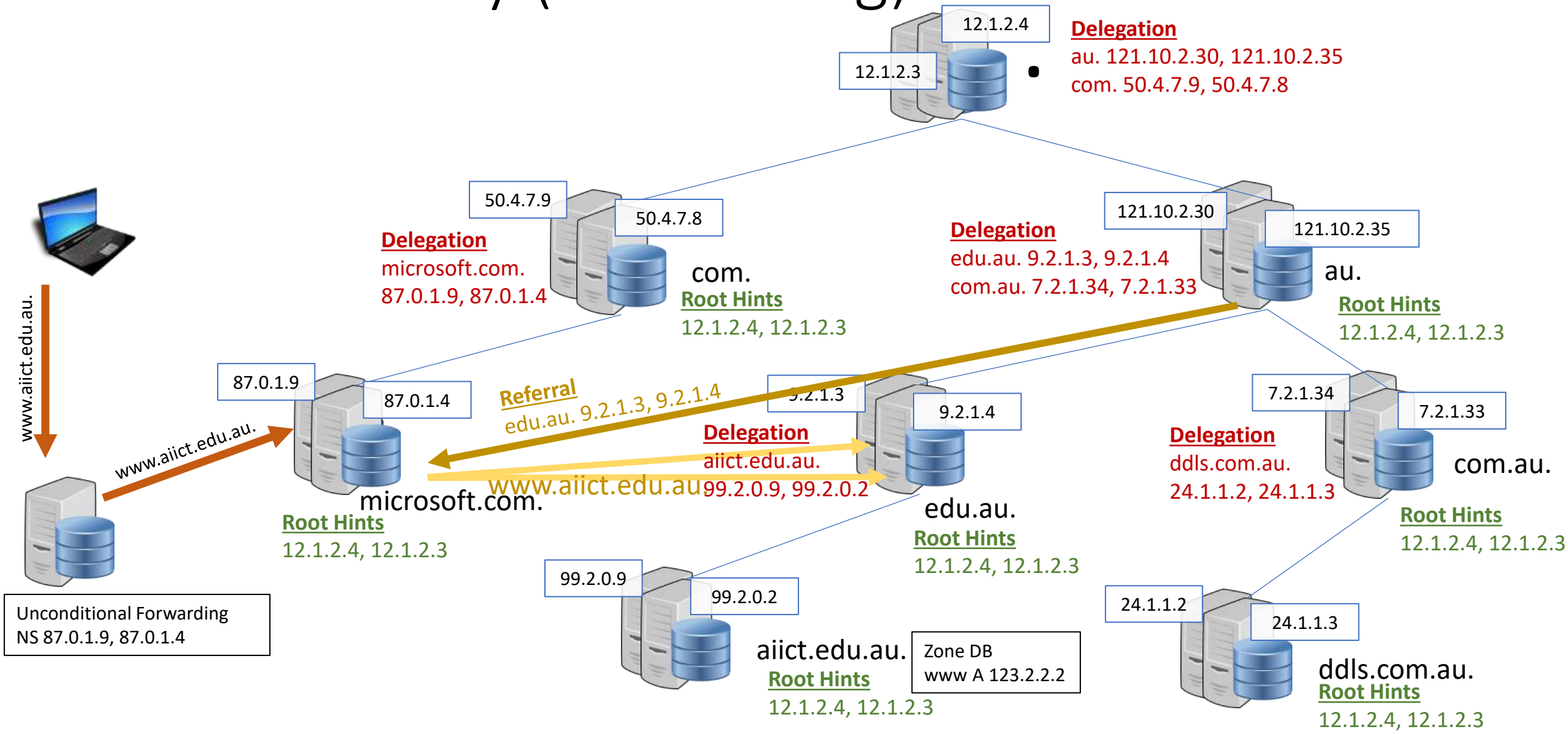

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