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Classless in-addr.arpa delegation

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RIPE NCC

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(ftp://ftp.ripe.net/ripe/presentations/ietf-geertj-CL-INADDR.ps.Z)

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Why

- Many small enterprises are joining the net
- Desire to assign < /24 prefix
- Problem delegating `in-addr.arpa` authority because `in-addr.arpa` is octet-oriented

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The Problem

Enterprise A has 12 hosts -> 192.0.2.0/27
[192.0.2.0 - 192.0.2.31]

Enterprise B has 5 hosts -> 192.0.2.32/28
[192.0.2.32 - 192.0.2.47]

Who maintains 2.0.192.in-addr.arpa?

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Solutions (1)

Have 2.0.192.in-addr.arpa maintained by cental body (e.g. service provider)

- Maintainer must be notified of every change
- Delays in processing
- Does not scale

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Solutions (2)

Change DNS system
(e.g. 0.1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.1.1.in-addr.arpa)

- Requires changes in DNS software everywhere
- Administration is a p.a.i.n.

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Solutions (3a)

Use `CNAME` RR's to 'alias' authority to other zone:

```
$ORIGIN     2.0.192.in-addr.arpa.
0           CNAME      0.in-addr.some.domain.
1           CNAME      1.in-addr.some.domain.
2           CNAME      2.in-addr.some.domain.
...
31          CNAME      31.in-addr.some.domain.


32          CNAME      32.in-addr.other.domain.
33          CNAME      33.in-addr.other.domain.
...
47          CNAME      47.in-addr.other.domain.


$ORIGIN     in-addr.some.domain.
1           PTR        foo.some.domain.
2           PTR        bar.some.domain.
```


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Solutions (3b)

Use `CNAME` RR's to 'move' authority to other zone:

- 'Ugly'
- Up to 256 `CNAME`s in parent zone
+ No need to change current software

Works today!

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Experiences

- Old USENET trick; not well known
  has been in use several years
- Bind 4.9.3beta17 had small problems
  (believed to be fixed)
- Various tricks to stash new zone files
  A.2.0.192.in-addr.arpa
  32.2.0.192.in-addr.arpa
- OK and minor corrections from various
  Well Known DNS gurus