
EDGE
NEXUS

SOFTWARE VERSION
1.8

EdgeGSLB

Administrator User Guide

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GSLB Explained

GSLB, or its full name Global Server Load Balancing, allows organizations to improve their IT resilience using multiple data centres, on-ground or in-cloud. EdgeGSLB works by using server health and DNS to direct the traffic across geographical sets based on logic defined by the networking administrator.

The great thing about EdgeGSLB is that its resilience is no-touch, meaning that failover, fallback, or redirection of traffic is seamless should any resources within a data centre fail.

EdgeGSLB can also drive traffic based on geo-proximity, so users can obtain the lowest possible latency when accessing the applications within the data centre. Geo-proximity means that Melbourne users are sent to an Australian data centre, while users in Frankfurt can be sent to their nearest location, London. If the Australian data centre fails, its users will automatically be diverted to the London data centre until fixes are made.

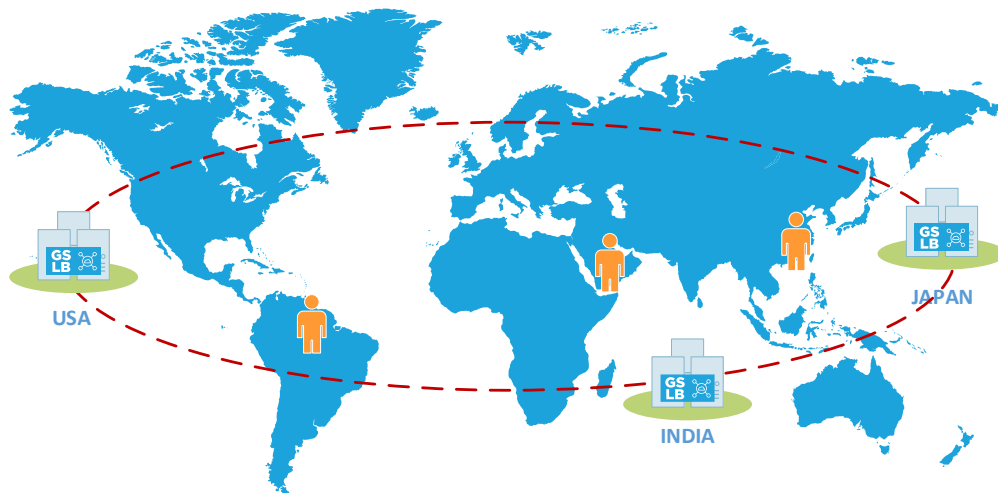
The advantage of using the EdgeGSLB is that it is totally under your control and does not rely on external DNS or other contractual services.

EdgeGSLB – The mechanics

There are some use cases for EdgeGSLB, and in this document, we will work to explain these to you.

Geographical Active-Active

This illustration is the classic way in which most organizations use EdgeGSLB. It operates by forming an Active-Active high availability framework of data centre server farms. Users can be located across geographies, and their requests are sent to the nearest and available data centre to have the best user experience.



End users from across the globe will access their application, with the EdgeGSLB determining where best to route the requests. The 'where best' is decided by the EdgeGSLB based on the system administrator's specified geo-proximity configuration.

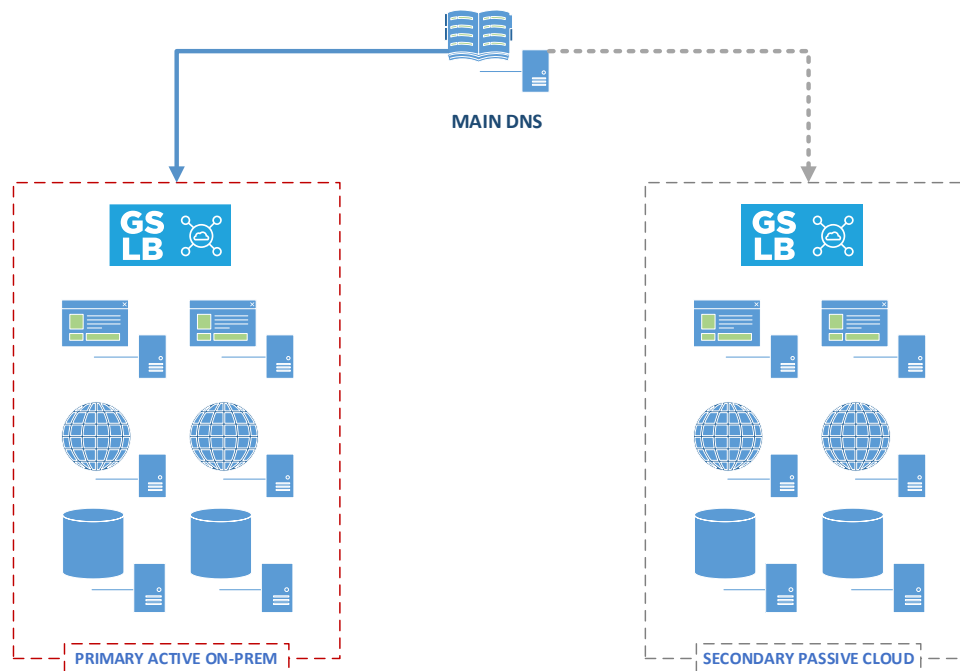
The health of each server within each data centre is continually monitored using various monitoring methods available. If an anomaly is detected within any data centre, the EdgeGSLB in that location will automatically route the end user to one of the other available and working server farms. We call this an Active-Active configuration because all the EdgeGSLB modules, servers, and data centres are accessible and operational.

Effective Disaster Recovery (DR)

The Edgenexus GSLB solution can be deployed to form a highly effective disaster recovery solution.

In standard DR scenarios, failure of the primary site would mean that the DNS entries would need to be manually changed to point to the secondary DR location and then back again when failback is initiated.

In the case of a data centre or services failure in the primary location, the EdgeGSLB will initiate a failover to the secondary. Using Edgenexus GSLB, this is no longer required. The image below shows two data centre locations, with an ADC+EdgeGSLB in each and a continual health check on their respective server farms.



Should the EdgeGSLB instances determine that the health of the primary data centre or any of its applications poses a problem, the failover to the secondary will be initiated.

Zero-Touch Scalability

Another good use case of the EdgeGSLB is 'zero-touch scalability'.

Let us look at a scenario with a primary data centre on-premise. We currently have several application servers in a cloud data centre, and we use GSLB for high availability. We then experience a sudden upsurge in usage and risk our servers being stressed.

The EdgeGSLB can monitor the usage in the primary on-premise servers and redirect users to the secondary cloud-located servers when needed. Since cloud data centres can utilize elastic computing, this method proves to be highly cost-effective to use.

