Authoritative DNS Metrics

These authoritative DNS metric elements are available in the dashboard:

DNS Outbound Zone Transfers

The DNS Outbound Zone Transfers dashboard element rendered as a stacked area chart tracks the rate of change in full and incremental outbound zone transfer responses, and any associated errors. The chart is available if you choose **DNS Metrics: DNS Outbound Zone Transfers** in the Chart Selection list.

The resulting stacked area chart plots the following trends:

- **Full Responses**—Number of full outbound zone transfers (AXFRs out).
- **Incremental Responses**—Number of incremental outbound zone transfers (IXFRs out).
- **Authorization Errors**—Number of unauthorized (refused) zone transfer requests.
- **Exceed Max Transfers Out**—Number of failed outbound transfers that exceed the maximum limit.
- **Other Errors**—Number of other outbound transfer errors that are not authorization errors.

How to Interpret the Data

This chart is useful in gauging if outbound zone transfers to a secondary DNS server are occurring as predicted and if there are any authorizations or failed transfer attempts in the process. The most significant indicator is the trend in the number of outbound zone transfers denied for lack of permission or for not being authorized for the zone.

Troubleshooting Based on the Results

Check the primary and secondary server configurations if there are errors or exceeded limits in the outbound zone transfers.

DNS Inbound Zone Transfers

The DNS Inbound Zone Transfers dashboard element rendered as a stacked area chart tracks the rate of change in full and incremental inbound zone transfer responses, and any associated errors. The chart is available if you choose **DNS Metrics: DNS Inbound Zone Transfers** in the Chart Selection list.

The resulting stacked area chart plots the following trends:

- **Full Response**—Number of full inbound zone transfers (AXFRs in).
- **Incremental Responses**—Number of incremental inbound zone transfers (IXFRs in).
- **Authorization Errors**—Number of refused responses (xfer-in-auth-errors).
- **Failed Attempts**—Number of failures other than refusals (xfer-failed-attempts).
- **Exceed Max Transfers In**—Number of times that the concurrent inbound transfers reach the maximum limit.

How to Interpret the Data

This chart is useful in gauging if inbound zone transfers to a secondary DNS server are occurring as predicted and if there are any authentication or failed transfer attempts in the process. The most significant indicator is the trend in the number of inbound zonended transfers denied for lack of permission, for not being authorized for the zone, or for other reasons.

Troubleshooting Based on the Results

Check the primary and secondary server configurations if there are errors or exceeded limits in the inbound zone transfers.

DNS Network Errors

The DNS Network Errors dashboard element rendered as a line chart tracks the rate of change in DNS server network errors. The chart is available if you choose **DNS Metrics: DNS Network Errors** in the Chart Selection list.

The resulting line chart plots the following trends:

- **Query Error Packets/Query Responses**—Ratio of query error packets over responses. Responses consist of:

  - Authoritative
  - Authoritative no-such-name
  - Authoritative no-such-data
  - Nonauthoritative
  - Nonauthoritative no-such-data
  - Requests refused

- **Non Error Dropped Packets/Query Responses**—Ratio of nonerror dropped packets (queries dropped) over responses.
- **Update Errors/Updates**—Ratio of DNS Update errors over total updates.

How to Interpret the Data

This chart indicates query and response errors as an indication of the health of the server.

Troubleshooting Based on the Results

Check the DNS server network configuration if errors are increasing.

DNS Related Servers Errors

The DNS Related Servers Errors dashboard element rendered as a line chart tracks the rate of change in DNS related server errors. The chart is available if you choose **DNS Metrics: DNS Related Servers Errors** in the Chart Selection list.

The resulting line chart plots the following trends:

- **Referral Timeouts/Referrals**—Ratio of referral timeouts over referrals.
- **Failed Responses/Total Incoming Zone Transfer Requests**—Ratio of failed responses over incoming zone transfer requests.
- **TSIG Errors/TSIG Attempts**—Ratio of transaction signature (TSIG) errors (bad times, keys, or signatures) over total TSIG attempts (successfully received packets).

How to Interpret the Data

This chart indicates the health of connections and data transfers with related DNS servers. All three chart lines can have diagnostic significance.

Troubleshooting Based on the Results

Check the configurations and connectivity of the related servers in HA DNS relationships if errors are increasing.

DNS General Indicators

The DNS General Indicators dashboard element rendered as a table shows the server state, its last and startup reload time, the number of zones per server, and the total resource record (RR) count. The table is available if you choose **DNS Metrics: DNS General Indicators** in the Chart Selection list.

The resulting table shows:

- **Server State**—Up or Down (based on whether statistics are available), and how long the server has been in this state.
- **Last Reload**—How long since the last server reload.
- **Start Time**—Date and time of the last server process (Cisco Prime Network Registrar server agent) startup.
- **Total Zones**—Number of configured zones.
- **Total RRs**—Number of resource records.

How to Interpret the Data

The data in this chart shows general server health and operational duration. The objective is to make decisions about the server, such as whether it might be time for another reload, perhaps warranted by the number of configured zones.

Troubleshooting Based on the Results

If the server state is Down, all the DNS chart indicators show a red status box, so no data will be available. In the case of a server that is down, restart the server. The number of zones indicated might also require some evaluation and possible reconfiguration.

DNS Queries Per Second

The DNS Queries Per Second dashboard element, rendered as chart, displays queries per second for the Authoritative DNS server. This chart is available if you choose **DNS Metrics: DNS Queries Per Second** in the Chart Selection page1.