

DNS-over-TLS implementations

Implementation Status

This table lists the best understanding of the current status of DNS-over-TLS related features in the latest stable releases of a selection of open source DNS software.

If there are errors or glaring omission please email sara@sinodun.com

Also see guides on [how to use NGINX and other proxies](#) to provide DNS-over-TLS, also see [here](#).

This works with a couple of provisos:

- Be aware that a client will think it is talking to a DNS-over-TLS server and so may keep connections open when idle even when not using EDNS0 Keepalive (as allowed by [RFC7858](#)). The nameserver will see only TCP connections which were historically used just for one-shot TCP and may not be robust to many long-lived connections.
- Therefore this **will work much better** if the nameserver has robust TCP capabilities (as described in Sections 6.2.2 and 10 of [RFC7766](#)), and would be required for production level service. Any server that fully implements EDNS0 Keepalive ([RFC7828](#)) should meet this criteria.

See the [DNS Privacy reference material](#) page for more details on the individual features.

Clients

Mode		Stub						Recursive resolver			
Software		Idns (drill)	digit	getdns (Stubby)	BIND (dig)	Go DNS	Knot (kdig)	getdns ^(a)	Unbound	BIND	Knot Res
TCP/TLS Features	TCP fast open ^(b)		✓	✓				P			✓
	Connection reuse (Q/R, Q/R, Q/R)		✓	✓	✓	✓	✓			✓	✓
	Pipelining of queries(Q,Q,Q,R,R,R)	n/a	✓	✓	✓	✓	✓			✓	✓
	Process OOR (Q1,Q2,R2,R1)	n/a	✓	✓	✓					✓	✓
	EDNS0 Keepalive ^(c)			✓							
TLS Features	TLS encryption (Port 853)		✓	✓		✓	✓	✓	✓		
	TLS authentication			✓							
	EDNS0 Padding		✓	✓			✓				

Servers

Mode		Recursive			Auth		
Software		Unbound	BIND	Knot Res	NSD	BIND	Knot Auth
TCP/TLS Features	TCP fast open**	✓	✓	✓			✓
	Process Pipelined queries	✓	✓	✓	✓	✓	✓
	Provide OOR		WIP	✓	n/a	n/a	n/a
	EDNS0 Keepalive***		WIP				
TLS Features	TLS encryption (Port 853)	✓	(d)	✓			
	Provide TLS auth credentials	✓	(d)	✓			
	TLS DNSSEC Chain Extension						
	EDNS0 Padding (basic)			✓			

KEY:

- Green square  - indicates latest release already supports this functionality
- Blue square - indicates that a patch is available in our git repo. See here for details: [DNS-over-TLS patches](#)
- Yellow square - indicates work in progress, or available in next release
- P - Requires building against a patched version of libunbound

- (a) `getdns` uses libunbound in recursive mode
- (b) not yet available on Windows
- (c) Implies robust TCP connection management (see RFC7828 and RFC7766)
- (d) See [this article](#) for how to use stunnel with BIND to provide DNS-over-TLS - thanks Francis Dupont!

Note pipelining and OOOOP are not applicable for synchronous applications.