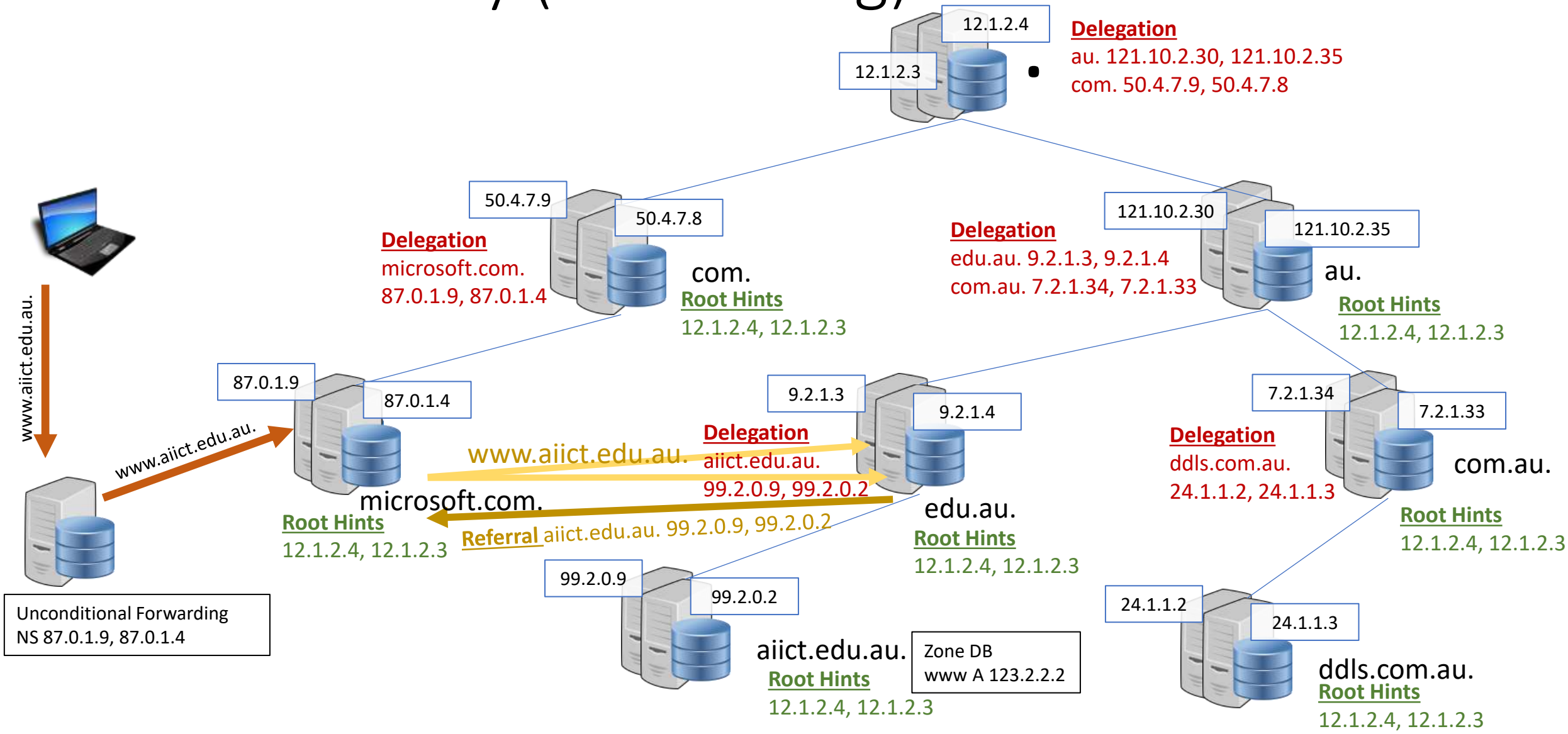

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