F5 BIGIP DNS (GTM) – Global Traffic Manager

TOPICS:

Module 1: Overview of BIG-IP DNS (GTM)
Module 2: DNS Overview
Module 3: Accelerated DNS resolutions
Module 4: Intelligent DNS Resolutions
Module 5: LDNS Probes and Metrics
Module 6: Load Balancing
Module 7: Monitors
Module 8: Logs and Notification
Module 9: Advanced Topics

Instructor
Manoj Verma
CCIE # 43923

Module 1: Overview of BIG-IP DNS (GTM)

Agenda :

- What is BIG-IP DNS ?
- LTM-GTM Traffic Flow
- GTM System Benefits
  - -Intelligent DNS Resolution
  - -Accelerated DNS Resolution
  - -Secure DNS Resolution
- Initial Configuration – Licensing & Provisioning

What is BIGIP DNS (GTM) ?

- Is a wide-area load balancer also known as a Global Server Load Balancer (GSLB)
- Uses DNS as the traffic management mechanism
- Puts intelligence into the DNS resolution process
- BIGIP DNS resolves DNS queries to the best IP address associated with the A record request
- Monitors site availability and performance
- The GTM can be a standalone product or it can be an add-on module on BIG-IP hardware platforms or Virtual Editions.

LTM/DNS Traffic Flow

TCP Connection

Client to 5.5.5

DNS Query

www.netxss.com

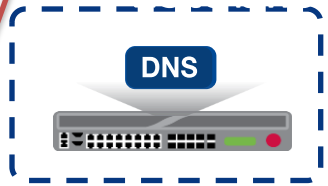
Application Session

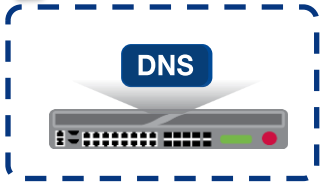
TCP Connection

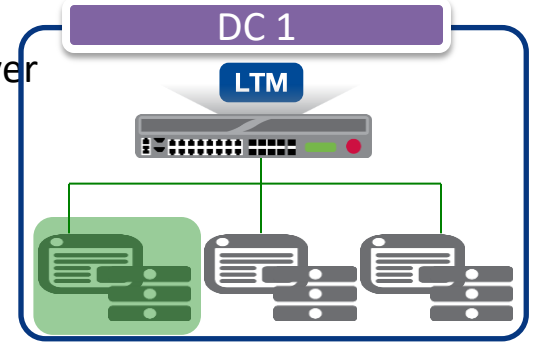
10.5.5.5 to

DNS Response

www.netxss.com 10.5.5.5







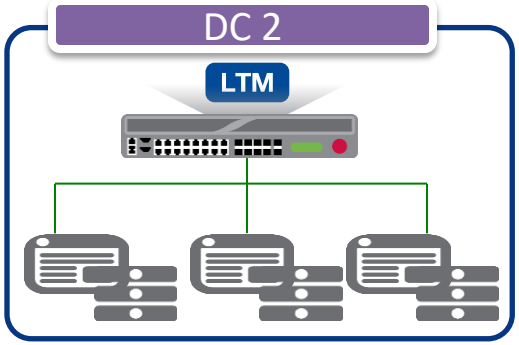
LTM Virtual Server

10.5.5.5

Web server 1

selected

Web server IPs: 172.16.1.1, .2, .3



Web server IPs: 172.16.1.1, .2, .3

Layers of Abstraction

www.netxss.com

DNS

FQDN

FQDN resolves to one or another application datacenter's virtual IP address based on availability.

Transparent to users

www.netxss.com ->10.5.5.5

OR

www.netxss.com-> 10.6.6.6

LTM

Application Virtual Server (NAT behavior)

Virtual IP address performs load balancing, monitoring, and optimization for traffic to multiple backend application servers which may have the same IP address at each datacenter.

Application server IP is transparent to users.