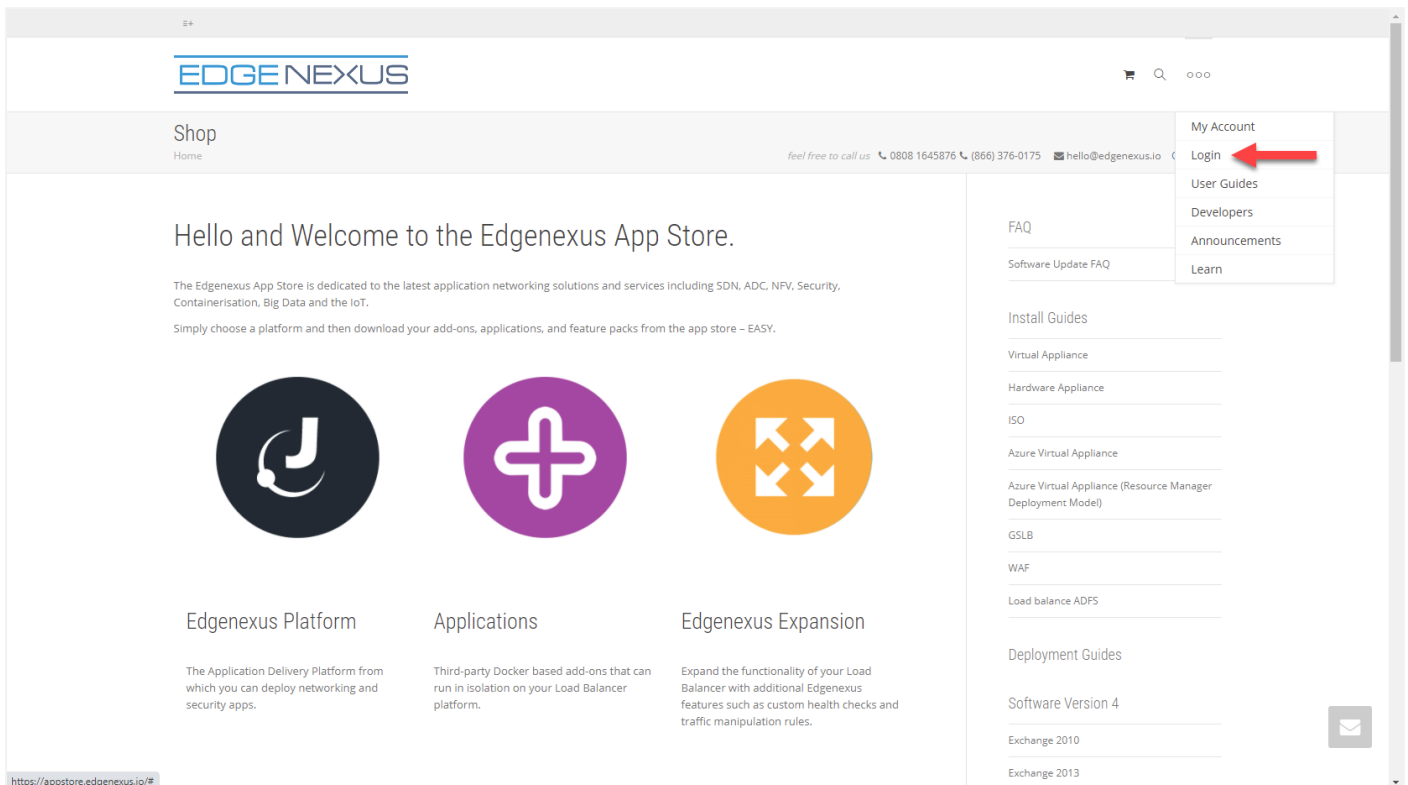
Installing the EdgeGSLB App

Getting the EdgeGSLB from the App Store

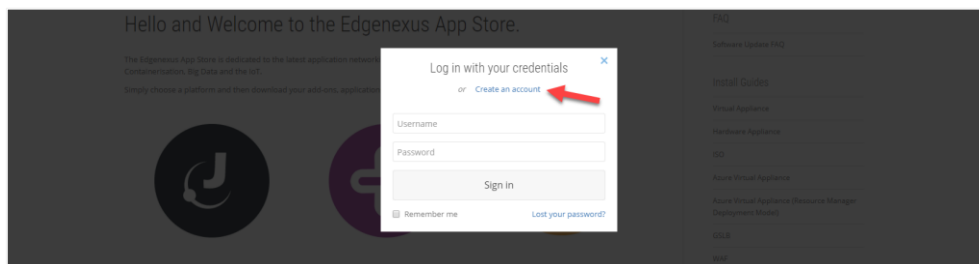
Obtaining the EdgeGSLB is very easy.

As with every Edgenexus App, the EdgeGSLB App is available through the App Store and is free of cost.

- The first thing to do is to register for access to the Edgenexus App Store. This process is done by using a browser and navigating to <https://appstore.edgenexus.io>.



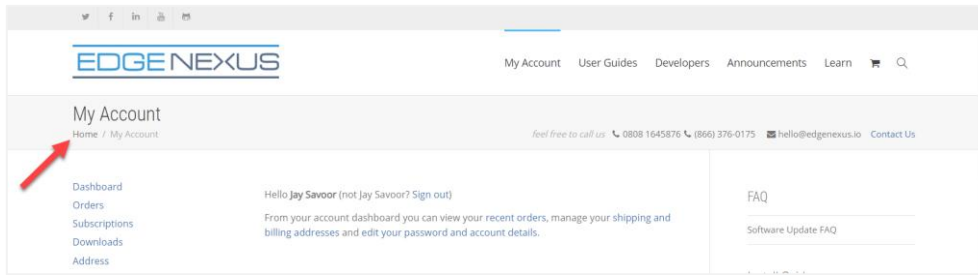
- Click on the login link in the hamburger icon at the top right.
- Click on the Create an Account, or log in using your account credentials.



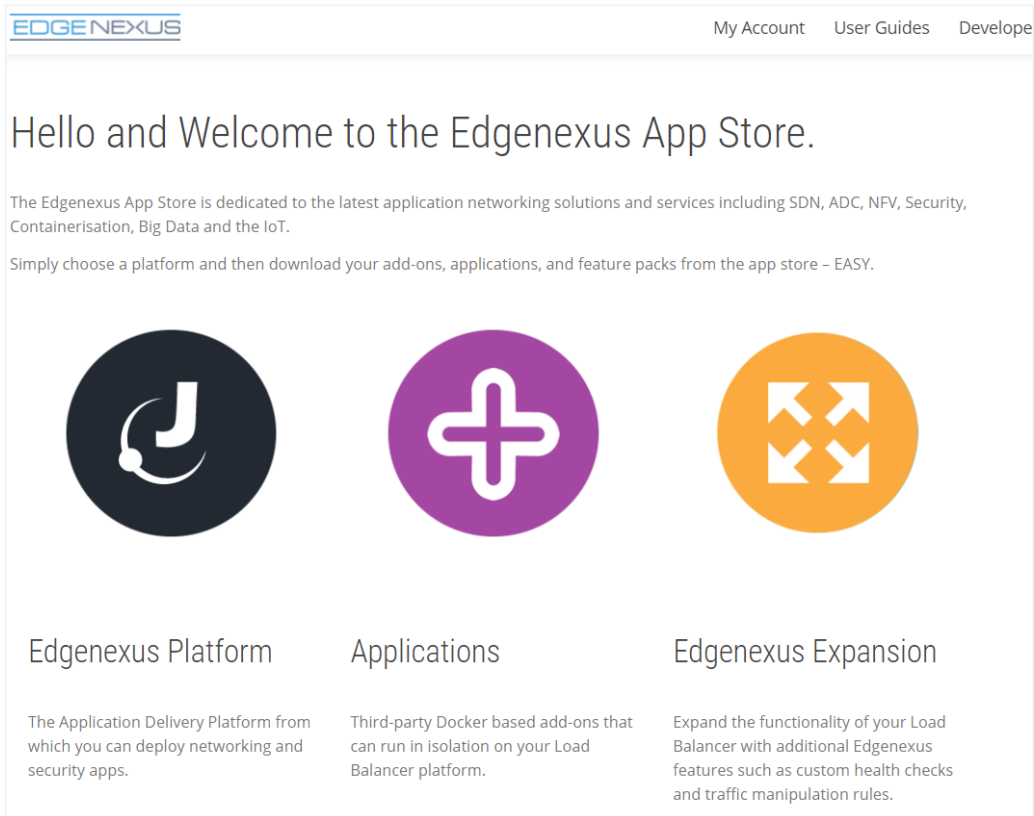
- Once you have logged in, please click on the Home link under the logo.

