K13639: Configuring a device group using tmsh

Non-Diagnostic

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Topic

For information about creating device groups using the Configuration utility, refer to the following articles:

- K63243467: Creating a device group using the Configuration utility (13.x - 15.x)
- K13649: Creating a device group using the Configuration utility (11.x - 13.x)

Purpose

You should consider using this procedure under the following conditions:

- You want to configure a device group using the TMOS Shell (tmsh).
- You want to add a BIG-IP device to an existing device group.

Prerequisites

You must meet the following prerequisites to use this procedure:

- You can access tmsh.
- The following configuration elements are defined on the BIG-IP devices:
  - Network components, such as Virtual Local Area Networks (VLANs), self IP addresses, and routes
  - Administrative components, such as network time protocol (NTP), the management IP address, and licensing

  Note: If you are adding an isolated network mode Virtual Clustered Multiprocessing (vCMP) guest to a device group, you should take note of the management IP address requirement for the vCMP guest. For more information, refer to K17065: Considerations for configuring vCMP guests with Isolated Management Network in a device group.

- Each BIG-IP device that will be part of the device group has a device certificate installed.

Description

BIG-IP 11.x software introduced the device group feature. A device group is a collection of BIG-IP devices that are configured to securely synchronize their BIG-IP configuration data, and fail over when needed. You can create the following device group types:
- **Sync-Failover**: A Sync-Failover device group contains devices that synchronize configuration data and support traffic groups for failover purposes. A Sync-Failover device group supports a maximum of eight devices.

- **Sync-Only**: A Sync-Only device group contains devices that synchronize configuration data, but do not synchronize failover objects and do not fail over to other members of the device group. A Sync-Only device group is typically used to synchronize the contents of a specific folder (partition) to the device group. For example, you can use a Sync-Only device group to synchronize a folder that contains policy data that you want to share across all BIG-IP devices in a local trust domain. A Sync-Only device group supports a maximum of 32 devices.

### Procedures

To configure your BIG-IP devices to be part of a device group, you must perform each of the following procedures:

- Configuring the ConfigSync and failover IP addresses
- Adding a device to the local trust domain
- Adding devices to new or existing device groups
  - Creating a Sync-Failover device group
  - Creating a Sync-Only device group
  - Adding new members to an existing device group
- Performing a ConfigSync using tmsh
- Removing members to an existing device group

**Configuring the ConfigSync and failover IP addresses**

Before configuring a device group, you must configure the configuration synchronization (ConfigSync) and failover IP addresses for each BIG-IP system in the device group. The ConfigSync address is the IP address that the system uses when synchronizing configuration with peer devices. The failover address is the IP address that the system uses for network failover. To configure the ConfigSync and failover addresses, perform the following procedure on each BIG-IP system that you want to add to the device group:

- **Note**: You must enable network failover for active-active configurations (device groups with two or more active traffic groups).

- **Impact of procedure**: Performing the following procedure should not have a negative impact on your system.

- **Important**: You must perform this procedure for each BIG-IP system that you want to add to the device group.

  1. Log in to **tmsh** by entering the following command:

     tmsh

  2. Configure the self IP address that you want to use for ConfigSync operations for each device.
modify /cm device <device name> configsync-ip <ip_address>

For example, the following command modifies the ConfigSync IP address for BIGIP.local.net to be the self IP address 10.10.10.100:

modify /cm device BIGIP.local.net configsync-ip 10.10.10.100

3. Configure the self IP address that you want to use for failover. To configure the failover address, use the following syntax:

modify /cm device <device name> unicast-address {{ ip <ip_address> }}

For example, the following command modifies the failover IP address for BIGIP.local.net to be the self IP address 10.10.10.100:

modify /cm device BIGIP.local.net unicast-address {{ ip 10.10.10.100 }}

4. Save the configuration by entering the following command:

save /sys config

5. Repeat this procedure for each BIG-IP system that you want to add to the device group.

Adding a device to the local trust domain

Any BIG-IP devices that you intend to add to a device group must first be members of the same local trust domain. When a BIG-IP device joins the local trust domain, it establishes a trust relationship with peer BIG-IP devices that are members of the same trust domain. For example, if you are creating a device group with four members, you must log in to one of the devices (for example, BIG-IP-1), and join the other devices to that system's local trust domain. The devices can then exchange their device properties and device connectivity information.