All communication is to/from the VIP

Virtual server at DC1: 10.1.1.1

- Application servers
  - 172.16.1.1
  - 172.16.1.2
  - 172.16.1.3

Virtual server at DC2: 10.6.6.6

- Application servers
  - 172.16.1.1
  - 172.16.1.2
  - 172.16.1.3

Intelligent DNS Resolution

- The GTM system intelligently resolves names into IP addresses providing intelligent wide area application traffic management and high availability of IP applications/services running across multiple data centers.

- With GTM, you can ensure optimal reliability and fast performance across all your internet sites , no matter where they are in the world.

GTM System Benefits & Features

- GTM adds intelligence to standard DNS , and ensures that end users are sent to a site that is available and provides the best response

- Its unique intelligence can examine the health od data centers, the network, and the geography of users, and then direct traffic based on customizable business rules.

Accelerated DNS Resolution

- When intelligence is not needed but speed is, GTM can still provide unique services to ensure quick and accurate DNS Resolutions
- One option is to have GTM load-balance DNS queries to standard DNS servers
- Another option that provides acceleration is DNS express. GTM system performs a zone transfer from a primary DNS server and then answers queries the GTM receives as an authoritative secondary server

GTM System Benefits & Features

- **Secure DNS Resolution**

❖ DNSSEC provides security for clients when they receive a DNS response.

❖ GTM can use DNSSEC to sign any response generated by the GTM system and can also sign DNS responses that flow through the GTM system.

❖ In addition , if You use DNS express, you can ensure zone transfers and updates are only processed by authorized system by using TSIG (Transaction signatures)

BIGIP Setup Utility

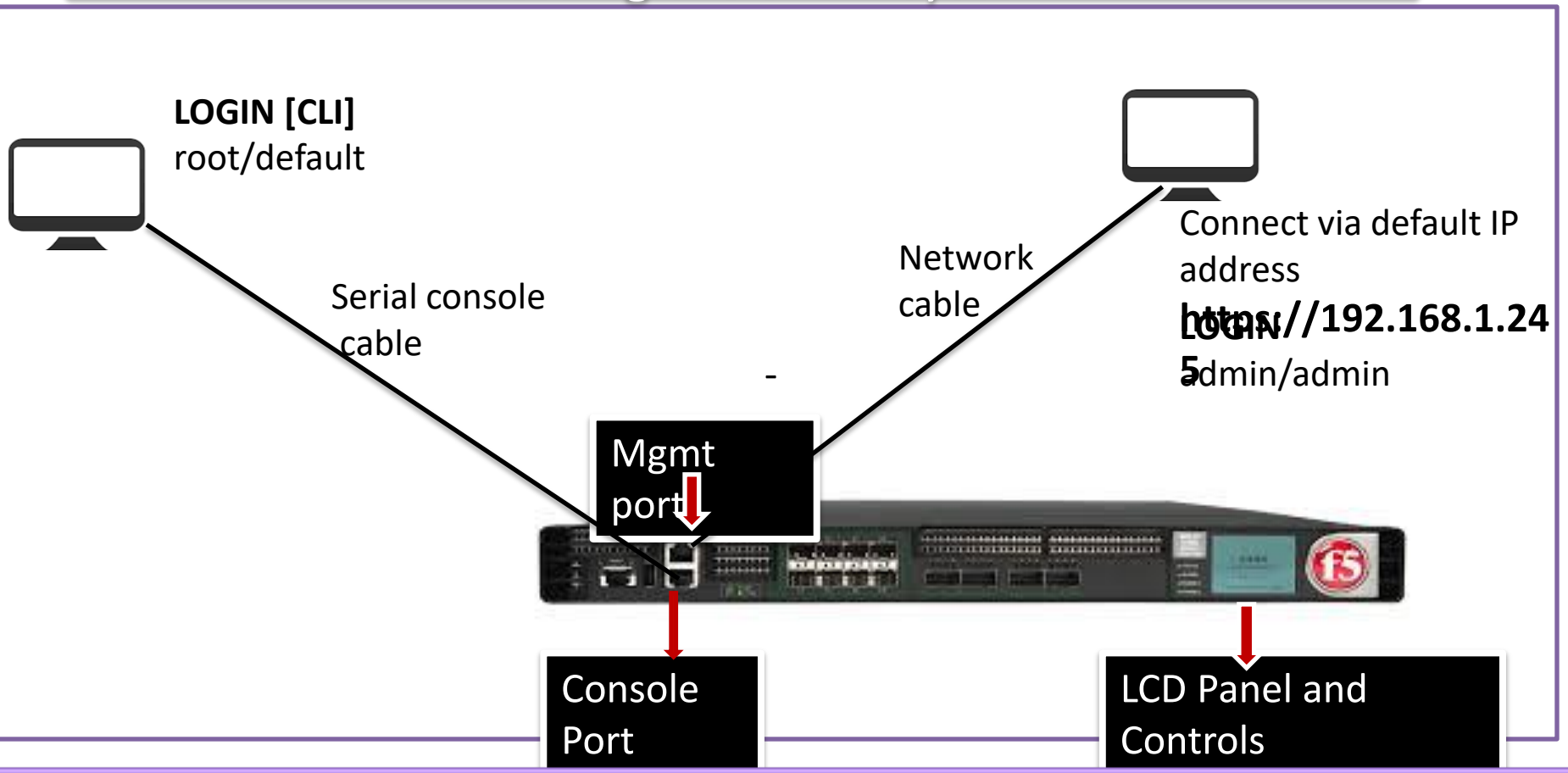
- Accessing the BIGIP system
- Licensing
- Provisioning
- BIGIP Platform properties
- Standard Network Configuration
    - IP addresses
    - VLAN Interfaces
    - NTP servers
    - DNS settings