EdgeGSLB

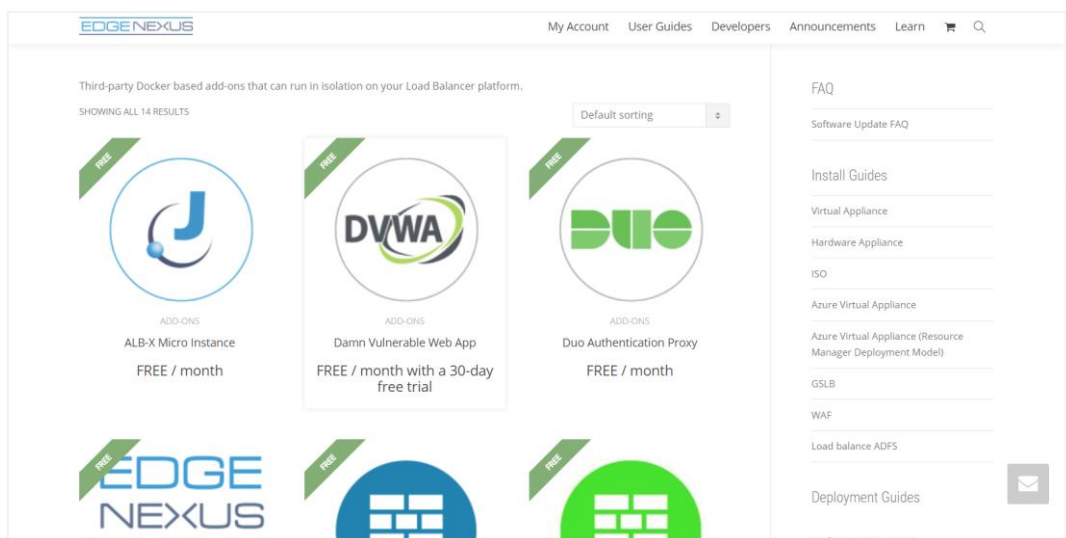
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- Next, click on Applications.



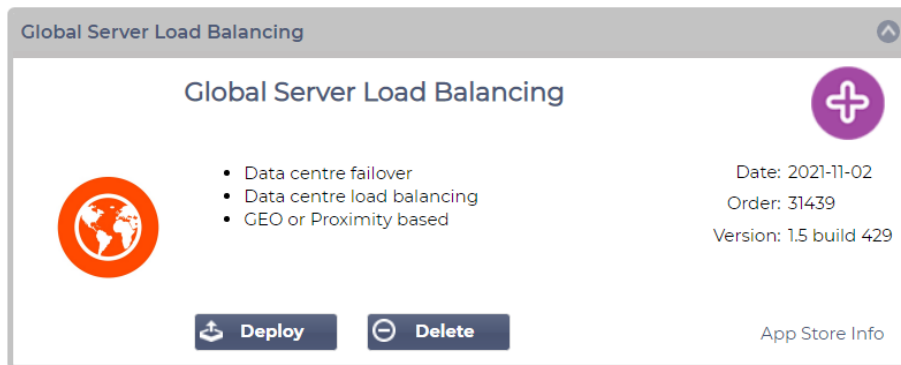
- This action will take you to the Applications page, where you can download the EdgeGSLB.



- Within the applications page, you can browse for and order the App.
- The EdgeGSLB is free to try, but you purchase it for full use.
- At this point, you have two options: Using the App Store from within the EdgeADC or directly downloading the App from the App Store and then uploading it to the EdgeADC.

Downloading and importing the App using the EdgeADC

- The first option is to log in using your App Store credentials inside the EdgeADC. The integrated App Store interface is available using Services > App Store.
- This method will allow you to make the purchase, and then find it available within the Purchased Apps section in Library > Apps.
- EdgeGSLB App looks something like the one shown below.



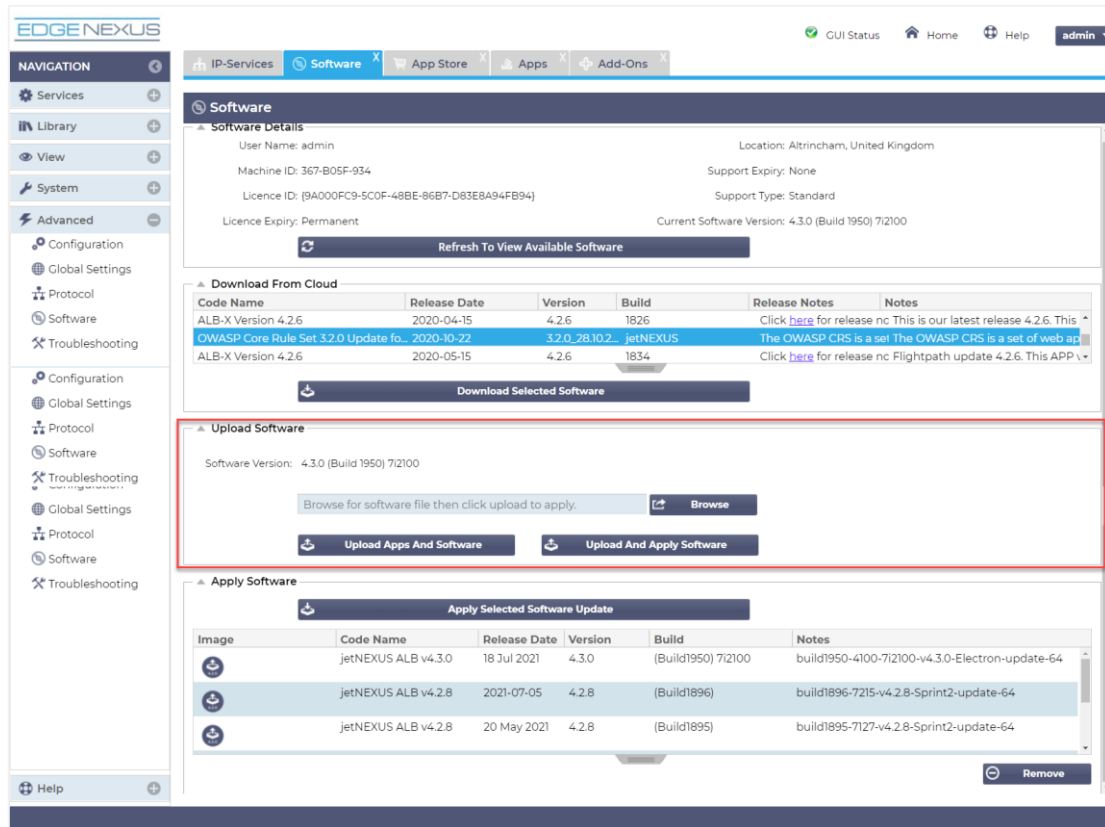
- You can then choose to download the App, and it will appear in the Downloaded Apps section.
- From the Library > Apps > Downloaded Apps section, locate the EdgeGSLB App and then deploy it to the EdgeADC containers by clicking the Deploy button.
- Once deployed, it will be available in the Library > Add-Ons tab

Download and import the App using direct download

- The secondary method uses your App Store login and directly downloads it to your desktop using a browser.
- Once downloaded, please make sure you save it without altering the filename.
- Please also ensure that there is no (1) or something similar in the filename, possibly indicating a second download, etc.
- With the file downloaded, navigate to Advanced > Software of the EdgeADC GUI using your browser.

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- There are several sections within the Software page, but the one we need is Upload Software.
- First, click the Browse button and find the EdgeGSLB App you downloaded.
- Next, click the Upload and Apply Software.
- The App will be shown in the Downloaded Apps section of Library > Add-Ons.
- From the Library > Apps > Downloaded Apps section, locate the EdgeGSLB App and then deploy it to the EdgeADC containers by clicking the Deploy button.
- Once deployed, it will be available in the Library > Add-Ons tab

Making the EdgeGSB App operational

When an App is downloaded and deployed, it is yet to be operational. It has to be given an IP address in the same subnet as the EdgeADC and ports through which it needs to be accessible.

- Navigate to Library > Add-Ons and locate the EdgeGSLB App.
- It should look something like the image below.



- As shown in the Container Name and External IP field, no name or IP address is allocated.
- Add an appropriate static IP address. This entry is optional for EdgeADC v4.3.x and above but is mandatory for any version lower than 4.3.x.
- Next, give the App a name – the EdgeADC's internal DNS system uses this to refer to the App when needed.

