

Resolving Aliases and Wildcards

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Problem #1

- DNS architecture resolves
 - Name, QType → Properties
- Does not resolve
 - Name, QType, Parameter → Properties
- Solution:
 - Name, Parameter → _Prefix.Name

Problem #2

- DNS does not know that prefix.Name is a subclass of Name
 - Wildcards break
 - Aliases break

Wildcard Consequence

- Cannot form a wildcard prefix.*.example.com
- *.example.com DANE fo0000
 - Will match to all port numbers
- Workarounds
 - Do not use wildcards
 - Decorate right hand side with prefix data
 - Combinatorial issue

Alias Consequence

- `www.example.com` CNAME `example.com`
 - Maps the Web service for `example.com`
 - Does not map the prefixed DANE record
- Workarounds
 - Tell admin not to use aliases
 - Tell admin to generate a CNAME for each prefix
 - Loses point of using prefix

Solution

- Resolver looks for prefix at canonical name.
 - A/AAAA and DANE resolution occur in parallel
 - x.example.com ? A
 - _prefix.x.example.com ? DANE
 - If name is canonical DANE query is one round trip
 - x.example.com A 10.1.2.3
 - _prefix.x.example.com DANE blah...
 - If name is not canonical, DANE is two round trips*
 - x.example.com CNAME y.example.com
 - _prefix.x.example.com DANE (Not found)
 - _prefix.y.example.com ? DANE

Optimization

- Authoritative server can anticipate this need
 - If DANE record for `_prefix.X` fails
 - Look to see if `X` has a CNAME
 - Return `_prefix` for alias record as additional record
 - Single round trip resolution in all cases

Open issue

- What to do in case we have
 - x.example.com CNAME y.example.com
 - _prefix.x.example.com DANE blahh
 - _prefix.y.example.com DANE blurgh
 - Should we use the record X or Y?
 - Which we choose matters less than that we choose

Next steps

- PHB to do write up of scheme
 - Add to draft (if agreed this is solution)
- Propose to DNSEXT as fix to SRV/URI
 - If approach is generic, can be made infrastructure