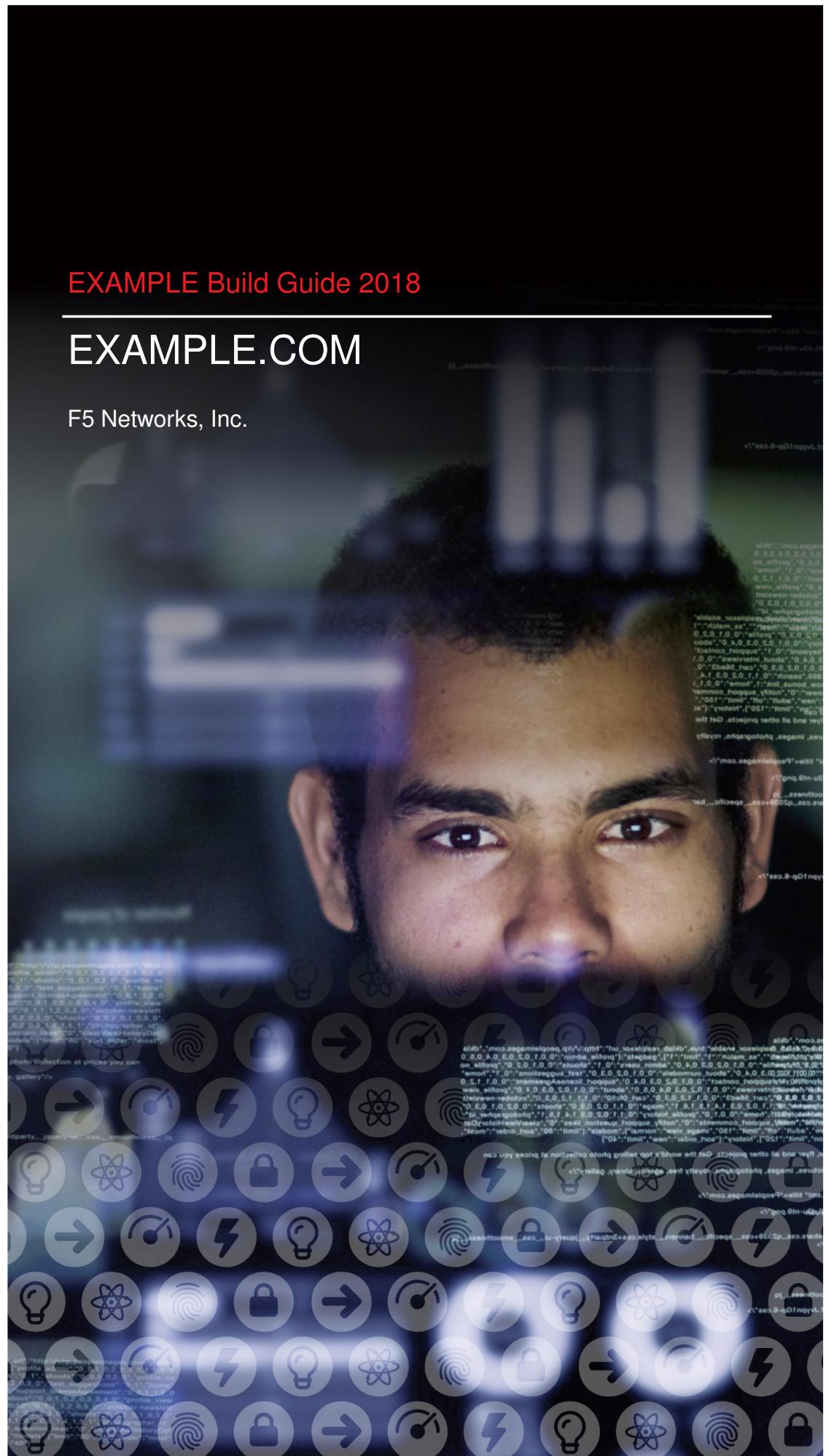




## EXAMPLE Build Guide 2018

# EXAMPLE.COM

F5 Networks, Inc.





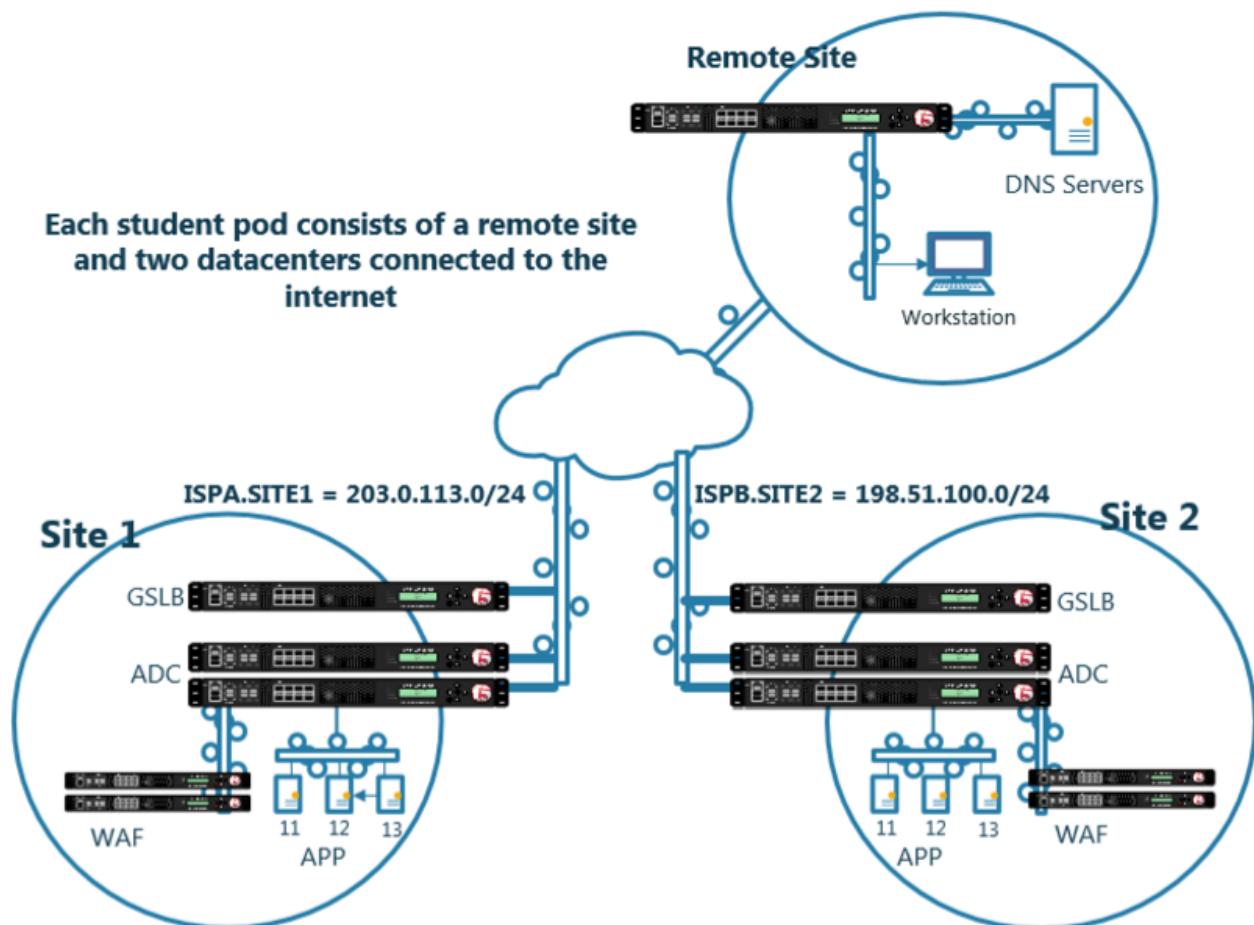
## Contents

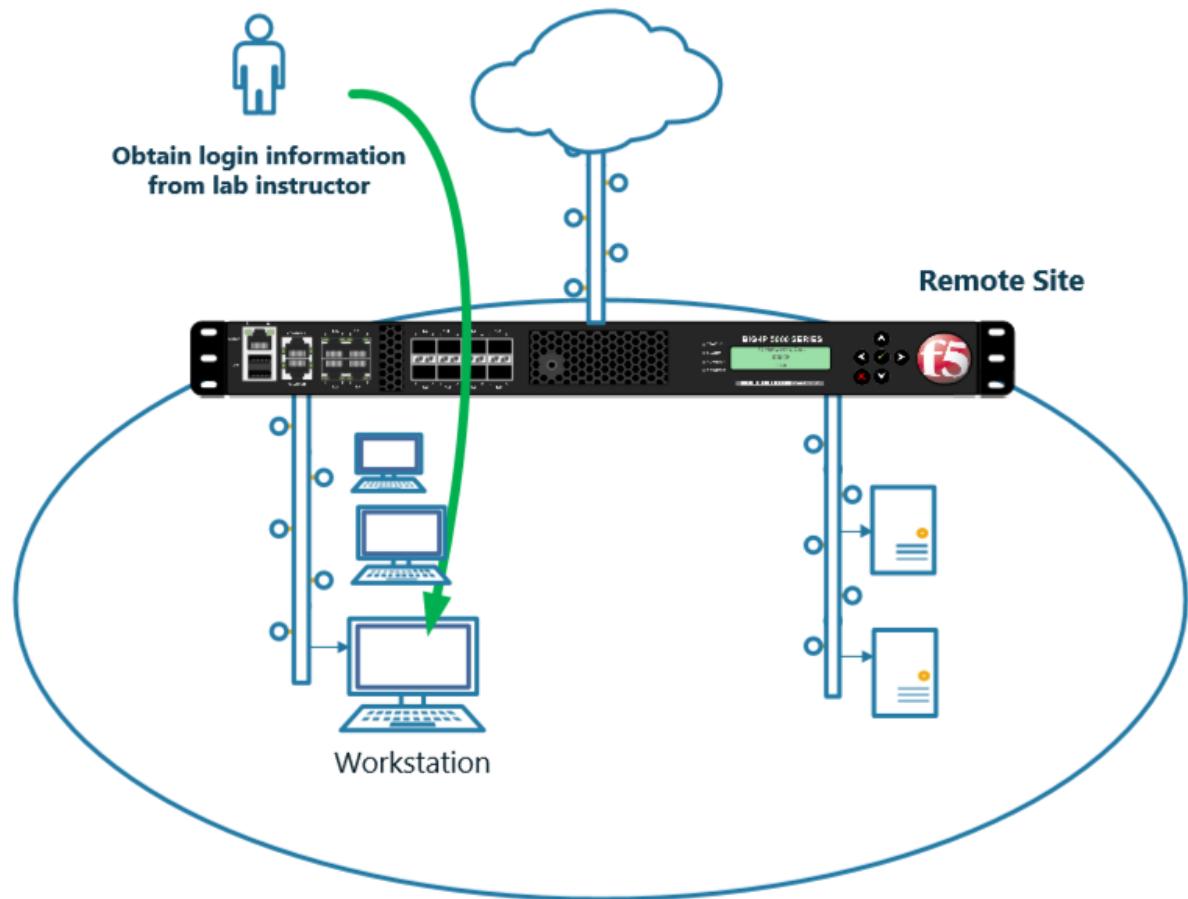
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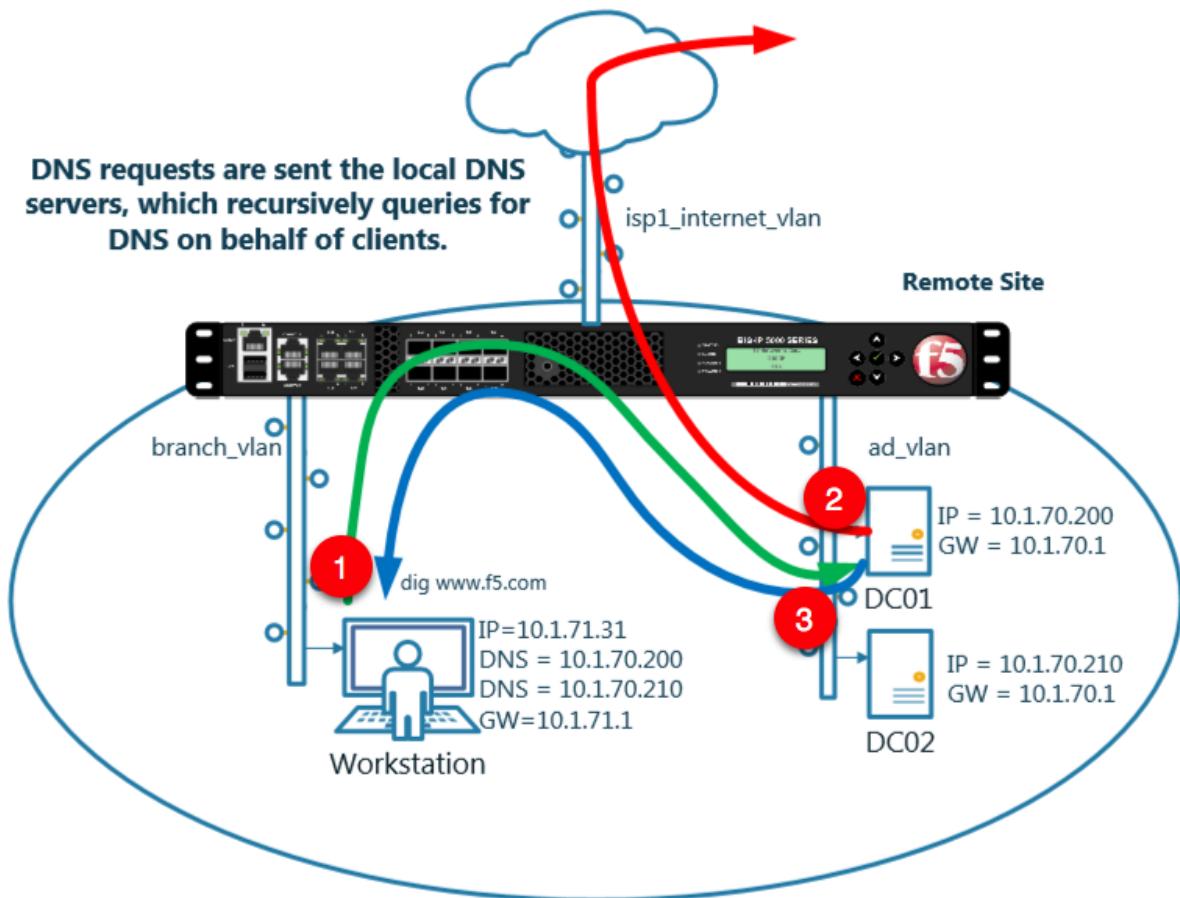
1

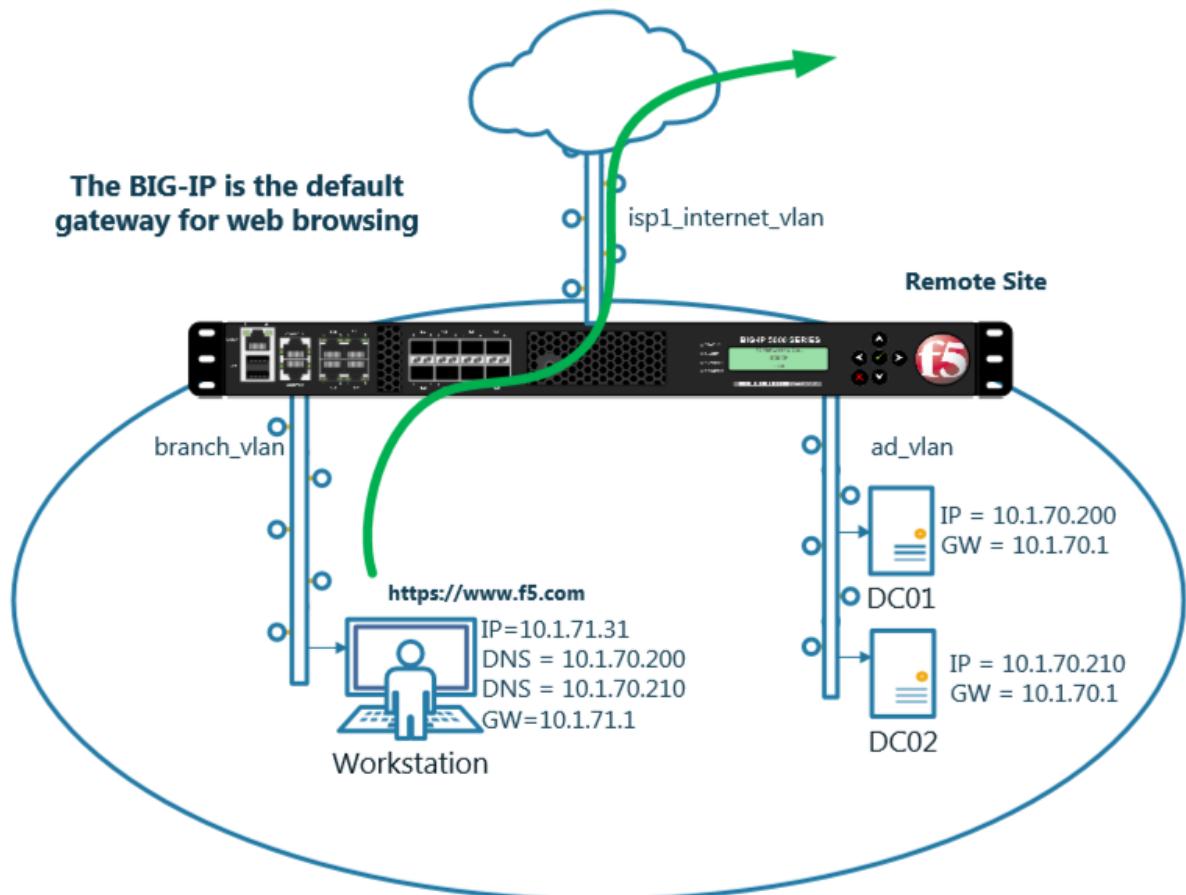
## Topology

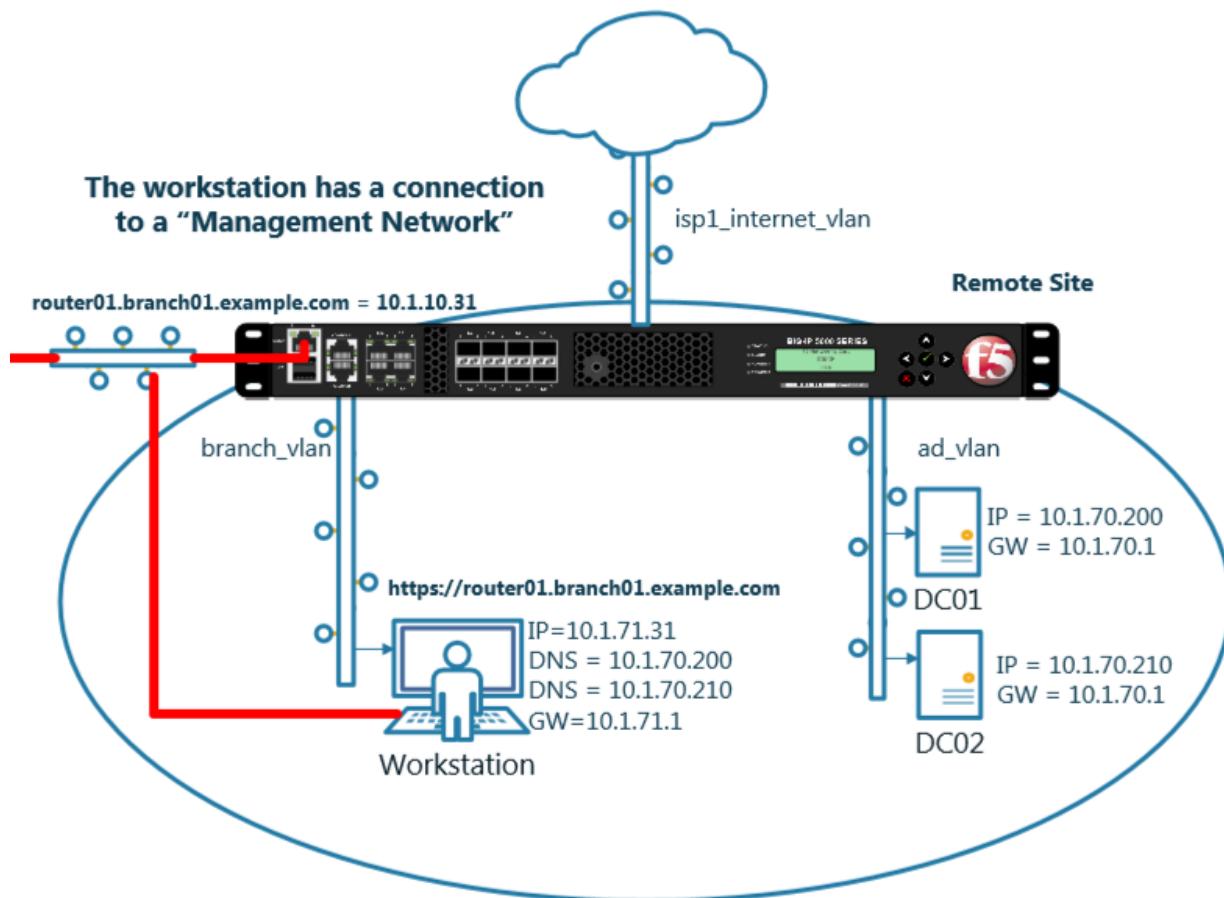




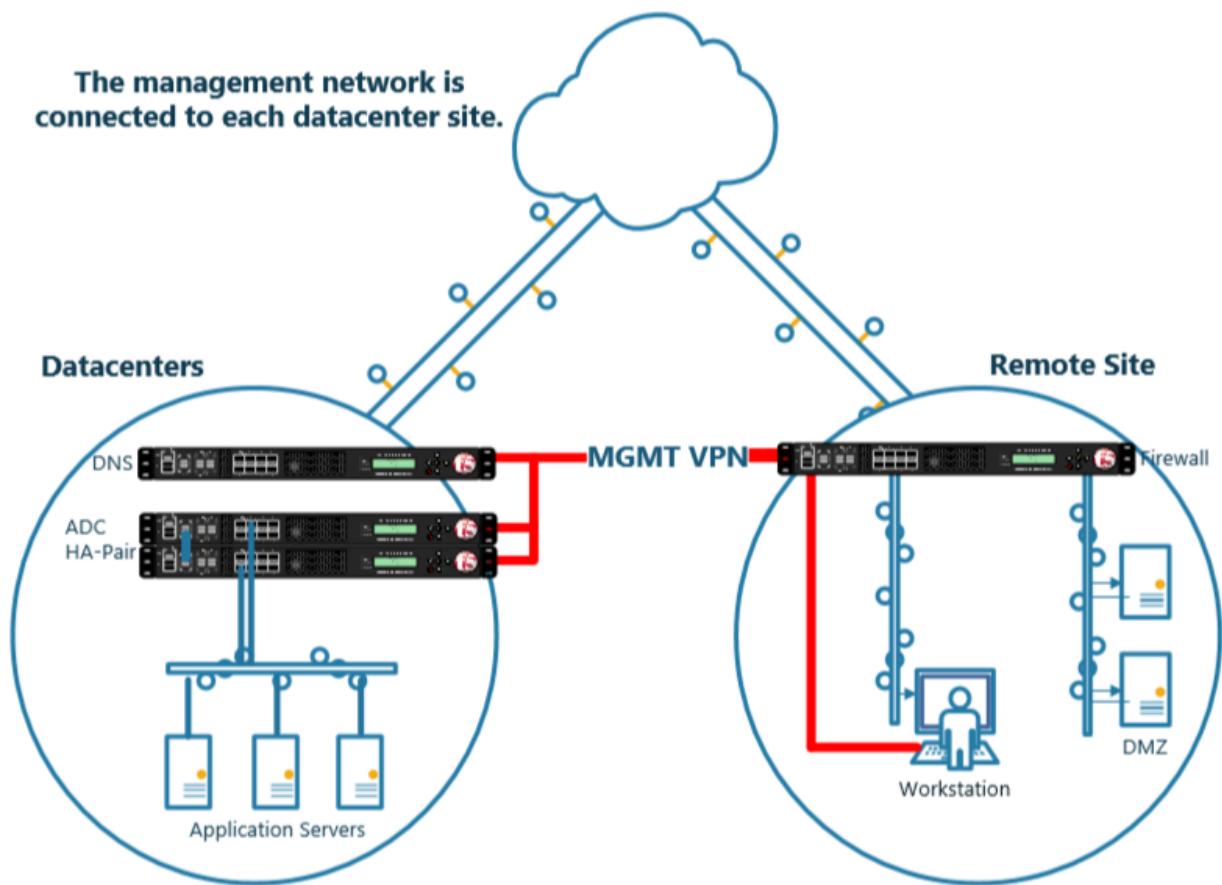
DNS requests are sent to the local DNS servers, which recursively queries for DNS on behalf of clients.







The management network is connected to each datacenter site.