EdgeGSLB

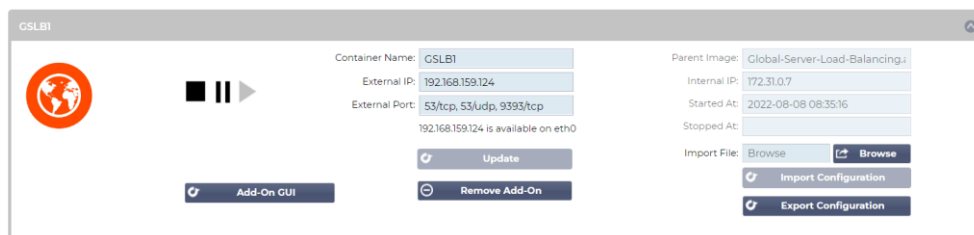
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Note: The provision of a name is mandatory and essential for internal ADC <> GSLB communications.

- You will need to add the relevant ports for DNS. These are 53/tcp, 53/udp and 9393/tcp.
- Once you have done this, click the Update button to initialize the App.
- It should look something like the one below.



- Click the PLAY icon to activate the App into an operational state.

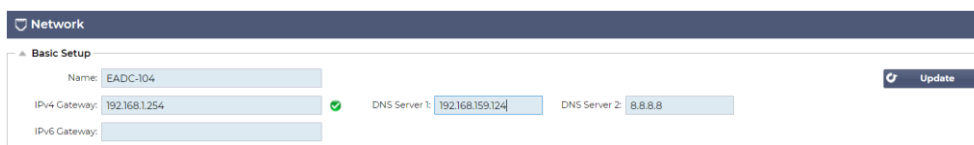


Note the View App button to launch the App GUI and the Pause App and Stop App buttons.

- You can launch the App GUI using View App or the listing in the IP Services section.

The EdgeGSLB App runs within the ADC's docker container technology, ensuring its safety and integrity. The App uses a separate docker0 network to communicate with the EdgeADC load balancer. When the App is started, it is allocated an IP address from the docker0 pool. This IP address is automatically resolved by the EdgeADC using the docker name you provided in the Container Name field. You can see the internal IP address on the right side of the App.

You will also need to ensure that the EdgeADC can resolve DNS names using the GSLB's PowerDNS module. The External IP address of our EdgeGSLB App, 192.168.159.124 in our example shown above, needs to be added as the Primary DNS in the System > Networking section. See the example below.



Configuring the EdgeGSLB

You will need to use your browser to access the EdgeGSLB App for the configuration needed.

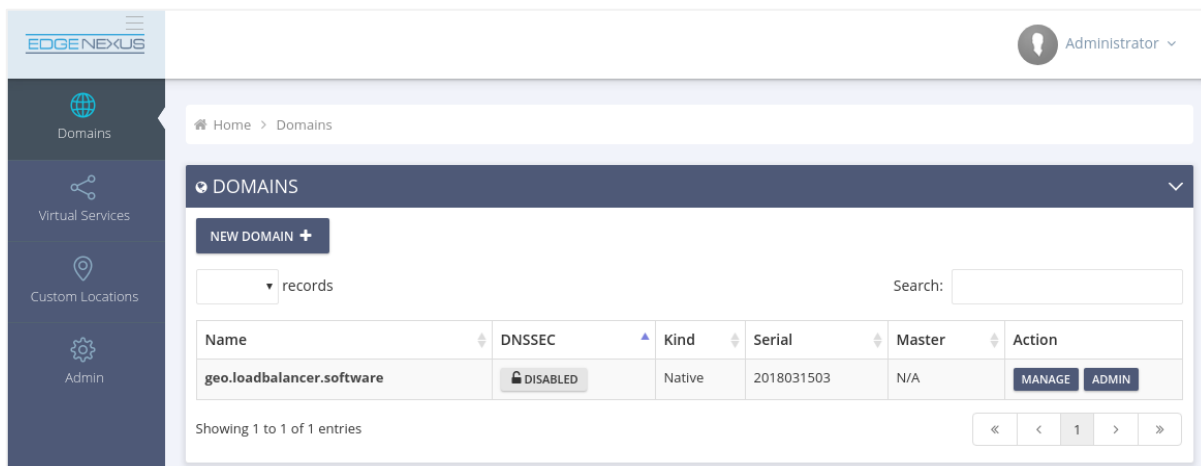
To access the App, use the Add-on GUI button. You can also access this using the browser and the following URL, https://{EXTERNAL_IP_ADDRESS}:9393.

This action will open a browser window or tab and display the page below.



The default username and password are *admin* and *jetnexus*, the same as the EdgeADC. You can change this once you have logged in.

Once logged in, you will be presented with a page similar to the one shown below.



As you can see, a dummy domain name has been pre-configured as an illustration.

Note: It is impossible to edit a domain entry once it has been created. You can only delete the domain entry.

This guide will show you how to configure the GSLB using the dummy configuration and will allow you to get a good idea of how to use your domain and VIP entries when configuring it for POC or production.

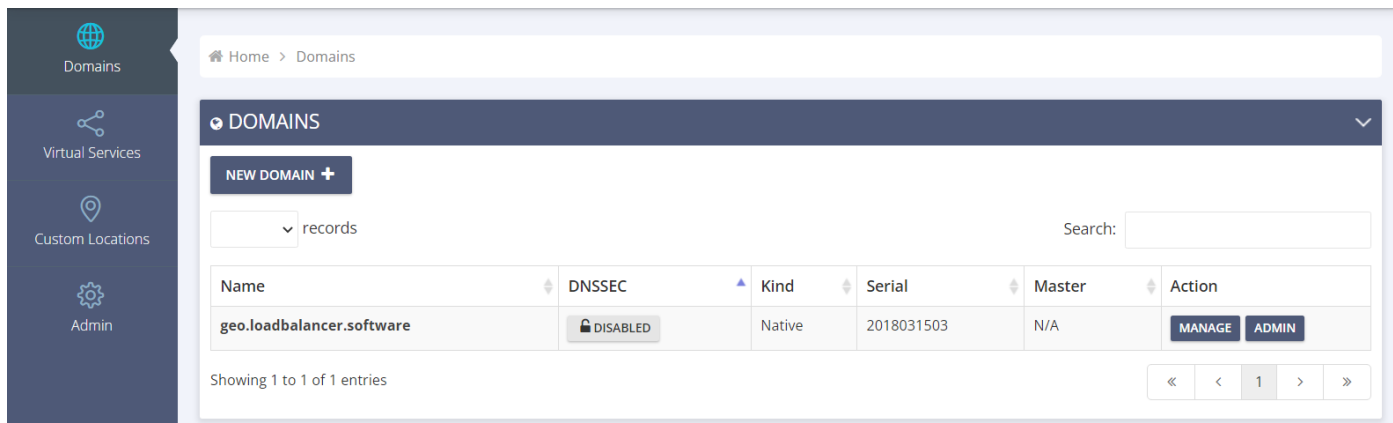
Adding a new domain

The domain name you enter in this stage will be the one that the GSLB uses for resolving. You may opt to use the prefix 'geo' in front of your domain name as a subdomain, as we have in this example, and it will then be 'geo.yourrownrealdomain.com'.

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- Click the New Domain button located in the Domains section.



- You will then see the form shown below.
- Enter your domain name in the field shown in the example.

- Leave the remaining settings in the form as they are.

You should now see the following in the Domains section.

