DNS64 Implementer's Report

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Ecdysis
http://ecdysis.viagenie.ca

- Open-source implementation of a NAT64 gateway.

- Funded by NLnet Foundation and Viagénie.

- We implemented DNS64 three times:

  - Stand-alone Perl implementation

  - Patch for Unbound

  - Patch for Bind

- (source code available at the web site)

- NAT64 module is being implemented.

- Ecdysis refers to the molting of the cuticula in arthropods, as an analogy of IPv4 molting into IPv6. After molting, the arthropod is fresh and ready to grow!

Implementation Issues

- Implementations return different responses.

- Perl and Unbound implementation:

```
;; QUESTION SECTION:
;twitter.com.           IN AAAA

;; ANSWER SECTION:
twitter.com.        30 IN AAAA   dead:beef::a88f:a244

;; AUTHORITY SECTION:
twitter.com.        60 IN SOA    ns1.p26.dynect.net. zone-
admin.dyndns.com. 2007073971 3600 600 604800 60
```

Implementation Issues

- Bind implementation:

```
;; QUESTION SECTION:
;twitter.com.          IN  AAAA

;; ANSWER SECTION:
twitter.com.      30  IN  A   168.143.161.20
twitter.com.      30  IN  AAAA    dead:beef::a88f:a114

;; AUTHORITY SECTION:
twitter.com.        60  IN  SOAns1.p26.dynect.net. zone-
admin.dyndns.com. 2007073976 3600 600 604800 60
twitter.com.        86400   IN  NS  ns4.p26.dynect.net.
twitter.com.        86400   IN  NS  ns3.p26.dynect.net.
twitter.com.        86400   IN  NS  ns2.p26.dynect.net.
twitter.com.        86400   IN  NS  ns1.p26.dynect.net.

;; ADDITIONAL SECTION:
ns1.p26.dynect.net. 172800 IN  A   208.78.70.26
ns2.p26.dynect.net. 172800 IN  A   204.13.250.26
ns3.p26.dynect.net. 86400   IN  A   208.78.71.26
ns4.p26.dynect.net. 172800 IN  A   204.13.251.26
```

Implementation issues

- Bind keeps A records in answer section.

    – Not allowed anymore in latest draft.

    – Implementation note: adding records is easy. Removing records is unheard of.

- Additional section needs to be processed as per latest draft. Todo.

- What about the authority section?

    – Draft silent about authority section.

Authority section for PTR

```
; QUESTION SECTION:
;2.0.f.1.b.7.e.c.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.f.e.e.b.d.a.e
.d.ip6.arpa. IN PTR

;; ANSWER SECTION:
2.31.123.206.in-addr.arpa. 259200 IN PTR jazz.viagenie.ca.
2.0.f.1.b.7.e.c.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.f.e.e.b.d.a.e.
d.ip6.arpa. 259200 IN PTR  jazz.viagenie.ca.

;; AUTHORITY SECTION:
31.123.206.in-addr.arpa. 259200   IN NS jazz.viagenie.ca.
31.123.206.in-addr.arpa. 259200   IN NS blues.viagenie.ca.

;; ADDITIONAL SECTION:
jazz.viagenie.ca.     78274  IN A   206.123.31.2
jazz.viagenie.ca.     78271  IN AAAA   2620:0:230:8000::2
blues.viagenie.ca.    78271  IN AAAA   2607:f590:0:ffff::70
```
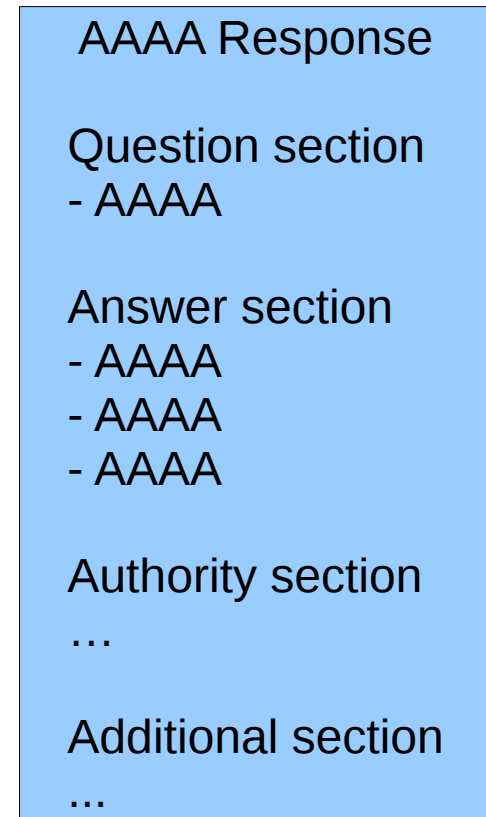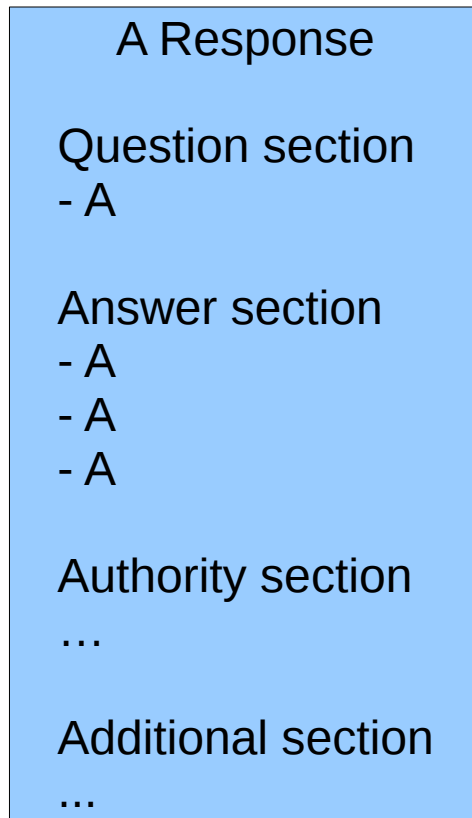
Should we translate the authority section here?

Merging, Generating, and Pruning

A Response

Question section
- A

Answer section
- A
- A
- A

Authority section
…

Additional section
...

AAAA Response

Question section
- AAAA

Answer section
- AAAA
- AAAA
- AAAA

Authority section
…

Additional section
...

DNS64 response

Merging, Generating, and Pruning

- To further improve the DNS64 spec, it would be useful to focus on merging, generating, and pruning operations.

- We have an A and an AAAA response.

  - First, how to merge them.

    - Just append AAAA response RRs to A response RRs? Not specified, implementor has to decide.

  - Then, what records to generate.

    - AAAA RRs from A RRs in answer and authority.

  - Finally, what to prune.

    - A records in answer section.

    - Prune *.in-addr.arpa. for PTR in answer section?

Questions?

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Project web page with source code:
http://ecdysis.viagenie.ca
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