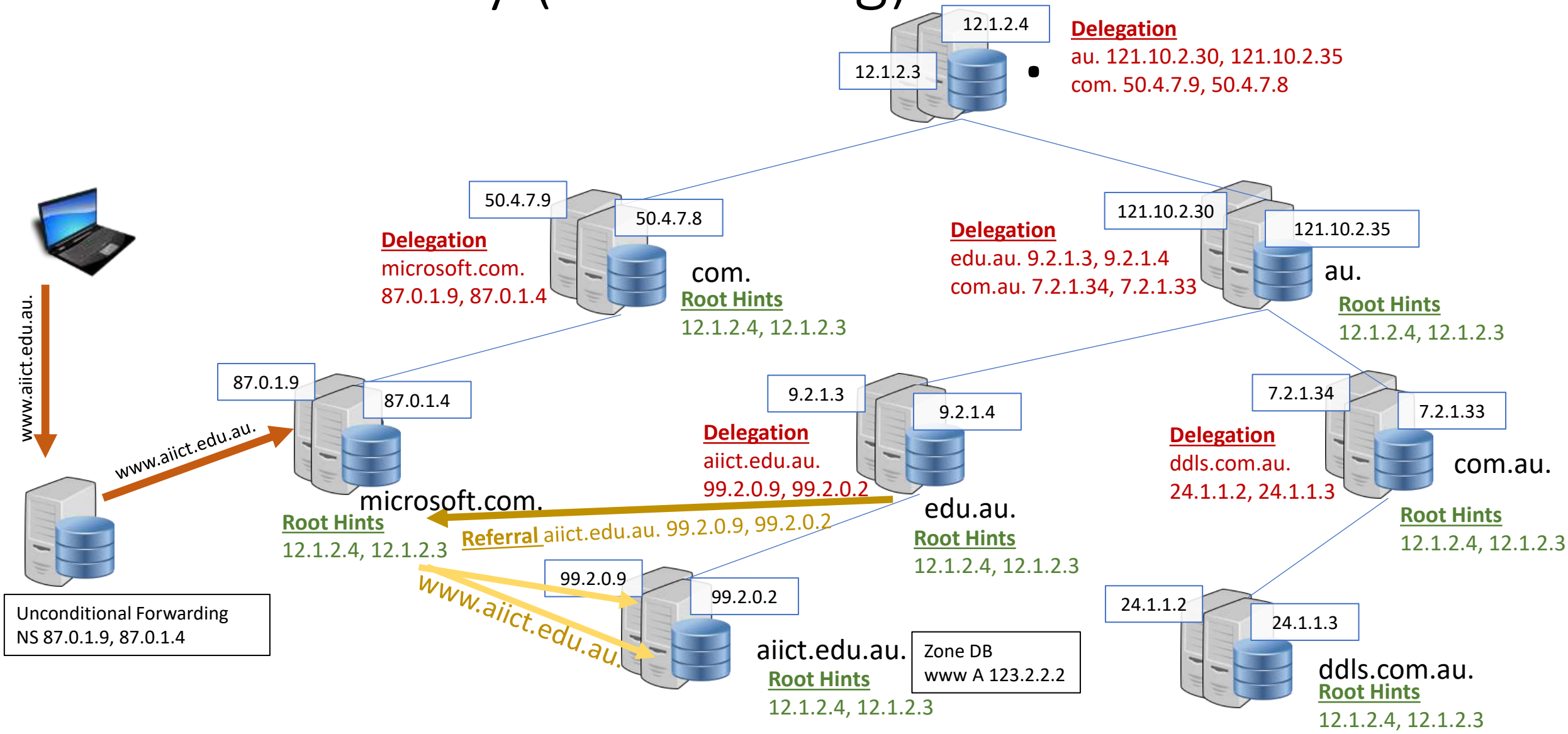

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