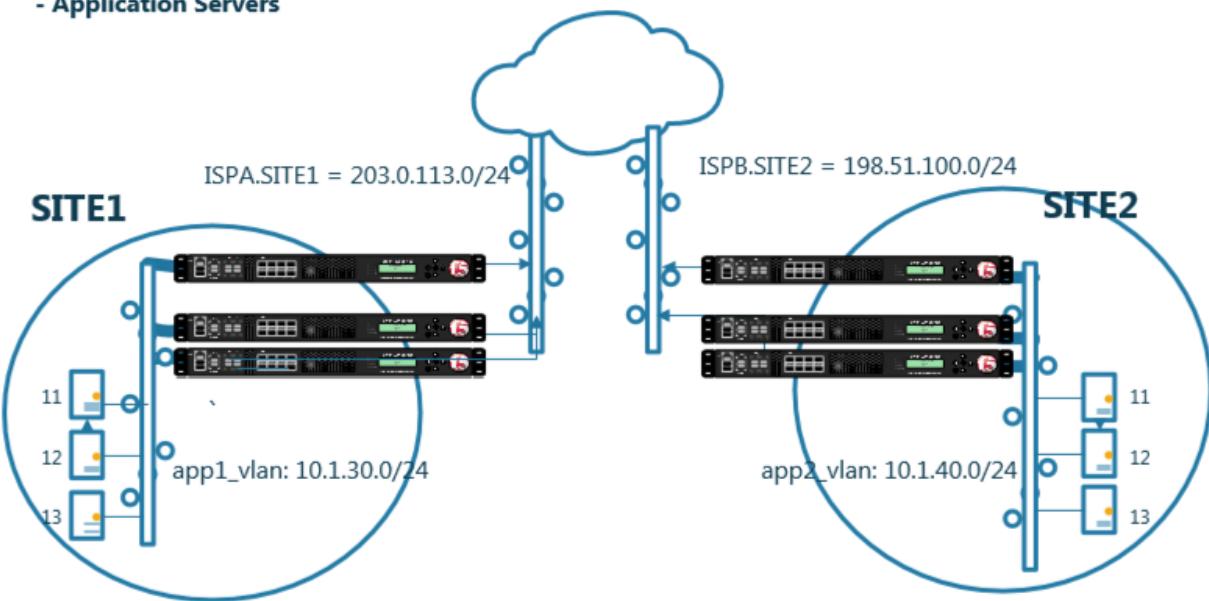


# 2

## DNS

EXAMPLE INC. occupies two datacenters. Each datacenter is identically configured with:

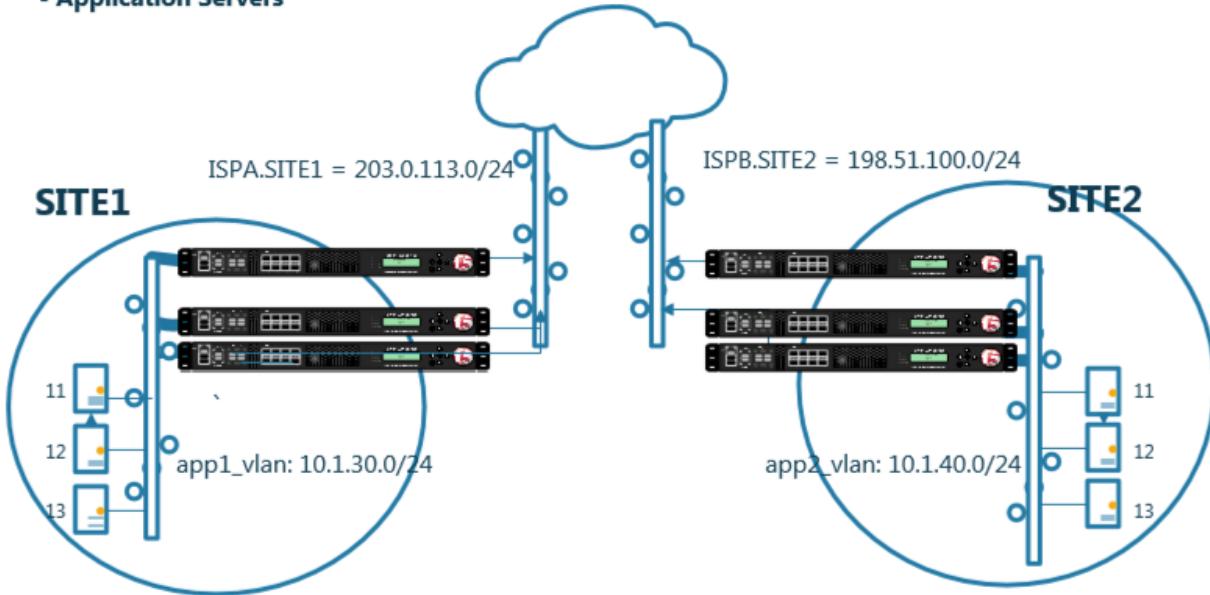
- HA pair of F5 ADC
- Standalone F5 DNS
- Application Servers



## 2.1 Availability

EXAMPLE INC. occupies two datacenters. Each datacenter is identically configured:

- HA pair of F5 ADC
- Standalone F5 DNS
- Application Servers



- Students will configure F5 DNS servers to support GSLB services on a single device in site1.
- Join an additional F5 DNS server in site2 to the GSLB cluster.
- An Internal group of DNS servers is authoritative for the zone example.com and contains a static A record for “www.example.com”, which resolves to 203.0.113.9.
- Students will add glue records and delegate gslb.example.com to the F5 GSLB DNS servers.
- Convert the A record “www.example.com” to be a CNAME record pointing to [www.gslb.example.com](#).

At the end of the lab students will have configured F5 GSLB DNS servers to alternately resolve www.example.com to 203.0.113.9 and 198.51.100.41 ;

## 2.1.1 Settings

The screenshot shows the F5 BIG-IP iControl interface. At the top, there is a header with the hostname "gtm1.site1.example.com", date "Jul 20, 2017", time "12:19 PM (CDT)", user "admin", and role "Administrator". Below the header, the F5 logo is displayed with the status "ONLINE (ACTIVE)" and "Standalone". The main menu on the left includes links for Main, Help, About, Statistics, iApps, DNS, Delivery, GSLB, Zones, Caches, and Settings. The "Settings" link is highlighted with a yellow box and has a red arrow pointing to it from the left. The "GSLB" link is also highlighted with a yellow box and has a red arrow pointing to it from the left. The central pane shows the "DNS > Settings : GSLB : General" configuration screen. It contains sections for "Configuration Synchronization" and "Configuration Save". In the "Configuration Synchronization" section, the "Synchronize" checkbox is checked (indicated by a red arrow), the "Group Name" is set to "EXAMPLE\_group" (indicated by a red arrow), and the "Synchronize DNS Zone Files" checkbox is checked (indicated by a red arrow). In the "Configuration Save" section, the "Delivery" dropdown is selected, and under "GSLB", the "General" tab is selected. Other tabs include "Load Balancing" and "Metrics Collection". Under "General", the "Enabled" checkbox is checked. The "Monitoring" section shows a "Heartbeat Interval" of 10 seconds.

Configure the global settings for GSLB according to the following table:

Field	Value
Synchronize	checked
Group Name	EXAMPLE_group
Synchronize DNS Zone Files	checked

The above work may alternatively be completed using the command line. Using Putty log into gtm1.site1 and issue the following command.

---

### TMSH

```
tmsh modify gtm global-settings general synchronization yes synchronization-group-name EXAMPLE_group synchronize-zone-files yes
```

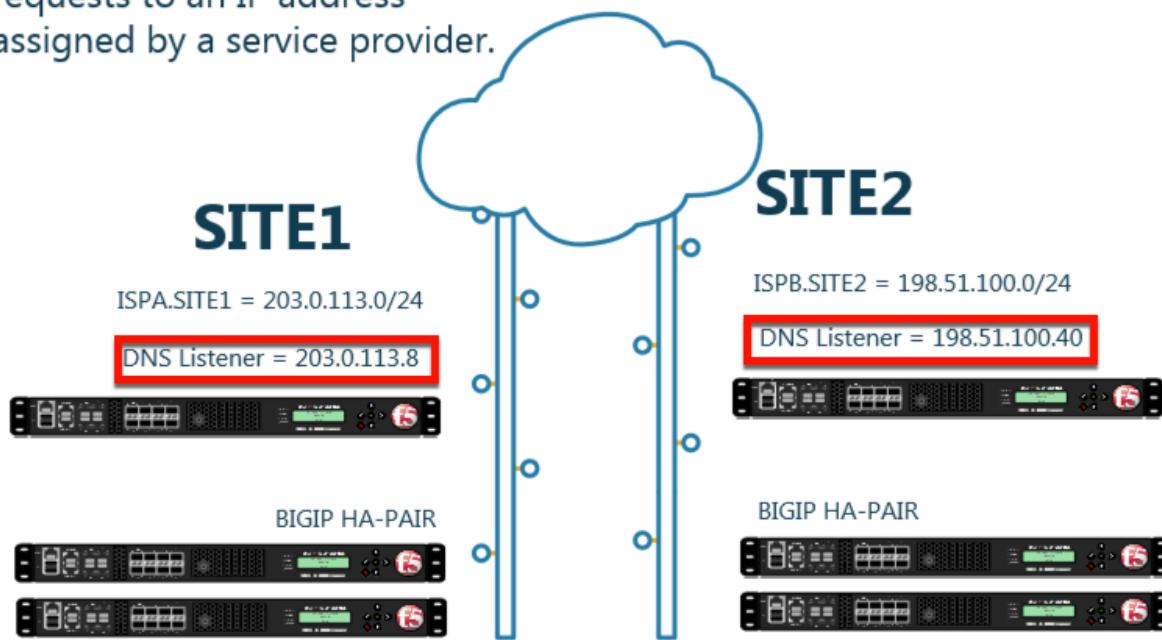
---

## 2.1.2 Listeners

A listener object is a specialized virtual server that is configured to respond to DNS queries.

We will be creating both TCP and UDP based listeners.

A listener will receive DNS requests to an IP address assigned by a service provider.



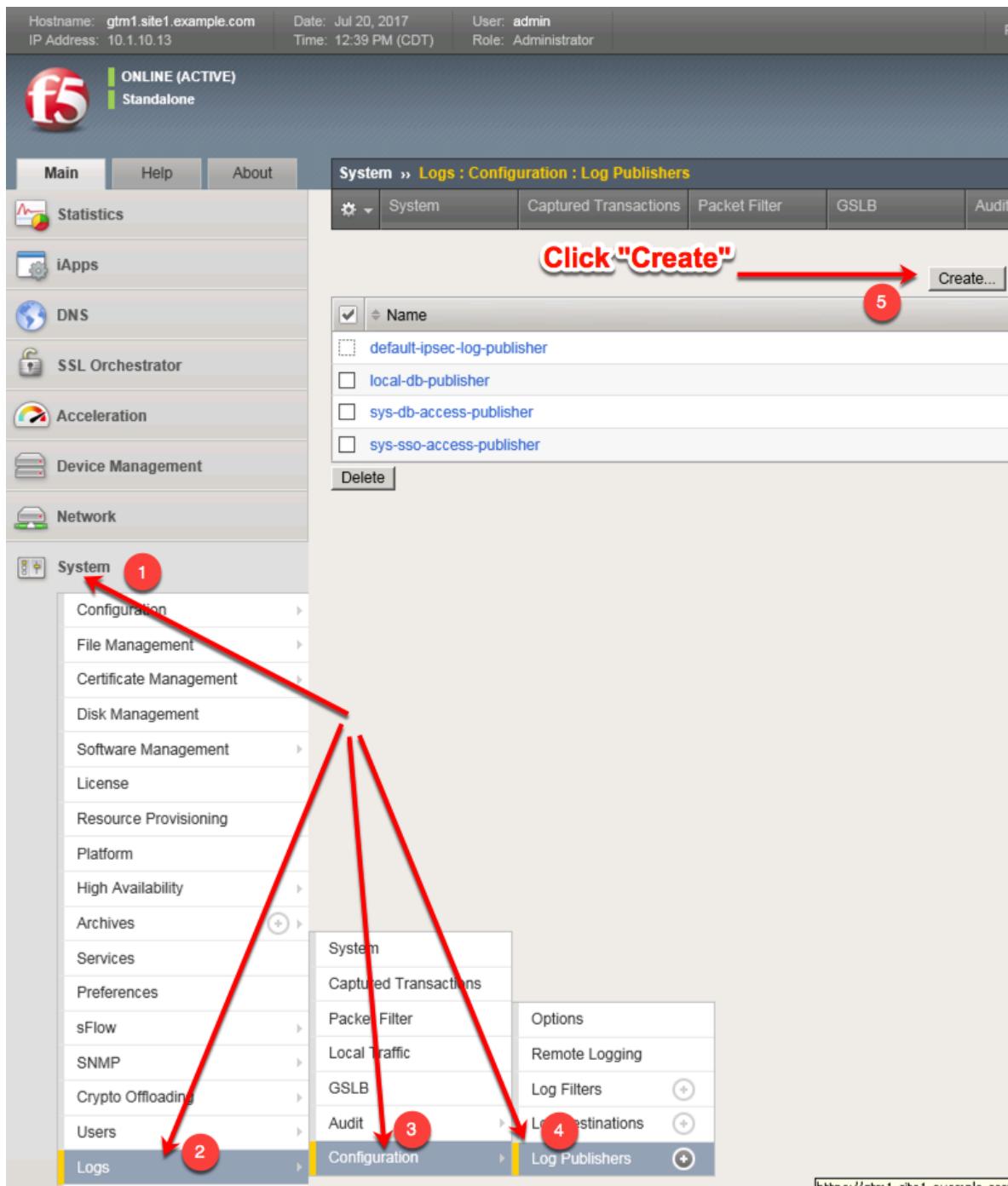
#### 2.1.2.1 Logging

1. Create a “Log Publisher”

---

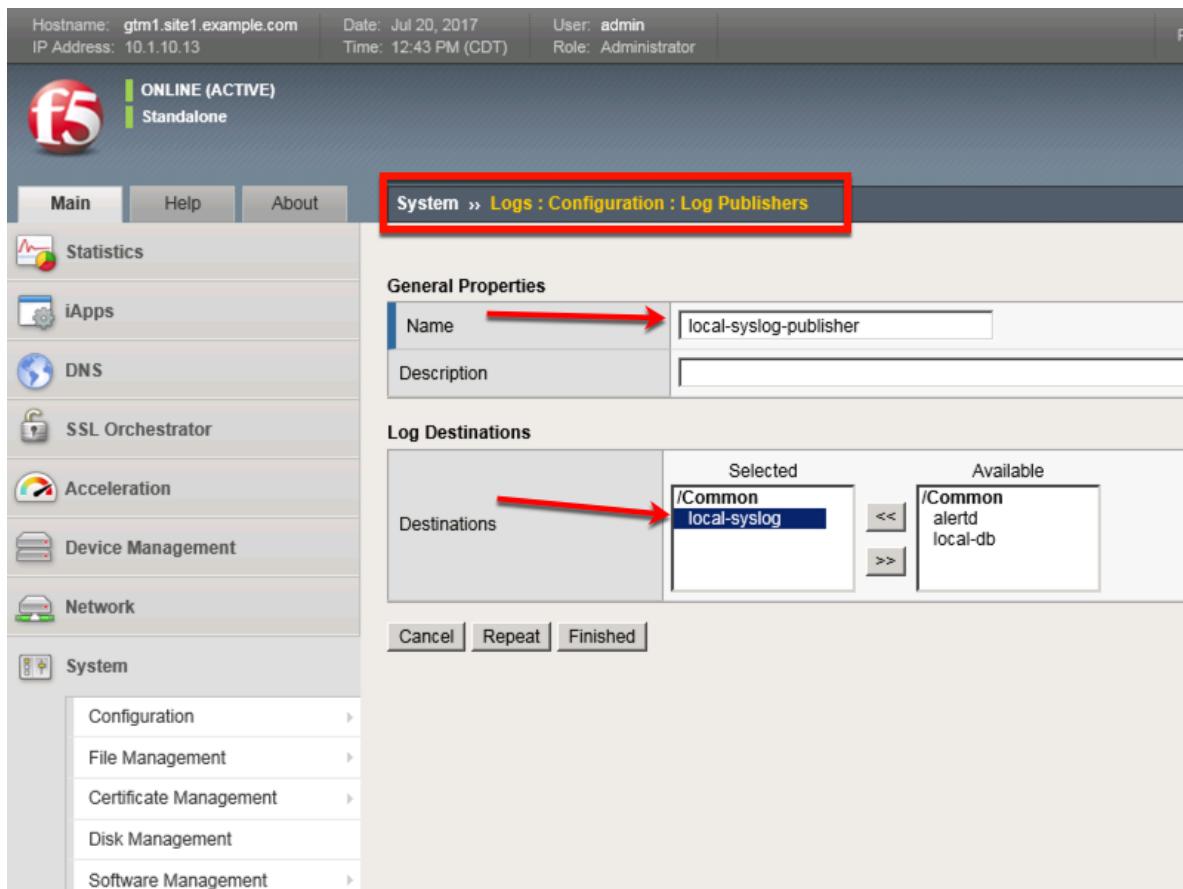
**Note:** It is required to complete the following task on both gtm1.site1 and gtm1.site2

---



Create a local syslog publisher according to the table below:

Field	Value
Name	local-syslog-publisher
Destinations	local-syslog



**TMSH command for both gtm1.site1 and gtm1.site2:**

---

#### TMSH

```
tmsh create sys log-config publisher local-syslog-publisher { destinations replace-all-with { local-syslog {} } }
```

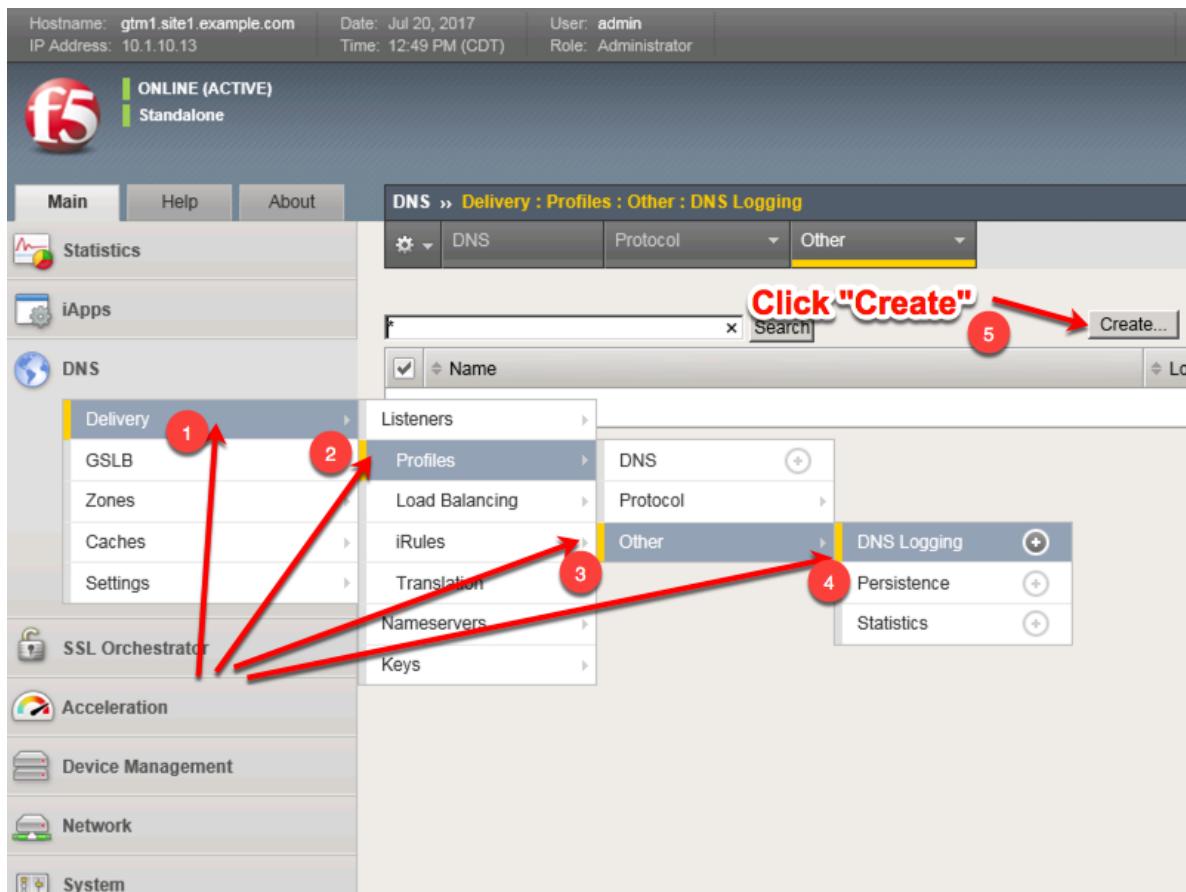
---

2. Create a “Logging Profile”

---

**Note: It is required to complete the following task on both gtm1.site1 and gtm1.site2**

---



Create a new DNS logging profile as shown in the table below.

Field	Value
Name	example_dns_logging_profile
Log Publisher	local-syslog-publisher
Log Responses	enabled
Include Query ID	enabled

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
 IP Address: 10.1.10.13 Time: 12:52 PM (CDT) Role: Administrator

**f5** ONLINE (ACTIVE)  
 Standalone

Main Help About

Statistics iApps DNS Delivery GSLB Zones Caches Settings

SSL Orchestrator Acceleration Device Management Network System

**DNS » Delivery : Profiles : Other : DNS Logging » New...**

**General Properties**

Name	<input type="text" value="example_dns_logging_profile"/>
Description	<input type="text"/>

**Configuration**

Log Publisher	local-syslog-publisher
Log Queries	<input checked="" type="checkbox"/> Enabled
Log Responses	<input checked="" type="checkbox"/> Enabled

**Log Fields**

Include Complete Answer	<input checked="" type="checkbox"/> Enabled
Include Query ID	<input checked="" type="checkbox"/> Enabled
Include Source	<input checked="" type="checkbox"/> Enabled
Include Timestamp	<input checked="" type="checkbox"/> Enabled
Include View	<input checked="" type="checkbox"/> Enabled

Cancel Repeat Finished

**TMSH command for both gtm1.site1 and gtm1.site2:**

---

#### TMSH

```
tmsh create ltm profile dns-logging example_dns_logging_profile enable-response-logging yes
include-query-id yes log-publisher local-syslog-publisher
```

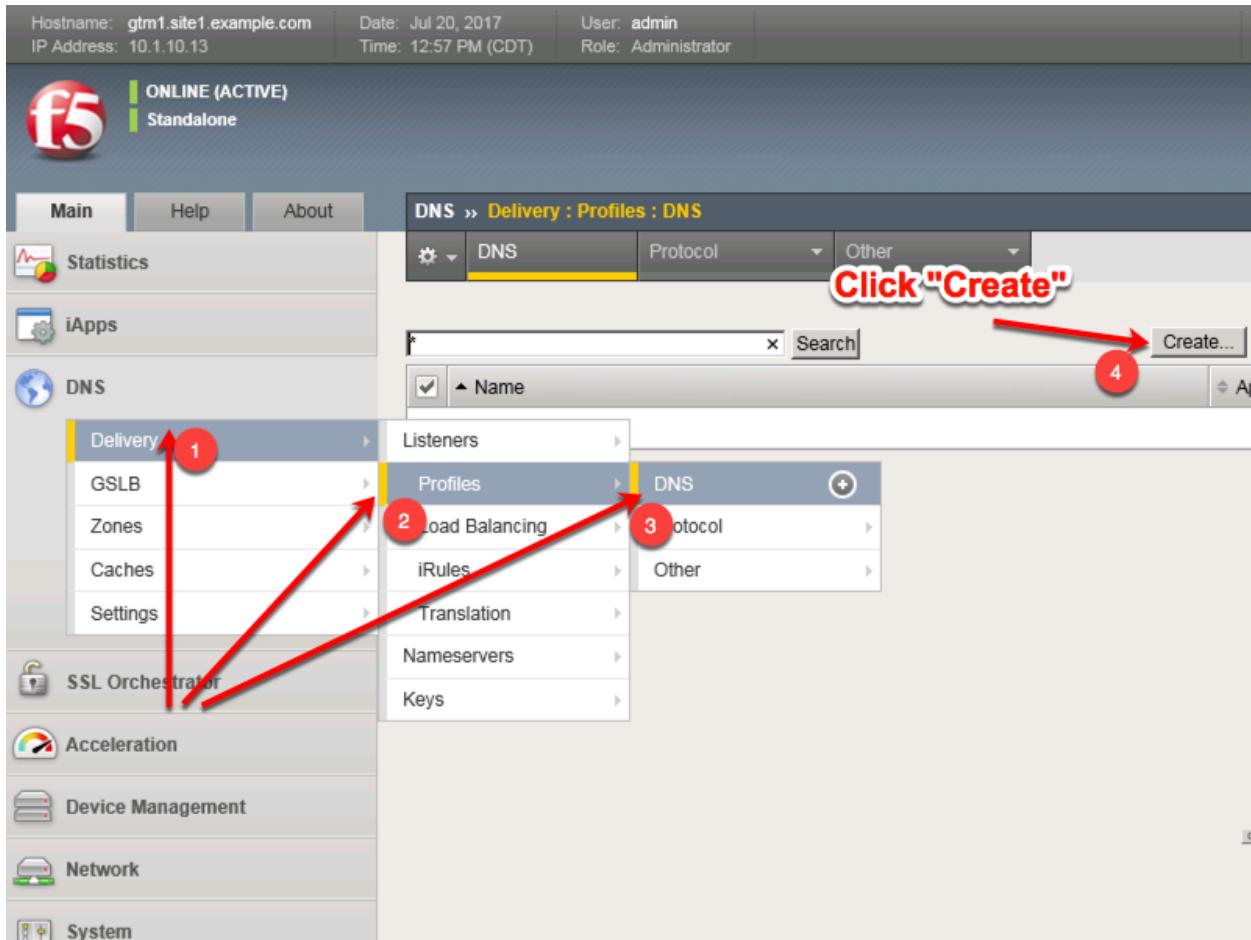
---

#### 2.1.2.2 DNS Profile

---

**Note: It is required to complete the following task on both gtm1.site1 and gtm1.site2**

---



Create a new DNS profile as shown in the following table.