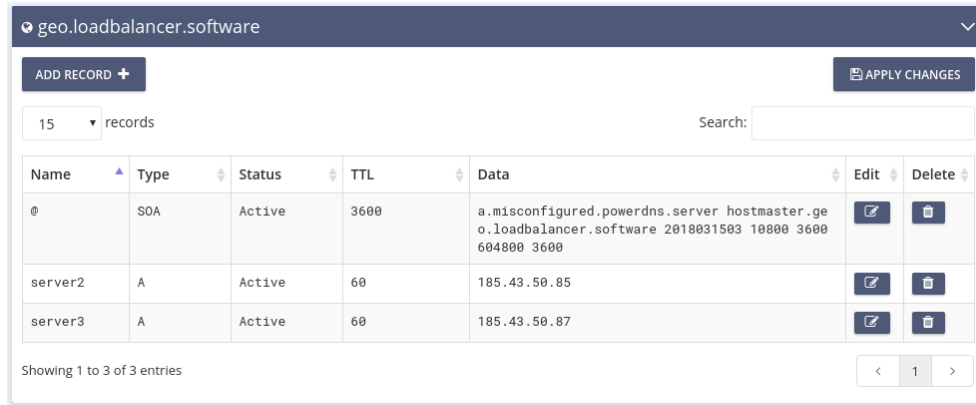


So let's now see what the pre-configured example entry looks like.

- Click on the entry geo.loadbalancer.software.

EdgeGSLB

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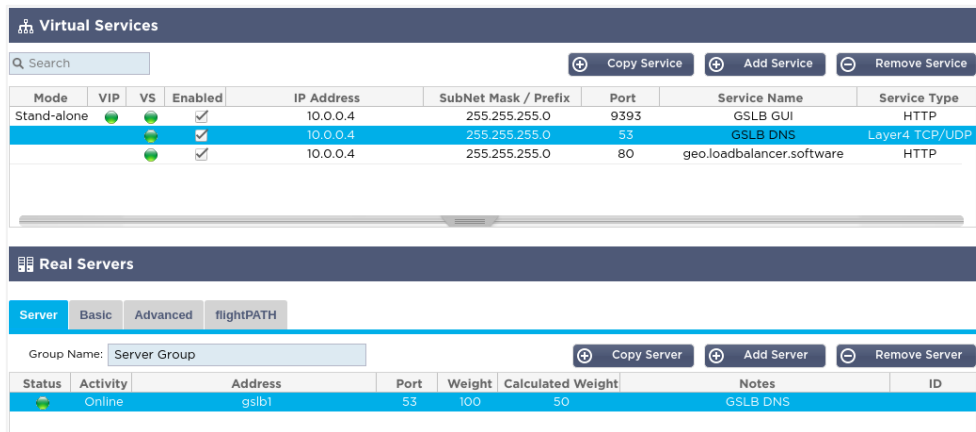


As you can see from the image above, you have two A records and a dummy SOA record. The A record entries are the application servers' IP addresses or the ADC VIPs that point to the application servers, the latter being the most probable.

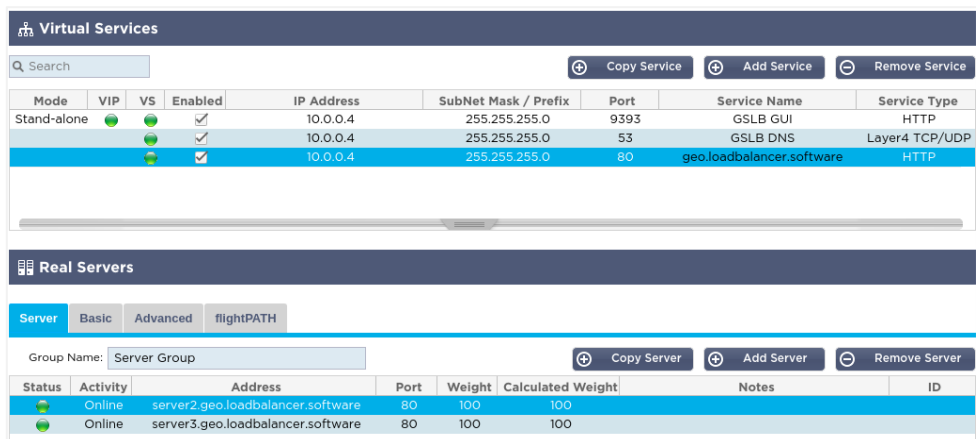
To have a complete DNS configuration, you must add the name server records to point to the GSLB IP Address(s) themselves.

We will now switch back to the IP Services tab of the ADC.

Please note the second entry within the Virtual Services section is configured to use port 53 with the Layer 4 TCP/UDP service. The Real Server entry points to the Container Name, gslb1, defined in our example.



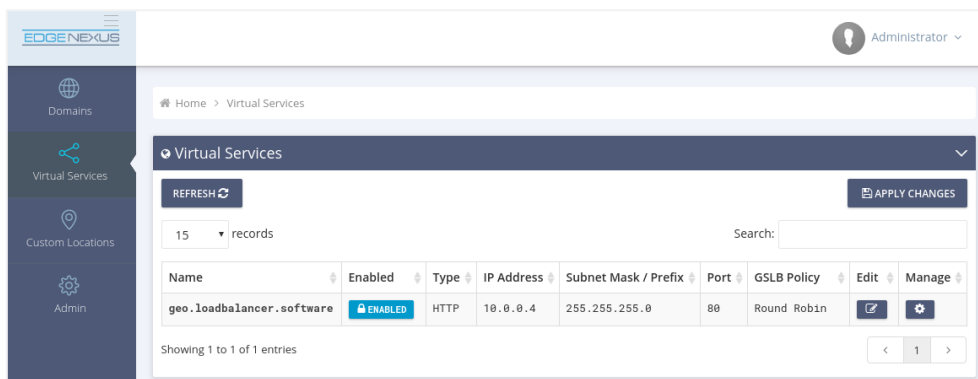
The third entry within the Virtual Services section is an HTTP service that uses port 80, points to the Servers or VIPs, and maps the A record entries to the GSLB domain Service Name.



There are some important points in this configuration.

1. **Virtual Service: Service Name** – This represents what the upstream CNAME entry in the upstream DNS server will be pointing to resolve the IP address for the service the client is trying to access. So in our example, this will be *geo.loadbalancer.software*.
2. **Address entries in the Real Server section** are required as the EdgeADC looks up the IP addresses relating to the hostnames configured. It does this by referring to the GSLB configured as the ADC's primary DNS server. The ADC will perform the health check configured in the Real Servers Basic tab to confirm the reachability of the returned server IP and port.

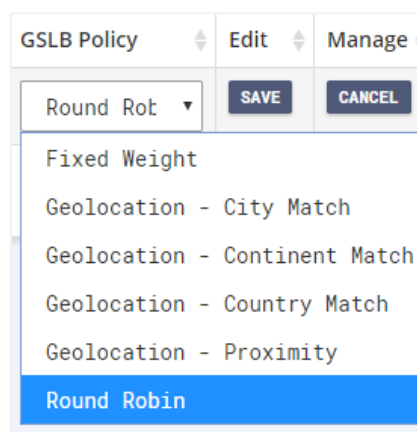
The information you enter here will be scrapped by the GSLB using the EdgeADC REST API and entered in the GSLB Virtual services section. The image below shows the Virtual Services section of the GSLB once the data has been transferred.



GSLB Policies

The default GSLB policy created for the Virtual Service is Round Robin, as this is the defacto one used by DNS. As the name suggests, any queries made to the domain name will be cycled through the available hosts/IP addresses.

Clicking on the entry will display a dropdown menu, as shown below. The options available are different GSLB policies that the GSLB App supports.



Fixed Weight

When Fixed Weight is selected as the GSLB policy, the ADC and GSLB will work in tandem to ensure that the requests are distributed per the weighting provided.

Geo Location Policies

As the name suggests, these policies are all related to the client's geographical location. Depending on the source IP location, the GSLB and the EdgeADC will decide to which data centre the client requests will be sent.

Custom Locations

The EdgeGSLB can also be configured to use custom locations so that you can use it on internal “private” networks. In the scenario above, the GSLB determines the client’s location by cross-referencing the client’s public IP address with a database to work out its location. It also works out the service IP address location from the same database; if the load balancing policy is set to a GEO policy, it will return the closest IP address. This method works perfectly well with public IP addresses, but there is no such database for internal private addresses that conform to RFC 1918 for IPv4 addresses and RFC 4193 for IPv6 addresses.