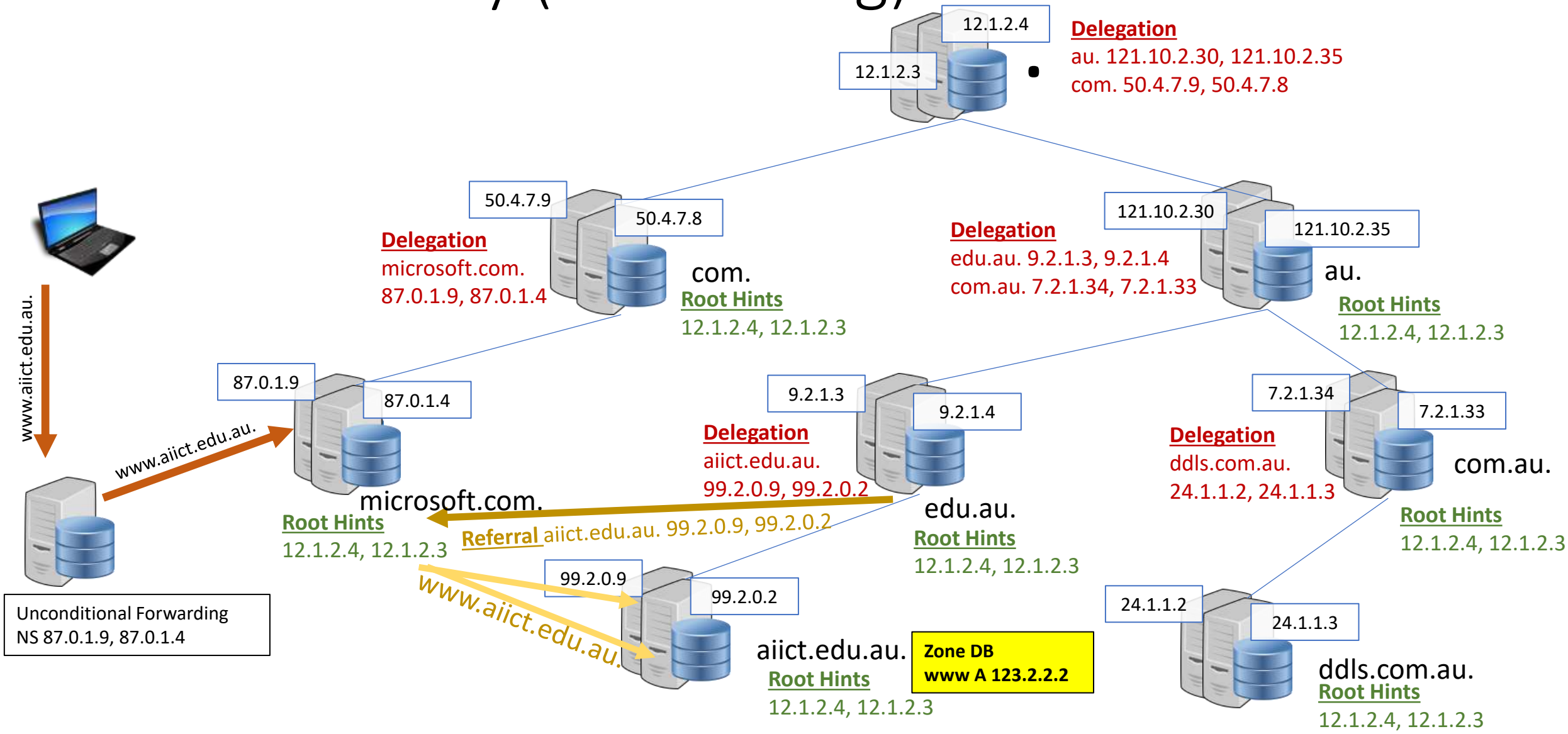

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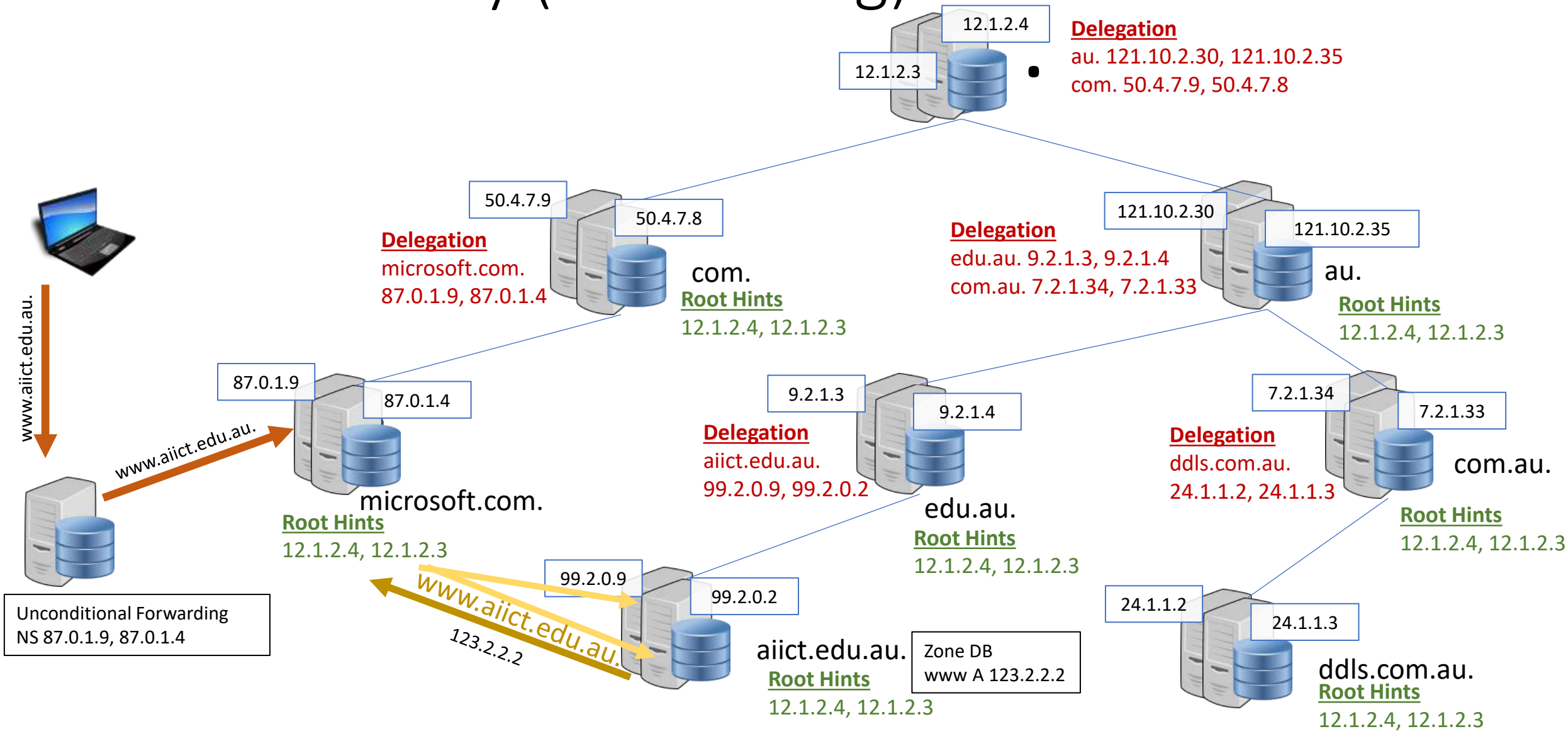