Field	Value
Name	example.com_dns_profile
DNSSEC	Disabled
DNS Express	Disabled
Unhandled Query Action	Drop
Use BIND Server on Big-IP	Disabled
Logging	Enabled
Logging Profile	example_dns_logging_profile
AVR statistics Sample Rate	Enabled, 1/1 queries sampled

**General Properties**

Name	example.com_dns_profile
Partition / Path	Common
Parent Profile	dns

**Denial of Service Protection**

Rapid Response Mode	Disabled
Rapid Response Last Action	Drop

**Hardware Acceleration**

Protocol Validation	Disabled
Response Cache	Disabled

**DNS Features**

DNSSEC	Disabled	Enabled
GSLB	Enabled	Disabled
DNS Express	Disabled	Enabled
DNS Cache	Disabled	Disabled
DNS Cache Name	Select...	Disabled
DNS IPv6 to IPv4	Disabled	Disabled
Unhandled Query Actions	Drop	Enabled
Use BIND Server on BIG-IP	Disabled	Enabled

**DNS Traffic**

Zone Transfer	Disabled	Enabled
DNS Security	Disabled	Enabled
DNS Security Profile Name	Select...	Enabled
Process Recursion Desired	Enabled	Enabled

**Logging and Reporting**

Logging	Enabled	Enabled
Logging Profile	example_dns_logging_profile	Enabled
AVR Statistics Sample Rate	Enabled 1/1 queries sampled	Enabled

TMSH command for both gtm1.site1 and gtm1.site2:

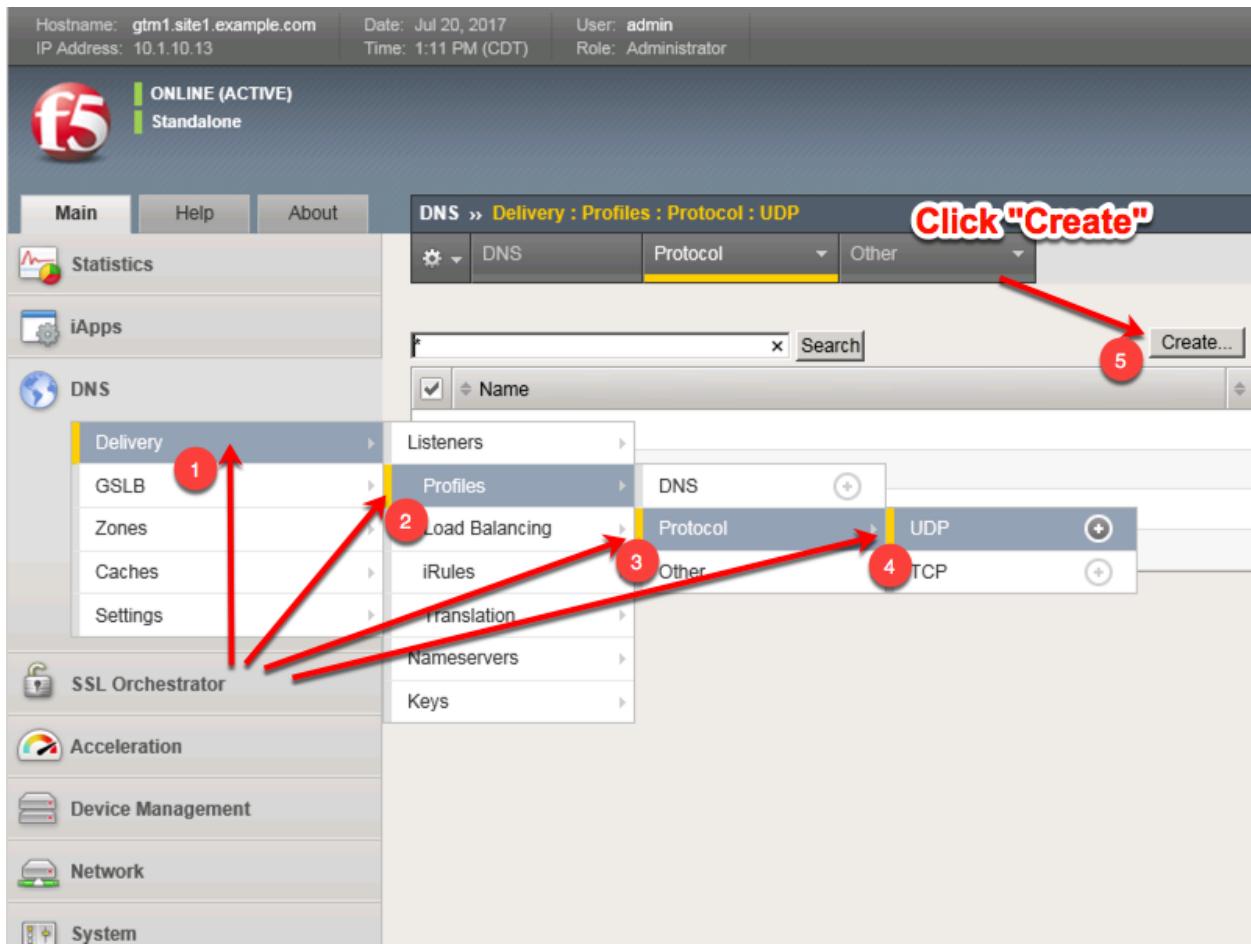
## TMSH

```
tmsh create ltm profile dns example.com_dns_profile use-local-bind no unhandled-query-action drop log-profile example_dns_logging_profile enable-logging yes avr-dnsstat-sample-rate 1 enable-dns-express no enable-dnssec no
```

### 2.1.2.3 UDP Profile

A UDP profile is associated with a listener.

**Note: It is required to complete the following task on both gtm1.site1 and gtm1.site2**



Create a new UDP profile as shown in the following table:

Field	Value
Name	example.com_udp-dns_profile
Parent Profile	udp_gtm_dns

The screenshot shows the F5 BIG-IP iControl interface. The top bar displays the hostname (gtm1.site1.example.com), date (Jul 26, 2018), time (8:17 AM (EDT)), user (admin), role (Administrator), partition (Common), and a Log out button. The status bar indicates the system is 'ONLINE (ACTIVE)' and 'Standalone'. The main menu on the left includes Main, Help, About, Statistics, iApps, DNS (selected), Delivery, GSLB, Zones, Caches, Settings, Acceleration, Device Management, Network, and System. The navigation path at the top right is 'DNS > Delivery > Profiles > Protocol > UDP > New UDP Profile...'. A red box highlights this path. The 'General Properties' section shows 'Name' set to 'example.com\_udp-dns\_profile' and 'Parent Profile' set to 'udp\_gtm\_dns'. The 'Settings' section contains various configuration options: Proxy Maximum Segment (unchecked), Idle Timeout (Specify... 5 seconds), IP ToS (Specify... 0), Link QoS (Specify... 0), Datagram LB (Enabled checked), Allow No Payload (unchecked), TTL Mode (Proxy selected), Don't Fragment Mode (PMTU selected), Max Buffer Bytes (655350), and Max Buffer Packets (0). A 'Custom' checkbox is also present.

TMSH command for both gtm1.site1 and gtm1.site2:

#### **TMSH**

---

tmsh create ltm profile udp example.com\_udp-dns\_profile defaults-from udp\_gtm\_dns

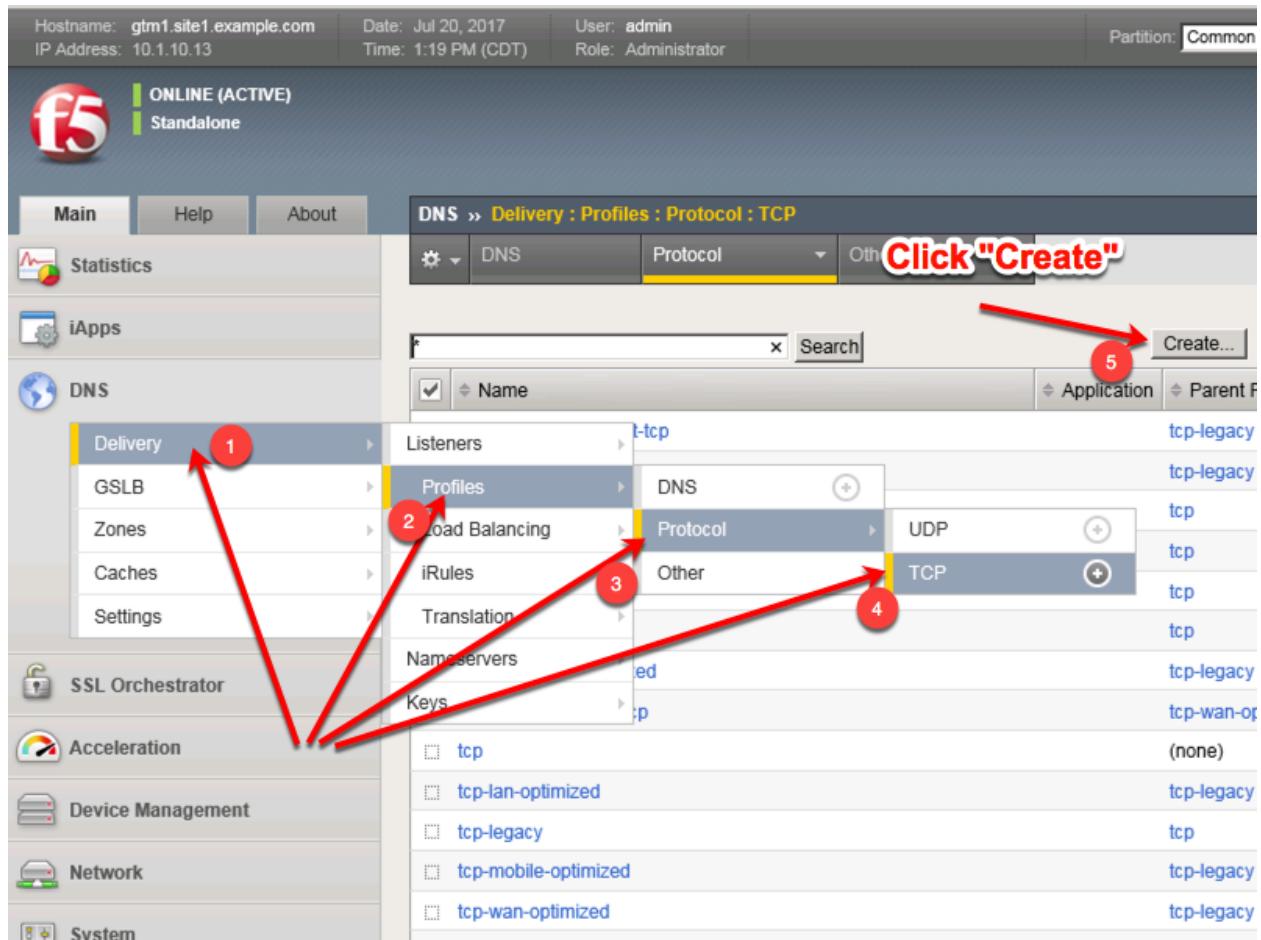
---

#### **2.1.2.4 TCP Profile**

---

**Note: It is required to complete the following task on both gtm1.site1 and gtm1.site2**

---



Create a new TCP profile as shown in the following table.

Field	Value
Name	example.com_tcp-dns_profile
Parent Profile	f5-tcp-wan

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
IP Address: 10.1.10.13 Time: 1:23 PM (CDT) Role: Administrator Partition: Common

**ONLINE (ACTIVE)**  
Standalone

Main Help About DNS » Delivery : Profiles : Protocol : TCP » New TCP Profile...

**General Properties**

Name	example.com_tcp-dns_profile
Parent Profile	f5-tcp-wan

**Timer Management**

Close Wait	Specify... 5 seconds
Fin Wait 1	Specify... 5 seconds
Fin Wait 2	Specify... 300 seconds
Idle Timeout	Specify... 300 seconds
Keep Alive Interval	Specify... 1800 seconds
Minimum RTO	500 milliseconds
Reset On Timeout	<input checked="" type="checkbox"/> Enabled
Time Wait	Specify... 2000 milliseconds
Zero Window Timeout	Specify... 20000 milliseconds

**Scroll way down to find the "Finish" button**

TMSH Command for both gtm1.site and gtm1.site2:

## TMSH

---

tmsh create ltm profile tcp example.com\_tcp-dns\_profile defaults-from f5-tcp-wan

---

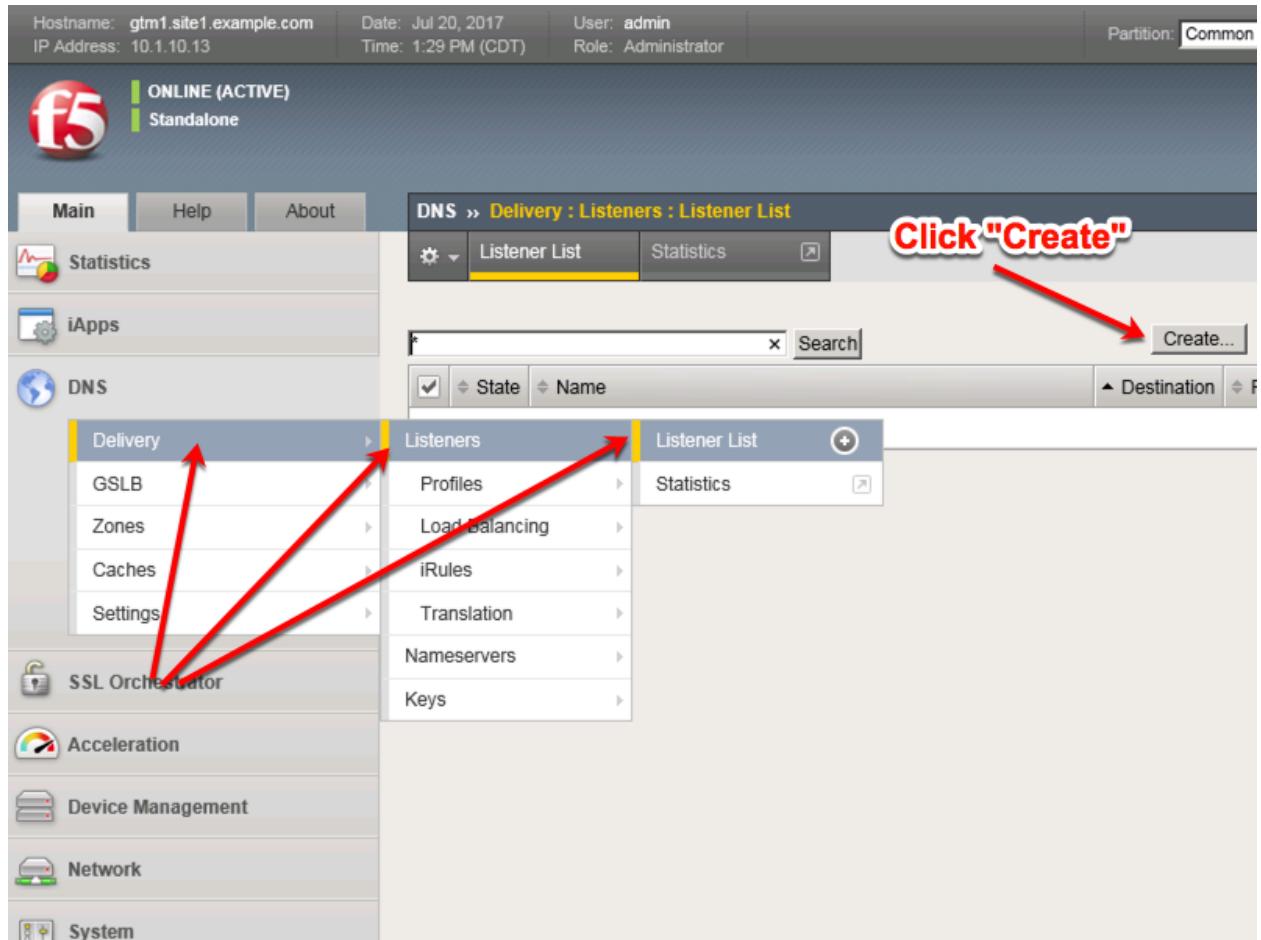
### 2.1.2.5 UDP IP Address

A UDP listener will receive and process DNS queries.

---

**Note: It is required to complete the following task on both gtm1.site1 and gtm1.site2**

---



Create a UDP listener according to the following table:

Field	gtm1.site1	gtm1.site2
Name	isp1_site1_ns1.example.com_udp_53	isp1_site2_ns2.example.com_udp_53
Destination	203.0.113.8	198.51.100.40
Protocol Profile (Client)	example.com_udp-dns_profile	example.com_udp-dns_profile
DNS Profile	example.com_dns_profile	example.com_dns_profile

Hostname: **gtm1.site1.example.com** Date: Jul 20, 2017  
 IP Address: 10.1.10.13 Time: 1:32 PM (CDT) User: admin Role: Administrator Partition: Common

**Be sure to create 203.0.113.8 on gtm1.SITE1**

Main Help About DNS » Delivery : Listeners : Listener List » New...

**General**

Name	<b>isp1_site1_ns1.example.com_udp_53_virtual</b>
Description	
State	Enabled

**Listener:** Advanced

Destination	Type: <input checked="" type="radio"/> Host <input type="radio"/> Network Address: <b>203.0.113.8</b>
Service Port	DNS <b>53</b>
VLAN Traffic	All VLANs
Source Address Translation	None
Address Translation	<input type="checkbox"/> Enabled
Port Translation	<input type="checkbox"/> Enabled
Route Advertisement	<input type="checkbox"/> Enabled
Auto Last Hop	Default
Last Hop Pool	None

**Service:** Advanced

Protocol	<b>UDP</b>
Protocol Profile (Client)	<b>example.com_udp-dns_profile</b>
Protocol Profile (Server)	(Use Client Profile)
DNS Profile	<b>example.com_dns_profile</b>

Make sure you create the IP addresses on the correct devices.

Hostname: gtm1.site2.example.com Date: Jul 20, 2017  
 IP Address: 10.1.10.23 Time: 1:32 PM (CDT) User: admin Role: Administrator Partition: Common

**f5** ONLINE (ACTIVE)  
 Standalone

**Be sure to create 198.51.100.40 on gtm1.SITE2**

Main Help About DNS » Delivery : Listeners : Listener List » New...

Statistics iApps DNS Delivery GSLB Zones Caches Settings

SSL Orchestrator Acceleration Device Management Network System

**General**

Name	isp1_site2_ns2.example.com_udp_53_virtual
Description	
State: Enabled	

**Listener: Advanced**

Destination	Type: Host Network Address: 198.51.100.40
Service Port	DNS 53
VLAN Traffic	All VLANs
Source Address Translation	None
Address Translation	<input type="checkbox"/> Enabled
Port Translation	<input type="checkbox"/> Enabled
Route Advertisement	<input type="checkbox"/> Enabled
Auto Last Hop	Default
Last Hop Pool	None

**Service: Advanced**

Protocol	UDP
Protocol Profile (Client)	example.com_udp-dns_profile
Protocol Profile (Server)	(Use Client Profile)
DNS Profile	example.com_dns_profile

gtm1.site1 TMSH command:

---

### TMSH

```
tmsh create gtm listener isp1_site1_ns1.example.com_udp_53_virtual address 203.0.113.8 ip-protocol udp
mask 255.255.255.255 port 53 profiles add { example.com_dns_profile example.com_udp-dns_profile }
```

---

gtm1.site2 TMSH command:

---

### TMSH

```
tmsh create gtm listener isp1_site2_ns2.example.com_udp_53_virtual address 198.51.100.40 ip-protocol udp
mask 255.255.255.255 port 53 profiles add { example.com_dns_profile example.com_udp-dns_profile }
```

---

}

---

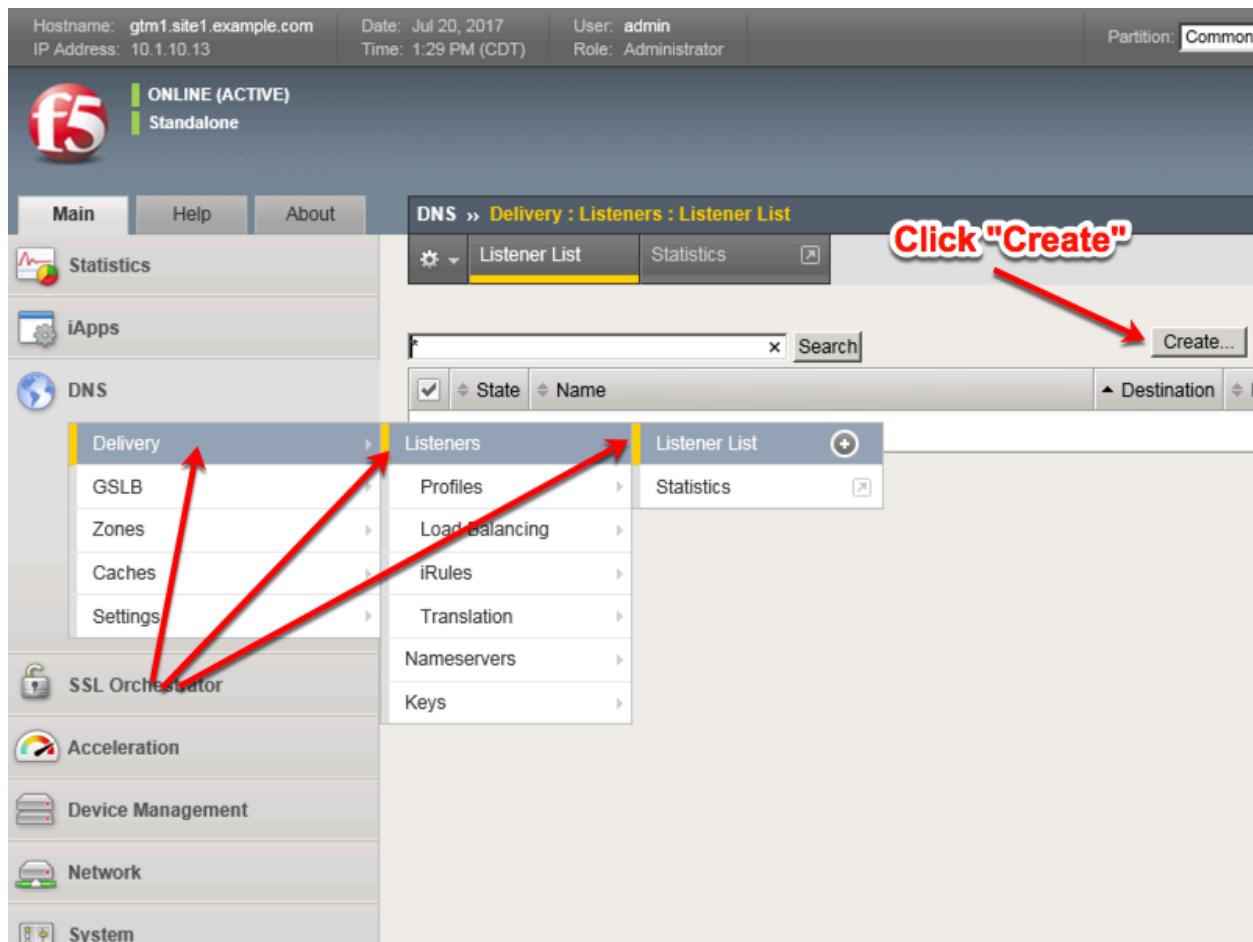
<https://support.f5.com/csp/article/K14923>

### 2.1.2.6 TCP IP Address

A TCP listener will receive and process DNS queries.

**Note: It is required to complete the following task on both gtm1.site and gtm1.site2**

---



Create a TCP listener.

Field	gtm1.site1	gtm1.site2
Name	isp1_site1_ns1.example.com_tcp_53_virtual	isp1_site2_ns2.example.com_tcp_53_virtual
Destination	203.0.113.8	198.51.100.40
Protocol Profile (Client)	example.com_tcp-dns_profile	example.com_tcp-dns_profile
DNS Profile	example.com_dns_profile	example.com_dns_profile

Hostname: gtm1.site1.example.com  
IP Address: 10.1.10.13

Date: Jul 20, 2017 Time: 2:18 PM (CDT) User: admin Role: Administrator Partition: Common

**ONLINE (ACTIVE)**  
Standalone

**Be sure to create 203.0.113.8 on gtm1.SITE1**

Main Help About DNS » Delivery : Listeners : Listener List » New...

**General**

Name:	isp1_site1_ns1.example.com_udp_53
Description:	
State:	Enabled

**Listener: Advanced**

Destination	Type: <input checked="" type="radio"/> Host <input type="radio"/> Network Address: 203.0.113.8
Service Port	DNS 53
VLAN Traffic	All VLANs
Source Address Translation	None
Address Translation	<input type="checkbox"/> Enabled
Port Translation	<input type="checkbox"/> Enabled
Route Advertisement	<input type="checkbox"/> Enabled
Auto Last Hop	Default
Last Hop Pool	None

**Service: Advanced**

Protocol	TCP
Protocol Profile (Client)	example.com_tcp-dns_profile
Protocol Profile (Server)	(Use Client Profile)
DNS Profile	example.com_dns_profile

**Load Balancing**

Default Pool	None
Default Persistence Profile	None
Fallback Persistence Profile	None

**Be sure to select "TCP"**

Be sure to create the 198.51.100.40 address on gtm1.site2

Hostname: gtm1.site2.example.com  
IP Address: 10.1.10.23

Date: Jul 20, 2017 Time: 2:18 PM (CDT) User: admin Role: Administrator Partition: Common

**ONLINE (ACTIVE)**  
Standalone

**Be sure to create 198.51.100.40 on gtm1.SITE2**

Main Help About DNS » Delivery : Listeners : Listener List » New...

