

Architecture Overview

This document is an overview of the DNS Manager architecture.

- DNS RFC compliance
- Zone dump
- Dump export utilities
- Services
- Interface access and disk location

DNS RFC compliance

DNS Manager complies to the RFC listed below.

Aspect	RFC	Description
A record	RFC 1035	
AAAA record	RFC 3596	
CNAME record	RFC 1035	
MX record	RFC 1035	
NAPTR record	RFC 3403 RFC 2915	
CAA record	RFC 6844	
NS record	RFC 1035	
PTR record	RFC 1035	
SRV record	RFC 2782	
TXT record	RFC 1035	
TXT record stuctured	RFC 1464	Structured format in TXT data fields.
SOA record	RFC 1912	For default values for SOA records.
SERIAL	RFC 1912	Supports both RFC 1912 and timestamp SOA Serial number formats.
Classless delegation	RFC 2317	Classless routing allows allocation of subnets on non-octet boundaries that is less than 256 addresses from a Class C address.
E.164	RFC 3761	DNS zones for storage of E.164 numbers.
IPv6 zones	RFC 4291	Reverse DNS lookups for IPv6 addresses.
Mask delimiters	RFC 4183	Both / and - are supported as mask delimiters.
SRV services and protocols	RFC 3958	The list of services and protocols accepted by SRV records.
IPv6 format	RFC 5952	Recommendation for IPv6 address text representation.
Dynamic Delegation Discovery System (DDDS)	RFC 3401 RFC 3402 RFC 3403 RFC 3404	
Straightforward-NAPTR (S-NAPTR) Specification	RFC 3958	
DomainKeys Identified Mail (DKIM)	RFC 4871	
List of accepted services for SRV and NAPTR records	https://www.iana.org/assignments/enum-services/enum-services.xhtml	
Wildcard usage in IPv6 reverse DNS	RFC 4472	

Zone dump

The zone dump file format that is used by DNS Manager remote update protocol has been improved with:

- Zones are classified according to type, if a zone type is missing, then [the zone is treated as master](#)
- [Master server IP addresses](#) can be included in the dump on slave zones
- [Allow-transfer server IP addresses](#) can be included in the dump on master zones
- SOA records can be [included in the dump on master zones](#), if the SOA records are not found in the dump, they are [inherited from the client or system defaults](#);
- [Classless IN-ADDR.ARPA delegation](#) for zone names and records (RFC 2317)
- [E164.ARPA](#)
- Reverse DNS lookups for [IPv6 addresses](#)
- [\\$ORIGIN, @ and blank substitution](#)
- Both / and - as mask delimiters for reverse zones
- The [primary nameserver](#) may be tagged to be imported correctly

Dump file examples

Master zones examples

```
domain.ltd.|master {
|SERIAL| |2011110802| || || | | | | | | | | | | | |
|DEFAULT_TTL| |86400| || ||
|REFRESH| |10800| || ||
|RETRY| |3600| || ||
|EXPIRE| |604800| || ||
|MIN_TTL| |86400| || ||
|ALLOW_TRANSFER| |4.3.2.1| || ||
|NS| |domain.ltd.| |ns1.domain.ltd.| ||
|NS| |aa.domain.ltd.| |ns.domain.ltd.| ||
|CNAME| |cname.domain.ltd.| |canonical.name.| ||
|CNAME| |somedir.domain.ltd.| |domain.ltd.| ||
|CNAME| |ftp| |domain.ltd.| ||
|A| |mail.domain.ltd.| |192.168.10.32| ||
|AAAA| |sub.domain.ltd.| |2001:db8:85a3:88:8a2e:370:7334:89| ||
|MX| |zone.domain.ltd.| |email.exchanger| |10|
|TXT| |txt.domain.ltd.| |v=spf1 exists:{ir}.%{v}.arpa -all| ||
|TXT| |some-text.domain.ltd.| |any text| ||
|TXT| |domain.ltd.| |sometext| ||
|TXT| |private._domainkey.domain.ltd.| |k=rsa; p=MEwwDQYerwqEWwE| ||
|NAPTR| |mail.domain.ltd.| |!^.*!mailto:info@domain.ltd!i| |6| |5| || || |SMTP| |A| ||
|SRV| |_sip._tcp.domain.ltd.| |..| |5| |25| |12345| ||
|SRV| |_sip._tcp.domain.ltd.| |anotherdomain.com.| |10| |20| |5560| ||
|SRV| |_h323._udp.domain.ltd.| |sub.domain.ltd.| |15| |25| |8550| ||
}
testdomain.com.|master {
    |$ORIGIN| |com.| || || | |
    |TXT| |testdomain| |v=spf1 a mx ptr mx@mail.testdomain.com ~all| ||
    |NS| || |ns1.test-web| ||
    |NS| || |ns2.test-web| ||
    |A| || |64.85.2.56| ||
    |CAA| |test.testdomain.com.| |test.com| |issue| |2|
}
```