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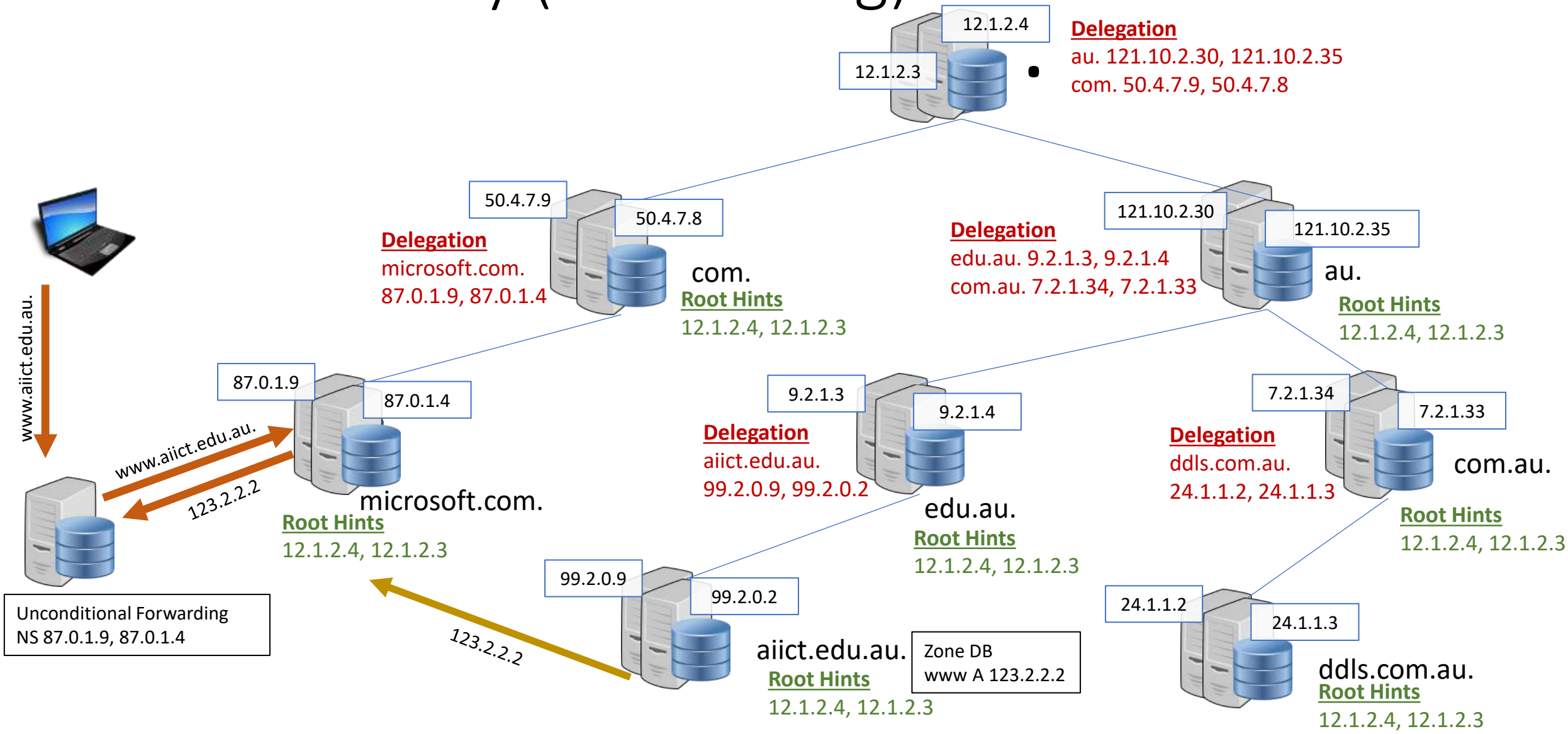