To add devices to the local trust domain, perform the following procedure:

**Impact of procedure:** Performing the following procedure should not have a negative impact on your system.

**Important:** If you are adding a BIG-IP system to an existing device group, you must perform the following procedure on a BIG-IP system that is already a member of the existing device group (not on the BIG-IP system that you are adding to the device group).

1. Log in to `tmsh` on one of the BIG-IP devices by entering the following command:

   tmsh

2. Add the peer devices to the local trust domain using the following syntax, depending on your version:
**BIG-IP 13.x and later:**

modify /cm trust-domain /Common/Root add-device { device-ip <mgmt_ip_address> device-name <device name> username <admin_username> password <admin_password> ca-device true }

For example, the following command adds the remote device called BIGIP.remote.net (with the management IP address of 172.24.10.100, and the administrator user name and password of admin/admin) to the local system's trust domain:

modify /cm trust-domain /Common/Root add-device { device-ip 172.24.10.100 device-name BIGIP.remote.net username admin password admin ca-device true }

**BIG-IP 11.x - 12.x:**

modify /cm trust-domain /Common/Root ca-devices add { <mgmt_ip_address> } name <device name> username <admin_username> password <admin_password>

For example, the following command adds the remote device called BIGIP.remote.net (with the management IP address of 172.24.10.100, and the administrator user name and password of admin/admin) to the local system's trust domain:

modify /cm trust-domain /Common/Root ca-devices add { 172.24.10.100 } name BIGIP.remote.net username admin password admin

3. To verify that the trust domain contains the correct devices, enter the following command:

list /cm trust-domain

4. Save the configuration by entering the following command:

save /sys config

5. Repeat steps 2 through 4 for each BIG-IP system that you want to add to the local trust domain.

Adding devices to new or existing device groups

After you have added members to the same local trust domain, you can add the devices to a new Sync-Failover device group, a new Sync-Only device group, or an existing device group. To do so perform the following procedures:

Creating a Sync-Failover device group

A Sync-Failover device group contains devices that synchronize configuration data and fail over to one another when the active device becomes unavailable.

**Impact of procedure:** Performing the following procedure should not have a negative impact on your system.
1. Log in to **tmsh** on one of the BIG-IP devices by entering the following command:

   tmsh

2. To create a Sync-Failover device group and add the peer devices to the device group, use the following syntax:

   create /cm device-group <device_group_name> devices add { <local_device_name> <remote_device_name> } type <device_group_type>

   For example, the following command creates a Sync-Failover device group named **SyncFailover**, which contains the local device **BIGIP.local.net** and remote device **BIGIP.remote.net**:

   create /cm device-group SyncFailover devices add { BIGIP.local.net BIGIP.remote.net } type sync-failover

3. Save the configuration by entering the following command:

   save /sys config

Creating a Sync-Only device group

Creating a Sync-Only device group typically involves associating a folder (partition) with the group. Objects that reside in the folder are synchronized to devices in the device group.

**Note:** You must associate a Sync-Only device group with a folder other than the / or /Common folders.

**Impact of procedure:** Performing the following procedure should not have a negative impact on your system.

1. Log in to **tmsh** on one of the BIG-IP devices, by entering the following command:

   tmsh

2. To create a Sync-Only device group and add the peer devices to the device group, use the following syntax:

   create /cm device-group <device_group_name> devices add { <local_device_name> <remote_device_name> } type <device_group_type>

   For example, the following command creates a Sync-Only device group named **SyncOnly**, which contains the local device **BIGIP.local.net** and remote device **BIGIP.remote.net**:

   create /cm device-group SyncOnly devices add { BIGIP.local.net BIGIP.remote.net } type sync-only

3. To create a folder object and link it to the device group, use the following syntax:

   create /sys folder /<folder_name> device-group <device_group_name> traffic-group none
**Note:** To modify an existing folder, use the `modify` command.