**General**

Name:	isp1_site2_ns2.example.com_udp_53
Description:	
State:	Enabled

**Listener: Advanced**

Destination	Type: <input checked="" type="radio"/> Host <input type="radio"/> Network Address: 198.51.100.40
Service Port	DNS 53
VLAN Traffic	All VLANs
Source Address Translation	None
Address Translation	<input type="checkbox"/> Enabled
Port Translation	<input type="checkbox"/> Enabled
Route Advertisement	<input type="checkbox"/> Enabled
Auto Last Hop	Default
Last Hop Pool	None

**Service: Advanced**

Protocol:	TCP
Protocol Profile (Client):	example.com_tcp-dns_profile
Protocol Profile (Server):	(Use Client Profile)
DNS Profile:	example.com_dns_profile

**Load Balancing**

Default Pool:	None
Default Persistence Profile:	None
Fallback Persistence Profile:	None

gtm1.site1 TMSH command:

## TMSH

```
tmsh create gtm listener isp1_site1_ns1.example.com_tcp_53_virtual address 203.0.113.8 ip-protocol tcp
mask 255.255.255.255 port 53 profiles add { example.com_dns_profile example.com_tcp-dns_profile }
```

gtm1.site2 TMSH command:

## TMSH

```
tmsh create gtm listener isp1_site2_ns2.example.com_tcp_53_virtual address 198.51.100.40 ip-protocol tcp mask 255.255.255.255 port 53 profiles add { example.com_dns_profile example.com_tcp-dns_profile }
```

<https://support.f5.com/csp/article/K14923>

### 2.1.3 Data Centers

#### 2.1.3.1 Servers

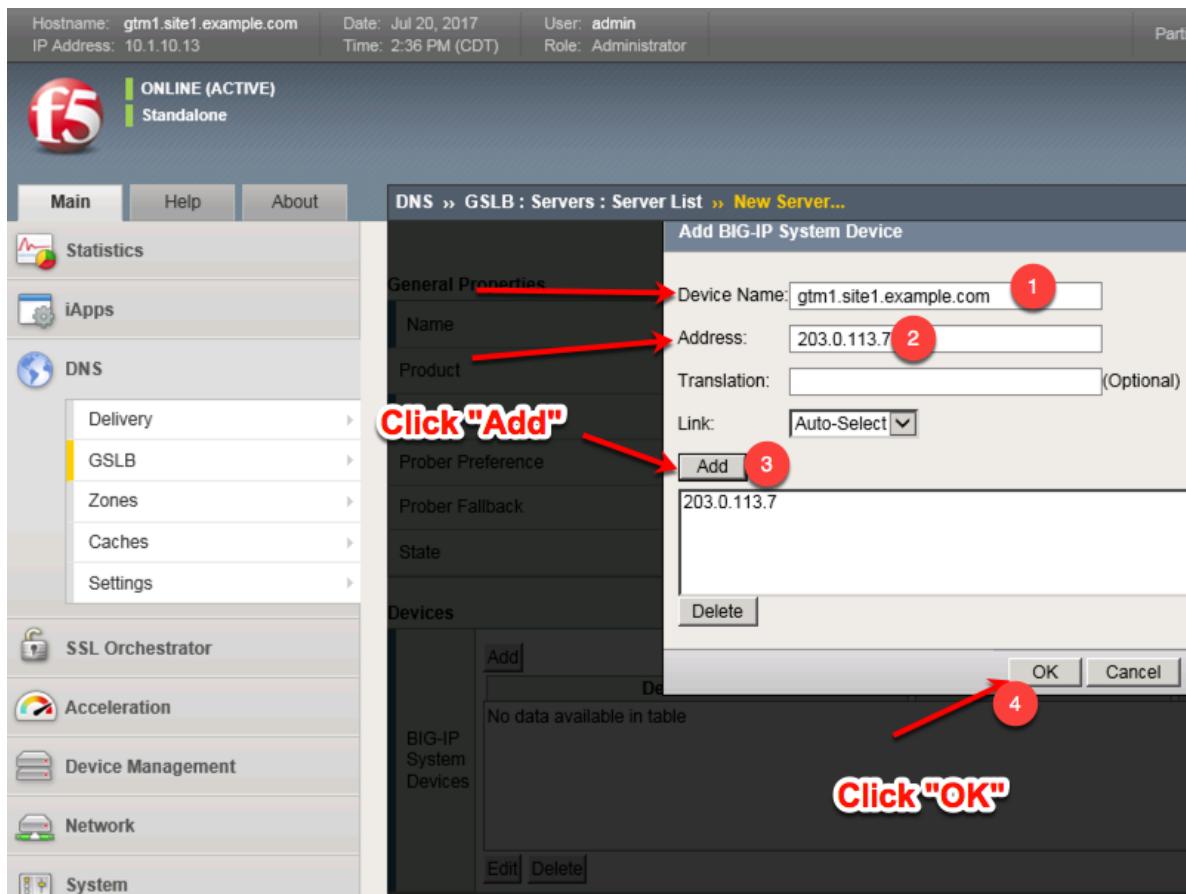
##### 2.1.3.1.1 gtm1.SITE1

Field	Value
Name	gtm1.site1_server
Data Center	site1_datacenter
Devices Add:	gtm1.site1.example.com : 203.0.113.7
Health Monitors	bigip

1. Fill in the Name and Datacenter

The screenshot shows the F5 BIG-IP iControl interface. The top navigation bar includes fields for Hostname (gtm1.site1.example.com), IP Address (10.1.10.13), Date (Jul 20, 2017), Time (2:29 PM (CDT)), User (admin), and Role (Administrator). The main header reads "DNS » GSLB : Servers : Server List » New Server...". The left sidebar lists "Statistics", "iApps", "DNS" (selected), "Delivery", "GSLB" (highlighted in yellow), "Zones", "Caches", and "Settings". The "GSLB" section contains "Delivery", "Zones", "Caches", and "Settings". The "Devices" section under "BIG-IP System Devices" shows a table with columns "Device Name" and "Address". A red box highlights the "New Server..." link in the header. Red arrows point from the "Name" and "Data Center" fields in the "General Properties" section to their respective input boxes. A red arrow points to the "Add" button in the "Devices" table, with the text "Click 'Add'" overlaid.

2. Click the "Add" button to define IP addresses



3. Complete the form and associate the “bigip” “Health Monitor”

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
IP Address: 10.1.10.13 Time: 2:43 PM (CDT) Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About DNS » GSLB : Servers : Server List » New Server...

**General Properties**

Name	gtm1.site1_server
Product	BIG-IP System
Data Center	site1_datacenter
Prober Preference	Inherit From Data Center
Prober Fallback	Inherit From Data Center
State	Enabled

**Devices**

	Device Name	Address
Add	gtm1.site1.example.com	203.0.113.7

**Configuration:** Advanced

Health Monitors	<div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <b>/Common</b>  <b>bigip</b> </div> <div style="margin-left: 20px;"> <input type="button" value="&lt;&lt;"/> <input type="button" value="&gt;&gt;"/> </div> <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <b>/Common</b>  gateway_icmp  gtp  http  http_head_f5 </div>
Availability Requirements	All Health Monitors
Limit Settings	Bits: <input type="checkbox"/> Packets: <input type="checkbox"/> Current Connections: <input type="checkbox"/>
iQuery Options	Service Check <input checked="" type="checkbox"/> Path <input checked="" type="checkbox"/> SNMP <input checked="" type="checkbox"/>

## TMSH

```
tmsh create gtm server gtm1.site1_server datacenter site1_datacenter devices add { gtm1.site1.example.com { addresses add { 203.0.113.7 } } } monitor bigip product bigip
```

### 2.1.3.1.2 gtm1.SITE2

The screenshot shows the F5 BIG-IP interface with the following details:

- Header:** Hostname: gtm1.site1.example.com, Date: Jul 20, 2017, User: admin, IP Address: 10.1.10.13, Time: 2:47 PM (CDT), Role: Administrator.
- Status Bar:** ONLINE (ACTIVE) Standalone
- Main Menu:** Main, Help, About
- Left Sidebar:** Statistics, iApps, DNS (selected), Delivery, GSLB (highlighted), Zones, Caches, Settings, SSL Orchestrator, Acceleration, Device Management, Network, System.
- Current View:** DNS > GSLB : Servers : Server List
- Table Headers:** Status, Name, Devices, Address, Data Center, Virtual.
- Table Data:** One entry for gtm1.site1\_server (Status: green, Devices: 1, Address: 203.0.113.7, Data Center: site1\_datacenter, Virtual: 0).
- Buttons:** Enable, Disable, Delete..., Create... (highlighted by a red arrow and a red box with the text 'Click "Create" to define gtm1.site2').

Field	Value
Name	gtm1.site2_server
Data Center	site2_datacenter
Devices Add:	gtm1.site2.example.com : 198.51.100.39
Health Monitors	bigip

1. Fill in the Name and Datacenter

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
IP Address: 10.1.10.13 Time: 3:18 PM (CDT) Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About

Statistics iApps

DNS

- Delivery
- GSLB
- Zones
- Caches
- Settings

SSL Orchestrator Acceleration Device Management Network System

**DNS » GSLB : Servers : Server List » New Server...**

**General Properties**

Name	gtm1.site2_server
Product	BIG-IP System
Data Center	site2_datacenter
Prober Preference	Inherit From Data Center
Prober Fallback	Inherit From Data Center
State	Enabled

**Devices**

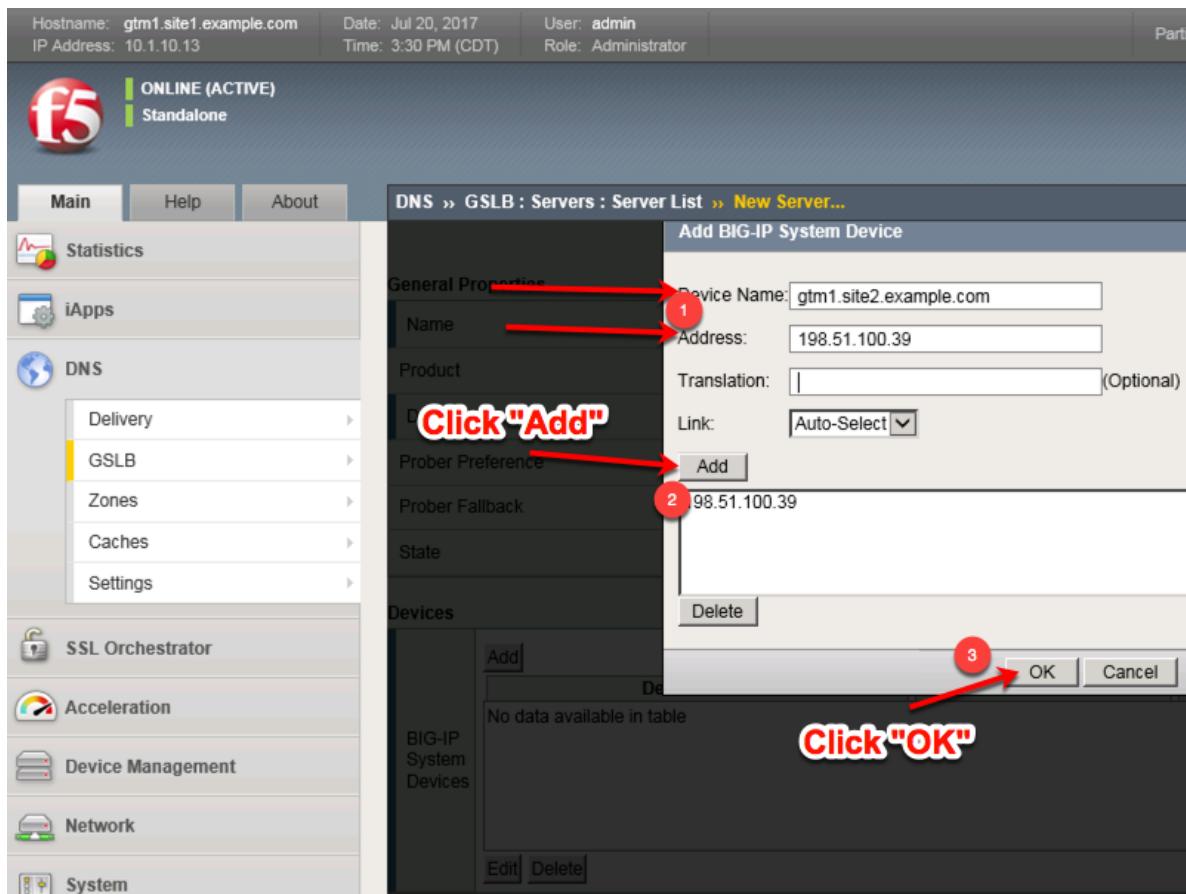
	Device Name	Address
Add	No data available in table	

**Click "Add"**

**BIG-IP System Devices**

Edit Delete

2. Click the “Add” button to define IP addresses



3. Complete the form and associate the “bigip” “Health Monitor”

Hostname: gtm1.site1.example.com    Date: Jul 20, 2017  
 IP Address: 10.1.10.13    Time: 3:37 PM (CDT)    User: admin    Role: Administrator

**f5** ONLINE (ACTIVE)  
 Standalone

Main Help About

DNS » GSLB : Servers : Server List » New Server...

**General Properties**

Name	gtm1.site2_server
Product	BIG-IP System
Data Center	site2_datacenter
Prober Preference	Inherit From Data Center
Prober Fallback	Inherit From Data Center
State	Enabled

**Devices**

	Device Name	Address
Add	gtm1.site2.example.com	198.51.100.39

**Configuration:** Advanced

Health Monitors	Selected: /Common bigip	Available: /Common gateway_icmp, gtp, http, http_head_f5
Availability Requirements	All Health Monitors	
Limit Settings	Bits: Disabled, Packets: Disabled, Current Connections: Disabled	
iQuery Options	Service Check: <input checked="" type="checkbox"/> , Path: <input checked="" type="checkbox"/> , SNMP: <input checked="" type="checkbox"/>	

## TMSH

```
tmsh create gtm server gtm1.site2_server datacenter site2_datacenter devices add { gtm1.site2.example.com { addresses add { 198.51.100.39 } } } monitor bigip product bigip
```

### 2.1.3.1.3 site1\_ha-pair

LTM devices need to be defined. Create a server object for the SITE1 LTM HA pair

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
IP Address: 10.1.10.13 Time: 3:49 PM (CDT) Role: Administrator

**DNS > GSLB : Servers : Server List**

*	Status	Name	Devices	Address	Data Center	Virtual
<input type="checkbox"/>	<span style="color: green;">●</span>	gtm1.site1_server	1	203.0.113.7	site1_datacenter	0
<input type="checkbox"/>	<span style="color: blue;">■</span>	gtm1.site2_server	1	198.51.100.39	site2_datacenter	0

Enable | Disable | Delete... | Create...

**Click "Create"**

Field	Value
Name	site1_ha-pair
Data Center	site1_datacenter
Devices Add:	bigip1.site1.example.com : 203.0.113.5
Devices Add:	bigip2.site1.example.com : 203.0.113.6
Health Monitors	bigip
Virtual Server Discovery	Enabled
Link Discovery	Enabled

1. Fill in the Name and Datacenter

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin Part...  
IP Address: 10.1.10.13 Time: 3:58 PM (CDT) Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About

Statistics iApps DNS Delivery GSLB Zones Caches Settings

SSL Orchestrator Acceleration Device Management Network System

**DNS » GSLB : Servers : Server List » New Server...**

**General Properties**

Name	site1_ha-pair
Product	BIG-IP System
Data Center	site1_datacenter
Prober Preference	Inherit From Data Center
Prober Fallback	Inherit From Data Center
State	Enabled

**Devices**

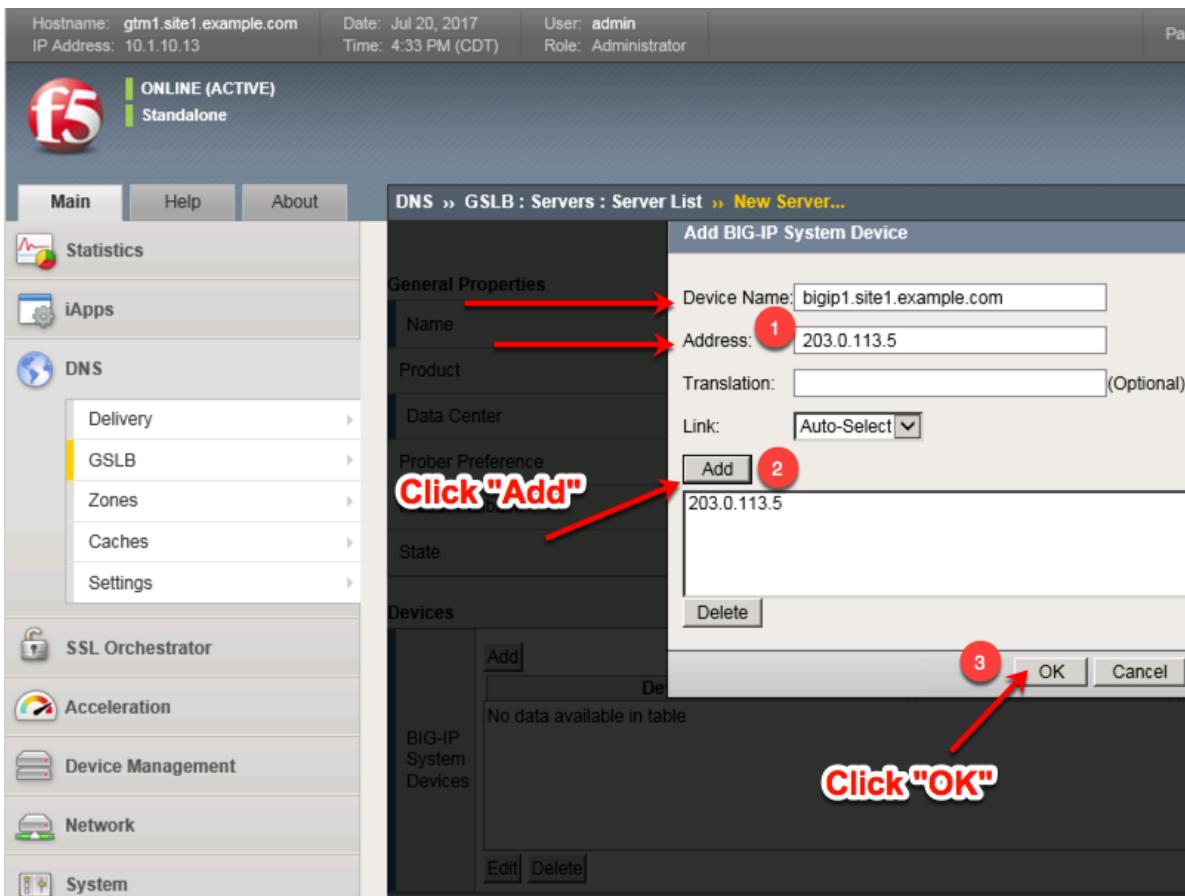
	Device Name	Address
Add	No data available in table	

**Click "Add"**

BIG-IP System Devices

Edit Delete

2. Click the “Add” button to define IP addresses



3. Click "Add" again to define the other BIG-IP in the HA pair.

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
IP Address: 10.1.10.13 Time: 4:38 PM (CDT) Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About DNS » GSLB : Servers : Server List » New Server...

Statistics iApps DNS Delivery GSLB Zones Caches Settings SSL Orchestrator Acceleration Device Management Network System

**General Properties**

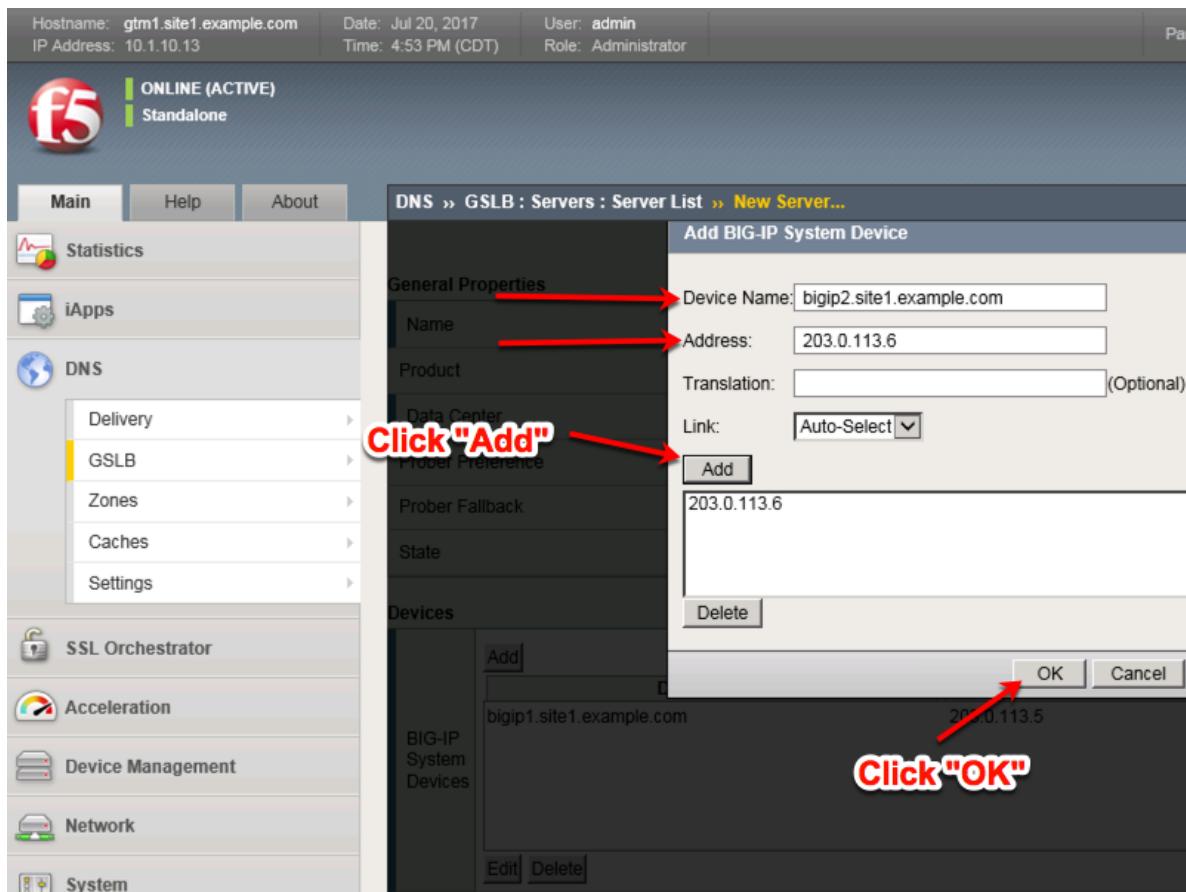
Name	site1_ha-pair
Product	BIG-IP System
Data Center	site1_datacenter
Prober Preference	Inherit From Data Center
Prober Fallback	Inherit From Data Center
State	Enabled

**Devices**

	Device Name	Address
Add	bigip1.site1.example.com	203.0.113.5

**Click "Add" .....again**

4. Click the “Add” button to define IP addresses



5. Complete the form and associate the “bigip” “Health Monitor”

Hostname: gtm1.site1.example.com  
IP Address: 10.1.10.13  
Date: Jul 20, 2017  
Time: 5:00 PM (CDT)  
User: admin  
Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About DNS » GSLB : Servers : Server List » New Server...

**General Properties**

Name	site1_ha-pair
Product	BIG-IP System
Data Center	site1_datacenter
Prober Preference	Inherit From Data Center
Prober Fallback	Inherit From Data Center
State	Enabled

**Devices**

**Two devices belong to this HA-Pair**

Device Name	Address
bigip1.site1.example.com	203.0.113.5
bigip2.site1.example.com	203.0.113.6

**Add the "bigip" Health Monitor**

**C--> Configuration: Advanced**

Health Monitors	Selected	Available
	/Common <b>bigip</b>	/Common gateway_icmp gtp http http_head_f5

Availability Requirements: All Health Monitors

6. Make sure to enable both “Virtual Server” and “Link” discovery

**Resources**

Virtual Server Discovery	Enabled
Link Discovery	Enabled

Cancel Repeat Finished

## TMSH

```
tmsh create gtm server site1_ha-pair datacenter site1_datacenter devices add { bigip1.site1.example.com { addresses add { 203.0.113.5 { } } } bigip2.site1.example.com { addresses add { 203.0.113.6 { } } } } link-discovery enabled monitor bigip product bigip virtual-server-discovery enabled
```

#### 2.1.3.1.4 site2\_ha-pair

LTM devices need to be defined. Create a server object for the SITE2 LTM HA pair

**Click "Create"**

<input checked="" type="checkbox"/>	Status	Name	Devices	Address	Data Center	Virtual
<input type="checkbox"/>	●	gtm1.site1_server	1	203.0.113.7	site1_datacenter	0
<input type="checkbox"/>	■	gtm1.site2_server	1	198.51.100.39	site2_datacenter	0
<input type="checkbox"/>	■	site1_ha-pair	2	203.0.113.5 203.0.113.6	site1_datacenter	0

Field	Value
Name	site2_ha-pair
Data Center	site2_datacenter
Device Add:	bigip1.site2.example.com : 198.51.100.37
Device Add:	bigip2.site2.example.com : 198.51.100.38
Health Monitors	bigip
Virtual Server Discovery	Enabled
Link Discovery	Enabled

1. Fill in the Name and Datacenter

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
IP Address: 10.1.10.13 Time: 5:52 PM (CDT) Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About

DNS » GSLB : Servers : Server List » New Server...

**General Properties**

Name	<input type="text" value="site2_ha_pair"/>
Product	<input type="text" value="BIG-IP System"/>
Data Center	<input type="text" value="site2_datacenter"/>
Prober Preference	<input type="text" value="Inherit From Data Center"/>
Prober Fallback	<input type="text" value="Inherit From Data Center"/>
State	<input type="text" value="Enabled"/>

**Devices**

Device Name	
No data available in table	

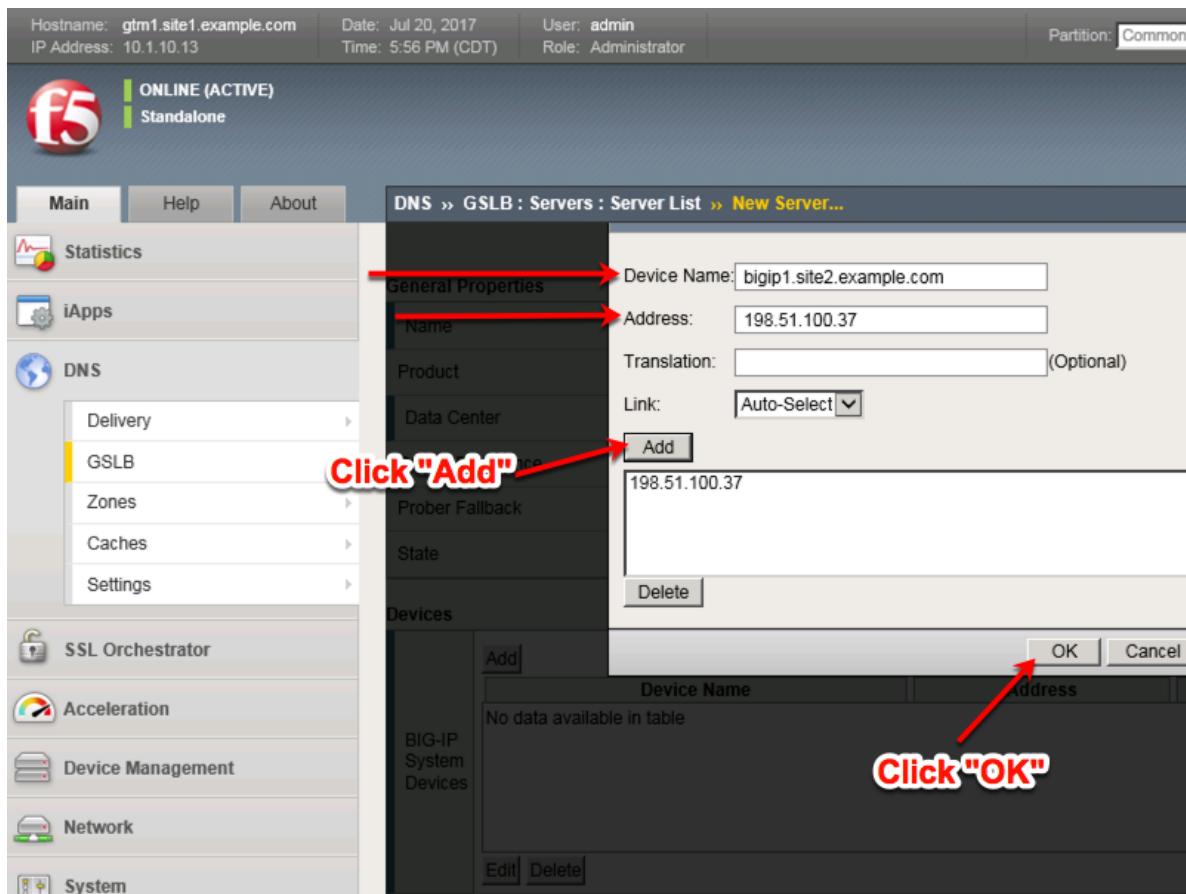
**Add** Click "Add"

BIG-IP System Devices

Edit Delete

Delivery  
GSLB  
Zones  
Caches  
Settings  
SSL Orchestrator  
Acceleration  
Device Management  
Network  
System

2. Click the “Add” button to define IP addresses



3. Click "Add" again to define the other BIG-IP in the HA pair.

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin Partition: Common  
IP Address: 10.1.10.13 Time: 6:13 PM (CDT) Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About DNS » GSLB : Servers : Server List » New Server...