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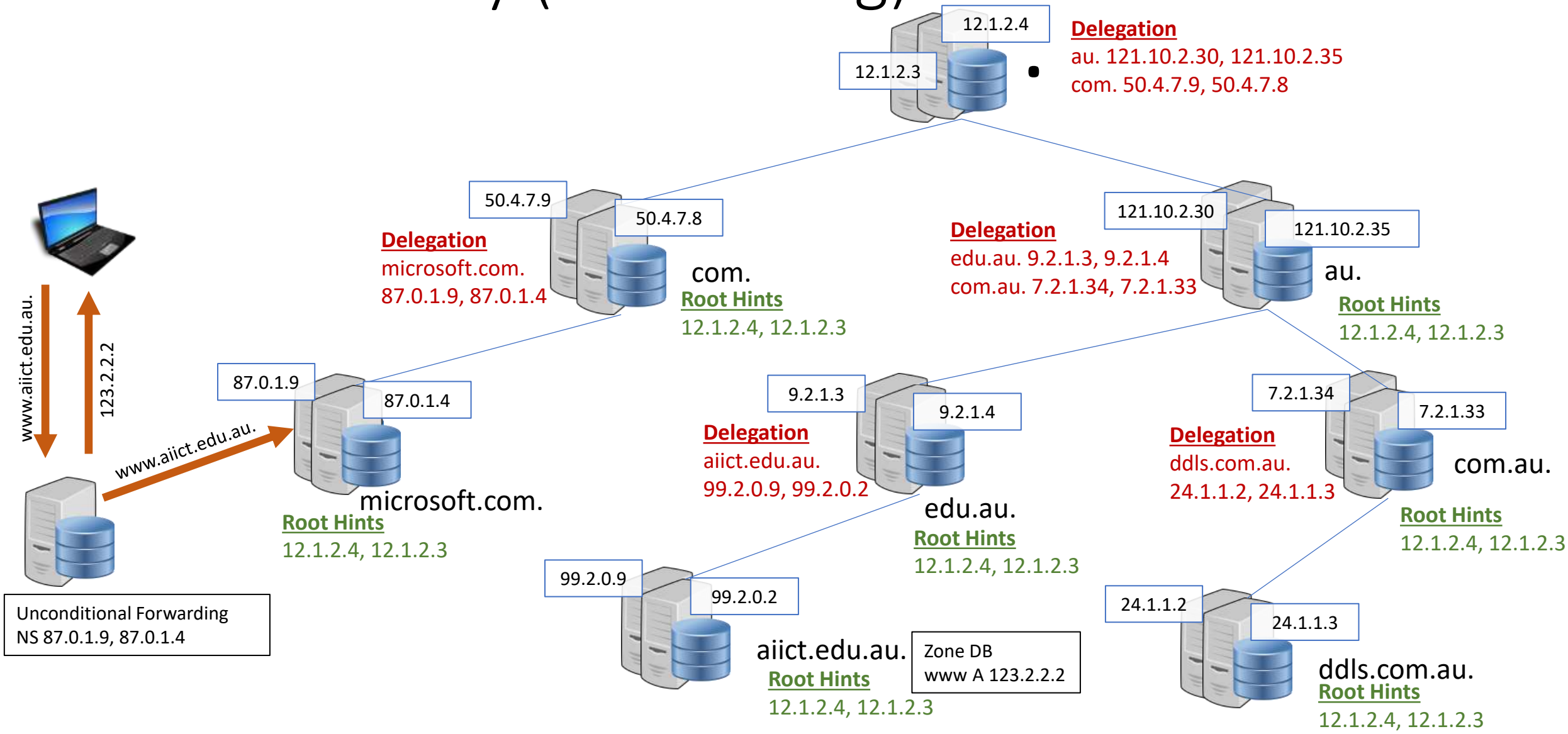