Default zone type is master

If the zone type is missing, it is assumed to be a master zone definition.

```

domain.ltd.{
    |REFRESH| |108002| || ||
    |RETRY| |36002| || ||
    |EXPIRE| |604802| || ||
    |MIN_TTL| |86402| || ||
    |DEFAULT_TTL| |86402| || ||
    |SERIAL| |1271668821| || ||
    |ALLOW_TRANSFER| |4.3.2.1| || ||
    |NS| |domain.ltd.| |ns1.domain.ltd.| ||
    |NS| |aa.domain.ltd.| |ns.domain.ltd.| ||
    |CNAME| |cname.domain.ltd.| |canonical.name.| ||
    |CNAME| |somedir.domain.ltd.| |domain.ltd.| ||
    |CNAME| |ftp| |domain.ltd.| ||
    |A| |mail.domain.ltd.| |192.168.10.32| ||
    |AAAA| |sub.domain.ltd.| |2001:db8:85a3:88:8a2e:370:7334:89| ||
    |MX| |zone.domain.ltd.| |email.exchanger| |10|
    |TXT| |txt.domain.ltd.| |v=spf1 exists:%{ir}.%{v}.arpa -all| ||
    |TXT| |some-text.domain.ltd.| |any text| ||
    |TXT| |domain.ltd.| |sometext| ||
    |TXT| |private._domainkey.domain.ltd.| |k=rsa; p=MEwwDQYerwqEWwE| ||
}

```

Slave zones example

Slave zones may included in dump as follows:

```

3.2.1.in-addr.arpa.|slave {
    |MASTER| |6.7.8.9| || ||
    |MASTER| |1999:db8:a0b:12f0:alb2:c3d4:f5e6:1234| || ||
    |ALLOW_TRANSFER| |2002:a96:b95::a96f:b95| || ||
    |ALLOW_TRANSFER| |69.41.170.223| || ||
}
foo.com.|slave {
    |MASTER| |1999:db8:a0b:12f0:alb2:c3d4:f5e6:1234| || ||
    |ALLOW_TRANSFER| |69.41.170.223| || ||
}