Statistics iApps DNS Delivery GSLB Zones Caches Settings SSL Orchestrator Acceleration Device Management Network System

**General Properties**

Name	site2_ha_pair
Product	BIG-IP System
Data Center	site2_datacenter
Prober Preference	Inherit From Data Center
Prober Fallback	Inherit From Data Center
State	Enabled

**Devices**

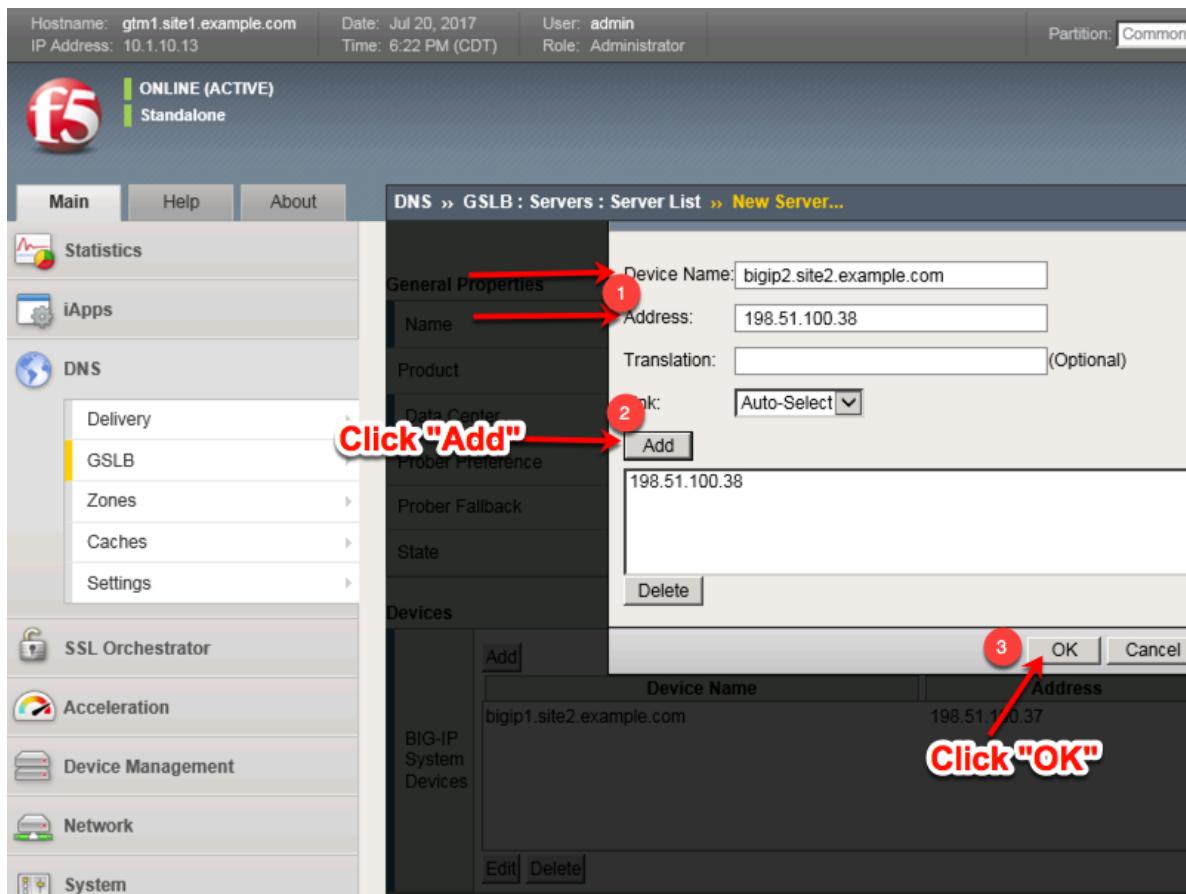
**Click "Add"**

Device Name	Address
bigip1.site2.example.com	198.51.100.37

Add Edit Delete

BIG-IP System Devices

4. Click the “Add” button to define IP addresses



5. Complete the form and associate the “bigip” “Health Monitor”

Hostname: gtm1.site1.example.com    IP Address: 10.1.10.13    Date: Jul 20, 2017    Time: 7:55 PM (CDT)    User: admin    Role: Administrator    Partition: Common

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About

DNS » GSLB : Servers : Server List » New Server...

**General Properties**

Name	site2_ha_pair
Product	BIG-IP System
Data Center	site2_datacenter
Prober Preference	Inherit From Data Center
Prober Fallback	Inherit From Data Center
State	Enabled

**Devices**

	Device Name	Address
BIG-IP System Devices	bigip1.site2.example.com	198.51.100.37
	bigip2.site2.example.com	198.51.100.38

**Configuration:** Advanced

Health Monitors	<input type="checkbox"/> Selected: /Common bigip <input type="checkbox"/> Available: /Common gateway_icmp <input type="checkbox"/> Available: gtp <input type="checkbox"/> Available: http <input type="checkbox"/> Available: http_head_f5
Availability Requirements	All Health Monitors



6. Make sure to enable both "Virtual Server" and "Link" discovery

**Resources**

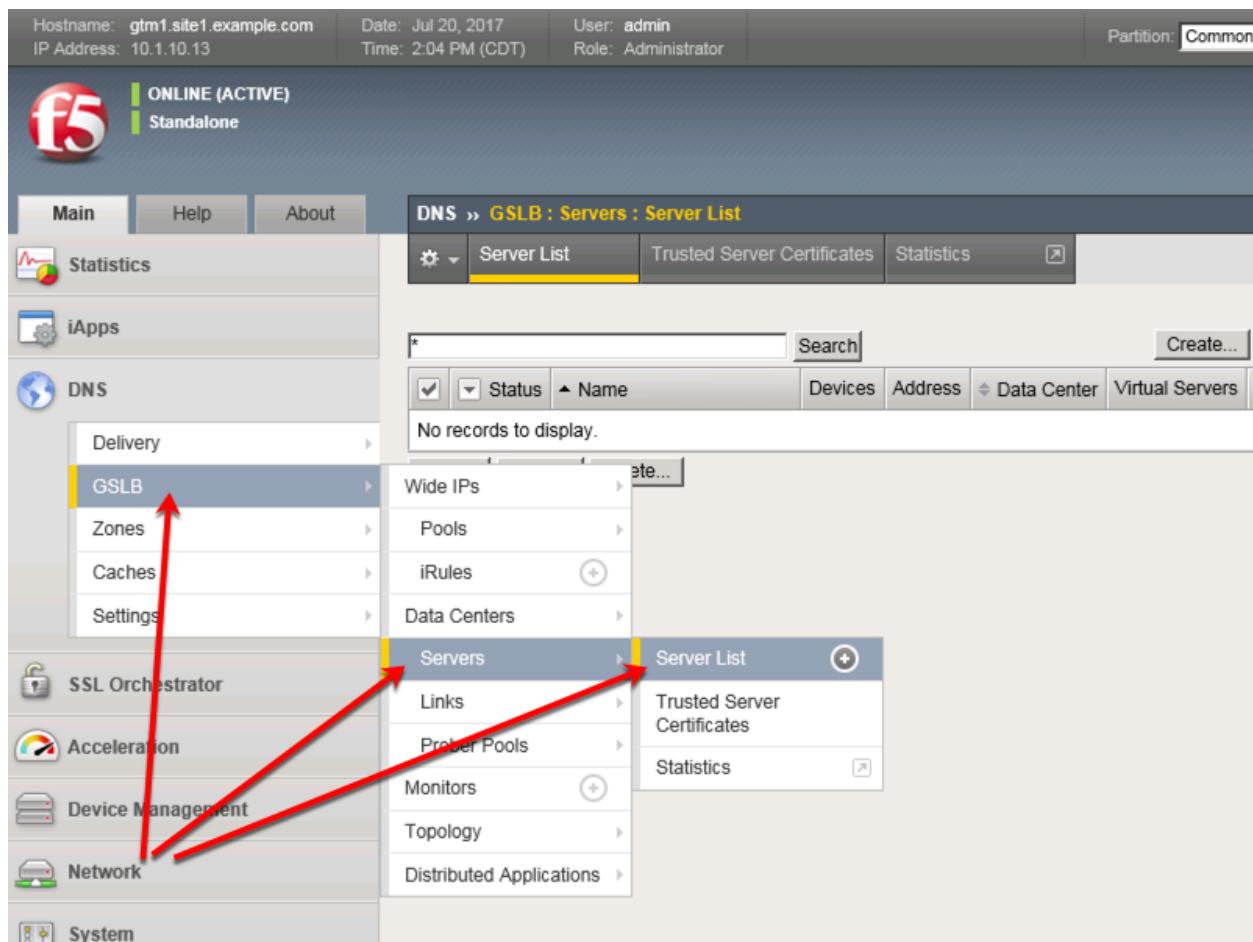
Virtual Server Discovery	Enabled
Link Discovery	Enabled

**Buttons:** Cancel | Repeat | Finished

## TMSH

```
tmsh create gtm server site2_ha_pair datacenter site2_datacenter devices add { bigip1.site2.example.com { addresses add { 198.51.100.37 { } } } bigip2.site2.example.com { addresses add { 198.51.100.38 { } } } } link-discovery enabled monitor bigip product bigip virtual-server-discovery enabled
```

Server objects need to be defined and grouped into a Datacenter



Click the create button and continue to define objects

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
IP Address: 10.1.10.13 Time: 2:00 PM (CDT) Role: Administrator Partition: Common

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About Statistics iApps DNS Delivery GSLB Zones Caches Settings SSL Orchestrator Acceleration Device Management Network System

DNS » GSLB : Servers : Server List

Server List Trusted Server Certificates Statistics

\* Search Create... Status ▲ Name Devices Address ▲ Data Center Virtual Servers

No records to display.

Enable Disable Delete...

**Click "Create" to define gtm1.site1**

### 2.1.3.2 Device Trust

A mesh of F5 DNS servers need to exchange keys to establish a trusted mechanism for HA communications.

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
 IP Address: 10.1.10.13 Time: 8:05 PM (CDT) Role: Administrator Partition: Common

**ONLINE (ACTIVE)**  
Standalone

Main Help About

Statistics iApps DNS

Delivery GSLB Zones Caches Settings

SSL Orchestrator Acceleration Device Management Network System

DNS » GSLB : Servers : Server List

Server List Trusted Server Certificates Statistics

	Status	Name	Devices	Address	Data Center	Virtual Servers	Pro
<input type="checkbox"/>	green circle	gtm1.site1_server	1	203.0.113.7	site1_datacenter	0	BIG
<input type="checkbox"/>	blue square	gtm1.site2_server	1	198.51.100.39	site2_datacenter	0	BIG
<input type="checkbox"/>	blue square	site1_ha-pair	2	203.0.113.5 203.0.113.6	site1_datacenter	0	BIG
<input type="checkbox"/>	blue square	site2_ha_pair	2	198.51.100.37 198.51.100.38	site2_datacenter	0	BIG

Enable Disable Delete...

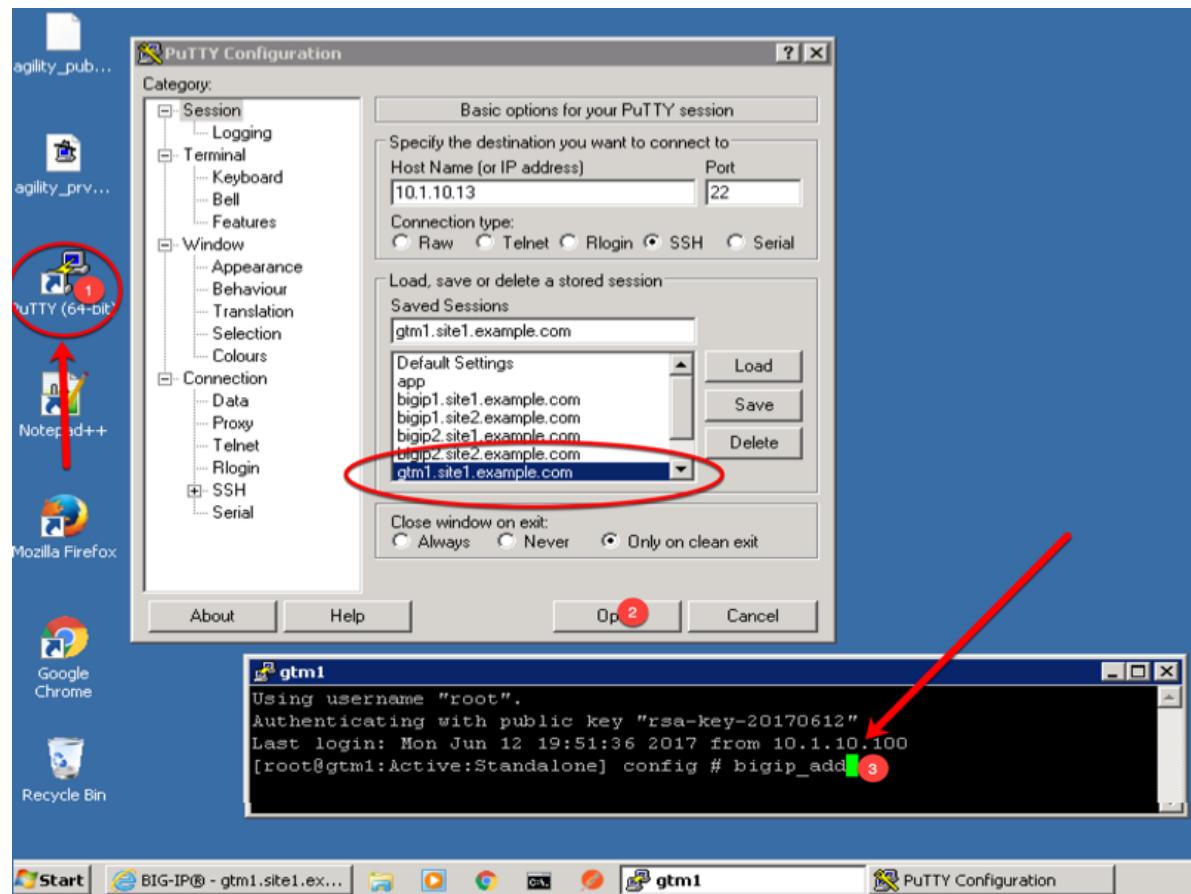
**Three other servers need to "establish trust"**

1. Launch Putty and login to gtm1.SITE1

Run the following command, and when prompted for a password use “default”

**TMSH**

bigip\_add



2. Observe the exchanged certificates

Hostname: gtm1.site1.example.com Date: Jun 25, 2017  
IP Address: 10.1.10.13 Time: 3:36 PM (CDT) User: admin  
Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About DNS » GSLB : Servers : Trusted Server Certificates

Statistics iApps DNS Delivery GSLB Zones Caches Settings SSL Orchestrator Acceleration Device Management

General Properties

Name	server
Partition / Path	
Wide IPs	gtm1.site2.example.com, MyCompany
Pools	bigip2.site1.example.com, MyCompany
iRules	bigip1.site2.example.com, MyCompany
Data Centers	bigip2.site2.example.com, MyCompany
Servers	gtm1.site1.example.com, MyCompany
Links	
Prober Pools	
Monitors	
Topology	

Server List Trusted Server Certificates Statistics

Common Name: gtm1.site2.example.com

gtm1.site2.example.com, MyCompany  
bigip2.site1.example.com, MyCompany  
bigip1.site2.example.com, MyCompany  
bigip2.site2.example.com, MyCompany  
gtm1.site1.example.com, MyCompany

3. Observe the server status

Hostname: gtm1.site1.example.com  
IP Address: 10.1.10.13  
Date: Jul 26, 2018  
Time: 3:44 PM (EDT)  
User: admin  
Role: Administrator  
Partition: Common

**ONLINE (ACTIVE)**  
Standalone

Main Help About

Statistics iApps DNS Acceleration Device Management Network System

DNS » GSLB : Servers : Server List

	Status	Name	Devices	Address	Data Center	Virtual Servers	Pro
<input type="checkbox"/>	●	gtm1.site1_server	1	203.0.113.7	site1_datacenter	0	BIC
<input type="checkbox"/>	●	gtm1.site2_server	1	198.51.100.39	site2_datacenter	0	BIC
<input type="checkbox"/>	●	site1_ha-pair	2	203.0.113.5 203.0.113.6	site1_datacenter	3	BIC
<input type="checkbox"/>	●	site2_ha-pair	2	198.51.100.37 198.51.100.38	site2_datacenter	2	BIC

Enable Disable Delete...

**Green Green Green !!**

### 2.1.3.3 Sync Group

After the BIG-IP DNS server in datacenter 2 is joined to the sync group, administrators may make changes to either F5 DNS server.

Changes will be automatically replicated across all F5 DNS servers.

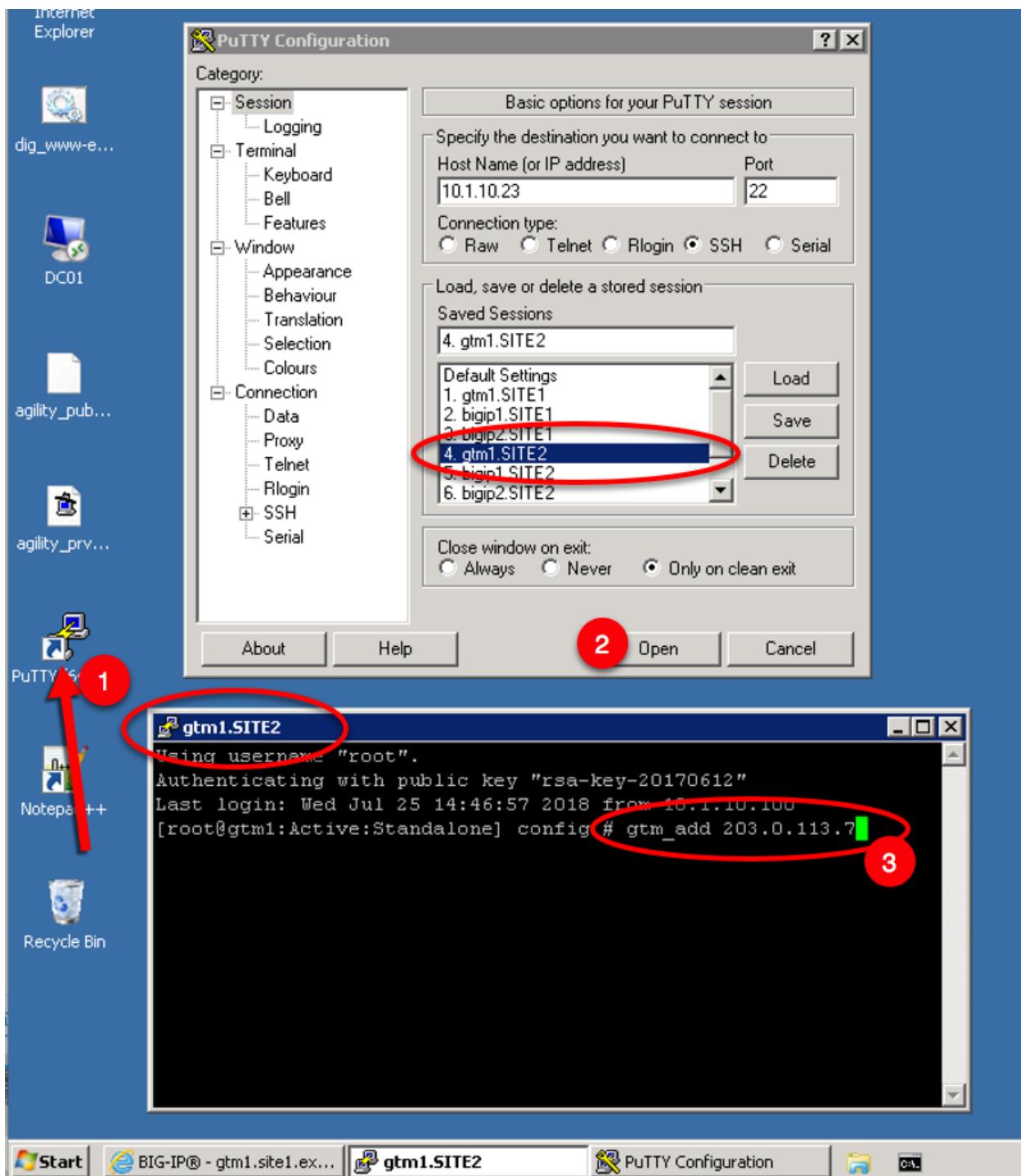
Launch Putty and log in to gtm1.site2

Run the following command: Enter the password “default” when prompted.

Select “y” to allow the bigip-ip to join the mesh.

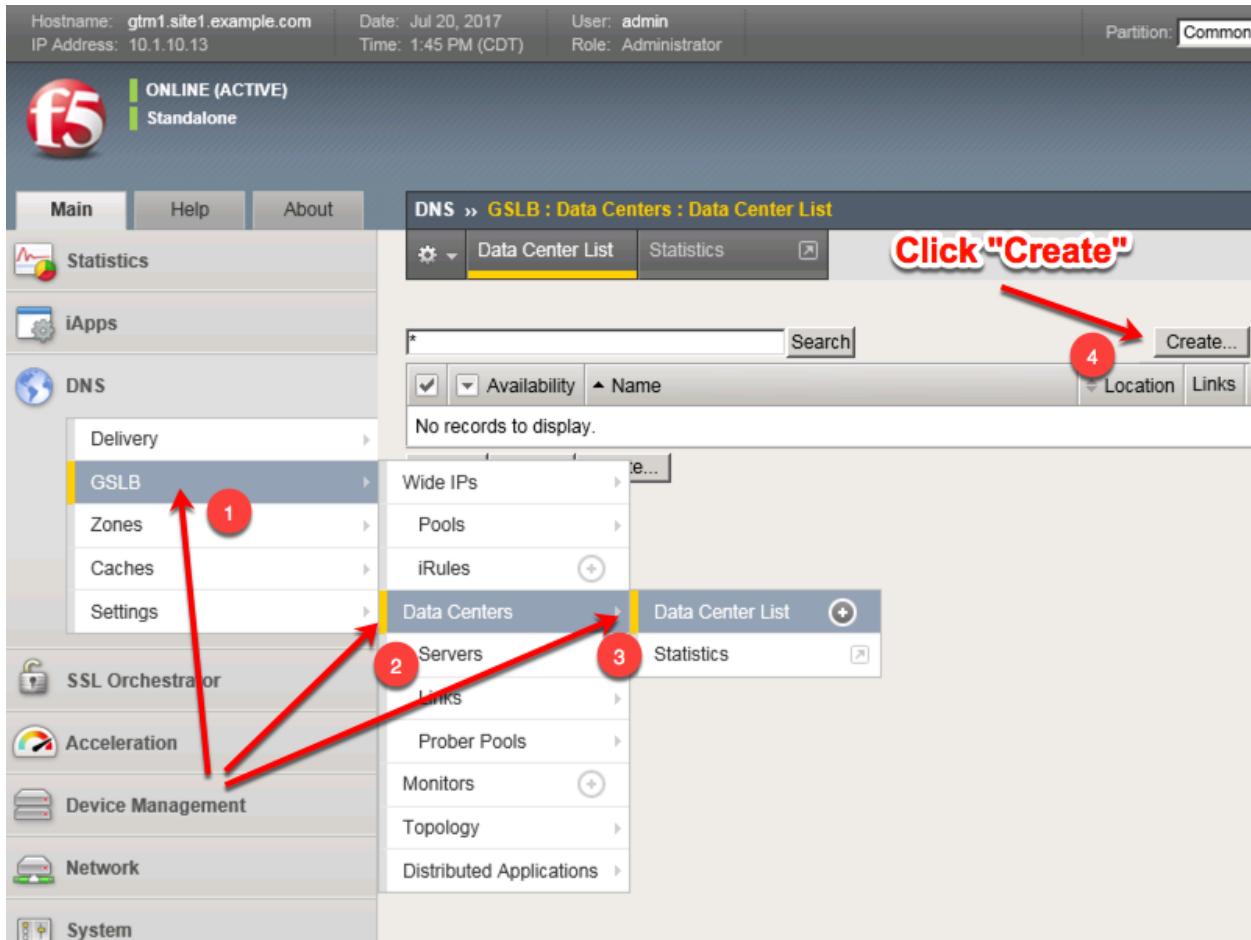
#### TMSH

```
gtm_add 203.0.113.7
```



Datacenters are logical groupings of devices that share a gateway.

**Note:** The tasks in this section are to be only completed on gtm1.site1



Create two data centers according to the table below:

Field	Value
Name	site1_datacenter
Name	site2_datacenter

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
IP Address: 10.1.10.13 Time: 1:48 PM (CDT) Role: Administrator Partition: Common

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About DNS » GSLB : Data Centers : Data Center List

Statistics iApps DNS Delivery GSLB Zones Caches Settings SSL Orchestrator Acceleration Device Management Network System

**General Properties**

Name	site1_datacenter
Description	
Location	
Contact	
Prober Preference	Inside Data Center
Prober Fallback	Any Available
State	Enabled

Cancel Repeat Finished

**Repeat this step to create "site2\_datacenter"**

TMSH command for only site1.gtm1:

---

#### TMSH

---

```
tmsh create gtm datacenter site1_datacenter
```

---

---

#### TMSH

---

```
tmsh create gtm datacenter site2_datacenter
```

---

### 2.1.4 Pools

LTM virtual server objects are grouped together into GTM pools.

Hostname: gtm1.site1.example.com | Date: Jul 26, 2018  
 IP Address: 10.1.10.13 | Time: 3:58 PM (EDT) | Partition: Common | Log out

**f5** ONLINE (ACTIVE)  
 Standalone

Main Help About DNS iApps Acceleration Device Management

DNS » GSLB : Pools : Pool List

Statistics Pool List Statistics Create...  
 Status Name Type Members Partition / Path

No records to display.

1 2 3

Field	Value
Name	www.example.com_pool
Type	A
member	isp1_site1_www.example.com_tcp_https_virtual
member	isp2_site2_www.example.com_tcp_https_virtual

Hostname: gtm1.site1.example.com Date: Jul 26, 2018 User: admin  
 IP Address: 10.1.10.13 Time: 4:11 PM (EDT) Role: Administrator Partition: Common Log out

**ONLINE (ACTIVE)**  
**Standalone**

Main Help About DNS » GSLB : Pools : Pool List » New Pool...

