



DNS Host Health Check

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DNS Host Health Check

In CPNR 9.0 and earlier, DNS replies to A/AAAA queries with the RR's in its authoritative configuration regardless of whether or not the destination addresses are reachable. The returned IP address may or may not be reachable at the time when the DNS query is made. This outage may not be known to the DNS servers, or to the DNS client. As of CPNR 9.1, an authoritative DNS server can periodically check the availability of a host or set of hosts for which it operates as the DNS authority by pinging the addresses using ICMP echo messages (ping). As of CPNR 10.0, DNS host health check supports the GTP-C protocol ECHO message using UDP v4 and UDP v6 to find out host availability. Hosts which are identified as unavailable are not sent in the query reply. The server responds with all RRs in the RR Set for the first query, with TTL set as **hhc-max-init-ttl**. The DNS server sends the pings (ICMP ping or GTP-C echo ping) for RRs in an RR Set only after receiving a query for that RR, and then the subsequent A/AAAA queries will respond with the reachable RRs.



Note

All RRs which have *host-health-check* attribute set to ping or gtp-echo are monitored periodically. Monitoring will start only after receiving first query for RR with host-health-check set to ping or gtp-echo. When host-health-check is set to ping, ICMP protocol will be used for monitoring.

To work the feature effectively, the pinged systems should have default security settings that allow ping response. When *host-health-check* is set to gtp-echo, GTP-C v2 protocol (GTP-C Echo request and response) will be used for monitoring.

DNS Host Health Check Configuration Settings

DNS Host Health Check comes with pre-configured settings, and is disabled by default on the DNS Server.

Use the below DNS Server Level Attributes to enable DNS Host Health Check:

Table 1: DNS Server Level Attributes

Attribute	Description
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host-health-check	<p>Enables or disables DNS Host Health Check in the DNS server. When Host Health Check is enabled, DNS server sends hhc- max-ttl as ttl in query reply for activeRRs. When DNSSec is enabled, dns server will add RR's which are not active at the end of rr list in the query reply. When DNSSec is not enabled, dns server will not add RR's which are not active in rr list in the query reply.</p> <p>host-health-check is disabled on the DNS server by default, reload the DNS server after enabling host-health-check.</p>
hhc-failed-domain-response	<p>Specifies how the DNS server responds to the requests when all RR's are down. The possible settings are:</p> <p>send-servfail - Configures the server to respond with SERVFAIL if all the RR's are down in nameset.</p> <p>send-all-rrs - Configures the server to respond with all rrs even all the RR's are down in nameset.</p> <p>drop-req - Configures the server to drop the query when all the RR's are down in nameset.</p>
hhc-interval	Specifies the time interval (in seconds) to check RR Sets for reachability.
hhc-max-ttl	<p>Specifies the maximum TTL (in seconds) to send in query reply when RR health status is up. By default the hhc-interval value will be used.</p> <p>Note If the RR Set has a TTL less than hhc-interval or hhc-max-ttl, the RR Set's TTL will be used in the response.</p>
hhc-max-init-ttl	<p>Specifies the maximum initial TTL (in seconds) to send in query reply when Host Health Check RR is queried for the first time.</p> <p>Note If the RR Set has a TTL less than hhc-max-init-ttl, the RR Set's TTL will be used in the response.</p>
hhc-gtp-echo-port	The port to which GTP-C echo messages are sent and received.

Enabling Host Health Check

Local Advanced Web UI

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- Step 1** On the Manage DNS Authoritative Server page, under the **Host Health Check** section, enable **Host Health Check**.
- Step 2** Click **Save** to save the changes and reload the DNS Authoritative Server.
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CLI Commands

Use the **dns enable host-health-check** to enable host health check and use **dns reload** to restart the DNS server.



Note Restart the DNS Server to apply the configuration changes successfully.

Host Health Check RR Set Settings

Local Advanced Web UI

Choose Forward Zones from **Design > Auth DNS** to open the List/Add Forward Zones page and click the **Resource Records** tab. The *host-health-check* attribute needs to be set as ping on the RR Set. This attribute change on the RR Set does not require a reload.



Note If DNSSEC is enabled on the zone, DNS server will add the RR's which are not active at the end of the rr list in the query reply.

CLI Commands

```
zone name rrSet rr-name [set <host-health-check=off/ping/gtp-echo>] [get <host-health-check>] [unset <host-health-check>] [show]
```

The rrSet command sets/unsets the host-health-check flag on resource records for the rr-name. When this flag is set, the A and AAAA record's health will be monitored.



Note DNS server supports Global Unicast Address for IPv6 host health monitoring.

DNS Host Health Check Statistics

You can view DNS Host Health Check Statistics through Web UI in the following ways:

Local Advanced Web UI

Click the **Statistics** tab on the Manage DNS Authoritative Server page to view the **Host Health Check Statistics** page. The statistics appear under the Host Health Check Statistics of both the Total Statistics and Sample Statistics categories.

Table 2: DNS Host Health Check Statistics Attributes

Attribute	Description
hhc-domains	Reports the total number of domains checked for ping and gtp-echo Host Health Check.
hhc-domains-failed	Reports the total number of domains check failed for ping and gtp-echo Host Health Check. When all the RRs in the RR set are down, this stat is incremented.

hhc-domains-passed	Reports the total number of domains check passed for ping and gtp-echo Host Health Check. When any RR in the RR set is up, this stat is incremented.
hhc-rrs	Reports the total number of RRs checked for ping and gtp-echo Host Health Check.
hhc-rrs-passed	Reports the total number of RRs that have passed ping and gtp-echo health check.
hhc-rrs-failed	Reports the total number of RRs that have failed ping and gtp-echo health check.
hhc-ping-domains-failed	Reports the total number of domains check failed for ping Host Health Check. When all the RRs in the RR set are down, this stat is incremented.
hhc-ping-domains-passed	Reports the total number of domains check passed for ping Host Health Check. When any RR in the RR set is up, this stat is incremented.
hhc-ping-rrs	Reports the total number of RRs checked for ping Host Health Check.
hhc-ping-rrs-passed	Reports the total number of RRs that have passed ping Host Health Check.
hhc-ping-rrs-failed	Reports the total number of RRs that have failed ping Host Health Check.
hhc-gtp-echo-domains	Reports the total number of domains checked for gtp-echo Host Health Check.
hhc-gtp-echo-domains-failed	Reports the total number of domains check failed for gtp-echo Host Health Check. When all the RRs in the RR set are down, this stat is incremented.
hhc-gtp-echo-domains-passed	Reports the total number of domains check passed for gtp-echo Host Health Check. When any RR in the RR set is up, this stat is incremented.
hhc-gtp-echo-rrs	Reports the total number of RRs checked for gtp-echo Host Health Check.
hhc-gtp-echo-rrs-passed	Reports the total number of RRs that have passed gtp-echo Host Health Check.
hhc-gtp-echo-rrs-failed	Reports the total number of RRs that have failed gtp-echo Host Health Check.

DNS Host Health Check statistics can also be logged in the server by enabling the **host-health-check** option present in the **Activity Summary Settings** section of the Edit Local DNS Server page.

CLI Commands

Use **dns getStats dns-hhc total** to view the host health check Total statistics and **dns getStats dns-hhc sample** to view the sampled counters statistics.



Note Restart the DNS Server to apply the configuration changes successfully.