Configuring the Management Interface

One of the first steps in setting up BIGIP system is to configure the management interface. The management interface is used by the BIGIP system to perform management functions, and is intended for administrative traffic only.

- There are several ways to access the BIGIP system to configure management Interface
  - ❖ Using LCD panel and control Buttons
  - ❖ Using Management port – Via Network Cable (HTTPS/SSH)
  - ❖ Using a serial cable – Via Console port (CLI access)

Accessing the BIGIP system



Licensing

The Licensing process consists of five basic steps

1. Finding Base registration Key
2. Generating the dossier on the BIGIP system . **DOSSIER** contains encrypted information that identifies platform to the F5 Licensing server. Dossier also includes the registration key.
3. Sending the dossier to the F5 License server at https://activate.f5.com [Manual Licensing]
4. Generating License and sending back to the BIGIP system
5. Installing License on the BIGIP system

Provisioning Modules and Resources

The process of allocating CPU, memory and disk space to licensed software modules is called provisioning.

(License determines what software modules the BIGIP system will support.)

- **Provisioning Management Module**
  Small, Medium and Large – Configuration utility
- **Provisioning Levels**
  Dedicated : Dedicated setting specifies that this is only active module
  Nominal : Nominal gives the module its minimum functional resources and distributes additional resources to the module only if they are available after all other provisioned modules are enabled.
  Minimum : Minimum setting allocates the least amount of resources required for the module to be enabled. No additional resources are ever allocated to the module during operation.

BIGIP Platform Properties

After licensing and provisioning, the setup utility provides for quickly defining (or changing) certain BIGIP platform properties.

- Management IP address, netmask and IP address of default route
- Hostname and time zone
- Passwords for both root and admin
- Controlling SSH access

Standard Network Configuration

- Network configuration wizard requires to assign self and floating IP addresses for VLAN internal and external

  VLAN: A virtual VLAN is way of logically partitioning a physical network so that distinct broadcast domains are created.

- A self IP address is an IP address/netmask combination on the BIGIP system that is associated with a VLAN

- VLAN Tag IDs can be manually defined for each VLAN , although F5 recommendation is to let the system retain the default Value, auto.