**Statistics**  
**iApps**  
**DNS**  
 Delivery  
**GSLB**  
 Zones  
 Caches  
 Settings  
**Acceleration**  
 Device Management  
**Network**  
 System

**General Properties**

Name	www.example.com_pool
Type	A
State	Enabled

**Configuration**

Health Monitors	Selected	Available
		/Common gateway_icmp gtp http http_head_f5
	Up Down	
Availability Requirements	All Health Monitors	
Limit Settings	Bits:	Disabled
	Packets:	Disabled
	Current Connections:	Disabled
Manual Resume	<input type="checkbox"/>	
TTL	30	
Dynamic Ratio	<input type="checkbox"/>	
Maximum Answers Returned	1	
Verify Member Availability	<input checked="" type="checkbox"/>	

**Select two LTM VIP's and click "Add"**

**Members**

Load Balancing Method	Preferred: Round Robin
	Alternate: Round Robin
	Fallback: Return to DNS
Fallback IP	0.0.0.0
	Virtual Server: Select...
	Ratio: 1
Add	<input type="button" value="Add"/>
Member List	/Common/isp1_site1_www.example.com_tcp_https_virtual (/Common/site1_ha-pair) - 203.0.113.9:443, Ratio(1) /Common/isp2_site2_www.example.com_tcp_https_virtual (/Common/site2_ha-pair) - 198.51.100.41:443, Ratio(1)
	Delete Up Down

TMSH command to run on only gtm1.site1:

## TMSH

```
tmsh create gtm pool a www.example.com_pool { members add { site1_ha-pair:/Common/isp1_site1_www.example.com_tcp_https_virtual { member-order 0 } site2_ha-pair:/Common/isp2_site2_www.example.com_tcp_https_virtual { member-order 1 } }}
```

## 2.1.5 FQDN

F5 refers to an FQDN as a “wide-ip”, or “wip”.

Navigate to: **DNS » GSLB : Wide IPs : Wide IP List**

Hostname: gtm1.site1.example.com Date: Jun 25, 2017  
IP Address: 10.1.10.13 Time: 8:49 PM (CDT) User: admin  
Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About

Statistics iApps

DNS

Delivery GSLB Zones Caches Settings

SSL Orchestrator

Acceleration

Device Management

Network

System

DNS » GSLB : Wide IPs : Wide IP List

Wide IP List Statistics

Search

Status Name

www.gslb.example.com

Wide IPs Pools iRules Data Centers Servers Links Prober Pools Monitors Topology Distributed Applications



Create an F5 “wide IP”

Field	Value
Name	www.gslb.example.com
Type	A
Pool	www.example.com_pool

DNS » GSLB : Wide IPs : Wide IP List » New...

General Properties: Advanced ▾

Name	<input type="text" value="www.example.com"/>
Type	A ▾
Description	<input type="text"/>
	Alias: <input type="text"/> <input type="button" value="Add"/>
Alias List	<input type="button" value="Delete"/>
State	Enabled ▾
Minimal Response	Enabled ▾
Return Code On Failure	Disabled ▾
Load-Balancing Decision Log	<input type="checkbox"/> Pool Selection <input type="checkbox"/> Pool Traversal <input type="checkbox"/> Pool Member Selection <input type="checkbox"/> Pool Member Traversal

iRules

iRule List	<table border="1"><tr><td>Selected</td><td><input type="button" value="&lt;&lt;"/></td></tr><tr><td><input type="button" value="&gt;&gt;"/></td><td>Available</td></tr><tr><td><input type="button" value="Up"/></td><td><input type="button" value="Down"/></td></tr></table>	Selected	<input type="button" value="&lt;&lt;"/>	<input type="button" value="&gt;&gt;"/>	Available	<input type="button" value="Up"/>	<input type="button" value="Down"/>
Selected	<input type="button" value="&lt;&lt;"/>						
<input type="button" value="&gt;&gt;"/>	Available						
<input type="button" value="Up"/>	<input type="button" value="Down"/>						

Pools

Load Balancing Method	Round Robin ▾
62 Persistence	Disabled ▾
	Pool <input type="button" value="Select... ▾"/>

<https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/wideip/list.jsp>

TMSH command to run on only gtm1.site1:

---

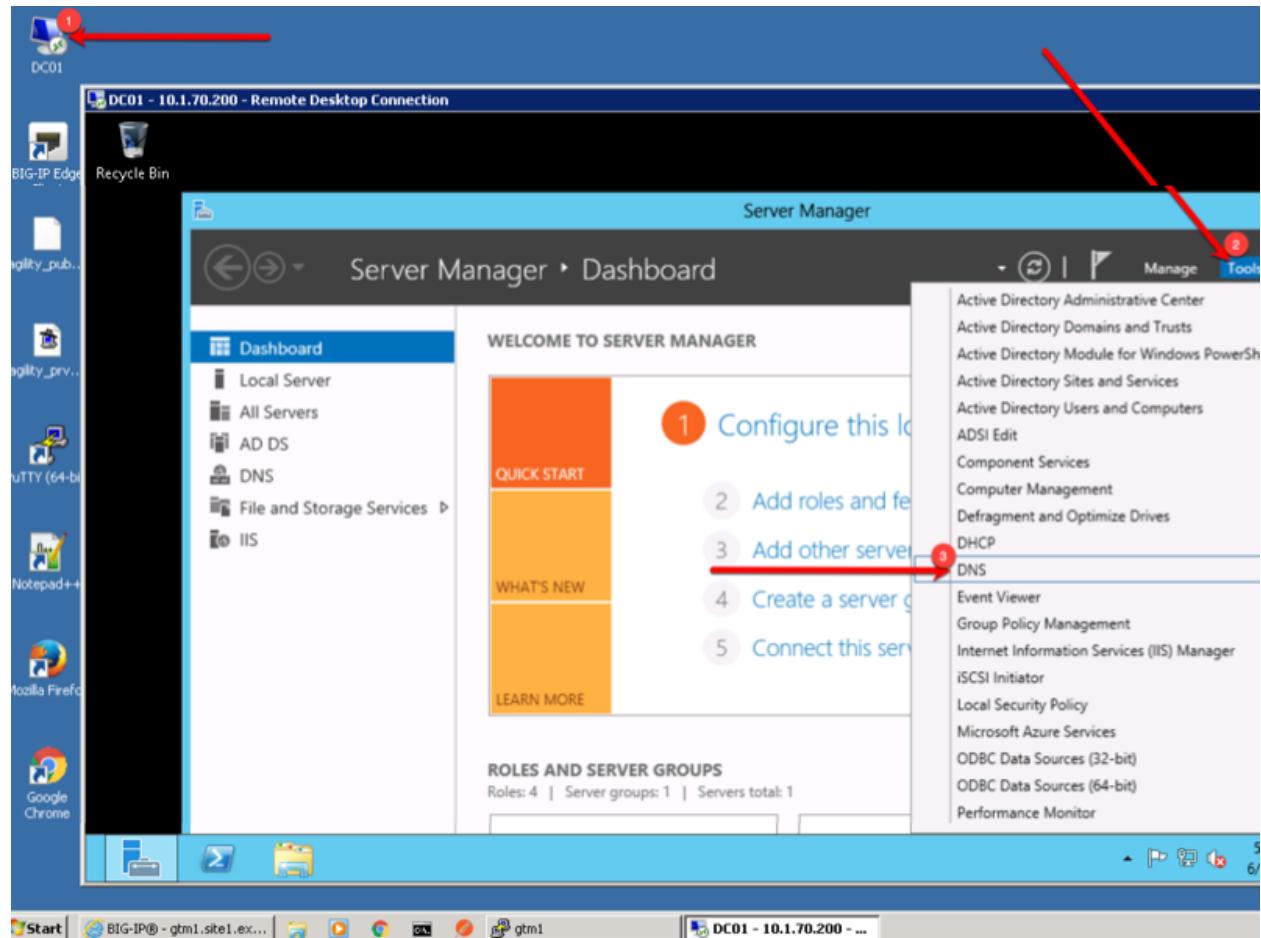
## TMSH

```
tmsh create gtm wideip a www.gslb.example.com { pools add { www.example.com_pool { order 0 } } }
```

---

### 2.1.6 Delegation

Log in to the DNS server from the jumpbox (username: user password: Agility1) , and open the DNS management UI:

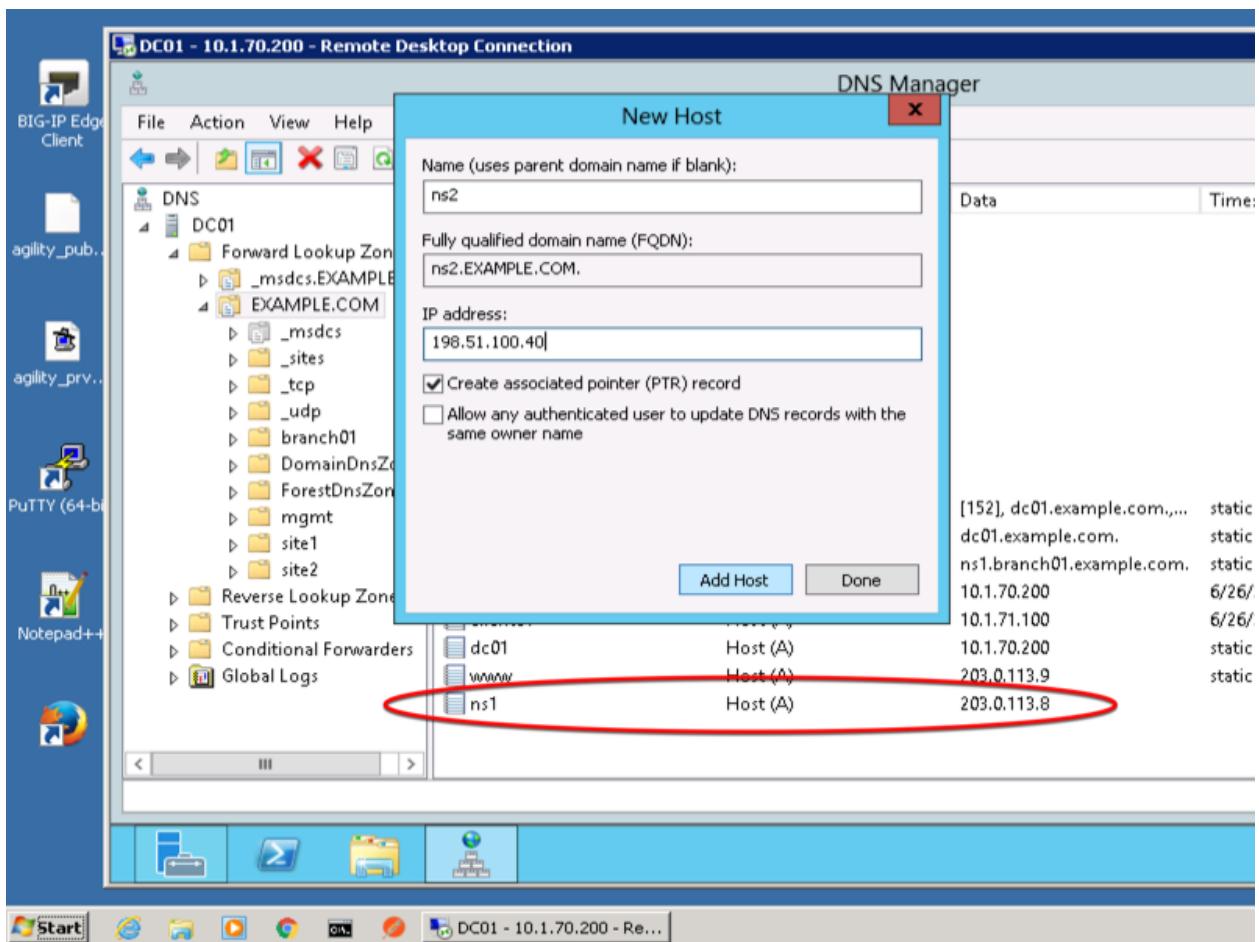


#### 2.1.6.1 A Records

Create two new A records for the new BIGP-IP nameservers.

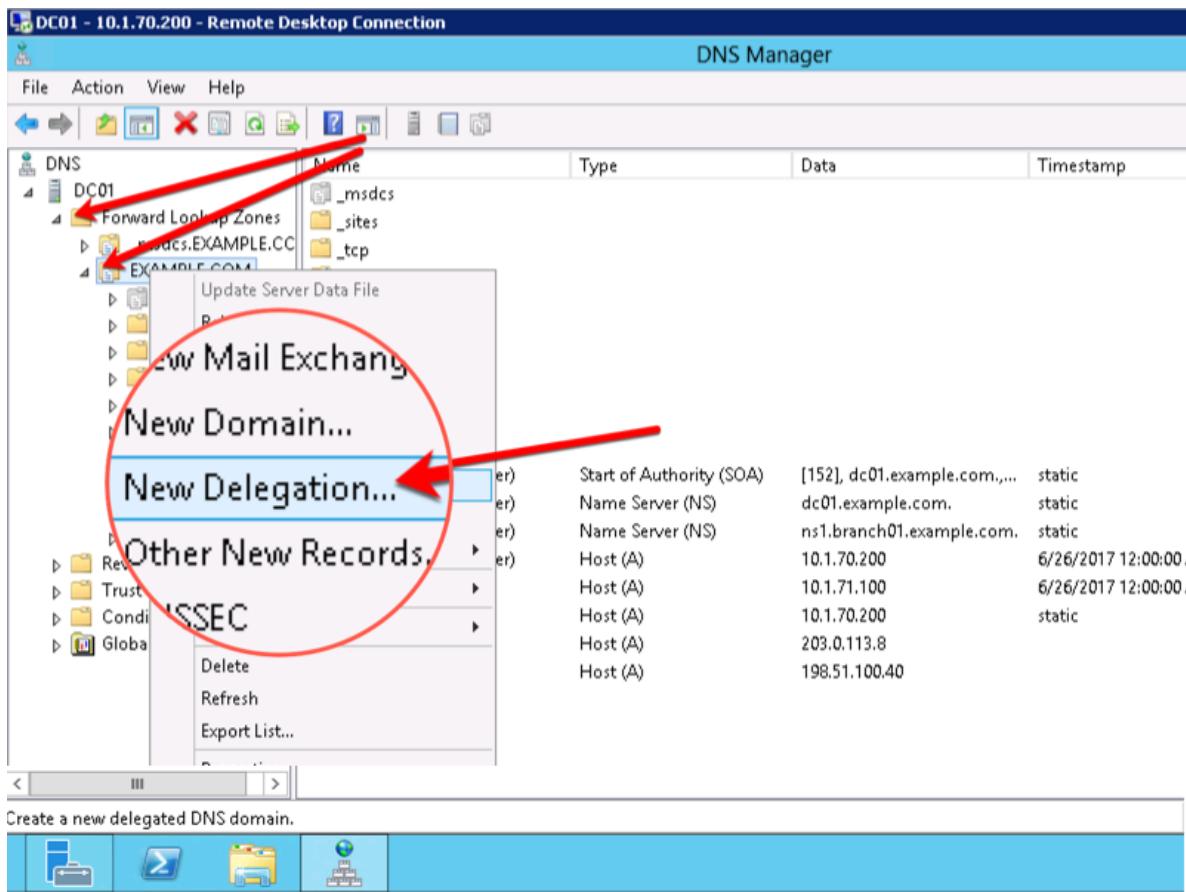
Field	Value
ns1	203.0.113.8
ns2	198.51.100.40

Expand “Forward Lookup Zones”, right click on EXAMPLE.COM and select “New Host”

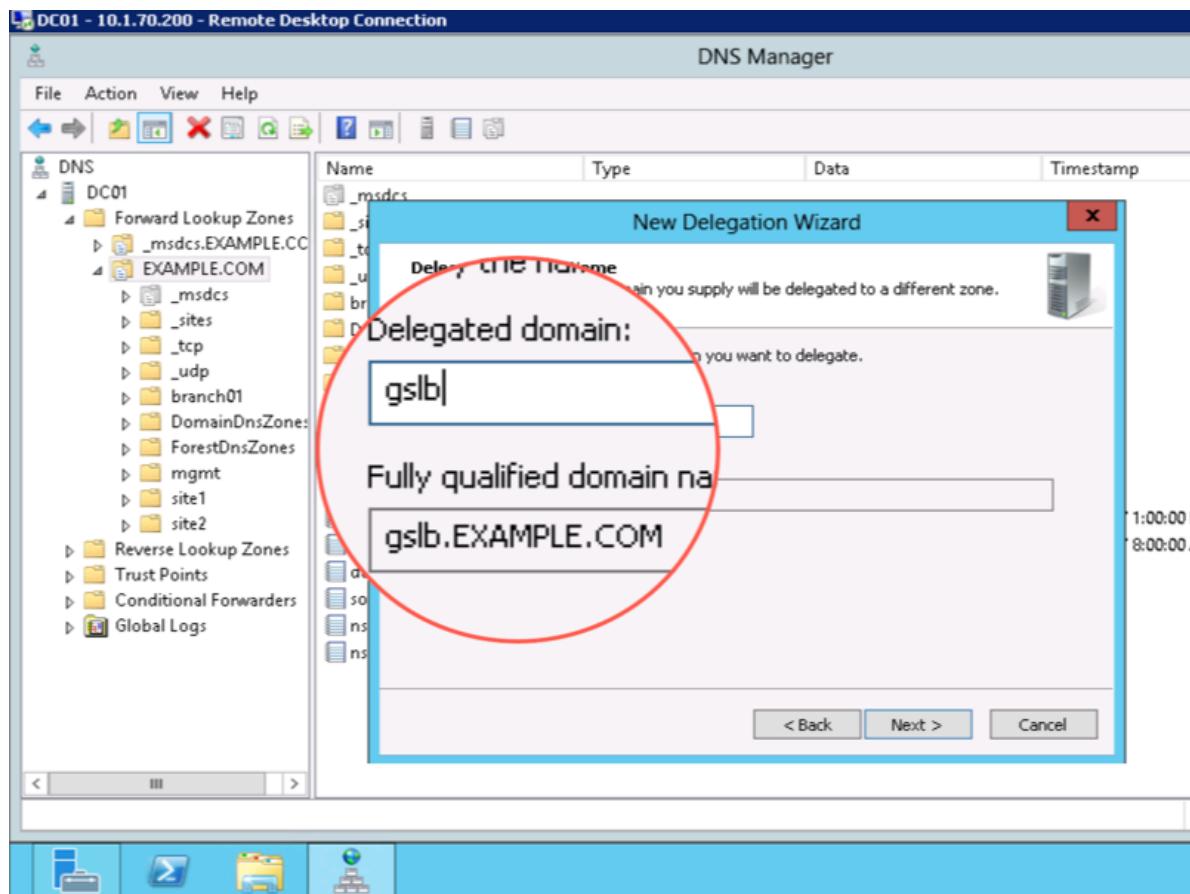


### 2.1.6.2 Sub Domain

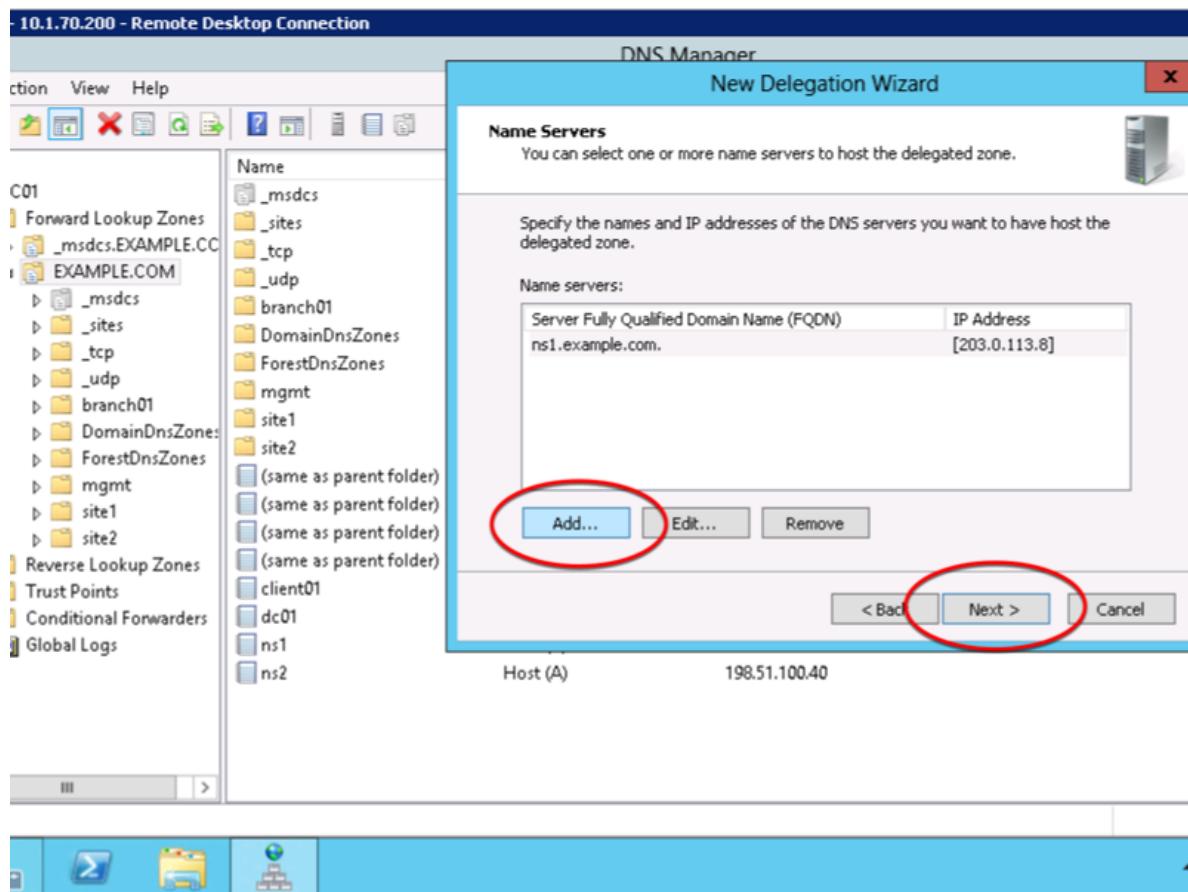
1. Expand “Forward Lookup Zones”, and right click on “EXAMPLE.com”



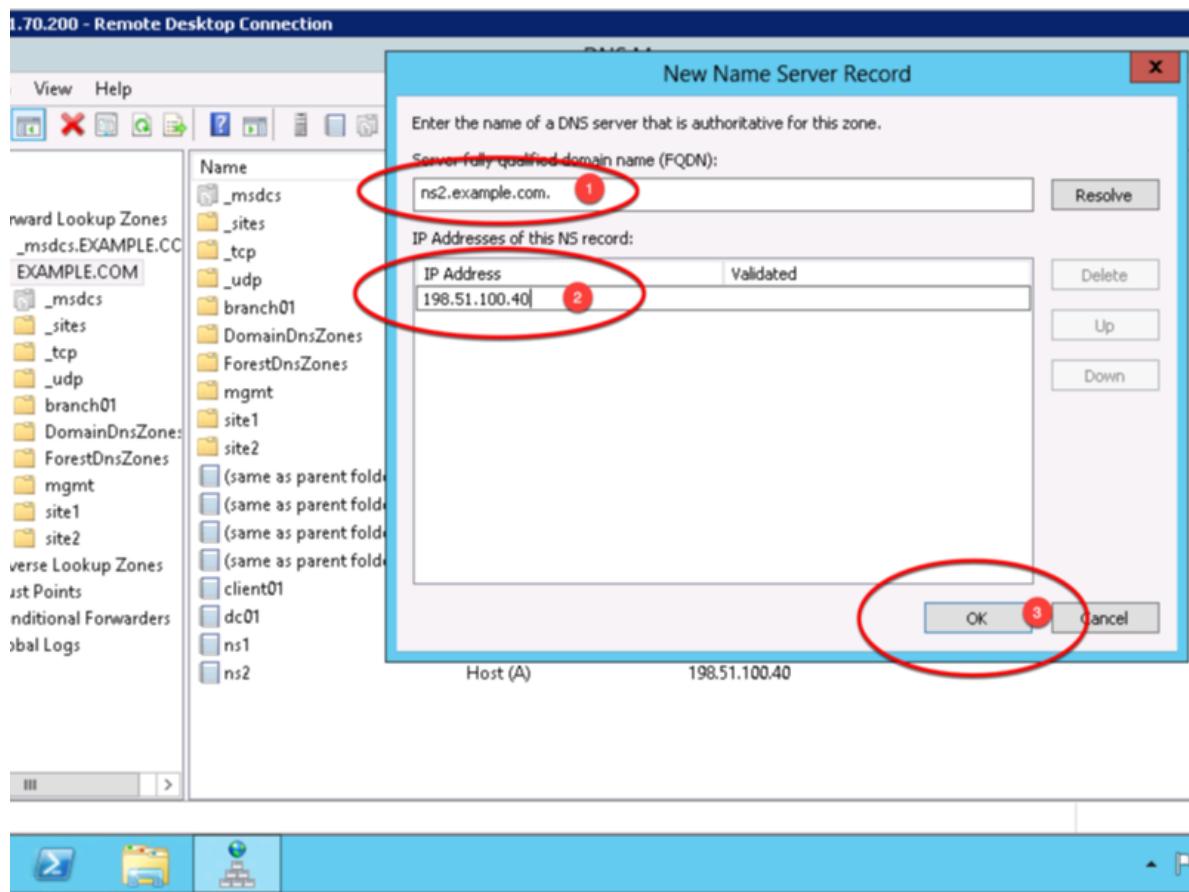
2. Create the “gslb” subdomain.