```

Classless delegation

The rules mentioned above also apply to reverse DNS zones. You can see below full DNS zones with /24 /28 and /32 subnet mask.

```

4.3.2.in-addr.arpa.|master {
    |REFRESH| |10800| || ||
    |RETRY| |3600| || ||
    |EXPIRE| |604800| || ||
    |MIN_TTL| |86400| || ||
    |DEFAULT_TTL| |86400| || ||
    |SERIAL| |1271668821| || ||
    |NS| |4.3.2.in-addr.arpa.| |ns1.name.com.| ||
    |NS| |0/25.4.3.2.in-addr.arpa.| |ns.domain.com.| ||
    |PTR| |5.4.3.2.in-addr.arpa.| |zone.name.| ||
    |PTR| |5.4.3.2.in-addr.arpa.| |dom1.com.| ||
    |PTR| |5.4.3.2.in-addr.arpa.| |dom2.com.| ||
    |PTR| |5.4.3.2.in-addr.arpa.| |dom3.com.| ||
    |CNAME| |10.4.3.2.in-addr.arpa.| |10.0/25.4.3.2.in-addr.arpa.| ||
    |TXT| |host.4.3.2.in-addr.arpa.| |value| ||
    |TXT| |4.3.2.in-addr.arpa.| |sometext| ||
}
4/28.3.2.1.in-addr.arpa.|master {
    |REFRESH| |10800| || ||
    |RETRY| |3600| || ||
    |EXPIRE| |60480| || ||
    |MIN_TTL| |86400| || ||
    |DEFAULT_TTL| |86400| || ||
    |SERIAL| |1271668821| || ||
    |ALLOW_TRANSFER| |7.8.9.10| || ||
    |ALLOW_TRANSFER| |2002:a96:b95::a96f:b95| || ||
    |NS| |4/28.3.2.1.in-addr.arpa.| |aa.com.| ||
    |PTR| |6.4/28.3.2.1.in-addr.arpa.| |zone.c.om.| ||
    |PTR| |6.4/28.3.2.1.in-addr.arpa.| |dom1.com.| ||
    |PTR| |6.4/28.3.2.1.in-addr.arpa.| |dom2.com.| ||
    |TXT| |a.4/28.3.2.1.in-addr.arpa.| |text value| ||
    |TXT| |4/28.3.2.1.in-addr.arpa.| |sometext| ||
}
4.3.2.1.in-addr.arpa.|master {
    |REFRESH| |10800| || ||
    |RETRY| |3600| || ||
    |EXPIRE| |60480| || ||
    |MIN_TTL| |86400| || ||
    |DEFAULT_TTL| |86400| || ||
    |SERIAL| |1271668821| || ||
    |ALLOW_TRANSFER| |7.8.9.10| || ||
    |ALLOW_TRANSFER| |2002:a96:b95::a96f:b95| || ||
    |NS| |4.3.2.1.in-addr.arpa.| |aa.com.| ||
    |PTR| |4.3.2.1.in-addr.arpa.| |zone.c.om.| ||
    |TXT| |abc.4.3.2.1.in-addr.arpa.| |sometext| ||
}

```

\$ORIGIN, @ and Blank Substitution

The "@" character is accepted when defining zones. It is substituted with:

- The last \$ORIGIN directive encountered in the file, or
- If no \$ORIGIN directive is present - it is generated automatically.

Blank Substitution - with the last valid name (or label) or \$ORIGIN if there are no previous names (labels).

```

testdomain.com.|master {
    |NS| |@| |ns.isdomain.com.| ||
    |NS| || |new| ||
    |MX| |@| |mail.testdomain.com.| |10|
    |MX| |test| |maill.testdomain.com.| |15|
    |TXT| |@| |this is not a test| ||
    |CNAME| |*.new| |newtest.com.| ||
}

```

Mask delimiter

Both "-" and "/" character are accepted when defining reverse zones. The zones are different!

```
4-28.3.2.1.IN-ADDR.ARPA.|master {
|NS| |4-28.3.2.1.IN-ADDR.ARPA.| |aa.com.| ||
|PTR| |6.4-28.3.2.1.IN-ADDR.ARPA.| |zone.com.| ||
|PTR| |6.4-28.3.2.1.IN-ADDR.ARPA.| |dom1.com.| ||
|PTR| |6.4-28.3.2.1.IN-ADDR.ARPA.| |dom2.com.| ||
|TXT| |a.4-28.3.2.1.IN-ADDR.ARPA.| |text value| ||
|TXT| |4-28.3.2.1.IN-ADDR.ARPA.| |sometext| ||
}
4/28.3.2.1.IN-ADDR.ARPA.|master {
|NS| |4/28.3.2.1.IN-ADDR.ARPA.| |aa.com.| ||
|PTR| |6.4/28.3.2.1.IN-ADDR.ARPA.| |zone.com.| ||
|PTR| |6.4/28.3.2.1.IN-ADDR.ARPA.| |dom1.com.| ||
|PTR| |6.4/28.3.2.1.IN-ADDR.ARPA.| |dom2.com.| ||
|TXT| |a.4/28.3.2.1.IN-ADDR.ARPA.| |text value| ||
|TXT| |4/28.3.2.1.IN-ADDR.ARPA.| |sometext| ||
}
```