For example, the following command creates a folder named `MyFolder`, which is linked to the Sync-Only device group named `SyncOnly`.

```
create /sys folder /MyFolder device-group SyncOnly traffic-group none
```

4. Save the configuration by entering the following command:

```
save /sys config
```

Objects created in the new partition synchronize to members of the Sync-Only device group.

Adding new members to an existing device group

If you are adding a new member to an existing device group, perform the following procedure:

**Important:** If you are adding a BIG-IP system to an existing device group, you must perform the following procedure on a BIG-IP system that is already a member of the existing device group (not on the BIG-IP system that you are adding to the device group).

**Impact of procedure:** Performing the following procedure should not have a negative impact on your system.

1. Log in to `tmsh` on one of the devices in the existing device group by entering the following command:

```
tmsh
```

2. To add the new member to the existing device group, use the following syntax:

```
modify /cm device-group <device_group_name> devices add { <local_device_name> <remote_device_name> }
```

For example, the following command adds the device `BIGIP.new.net` to the existing device group named `SyncFailover`:

```
modify /cm device-group SyncFailover devices add { BIGIP.new.net }
```

3. Save the configuration by entering the following command:

```
save /sys config
```

Performing a ConfigSync using the `tmsh`

You can manually synchronize the configuration between configured BIG-IP peer devices in the device group using `tmsh`.

**Impact of procedure:** Performing the following procedure should not have a negative impact on your system.
1. Log in to `tmsh` by entering the following command:

   `tmsh`

2. To perform the ConfigSync process, enter the following syntax:

   `run /cm config-sync <sync_direction> <sync_group>`

   For example, the following command pushes the local device's configuration to remote devices in the `Syncfailover` device group:

   `run /cm config-sync to-group Syncfailover`

3. After running the ConfigSync process, you can check the sync status by entering the following command:

   `show /cm sync-status`

   The following output shows a successful sync status between a device group containing two members:

   __________________________________________________________
   CM::Sync Status
   __________________________________________________________
   Color  green
   Status  In Sync
   Summary
   Details
   /Common/B3600-R22-S7.lab.ss.example.com: connected (for 2548 seconds)
   /Common/sync-fail-test (In Sync):
   - all 2 devices consistent
   /Common/device_trust_group (In Sync):
   - all 2 devices consistent

Removing members to an existing device group

**Impact of procedure:** Performing the following procedure should not have a negative impact on your system.

1. Log in to `tmsh` on one of the devices in the existing device group by entering the following command:

   `tmsh`

2. To remove a member from an existing device group, use the following command syntax:

   `modify /cm device-group <device_group_name> devices delete {<device_name>}`
For example, the following command adds the device **BIGIP.new.net** to the existing device group named **SyncFailover**:

```
modify /cm device-group SyncFailover devices delete { BIGIP.new.net }
```

For example, the following command removes all devices from the existing device group named **SyncFailover**:

```
modify /cm device-group SyncFailover devices delete { all }
```

3. Save the configuration by entering the following command:

```
save /sys config
```

### Supplemental Information

- **K13946**: Troubleshooting ConfigSync and device service clustering issues
- **K13590**: The BIG-IP system only allows initiation of the ConfigSync process from the device with configuration changes (11.0.0 - 11.2.0)
- **K8581**: Creating a redundant pair by adding a second BIG-IP system to an existing system
- **BIG-IP Redundant Systems Configuration Guide**
- **Traffic Management Shell (tmsh) Reference Guide**

**Note**: For information about how to locate F5 product manuals, refer to [K98133564: Tips for searching AskF5 and finding product documentation](#).

Applies to:

**Product**: BIG-IP, BIG-IP AAM, BIG-IP AFM, BIG-IP APM, BIG-IP ASM, BIG-IP DNS, BIG-IP GTM, BIG-IP Link Controller, BIG-IP LTM, BIG-IP PEM

**Product**: Legacy Products, BIG-IP WebAccelerator, BIG-IP WOM, BIG-IP PSM, BIG-IP Edge Gateway