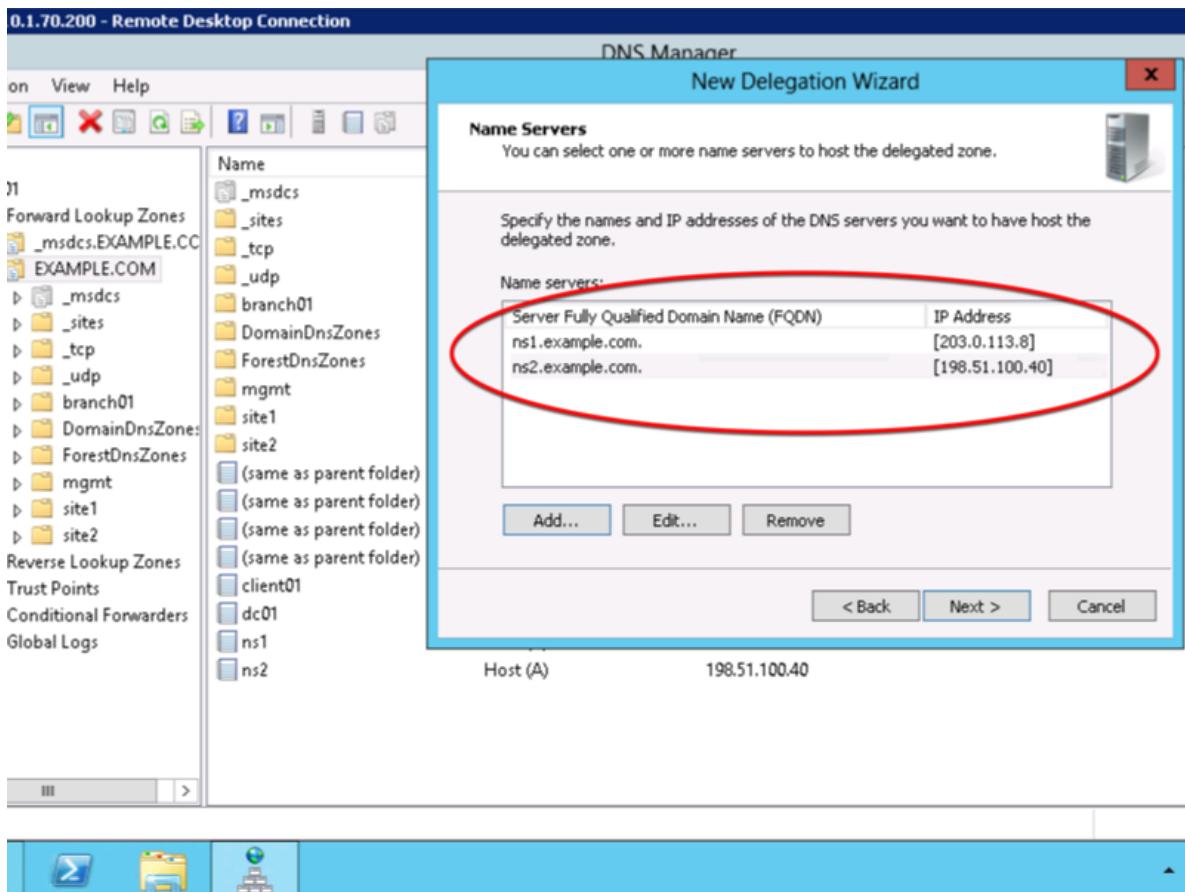
3. Step through the Delegation Wizard. Add “ns1.example.com - 203.0.113.8”



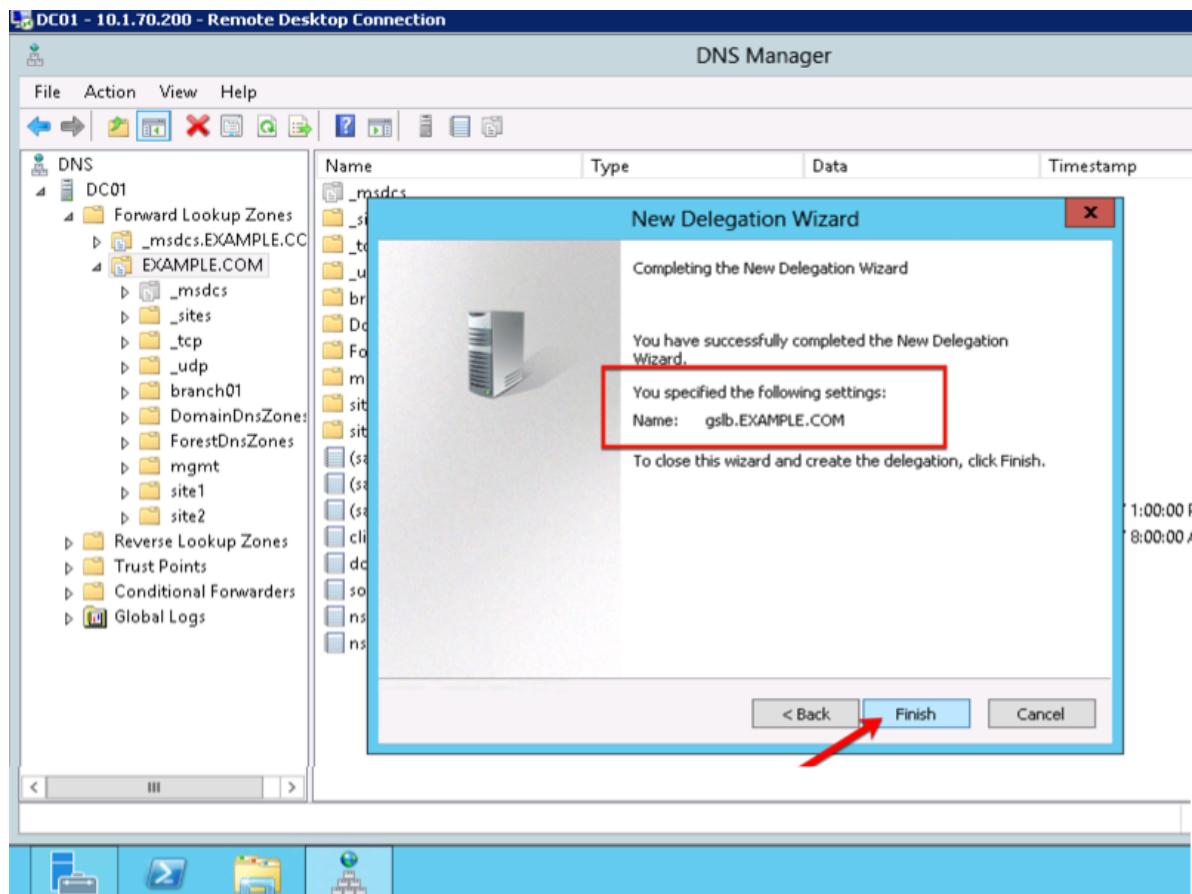
4. Also add "ns2.example.com - 198.51.100.40"



5. Make sure both ns1.example.com and ns2.example.com are added

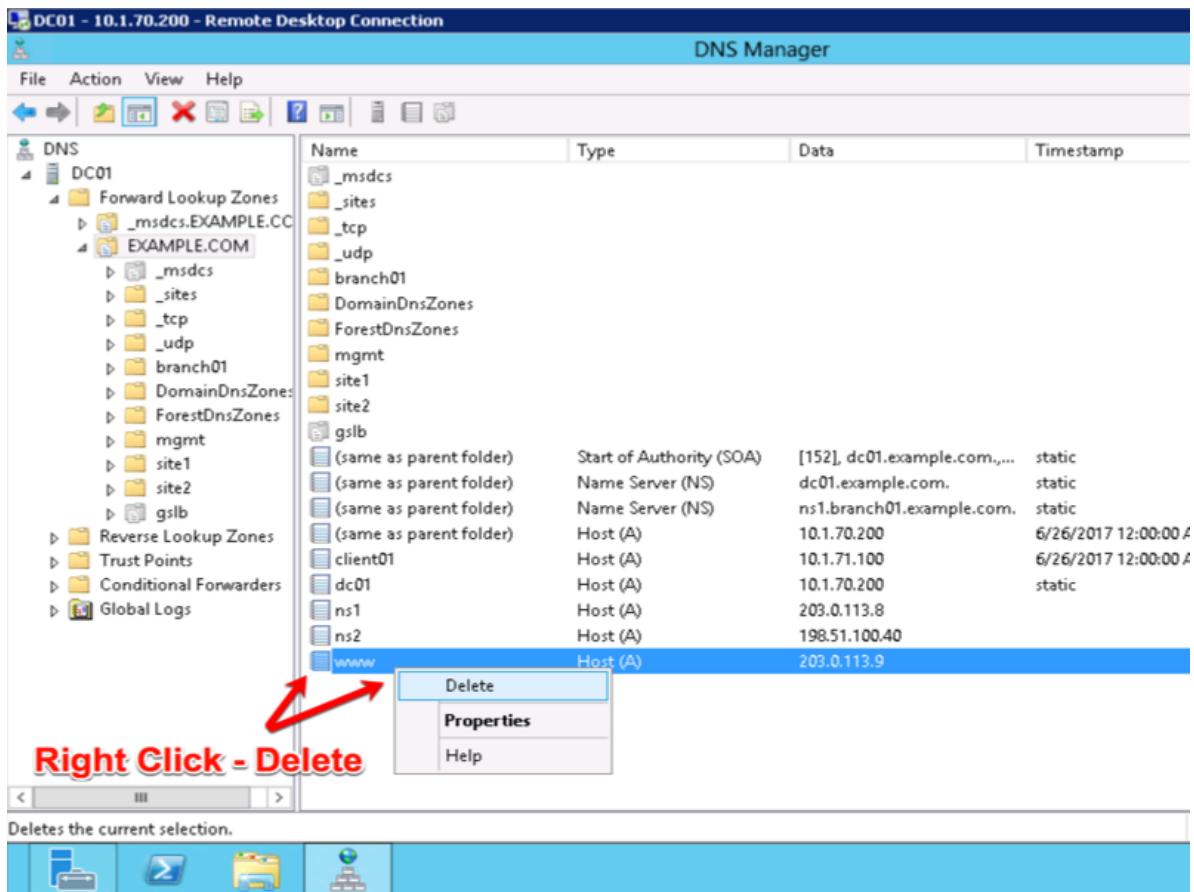


6. Click "Finish"

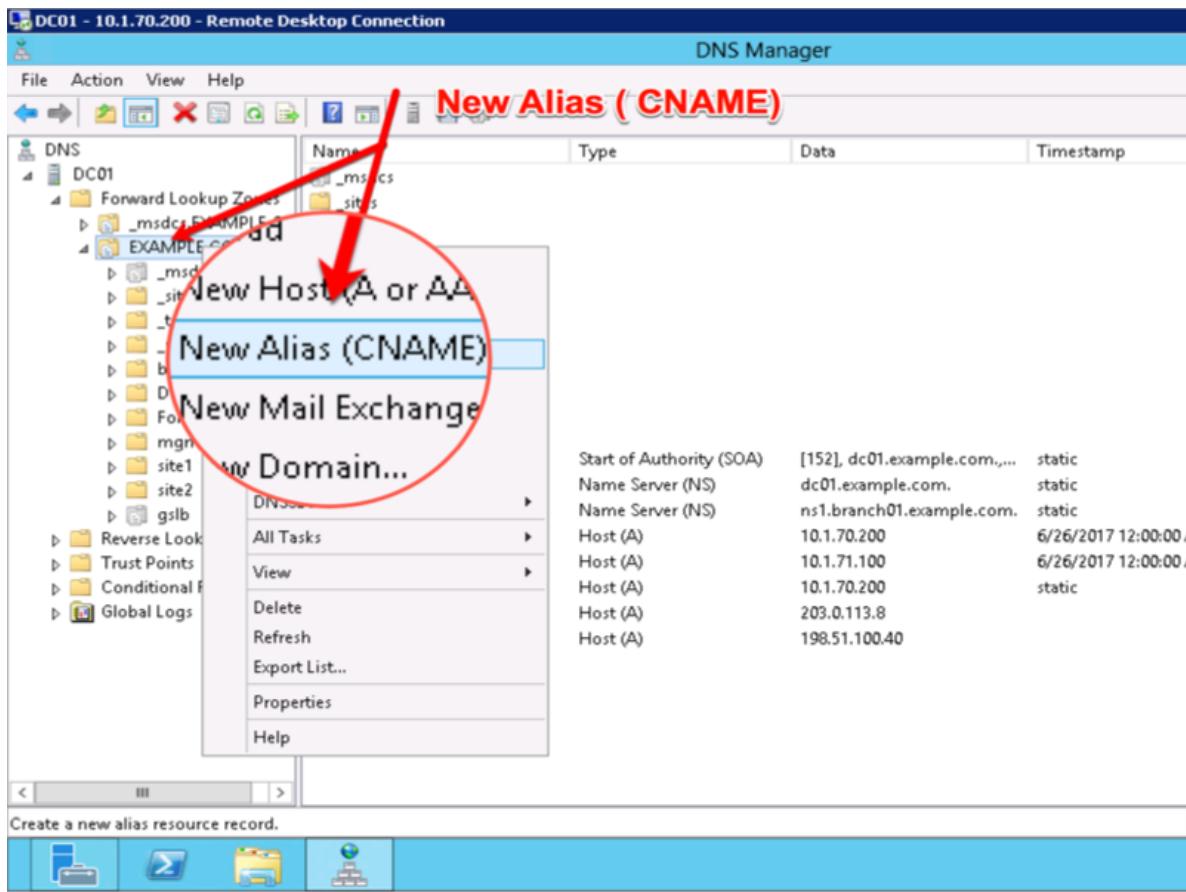


### 2.1.6.3 CNAME

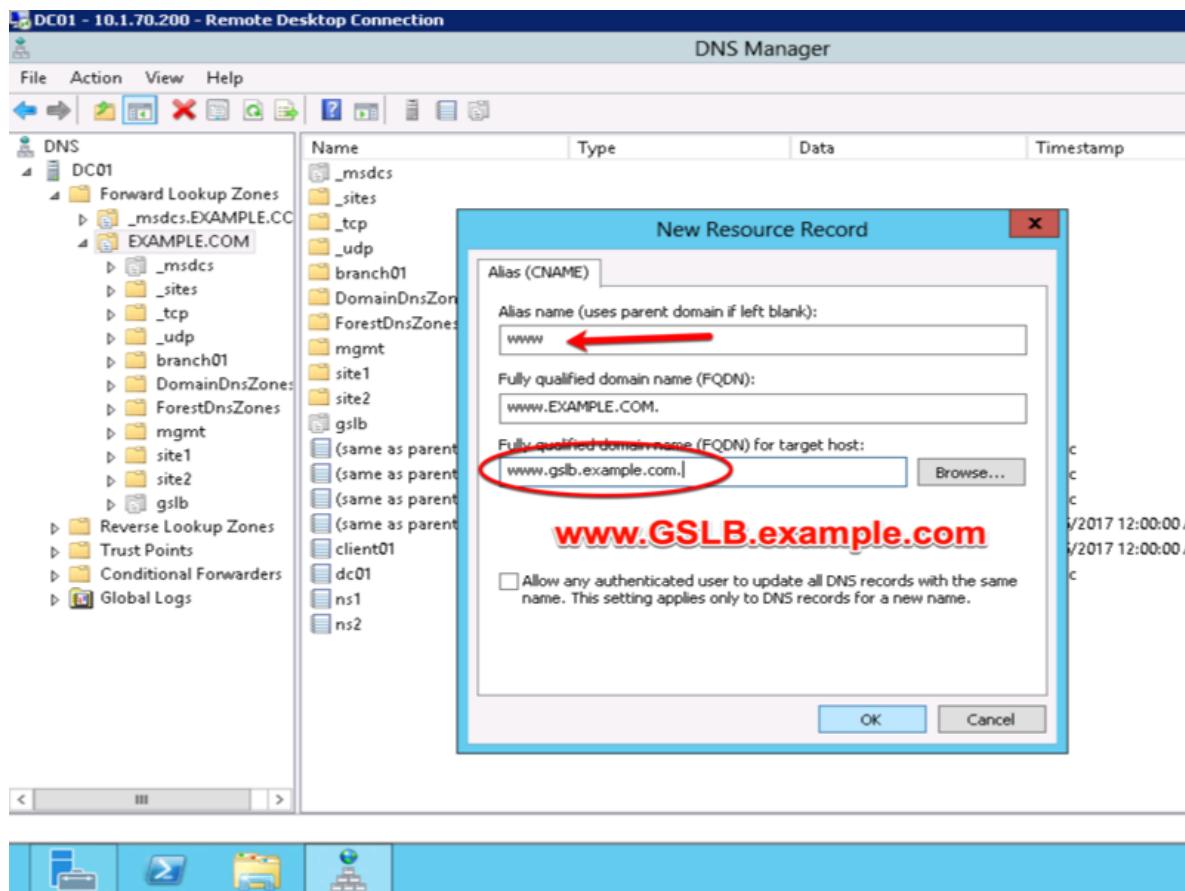
1. Make sure “Forward Lookup Zones” and “EXAMPLE.COM” is expanded. Right click on “www”, and select delete.



2. Right click on “EXAMPLE.COM”, and select “New Alias (CNAME)”

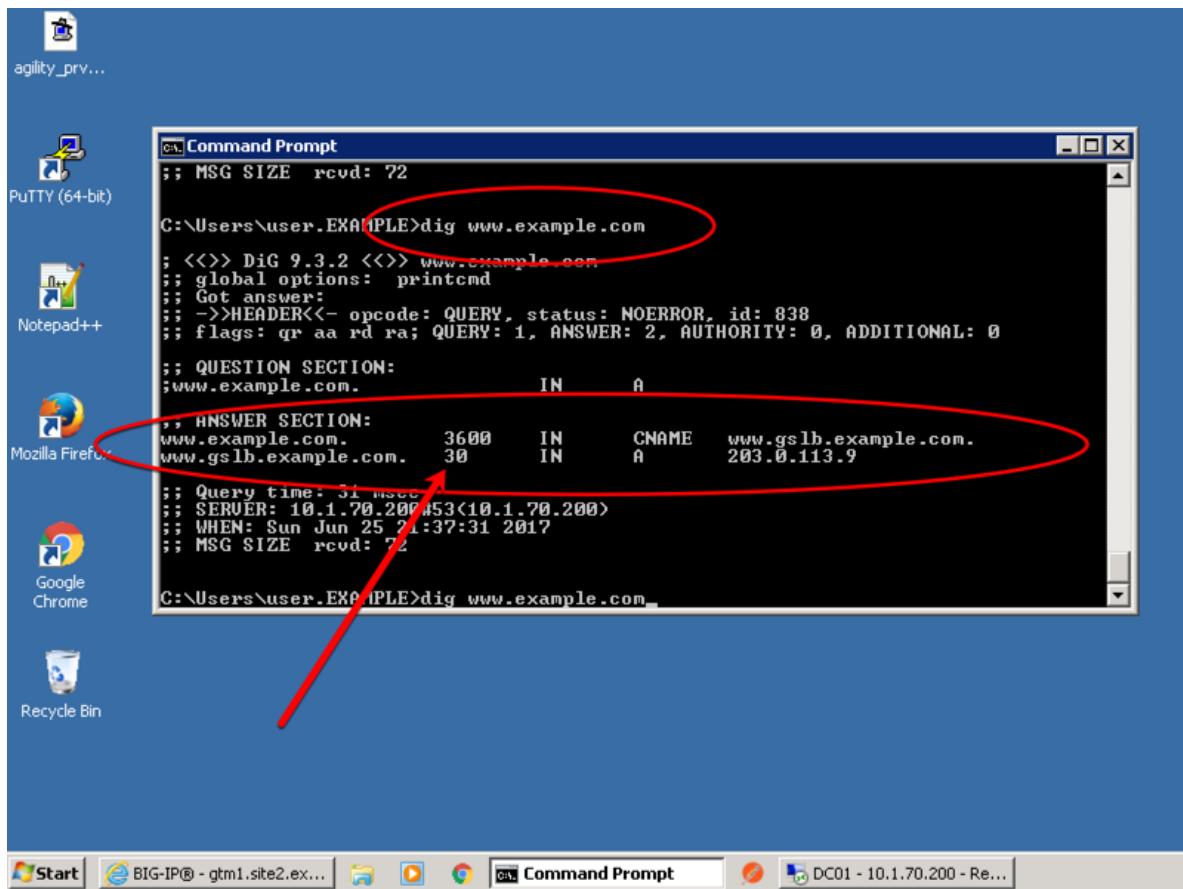


3. Add “www - www.gslb.example.com”



## 2.1.7 Results

1. From the Workstation command prompt type "dig www.example.com"



2. Observe WIDEIP statistics on gtm1.site1: **Statistics** » **Module Statistics : DNS : GSLB** » **Wide IPs** : **www.gslb.example.com : A**

[https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/stats/wideip/stats\\_detail.jsp?name=%2FCommon%2Fwww.gslb.example.com&type=1&identity=www.gslb.example.com+%3A+A](https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/stats/wideip/stats_detail.jsp?name=%2FCommon%2Fwww.gslb.example.com&type=1&identity=www.gslb.example.com+%3A+A)

Hostname: gtm1.site1.example.com Date: Jul 17, 2017  
IP Address: 10.1.10.13 Time: 11:41 AM (CDT) User: admin Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About

Statistics iApps DNS Delivery GSLB Zones Caches Settings SSL Orchestrator Acceleration Device Management Network System

DNS » GSLB : Wide IPs : Wide IP List » Properties : www.gslb.example.com : A

Properties iRules Pools Statistics

General Properties: Advanced

Name: www.gslb.example.com Partition / Path: Common

Wide IP List:  Statistics:

Alias:  Add Delete

Available (Enabled) - Available

Enabled  Enabled  Disabled

**Click Statistics**

Hostname: gtm1.site1.example.com Date: Jul 17, 2017 User: admin  
IP Address: 10.1.10.13 Time: 11:45 AM (CDT) Role: Administrator

**f5** ONLINE (ACTIVE)  
Standalone

Main Help About

Statistics

- Dashboard
- Module Statistics
- Analytics
- Performance

iApps DNS SSL Orchestrator Acceleration Device Management Network System

Statistics » Module Statistics : DNS : GSLB » Wide IPs : www.gslb.example.com : A

Traffic Summary DNS Network Memory System

Display Options

Data Format	Normalized
Auto Refresh	Disabled Refresh

<< Back Clear Statistics

Requests

Total	12
Persisted	0
Resolved	12
Dropped	0

Load Balancing

Preferred	12
Alternate	0
Fallback	0
CNAME Resolutions	0

## TMSH

```
tmsh show gtm wideip a www.gslb.example.com
```

3. Observe WIDEIP statistics on gtm1.site2: **Statistics » Module Statistics : DNS : GSLB » Wide IPs : www.gslb.example.com : A**

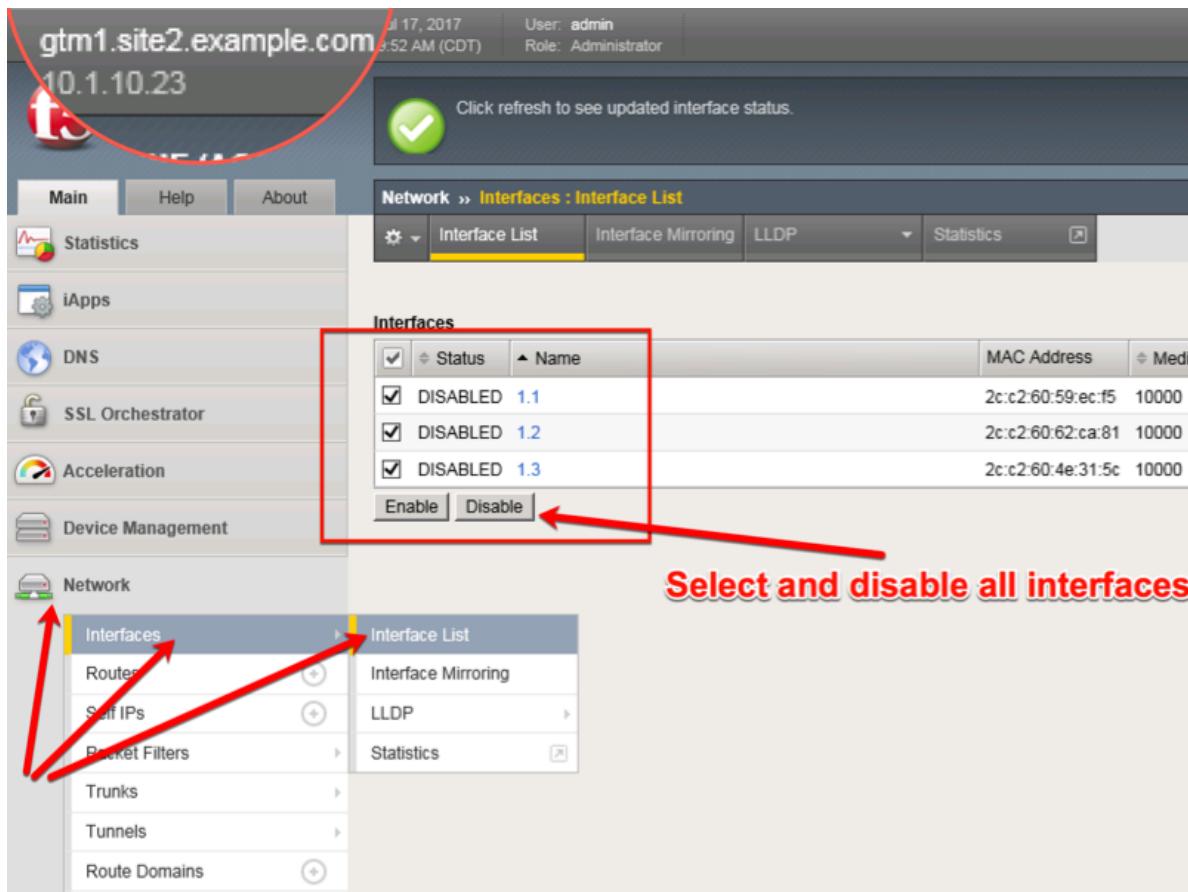
[https://gtm1.site2.example.com/tmui/Control/jspmap/tmui/globalbb/stats/wideip/stats\\_detail.jsp?name=%2FCommon%2Fwww.gslb.example.com&type=1&identity=www.gslb.example.com+%3A+A](https://gtm1.site2.example.com/tmui/Control/jspmap/tmui/globalbb/stats/wideip/stats_detail.jsp?name=%2FCommon%2Fwww.gslb.example.com&type=1&identity=www.gslb.example.com+%3A+A)

### 2.1.8 Troubleshooting

To simulate an outage, disable interfaces and observe the effects.