SOA records

If the SOA records are not found in the zone definition, they are inherited from the client preferences, if the client has SOA records defined. If the client has no SOA records defined, the system wide SOA settings defined by the administrator are used.

```
domain.ltd.|master {
|ALLOW_TRANSFER| |4.3.2.1| || ||
|ALLOW_TRANSFER| |2002:a96:b95::a96f:b95| || ||
|NS| |domain.ltd.| |ns1.domain.ltd.| ||
|NS| |aa.domain.ltd.| |ns.domain.ltd.| ||
|CNAME| |cname.domain.ltd.| |canonical.name.| ||
|CNAME| |somedir.domain.ltd.| |domain.ltd.| ||
|CNAME| |ftp| |domain.ltd.| ||
|A| |mail.domain.ltd.| |192.168.10.32| ||
|MX| |zone.domain.ltd.| |email.exchanger| |10|
|TXT| |txt.domain.ltd.| |v=spf1 exists:{ir}.#{v}.arpa -all| ||
|TXT| |some-text.domain.ltd.| |any text| ||
|TXT| |private._domainkey.domain.ltd.| |k=rsa; p=MEwwDQYerwqEWwE| ||
|TXT| |domain.ltd.| |text value| ||
}
4/28.3.2.1.in-addr.arpa.|master {
|NS| |4/28.3.2.1.in-addr.arpa.| |aa.com.| ||
|PTR| |6.4/28.3.2.1.in-addr.arpa.| |zone.com.| ||
|PTR| |6.4/28.3.2.1.in-addr.arpa.| |dom1.com.| ||
|PTR| |6.4/28.3.2.1.in-addr.arpa.| |dom2.com.| ||
|TXT| |a.4/28.3.2.1.in-addr.arpa.| |text value| ||
|TXT| |4/28.3.2.1.in-addr.arpa.| |sometext| ||
}
```

E164.ARPA reverse zone

Check the below example of E.164 reverse zone that contains all the supported record types, NS and NAPTR:

```

1.2.3.1.E164.ARPA.|master {
    |SERIAL| |1330507579| || || | | | | | | | | | | |
    |REFRESH| |10800| || ||
    |RETRY| |3600| || ||
    |EXPIRE| |604800| || ||
    |MIN_TTL| |86400| || ||
    |DEFAULT_TTL| |86400| || ||
    |ALLOW_TRANSFER| |134.222.123.123/27| || ||
        |ALLOW_TRANSFER| |2002:a96:b95::a96f:b95| || ||
    |NAPTR| |2.3.4.5.1.2.3.1.E164.ARPA.| !regex!replace!| |10| |20| || || |service| |S| |mydomain.tst.|
    |NAPTR| |9.1.2.3.1.E164.ARPA.| !^.*$!mailto:info@example.com!i| |10| |20| || || |email| |S| ||
    |NS| |1.2.3.1.E164.ARPA.| |ns1.example.com.| |1|
    |NS| |1.2.3.1.E164.ARPA.| |ns2.example.com.| ||
}

```

IP6.ARPA reverse zone

Check this example of IP6.ARPA reverse zone that contains both supported record types, NS and PTR:

```

1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6.7.8.9.0.2.1.2.A.A.2.2.IP6.ARPA.|master {
    |SERIAL| |2018071302| || ||
    |REFRESH| |10800| || ||
    |RETRY| |3600| || ||
    |EXPIRE| |604800| || ||
    |MIN_TTL| |86400| || ||
    |DEFAULT_TTL| |86400| || ||
    |NS| |1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6.7.8.9.0.2.1.2.A.A.2.2.IP6.ARPA.| |ns1.bar.com.| ||
    |NS| |1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6.7.8.9.0.2.1.2.A.A.2.2.IP6.ARPA.| |ns3.bar.com.| |1|
    |PTR| |9.8.7.6.5.1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6.7.8.9.0.2.1.2.A.A.2.2.IP6.ARPA.| |foo.com.| ||
    |PTR| |9.9.9.9.9.1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6.7.8.9.0.2.1.2.A.A.2.2.IP6.ARPA.| |bar.com.| ||
    |PTR| |*.1.2.3.4.5.6.7.8.9.0.1.2.3.4.5.6.7.8.9.0.2.1.2.A.A.2.2.IP6.ARPA.| |newtest.tst.| ||
}