Please see the Wikipedia page explaining private addressing https://en.wikipedia.org/wiki/Private_network

How the Custom Locations feature works

Typically the idea behind using our GSLB for internal networks is that users from certain addresses will receive a different answer for a service depending on which network they are located in, so if we consider two data-centres, one called “North” and the other called “South”, providing a service called north.service1.gslb.com and south.service1.gslb.com respectively. When a user from the Northern data centre queries the GSLB, we want the GSLB to respond with the IP address associated with north.service1.gslb.com, provided the service is working correctly. Alternatively, if a user from the Southern data centre queries the GSLB, we want the GSLB to respond with the IP address associated with south.service1.gslb.com again, providing the service is working properly.

So what do we need to do to make the above scenario work?

1. We need to have at least two Custom Locations, one for each data centre
2. Assign the various private networks to these locations
3. Assign each service to the respective location

How do we configure this scenario on the GSLB?

1. Add a location for the Northern Data Center
 - Click on Custom Locations on the left-hand side
 - Click Add Location
 - Name = North
 - Add a private IP address and subnet mask for your Northern network. For this exercise, we will assume that the service and the client IP addresses are in the same private network, 10.1.1.0/24
 - Continent Code = EU
 - Country Code = UK
 - City = Enfield
 - Latitude (obtained from Google) = 51.6523
 - Longitude (obtained from Google) = 0.0807

Note: Please use the correct code, which can be obtained [here](#)

Add a location for the Southern Data Center

- Click on Custom Locations on the left-hand side
- Click Add Location
- Name = South
- Add a private IP address and subnet mask for your Southern network. For this exercise, we will assume that the service and the client IP addresses are in the same private network. 192.168.1.0/24
- Continent Code = EU
- Country Code = UK
- City = Croydon

- Latitude (obtained from Google) = 51.3762
- Longitude (obtained from Google) = 0.0982

Note: Please use the correct code, which can be obtained [here](#)

The result should appear something like the image below.

Custom Locations

ADD LOCATION +

APPLY CHANGES

15 records

Search:

Name	IP Address	Subnet Mask / Prefix	Continent	Country	City	Latitude	Longitude	Edit	Delete
North	10.1.1.0	24	EU	UK	Enfield	51.6523	0.0807		
South	192.168.1.0	24	EU	UK	Croydon	51.3762	0.0982		

Showing 1 to 2 of 2 entries

Adding A Records for the custom locations

Add an A record for north.service1.gslb.com

- Click on the domain service1.gslb.com
- Click Add Record
- Name = North
- Type = A
- Status = Active
- TTL = 1 Minute
- IP Address = 10.1.1.254
(Note this is in the same network as the location Enfield)

Add an A record for south.service1.gslb.com

- Click on the domain service1.gslb.com
- Click Add Record
- Name = South
- Type = A
- Status = Active
- TTL = 1 Minute
- IP Address = 192.168.1.254
(Note this is in the same network as the location Croydon)

The final table should look like the image below.

Home > Domain > service1.gslb.com

service1.gslb.com

ADD RECORD +

APPLY CHANGES

15 records

Search:

Name	Type	Status	TTL	Data	Edit	Delete
@	SOA	Active	3600	a.misconfigured.powerdns.server hostmaster.service1.gslb.com 2017060801 10800 3600 604800 3600		
North	A	Active	60	10.1.1.254		
South	A	Active	60	192.168.1.254		

Showing 1 to 3 of 3 entries

Traffic Flow

Example 1 – Client in Northern Data-Center

1. Client IP 10.1.1.23 queries GSLB for service1.gslb.com
2. GSLB looks up the IP address 10.1.1.23 and matches it with Custom Location Enfield 10.1.1.0/24
3. GSLB looks at its A records for the service1.gslb.com and matches north.service1.gslb.com as it is also in the network 10.1.1.0/24
4. GSLB responds to 10.1.1.23 with the IP address 10.1.1.254 for service1.gslb.com

Example 2 – Client in Southern Data-Center

1. Client IP 192.168.1.23 queries GSLB for service1.gslb.com
2. GSLB looks up the IP address 192.168.1.23 and matches it with Custom Location Croydon 192.168.1.0/24
3. GSLB looks at its A records for the service1.gslb.com and matches south.service1.gslb.com as it is also in the network 192.168.1.0/24
4. GSLB responds to 192.168.1.23 with the IP address 192.168.1.254 for service1.gslb.com

Admin Options

The Admin Options section is accessible via the navigation bar on the left side. The options available are as follows:

- Console
- Create User
- Users
- History
- Settings

Console

This is where you can monitor various aspects of GSLB and DNS server operations. Clicking on the magnifier option will open a browser window to Google and relevant PowerDNS documentation.

The screenshot displays the EdgeGSLB Admin Console interface. On the left is a dark navigation sidebar with icons for Domains, Virtual Services, Custom Locations, and Admin. The main content area shows a breadcrumb trail 'Home > Admin > Console' and four summary cards: '1 Domain', '1 User', '0 History', and '10m Uptime'. Below these is a 'Server Statistics' section with a search bar and a table of statistics.

Docs	Statistic	Value
	corrupt-packets	0
	deferred-cache-inserts	0
	deferred-cache-lookup	0
	dnsupdate-answers	0
	dnsupdate-changes	0
	dnsupdate-queries	0

Create User

As with all networking administration tools, you will want to create users who can access the GSLB. The option to add additional access users is available here and looks like this.

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Administrator

User create new

Home / Admin / Edgenexus GSLB - Create User

Create new user

Help with creating a new user

Fill in all the fields to the in the form to the left.

Newly created users do not have access to any domains. You will need to grant access to the user once it is created via the domain management buttons on the dashboard.

First Name

Last Name

E-mail address

Enter the account details below

Username

Password

CREATE USER

As you can see, the method to add additional access is simple. However, adding a user does not provide them access to the information contained within the domains. To achieve this, you will need to access the Admin section for each domain and add the user you have created.

To do this:

- Click on Domains
- Click the Admin button on the domain you wish to administer.
- You will be presented with the following page.

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Admin Console

Home > Admin Console > Domain Management

Domain Access Control

Move users from left to right to grant them access to the domain **jet.io**.

Users with **red** color is in Administrator role, no need to grant permission.

admin

SAVE

Domain Deletion

This function is used to remove a domain completely from Database and PowerDNS. All records and user privileges which associated to this domain be removed also. Your change **cannot be reverted**. Please be careful with your action!

DELETE DOMAIN JET.IO

- You will see the users you have created in the leftmost section and will be able to drag and drop them to the right in order to activate their access privileges.
- Remember to click the Save button once done.

History

This is essentially an audit trail of all actions that have been performed within the GSLB. It looks like the image below.

The screenshot shows the 'History' section of the EdgeGSLB interface. It features a sidebar with navigation options: Domains, Virtual Services, Custom Locations, and Admin. The main content area displays a table of historical actions. The table has columns for 'Changed by', 'Content', 'Time', and 'Detail'. A search bar and a 'CLEAR HISTORY' button are located at the top right of the table area. The table lists several actions performed by 'admin' and 'sindhu' on various domains, with timestamps and 'Info' buttons for each entry.

Changed by	Content	Time	Detail
admin	Apply record changes to domain gslbuser.local	2024-12-12 12:03:38.425410	i INFO
sindhu	Apply record changes to domain gslbuser.local	2024-12-12 11:59:22.986443	i INFO
sindhu	Apply record changes to domain gslbuser.local	2024-12-12 11:59:09.873002	i INFO
sindhu	Apply record changes to domain gslbuser.local	2024-12-12 11:52:32.007085	i INFO
sindhu	Apply record changes to domain gslbuser.local	2024-12-12 11:51:21.794458	i INFO
sindhu	Apply record changes to domain gslbuser.local	2024-12-12 11:49:18.812361	i INFO
sindhu	Apply record changes to domain gslbuser.local	2024-12-12 11:47:29.110947	i INFO
sindhu	Apply record changes to domain gslb18.local	2024-12-12 11:44:19.174926	i INFO

You can also drill down and see further information about the action performed by clicking the Info button. The output is displayed on-screen and looks like the below image.