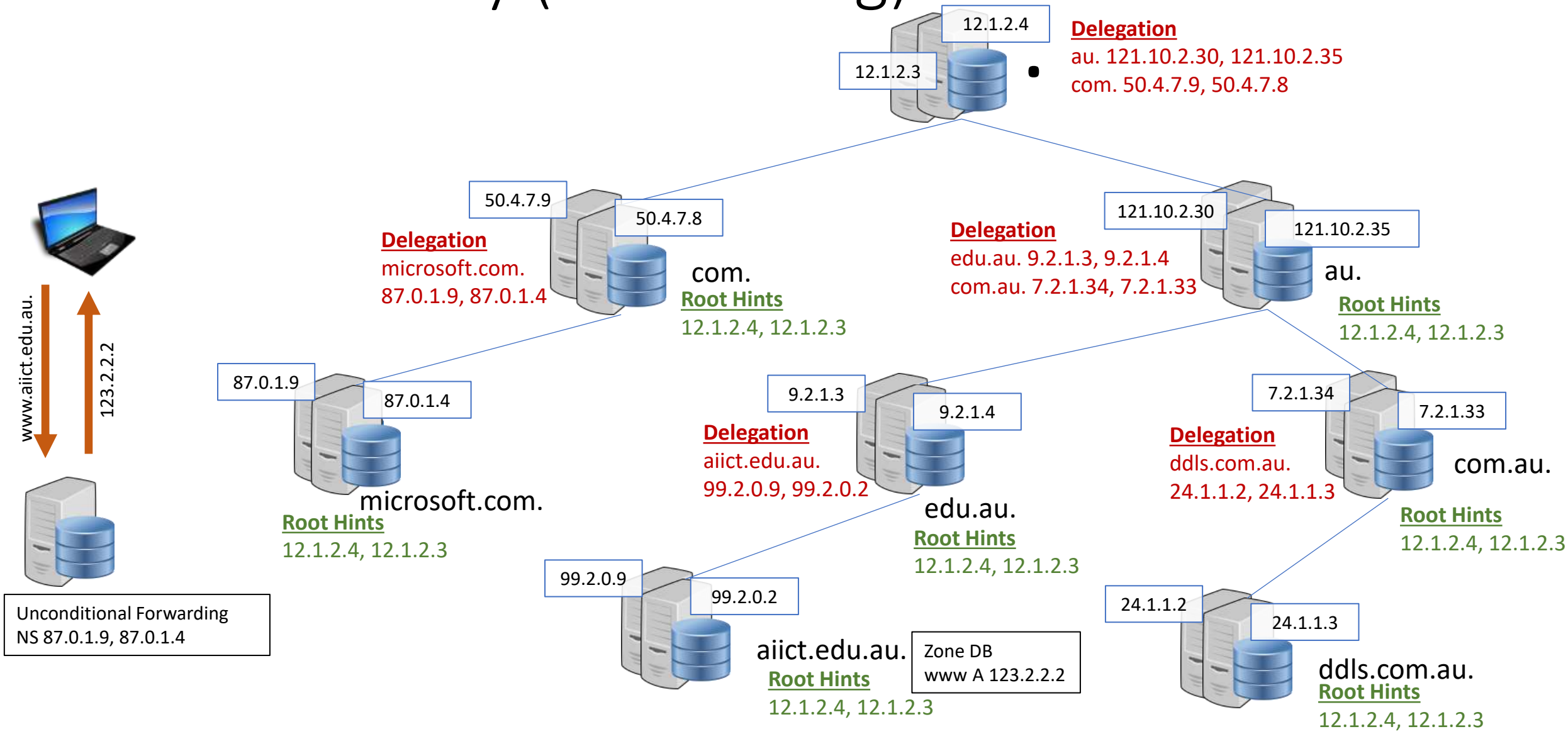
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