```

Primary NS

The primary NS record is marked with 1 in the dump file. If missing the NS order is random.

```

bar.com.|master {
    |NS| |bar.com.| |ns1.first.co.uk.| ||
    |NS| |bar.com.| |ns2.first.co.uk.| |1|
}

```

Dump export utilities

Command line utilities

The export command line utilities support the new dump file format. These utilities help you set the DNS Manager server to act as slave DNS for other servers.

The dump export utility should be copied on the primary server. To find out more details about how to configure Primary/Secondary Server Setup with DNS Manager read this [KB article](#).

Dump scripts

New dump scripts are provided for major control panels on the market. The new dump scripts can export both master and slaves zones. Export settings are set as variables in the script or in the configuration file.

Use this command to find the DNSMANAGER_ROOT_D path:

```
#> grep DNSMANAGER_ROOT_D /etc/dnsmanager/dnsmanager.conf
DNSMANAGER_ROOT_D /usr/local/dnsmanager
```

Below you can find the list of export scripts available:

Zones management software	Folder	DNS Manager Script
Bind generic	DNSMANAGER_ROOT_D/remote/bind	bind_export.sh
DNS Manager	DNSMANAGER_ROOT_D/remote/dnsmanager	dnsmanager_export.sh
Plesk Linux	DNSMANAGER_ROOT_D/remote/plesk	plesk_export.sh plesk_export.pl
Plesk Windows	DNSMANAGER_ROOT_D/remote/plesk_win	plesk_win_export.exe
PowerDNS	DNSMANAGER_ROOT_D/remote/powerdns	powerdns_export.sh
Helm Control Panel for Windows	DNSMANAGER_ROOT_D/remote/helm	helm_complete.exe helm_export.exe helm_zones.exe
InterWorx Hosting Control Panel	DNSMANAGER_ROOT_D/remote/iworx	iworx_complete.php iworx_zones.php
Ensim	DNSMANAGER_ROOT_D/remote/ensim	ensim_complete.sh ensim_zones.sh

Services

Please find below a list of all services on a DNS Manager 4 server.

Web interface service

- **Name:** dnsmanager
- **Short description:** The service is responsible for running DNS Manager web interface
- **Init script:** Usually located in /etc/init.d/dnsmanager

Zone management service

- **Name:** zonemngd
- **Short description:** The service synchronizes the bind configuration file with updates (received using any means)
- **Init script:** Usually located in /etc/init.d/zonemngd

Remote import service

- **Name:** updateurld
- **Short description:** The service synchronizes DNS Manager local database with remote updates.
- **Init script:** Usually located in /etc/init.d/updateurld

NAMED service

- **Name:** named
- **Short description:** BIND (Berkeley Internet Name Domain) is an implementation of the DNS (Domain Name System) protocols; BIND includes a DNS server (named), which resolves host names to IP addresses, a resolver library (routines for applications to use when interfacing with DNS), and tools to verify that the DNS server is operating properly.
- **Init script:** Usually located in /etc/init.d/named or /etc/init.d/named-chroot

Round robin service

- **Name - rrmonitd**
- **Short description -** Automates the DNS Round Robin disqualification and qualification when a resource associated with a resource record becomes unavailable/available again.
- **Init script -** Usually located in /etc/init.d/rrmonitd

Interface access and disk location

DNS Manager comes with a dedicated web management interface, accessible in the browser at:

```
https://<your_server_ip>
```

To log in to the interface for the first time, you must supply the following login credentials:

```
user: admin
password: welcome
```

The skin directory can be found in:

```
DNSMANAGER_ROOT_D/admin/htdocs/skins
```

The language pack directory can be found in:

```
DNSMANAGER_ROOT_D/admin/htdocs/language
```

All important paths are defined in [`/etc/dnsmanager/dnsmanager.conf`](#)