The screenshot shows a JSON output window with a close button (X) and an OK button. The JSON data contains detailed information about DNS records, including names, types, contents, disabled status, and TTL values for various domains like 'gslbuser.local' and 'gslb18.local'.

```

[{"name": "gq.gslbuser.local", "type": "A", "content": "4.4.4.4", "disabled": false, "ttl": 60}, {"name": "gslbuser.local", "type": "NS", "content": "ns1.gslbuser.local", "disabled": false, "ttl": 60}, {"name": "gslbuser.local", "type": "NS", "content": "ns2.gslbuser.local", "disabled": false, "ttl": 60}, {"name": "gslbuser.local", "type": "SOA", "content": "ns1.gslbuser.local hostmaster.gslbuser.local 2024121217 10800 3600 604800 3600", "disabled": false, "ttl": 3600}, {"name": "ns1.gslbuser.local", "type": "A", "content": "192.168.80.33", "disabled": false, "ttl": 60}, {"name": "ns2.gslbuser.local", "type": "A", "content": "192.168.80.34", "disabled": false, "ttl": 60}, {"name": "sindhu.gslbuser.local", "type": "A", "content": "3.3.3.3", "disabled": false, "ttl": 60}, {"name": "testuser.gslbuser.local", "type": "CNAME", "content": "testuser.local", "disabled": false, "ttl": 60}, {"name": "testuser2.gslbuser.local", "type": "CNAME", "content": "testuser2.local", "disabled": false, "ttl": 60}, {"name": "testuser3.gslbuser.local", "type": "CNAME", "content": "testuser3.local", "disabled": false, "ttl": 60}, {"name": "testuser4.gslbuser.local", "type": "A", "content": "1.1.1.1", "disabled": false, "ttl": 60}, {"name": "testuser5.gslbuser.local", "type": "A", "content": "2.2.2.2", "disabled": false, "ttl": 60}, {"name": "jay.gslbuser.local", "type": "A", "content": "5.5.5.5", "disabled": false, "ttl": 60}]
    
```

Settings

The Settings section contains all the settings for GSLB and its integrated DNS server. This section should only be used by people who have knowledge of the different settings and parameters. A full list of the settings and their allowed values are detailed below.

allow-axfr-ips

- IP ranges, separated by commas
- Default: 127.0.0.0/8,::1

If set, only these IP addresses or netmasks will be able to perform AXFR without TSIG.

Warning

This setting only applies to AXFR without TSIG keys. If you allow a TSIG key to perform an AXFR, this setting will not be checked for that transfer, and the client will be able to perform the AXFR from everywhere.

distributor-threads

- Integer
- Default: 3

Number of Distributor (backend) threads to start per receiver thread. See [Performance and Tuning](#).

max-cache-entries

- Integer
- Default: 1000000

Maximum number of entries in the query cache. 1 million (the default) will generally suffice for most installations.

max-queue-length

- Integer
- Default: 5000

If this many packets are waiting for database attention, consider the situation hopeless and respawn the server process. This limit is per receiver thread.

max-tcp-connections

- Integer
- Default: 20

Allow this many incoming TCP DNS connections simultaneously.

negquery-cache-ttl

- Integer
- Default: 60

Seconds to store queries with no answer in the Query Cache. See [Query Cache](#).

overload-queue-length

- Integer
- Default: 0 (disabled)

If this many packets are waiting for database attention, answer any new questions strictly from the packet cache. Packets not in the cache will be dropped, and [overload-drops](#) will be incremented.

pipe-timeout

- Integer
- Default: 2000

Number of milliseconds to wait for an answer from the backend. If this time is ever exceeded, the backend is declared dead and a new process is spawned.

queue-limit

- Integer
- Default: 1500

Maximum number of milliseconds to queue a query. See [Performance and Tuning](#).

receiver-threads

- Integer
- Default: 1

Number of receiver (listening) threads to start. See [Performance and Tuning](#).

recursive-cache-ttl

slave-cycle-interval / xfr-cycle-interval

- Integer
- Default: 60

On a primary, this is the amount of seconds between the primary checking the SOA serials in its database to determine to send out NOTIFYs to the secondaries. On secondaries, this is the number of seconds between the secondary checking for updates to zones.

udp-truncation-threshold

- Integer
- Default: 1232

EDNS0 allows for large UDP response datagrams, which can potentially raise performance. Large responses however also have downsides in terms of reflection attacks. Maximum value is 65535, but values above 4096 should probably not be attempted.

Note

Why 1232?

1232 is the largest number of payload bytes that can fit in the smallest IPv6 packet. IPv6 has a minimum MTU of 1280 bytes ([RFC 8200, section 5](#)), minus 40 bytes for the IPv6 header, minus 8 bytes for the UDP header gives 1232, the maximum payload size for the DNS response.

Master-Slave Configuration for DNS Replication

For a Master-Slave configuration we will look at how the settings need to be made in a different manner.

The domain we will use for this example will be **gslb18.local**. You can follow the process below.

You may have instances when you have a pair of GSLB modules running in HA within the same datacentre or across multiple data centres running in Active-Passive or Active-Active. This scenario, coupled with having a large number of DNS records, creates logistical problems for the administrator.

IT staff can end up typing in all the records without an adequate solution for replicating the DNS records, leading to inefficient usage.

The EdgeGSLB has a built-in method of replicating the DNS records to Slave modules when changes are made to the Master, using the Master-Slave(s) concept to replicate DNS data.

Setting up the Master Domain

To set up Master-Slave replication, you must first specify the Master GSLB followed by any Slave GSLB module(s).

- Navigate to the Domain section and then click the New Domain button. This is where you will create the domain and configure it to be either the Master or the Slave.
- Add your domain name, in our case it is **gslb18.local**
- Click the Master radio button. This will ensure that this GSLB becomes the Master. This setting cannot be changed once the domain is created.

NEW ZONE INFORMATION

Enter a valid domain name (required)

gslb18.local

Type

Native Master Slave

SOA-EDIT-API

(OFF)

INCEPTION-INCREMENT

INCEPTION

INCREMENT-WEEK

INCREMENT-WEEKS

EPOCH

INCEPTION-EPOCH

- Click the Submit button.

Once you have configured the Master, the next step will be to create and configure the Slave(s). The same step shown in the image above is used when you create the domain on the Slave GSLB.

Setting up the Slave Domain

The process of setting up the Slave domain is very similar to that of the Master.

On the GSLB that will serve as the Slave:

- Navigate to Domains.

- Click the New Domain button.
- Add the same domain name you used on the Master.
- Click and select the Slave radio button.
- Enter the IP address of the Master GSLB in the field shown.

- Click the Submit button.

The Slave domain has now been created.

Configuring the domain records

Now that you have created the Master and Slave, it is time to set up the replication method.

The method below works for an HA pair and cross-data centre replication. The only proviso for multiple data centre usage is that all the GSLB modules must be able to see and talk to each other.

In our explanation, we assume you have two GSLB modules, each with an IP address of 192.168.80.33 and 192.168.80.34, respectively.

For the replication to work properly, you will need to add several additional records on the Master domain.

- Navigate to the Domains section and click the name of the domain.
- You will be shown the domain records area.
- Click Add Record to add each of the records and types shown below.