1. Disable physical interfaces on gtm1.site2:

[https://gtm1.site2.example.com/tmui/Control/form?\\_\\_handler=/tmui/locallb/network/interface/list&\\_\\_source=disable&\\_\\_linked=false&\\_\\_fromError=false](https://gtm1.site2.example.com/tmui/Control/form?__handler=/tmui/locallb/network/interface/list&__source=disable&__linked=false&__fromError=false)



TMSH command to run on only gtm1.site2:

---

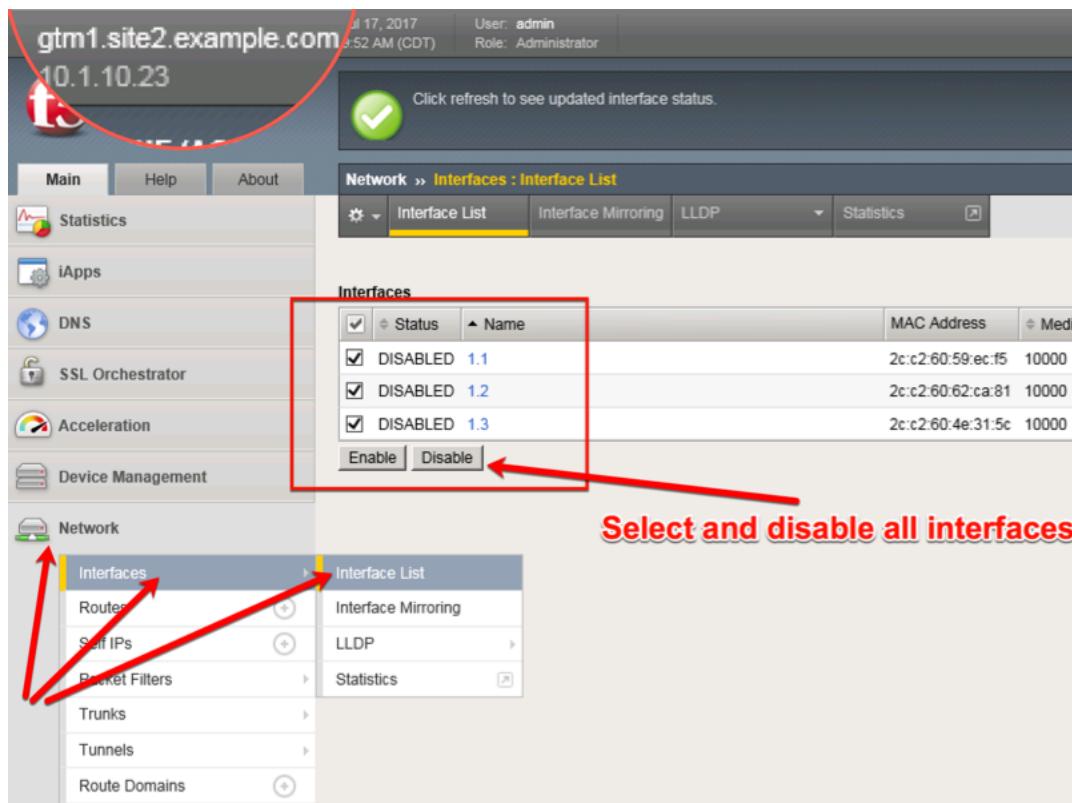
### TMSH

tmsh modify net interface all disabled

---

2. Refresh statistics on gtm1.site1 and make sure DNS requests are still resolving.
3. ROBIN - fix this section

[https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/stats/wideip/stats\\_detail.jsp?name=%2FCommon%2Fwww.gslb.example.com&type=1&identity=www.gslb.example.com+%3A+A](https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/stats/wideip/stats_detail.jsp?name=%2FCommon%2Fwww.gslb.example.com&type=1&identity=www.gslb.example.com+%3A+A)



TMSH command to run on only gtm1.site2:

---

#### TMSH

show gtm wideip

---

4. Re-enable interfaces on gtm1.site2, disable interfaces on gtm1.site1. Observe statistics on gtm1.site2 and make sure DNS requests are still resolving.

TMSH command to run on only gtm1.site2:

---

#### TMSH

tmsh modify net interface all enabled

---

5. Observe pool statistics on gtm1.site1: **Statistics > Module Statistics : DNS : GSLB > Pools : www.example.com\_pool : A**

[https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/stats/pool/stats\\_detail.jsp?name=%2FCommon%2Fwww.example.com\\_pool&pool\\_type=1&identity=www.example.com\\_pool+%3A+A](https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/stats/pool/stats_detail.jsp?name=%2FCommon%2Fwww.example.com_pool&pool_type=1&identity=www.example.com_pool+%3A+A)

Hostname: gtm1.site1.example.com Date: Jul 17, 2017 User: admin  
IP Address: 10.1.10.13 Time: 12:32 PM (CDT) Role: Administrator Partition: Common Location

**ONLINE (ACTIVE)**  
Standalone

Main Help About

Statistics

Dashboard Module Statistics Analytics Performance

iApps DNS SSL Orchestrator Acceleration

Device Management Network System

Statistics > Module Statistics : DNS : GSLB > Pools : www.example.com\_pool : A

Traffic Summary DNS Network Memory

Display Options

Data Format Normalized  
Auto Refresh Disabled Refresh

<< Back

Pool Details: "www.example.com\_pool : A"

Status	Pool Member	Server	Virtual Server	Preferred	...
●	198.51.100.41:443	site2_ha-pair	/Common/isp2_site2_www.example.com_tcp_https_virtual	43	0
●	203.0.113.9:443	site1_ha-pair	/Common/isp1_site1_www.example.com_tcp_https_virtual	44	0

---

### TMSH

```
show gtm pool a www.example.com_pool
```

---

- Using Putty, ssh into gtm1.site1 and run the following command to watch logs:

---

### TMSH

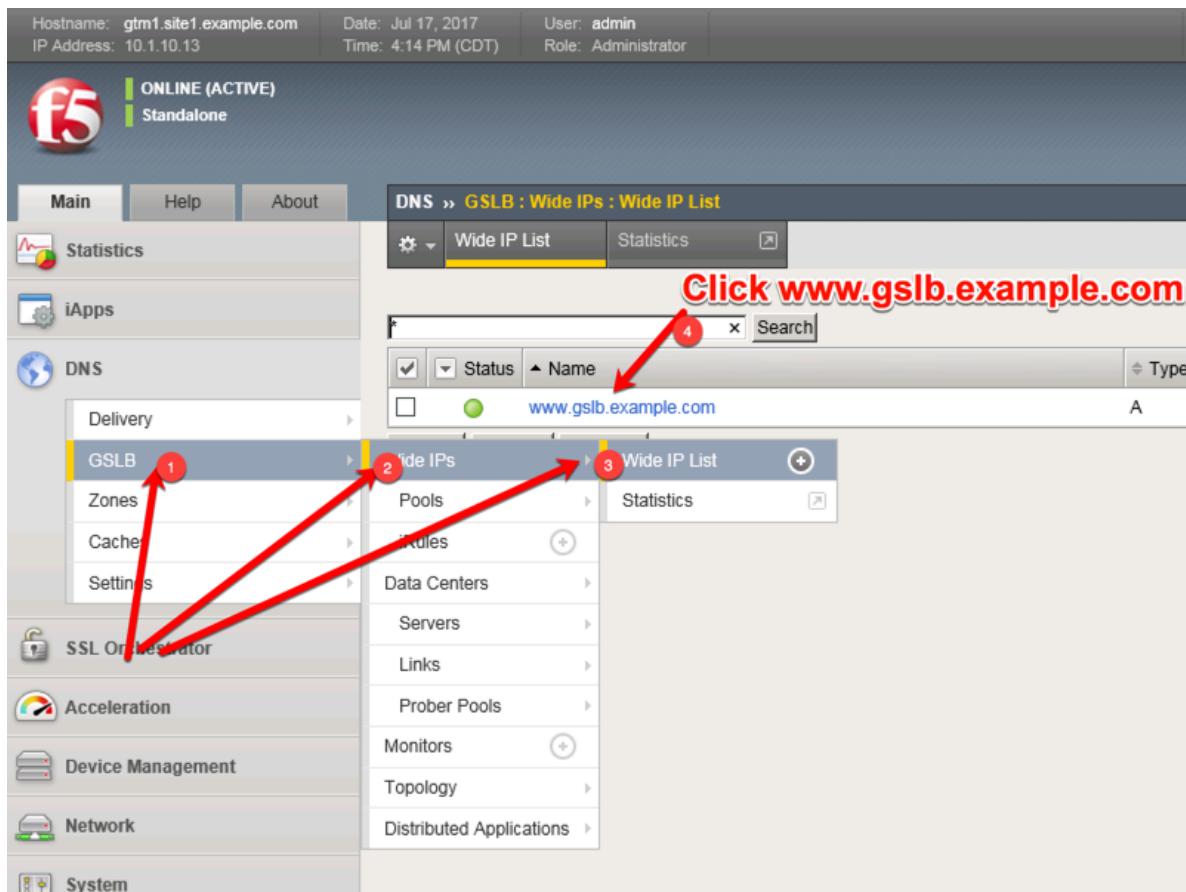
```
tail -f /var/log/ltm
```

---

## 2.1.9 Persistence

Modify the GSLB configuration so that LDNS servers continually receive the same DNS answer.

- On gtm1.site1 navigate to: **DNS > GSLB : Pools : Pool List > Members : www.example.com\_pool**



<https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/wideip/list.jsp>

2. Click into the “Pools” tab:

Hostname: gtm1.site1.example.com Date: Jul 17, 2017  
 IP Address: 10.1.10.13 Time: 4:18 PM (CDT) User: admin Role: Administrator

**f5** ONLINE (ACTIVE)  
 Standalone

Main Help About

Statistics iApps DNS Delivery GSLB Zones Caches Settings

SSL Orchestrator Acceleration Device Management Network System

DNS » GSLB : Wide IPs : Wide IP List » Properties : www.gslb.example.com : A

Properties iRules Pools Statistics

General Properties: Advanced

Name	www.gslb.example.com
Partition / Path	Common
Type	A
Description	
Alias:	<input type="text"/>
	Add
Alias List	
<input type="button" value="Delete"/>	
Availability	Available (Enabled) - Available
State	Enabled
Minimal Response	Enabled
Return Code On Failure	Disabled

**Click "Pools"**

<https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/wideip/pools.jsp?name=%2FCommon%2Fwww.gslb.example.com&type=1&identity=www.gslb.example.com>

### 3. Enable Persistence

The screenshot shows the F5 Management Interface. The top header displays the hostname 'gtm1.site1.example.com', IP address '10.1.10.13', date 'Jul 17, 2017', time '4:53 PM (CDT)', user 'admin', and role 'Administrator'. The title bar indicates the current path: 'DNS > GSLB : Wide IPs : Wide IP List > Members : www.gslb.example.com : A'. The main navigation menu on the left includes 'Main', 'Help', 'About', 'Statistics', 'iApps', 'DNS' (selected), 'Delivery', 'GSLB', 'Zones', 'Caches', 'Settings', 'SSL Orchestrator', 'Acceleration', 'Device Management', 'Network', and 'System'. The 'Pools' tab is selected in the top navigation bar. The 'Pools' configuration section shows the following settings:

Load Balancing Method	Round Robin
Persistence	Enabled
Persistence TTL	3600 seconds
Persist CIDR (IPv4)	32
Persist CIDR (IPv6)	128
Last Resort Pool	None

An 'Update' button is located below the persistence settings. Below the configuration table is a table showing the members of the pool:

	Order	Status	Pool Name
<input type="checkbox"/>	0	<span style="color: green;">●</span>	www.example.com_pool

A 'Delete...' button is located at the bottom of this table.

## TMSH

```
tmsh modify gtm wideip a www.gslb.example.com persistence enabled
```

---

### 4. View Persistence Records

---

## TMSH

```
tmsh show gtm persist
```

---

### 2.1.10 LB Methods

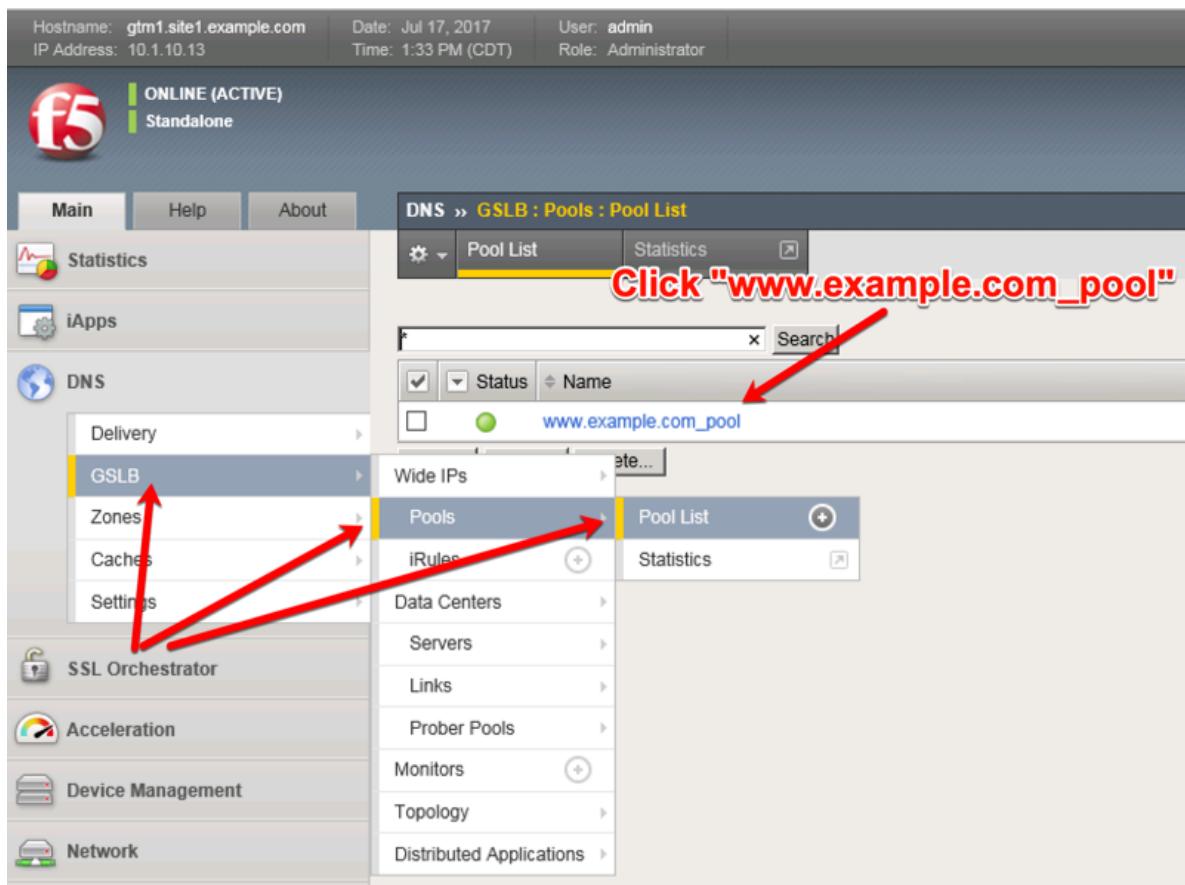
Modify the GSLB configuration so that site2 is a standby DR site.

Introduce a network problem that causes the isp1 link monitor to fail.

An ISP network outage can automatically cause DR activation.

- On gtm1.site1 navigate to: **DNS > GSLB : Pools : Pool List > Members : www.example.com\_pool**

[https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/pool/members.jsp?name=%2FCommon%2Fwww.example.com\\_pool&pool\\_type=1&identity=www.example.com\\_pool](https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/globallb/pool/members.jsp?name=%2FCommon%2Fwww.example.com_pool&pool_type=1&identity=www.example.com_pool)



2. Modify the “Load Balancing Method” -> “Preferred” to “Global Availability”

Hostname: gtm1.site1.example.com Date: Jul 17, 2017 User: admin  
 IP Address: 10.1.10.13 Time: 1:51 PM (CDT) Role: Administrator

**f5** ONLINE (ACTIVE)  
 Standalone

Main Help About DNS » GSLB : Pools : Pool List » Members : www.example.com\_pool : A

Statistics iApps DNS Delivery GSLB Zones Caches Settings

Load Balancing Method Preferred: Global Availability  
 Alternate: Round Robin  
 Fallback: Return to DNS

Fallback IP: 0.0.0.0

Update

Members

	Member Order	Status	Member	Member Address	Partition	Mem
<input type="checkbox"/>	0	●	/Common/site1_ha-pair	203.0.113.9	Common	/Cor
<input type="checkbox"/>	1	●	/Common/site2_ha-pair	198.51.100.41	Common	/Cor

Enable Disable Remove

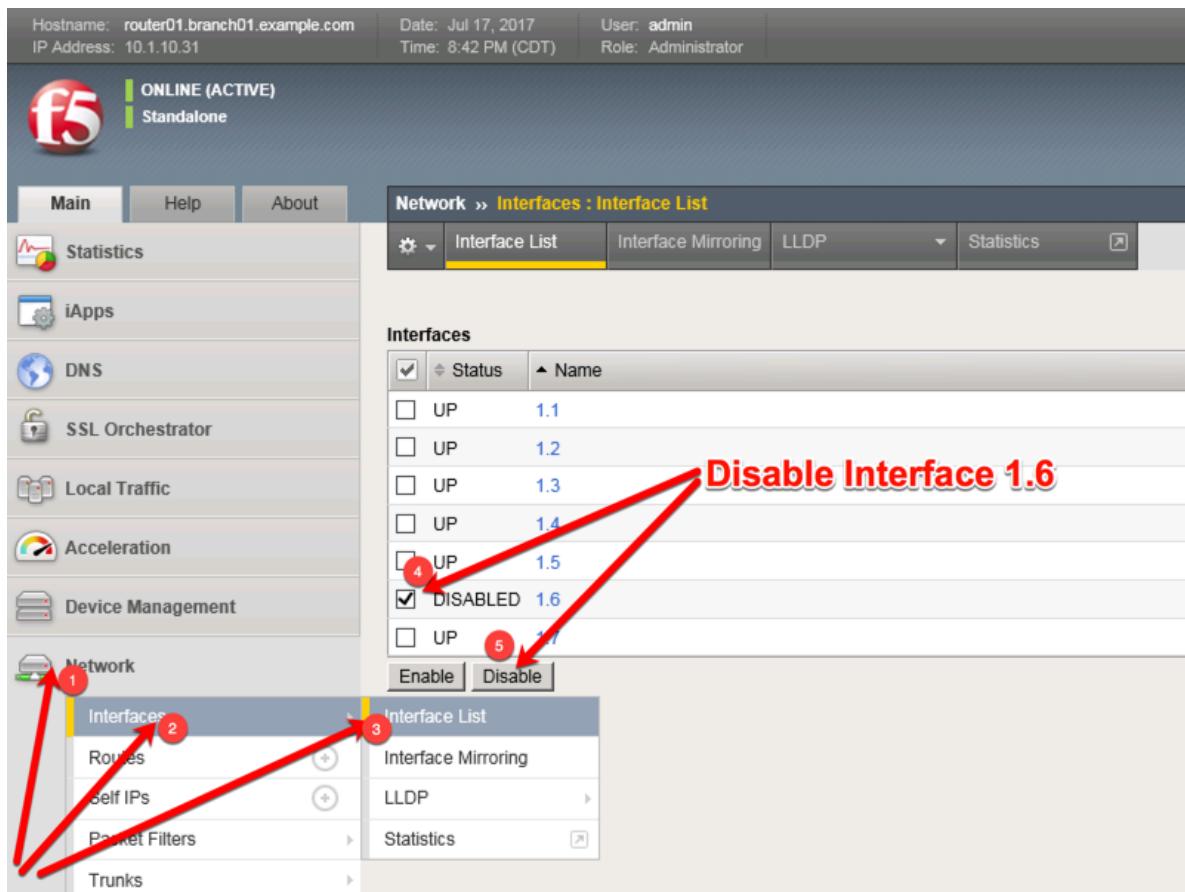
## TMSH

```
tmsh modify gtm pool a www.example.com_pool load-balancing-mode global-availability
```

3. Introduce a network problem in the ISP at site1

Log into the router and disable interface 1.6 connecting ISP1 to site1

<https://router01.branch01.example.com/tmui/Control/jspmap/tmui/locallb/network/interface/list.jsp>



TMSH command to run on the router01 to simulate an ISP failure

---

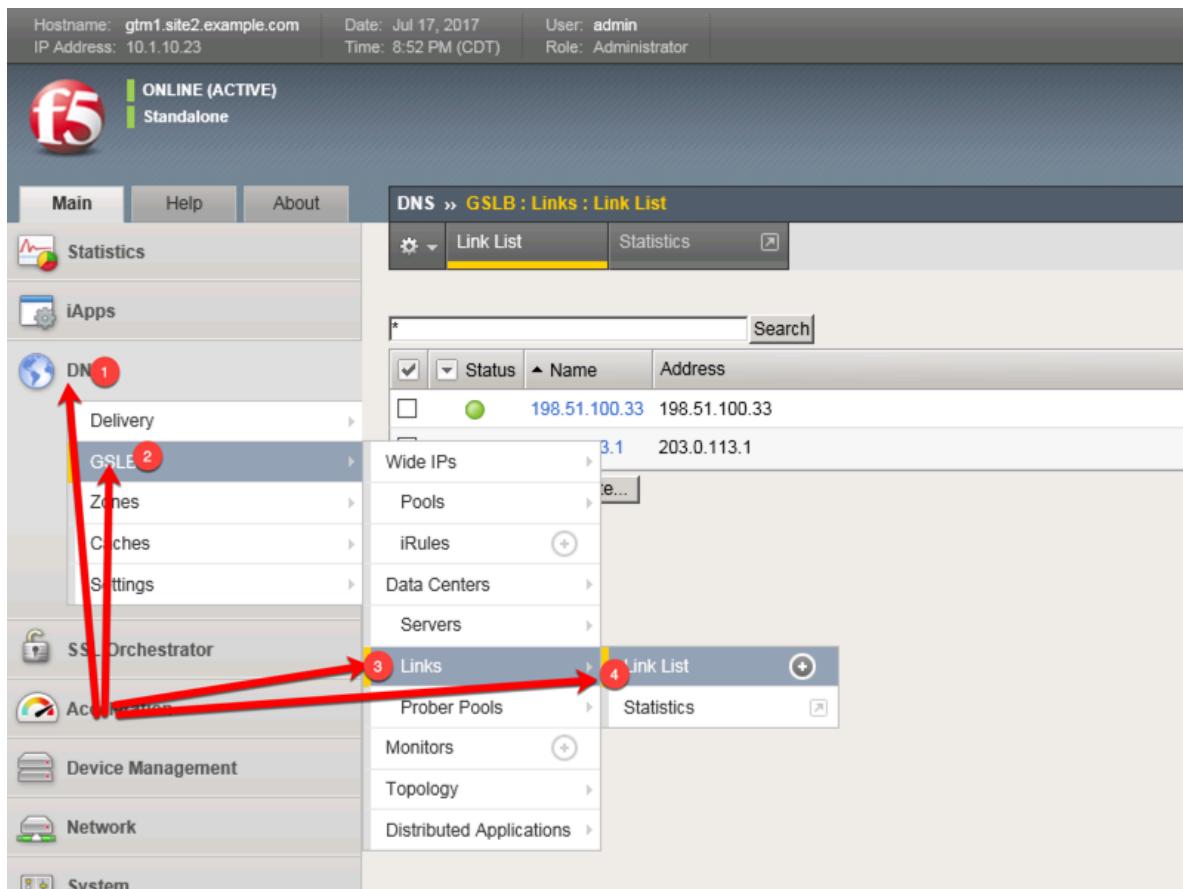
### TMSH

tmsh modify interface 1.6 disabled

---

4. View the effect

Log into gtm1.site2 and observe the status of “Link” objects:



[https://gtm1.site2.example.com/tmui/Control/jspmap/xsl/gtm\\_link/list](https://gtm1.site2.example.com/tmui/Control/jspmap/xsl/gtm_link/list)

---

## TMSH

tmsh show gtm link

---

5. Set the site1 isp link back up

Log into the router and enable the interface 1.6 connecting ISP1 to site1

<https://router01.branch01.example.com/tmui/Control/jspmap/tmui/locallb/network/interface/list.jsp>

Hostname: router01.branch01.example.com    IP Address: 10.1.10.31    Date: Jul 17, 2017    Time: 8:42 PM (CDT)    User: admin    Role: Administrator

**ONLINE (ACTIVE)  
Standalone**

Main    Help    About

Statistics    iApps    DNS    SSL Orchestrator    Local Traffic    Acceleration    Device Management

**Network**    Interfaces : Interface List

Interface List    Interface Mirroring    LLDP    Statistics

**Interfaces**

<input checked="" type="checkbox"/>	Status	Name
<input type="checkbox"/>	UP	1.1
<input type="checkbox"/>	UP	1.2
<input type="checkbox"/>	UP	1.3
<input type="checkbox"/>	UP	1.4
<input type="checkbox"/>	UP	1.5
<input checked="" type="checkbox"/>	DISABLED	1.6
<input type="checkbox"/>	UP	1.7

**Enable Interface 1.6**

Enable    Disable

## TMSH

tmsh modify interface 1.6 enabled

Note: Even though you re-enabled the primary site1, a persistence record from the previous lab is still in place.

### 2.1.11 Anycast

<https://tools.ietf.org/html/rfc5398>    <https://support.f5.com/csp/article/K13802>    <https://support.f5.com/csp/article/K13804>

A site specific sync group name will be created, and synchronization will be enabled.

Navigate to: **DNS** > **Settings** : **GSLB** : **General**

Configure the global settings for GSLB according to the following table:

Field	Value
Synchronize	checked
Group Name	EXAMPLE_group
Synchronize DNS Zone Files	checked

Hostname: gtm1.site1.example.com Date: Jul 20, 2017 User: admin  
IP Address: 10.1.10.13 Time: 12:19 PM (CDT) Role: Administrator

**DNS » Settings : GSLB : General**

**Configuration Synchronization**

Synchronize	<input checked="" type="checkbox"/>
Group Name	EXAMPLE_group
Time Tolerance	10 seconds
Synchronize DNS Zone Files	<input checked="" type="checkbox"/>

**Configuration Save**

Delivery	<input checked="" type="checkbox"/> Enabled
GSLB	<input checked="" type="checkbox"/> General
Zones	Load Balancing
Caches	Metrics Collection
Auto-Discover	<input checked="" type="checkbox"/> Enabled
Request Interval	30 seconds

**Monitoring**

Heartbeat Interval	10 seconds
--------------------	------------

[https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/dns/settings/gslb/properties\\_general.jsp](https://gtm1.site1.example.com/tmui/Control/jspmap/tmui/dns/settings/gslb/properties_general.jsp)

## TMSH

```
tmsh modify gtm global-settings general synchronization yes synchronization-group-name EXAMPLE_group synchronize-zone-files yes
```

<https://support.f5.com/csp/article/K13734>

<https://support.f5.com/kb/en-us/products/big-ip-dns/manuals/product/bigip-dns-implementations-12-0-0/4.html>

3

## Analytics

google-site-verification: google68a0f3f25ab55c69.html

WE MAKE APPS



FASTER.  
SMARTER.  
SAFER.



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US Headquarters: 401 Elliott Ave W, Seattle, WA 98119 | 888-882-4447 // Americas: [info@f5.com](mailto:info@f5.com) // Asia-Pacific: [apacinfo@f5.com](mailto:apacinfo@f5.com) // Europe/Middle East/Africa: [emeainfo@f5.com](mailto:emeainfo@f5.com) // Japan: [fj-info@f5.com](mailto:fj-info@f5.com)  
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