

Documentation links

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- [An Introduction to DNS](#)
- [DNS for Rocket Scientists](#)
- [How To Configure BIND as a Private Network DNS Server on Ubuntu](#)
- [BIND 9 Administrator Reference Manual](#)

DNS query commands

- **dig** (**d**omain **i**nformation **g**roper)
- **nslookup**

DNS forward lookup

```
> dig learn.mi.hdm-stuttgart.de
```

```
; <<>> DiG 9.16.1-Ubuntu <<>> learn.mi.hdm-stuttgart.de  
;; global options: +cmd  
;; Got answer:  
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 63891  
...  
;; ANSWER SECTION:  
learn.mi.hdm-stuttgart.de. 6593 IN A 141.62.64.28  
  
;; Query time: 0 msec  
;; SERVER: 127.0.0.53#53(127.0.0.53) ...
```

Display A-record result only

```
> dig +noall +answer www.hdm-stuttgart.de  
www.hdm-stuttgart.de. 3600 IN A 141.62.1.53  
www.hdm-stuttgart.de. 3600 IN A 141.62.1.59
```

Important record types

Record	Explanation
A	IPV4 Host address
AAAA	IPv6 host address
ALIAS	Auto resolved alias
CNAME	Canonical name for an alias
MX	Mail eXchange
NS	Name Server
PTR	Pointer
SOA	Start Of Authority
SRV	location of service
TXT	Descriptive text

Name Servers: Query type NS

```
dig +noall +answer -t NS hdm-stuttgart.de
hdm-stuttgart.de. 3600 IN NS iz-net-4.hdm-stuttgart.de.
hdm-stuttgart.de. 3600 IN NS dns3.belwue.de.
hdm-stuttgart.de. 3600 IN NS iz-net-3.hdm-stuttgart.de.
hdm-stuttgart.de. 3600 IN NS dns1.belwue.de.
hdm-stuttgart.de. 3600 IN NS iz-net-2.hdm-stuttgart.de.
```

Subdomain per group

- Dedicated lecture related DNS server `nssdi.mi.hdm-stuttgart.de`.
- One subdomain per group e.g. **`g7.sdi.mi.hdm-stuttgart.de`** corresponding to **group 7**.
- Zone edits require a subdomain specific hmac secret key being provided as `dnsupdate.sec` file in your personal group entry below the SDI course:

```
hmac-sha256:mykey.g7:I5sDDS3L1BU...
```

Note

The per zone secrets are being created using `tsig-keygen`. The value appearing here does not reflect a production setting.

- Edits become globally visible. Mind the TTL setting: A higher value means you'll have to wait longer until error corrections become visible.

Querying DNS zone

```
$ export HMAC=hmac-sha256:mykey.g7:YXWSeh3l...
$ dig @nssdi.mi.hdm-stuttgart.de -y $HMAC -t AXFR g7.sdi.mi.hdm-stuttgart.de
...
g7.sdi.mi.hdm-stuttgart.de. 86400 IN SOA nssdi.mi.hdm-stuttgart.de. goik.hdm-stuttgart.de. ...
docu.g7.sdi.mi.hdm-stuttgart.de. 5000 IN CNAME www.g7.sdi.mi.hdm-stuttgart.de.
manual.g7.sdi.mi.hdm-stuttgart.de. 5000 IN CNAME www.g7.sdi.mi.hdm-stuttgart.de.
nextcloud.g7.sdi.mi.hdm-stuttgart.de. 5000 IN CNAME www.g7.sdi.mi.hdm-stuttgart.de.
...
```


Creating an A record

```
export HMAC=hmac-sha256:mykey.g7:YXWSeh3l...
```

```
goik>nsupdate -y $HMAC
```

```
> server nssdi.mi.hdm-stuttgart.de
```

```
> update add vm2.g7.sdi.mi.hdm-stuttgart.de 86400 A 141.62.75.114
```

```
> send
```

```
> quit
```

```
goik>dig +noall +answer @nssdi.mi.hdm-stuttgart.de vm2.g7.sdi.mi.hdm-stuttgart.de
```

```
vm2.g7.sdi.mi.hdm-stuttgart.de. 86400 IN A 141.62.75.114
```

Modify by delete/create

```
$ nsupdate -y $HMAC
> server nssdi.mi.hdm-stuttgart.de
> update delete admin.g3.sdi.mi.hdm-stuttgart.de. 3600 IN CNAME www.g3.sdi.mi.hdm-stuttgart.de.
> update add admin.g3.sdi.mi.hdm-stuttgart.de. 7200 IN CNAME www.g3.sdi.mi.hdm-stuttgart.de.
> send
> quit
```

Note

Examples at DNS Updates with nsupdate