- Initial SOA Record. See the example below:

@	SOA	Active	3600	ns1.gslb18.local hostmaster.gslb18.local 2024121211 10800 3600 604800 3600		
---	-----	--------	------	--	--	--

- A Records for each GSLB. See example below:

ns1	A	Active	60	192.168.80.33		
ns2	A	Active	60	192.168.80.34		

- NS Records pointing to A Records for the GSLB. See example below:

@	NS	Active	60	ns1.gslb18.local		
@	NS	Active	60	ns2.gslb18.local		

- Followed by other records that are required for your infrastructure, such as server A records etc.

The final Domain record section will look like something similar to the one shown below. Remember, this is just an example.

gslb18.local							
ADD RECORD +						APPLY CHANGES	
15 records						Search:	
Name	Type	Status	TTL	Data	Edit	Delete	
@	NS	Active	60	ns1.gslb18.local			
@	NS	Active	60	ns2.gslb18.local			
@	SOA	Active	3600	ns1.gslb18.local hostmaster.gslb18.local 2024121211 10800 3600 604800 3600			
crm	CNAME	Active	60	srv02			
ns1	A	Active	60	192.168.80.33			
ns2	A	Active	60	192.168.80.34			
srv01	A	Active	60	10.17.22.46			
srv02	A	Active	60	10.17.22.47			
www	CNAME	Active	60	srv01			

Showing 1 to 9 of 9 entries

Configuring the Allow-AXFR-IPS Settings

The first thing to do is to make a note of the Domain Serial Number. This is located in the Domains section, under your domain. An example below shows its location.

Name	DNSSEC	Kind	Serial	Master	Action
gslb18.local	DISABLED	Master	2024121211	N/A	

The value for the Domain Serial Number changes each time a change is made to the domain. This is important as it will show us that the domain has been replicated and any changes made will reflect in the value of the Domain Serial Number on both the Master and Slave.

- Hover over the Admin section icon.
- You will be presented with a menu.
- Select Settings.
Explanation of all the settings are provided in the Settings section within this guide.
- The setting we are interested in is Allow-AXFR-IPS,
- Click the edit icon to edit the value for this setting.
- In the value field, enter the IP address of the Slave GSLB.
If you have more than one Slave, enter them all separated by a comma. An example is shown below.

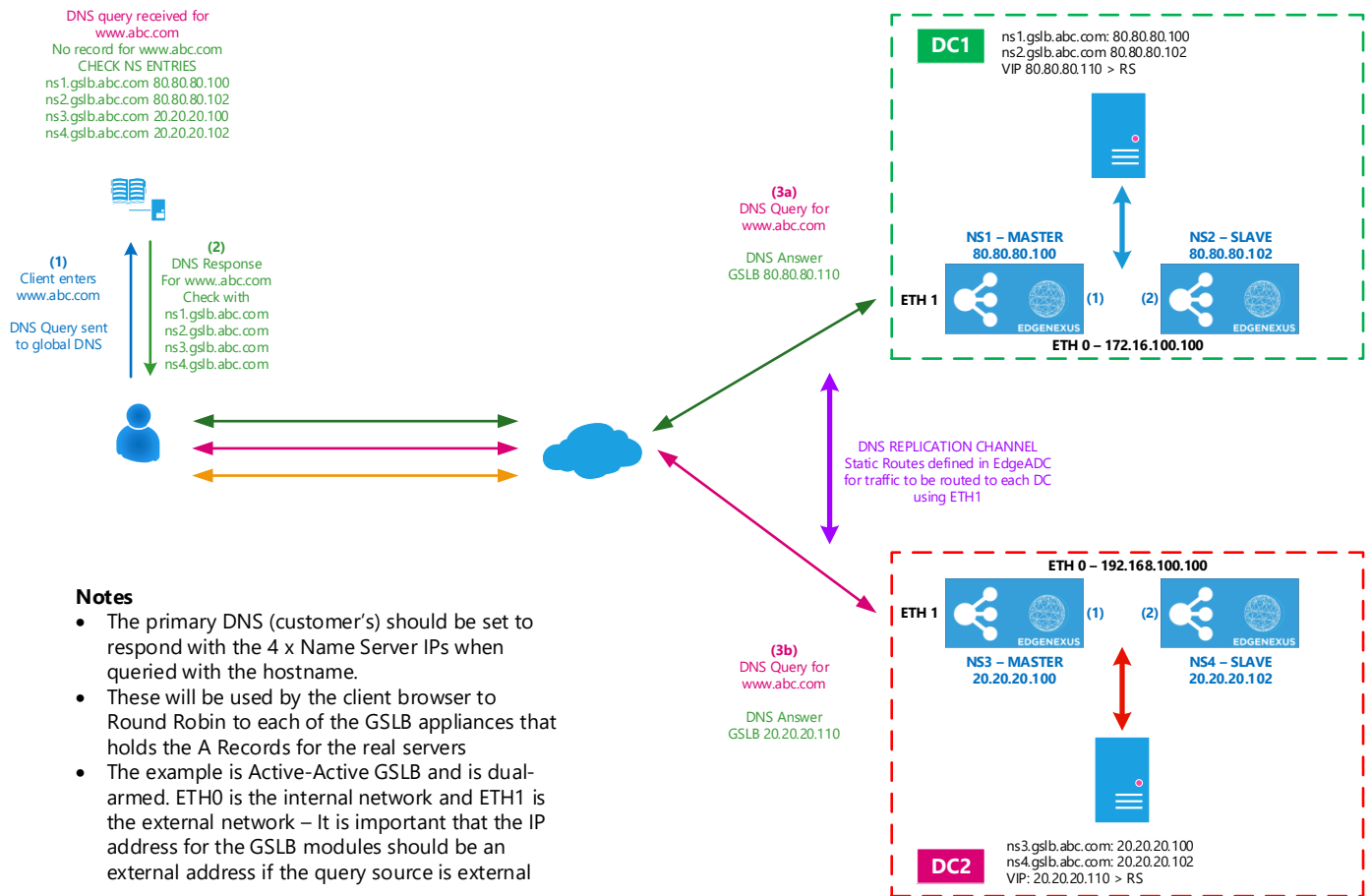
Docs	Name	Value	Edit
	allow-axfr-ips	192.168.80.34/32	

- Click Apply Changes.

The configuration of the GSLB-DNS replication services is now completed. You will need to give the GSLB a minute or so to replicate. You can check to see if replication has been successful by validating that the Domain Serial Number is the same on both GSLBs and also that the records have been replicated.

Dual Data Centre – Dual Arm Example

Sometimes, you may require an Active-Active GSLB architecture that crosses data centres. In the drawing below, we have outlined an example of two data centres with external and internal networks.



So let's see what we have in this example.

- The user in this example wishes to access a website called www.abc.com (not ABC NEWS!).
- They enter this into their browser, which queries their central DNS for the IP address.
- The central DNS responds to the user's machine that it does not have the IP address for www.abc.com, but it does have a list of Name Servers that may have the IP address for www.abc.com.
- It responds (in the example) with `ns1.gslb.abc.com`, `ns2.gslb.abc.com`, `ns3.gslb.abc.com` and `ns4.gslb.abc.com`.
- These Name Servers correspond to `gslb1` and `gslb2` in DC1 and `gslb3` and `gslb4` in DC2.
- DNS records on NS1 and NS3 Masters will be automatically replicated to NS2 and NS4, respectively.
- You could also have a single Master, say NS1 and the remaining GSLBs as Slaves. The Master will then replicate the records to the Slaves when updates are made. It is important to note that ANY changes to the records are only made on the Master. Also, it is important to understand that should the Master fail; it will need to be brought back up to make record changes.

When you wish to replicate DNS entries from the Master to Slaves that sit across data centres, you must add static routes that are fixed to use ETH1. The routes can be added in the System > Networking section.

Importing and Exporting Configuration

It's easy to import and export the configuration of Apps on the EdgeADC. Below is an image of the EdgeGSLB within the Library > Apps page.



As you can see, there are two buttons for the import and export of the configuration.

Ideally, you should stop the App, and then perform the export, but this is not strictly required. However, when importing the configuration back into the ADC, the system will automatically restart the App during the process, making the process as smooth as possible.