

在PfRv3中配置EIGRP SAF以推送策略

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簡介

效能路由(PfRv3)是一種智慧解決方案，可監控各種與網路效能相關的引數，如延遲、抖動、鏈路利用率。PfRv3相應地從多個候選鏈路中選擇最佳送出鏈路，並通過其路由流量。為此，PfRv3允許網路管理員在集線器主機上配置集中策略，然後將這些策略推送到多個集線器分支。

必要條件

需求

思科建議您瞭解效能路由(PfR)的基本知識。

採用元件

本文件所述內容不限於特定軟體和硬體版本。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

設定

集中策略定義

在PfRv3中，所有策略均由主集線器裝置建立和修改。主中心還負責將這些策略推送到所有主分支裝置。這種策略集中調配大大增加了PfRv3的可擴充性。網路管理員定義的策略要求處理各種型別的流量。流量可以根據DSCP值或Lotus notes、WebEx等應用型別進行分組/分類。

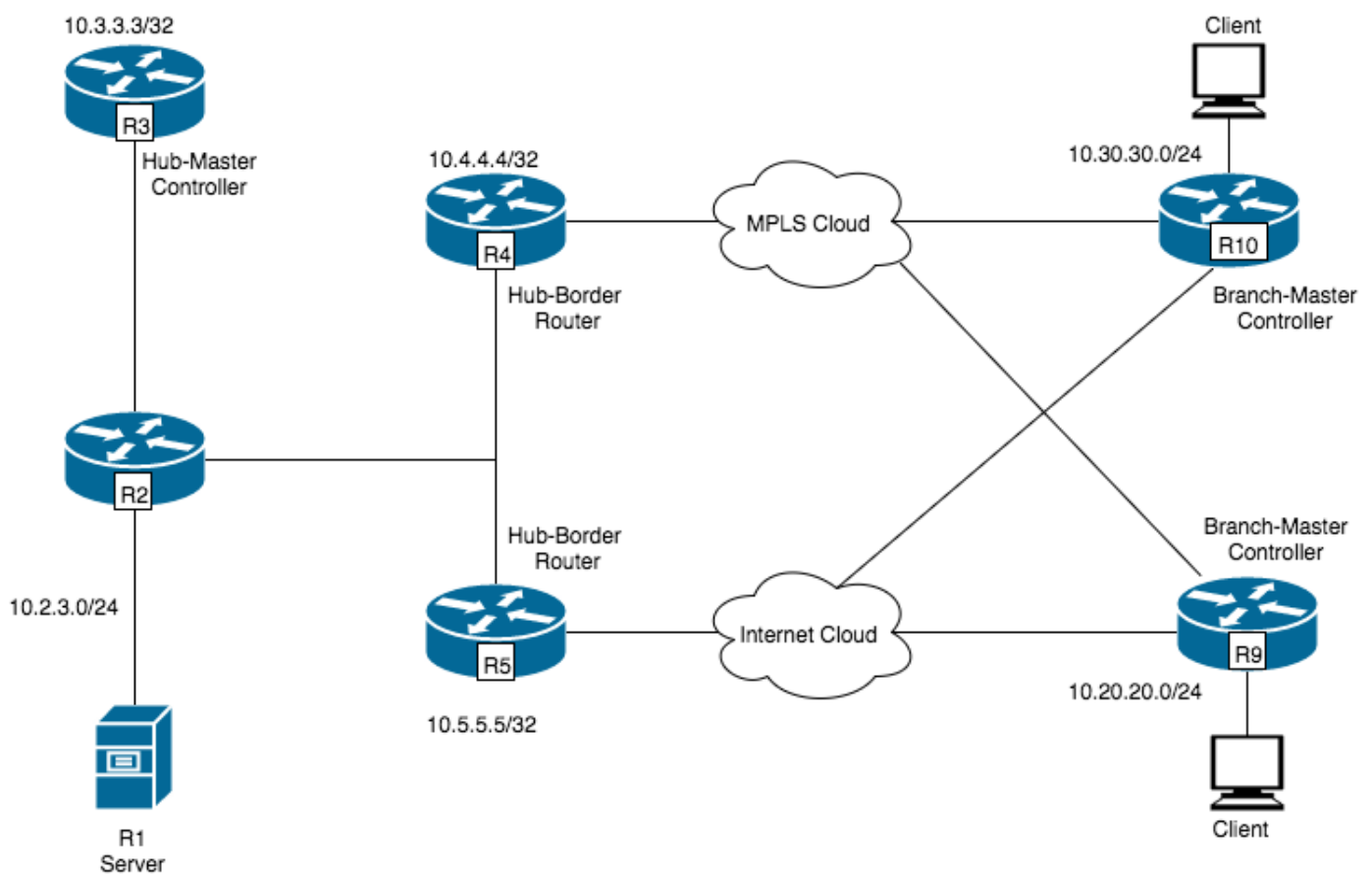
EIGRP服務地址系列(SAF):

EIGRP將與集線器邊界路由器以及主分支路由器形成SAF鄰居鄰接關係。下面是一組EIGRP SAF鄰居節點：

1. 集線器主控制器<—>集線器邊界路由器
2. 集線器主控制器<—>分支主控制器
3. 分支機構主控制器<—>分支機構邊界路由器

PfRv3使用EIGRP SAF框架將策略從中心站點推送到多個分支站點。只有中心主機才有權修改任何預先部署的策略，然後這些修改後的策略通過EIGRP SAF框架與其他分支主機同步。

網路圖表



組態

R3主集線器路由器

```
interface Loopback0
 ip address 10.3.3.3 255.255.255.255
!
domain PfRv3
 vrf default
  master hub
  source-interface Loopback0
```

```
class VOICE sequence 10
  match dscp ef policy voice
  path-preference MPLS fallback INET
```

R4集線器邊界路由器

```
interface Loopback0
  ip address 10.4.4.4 255.255.255.255
!
domain PFRv3
  vrf default
  border
    source-interface Loopback0
    master 10.3.3.3
  domain one path MPLS
```

R5集線器邊界路由器

```
interface Loopback0
  ip address 10.5.5.5 255.255.255.255

domain one
  vrf default
  border
    source-interface Loopback0
    master 10.3.3.3
  domain one path INET
```

R9分支主路由器

```
interface Loopback0
  ip address 10.9.9.9 255.255.255.255

domain PFRv3
  vrf default
  border
    source-interface Loopback0
    master local
  master branch
    source-interface Loopback0
    hub 10.3.3.3
```

R10分支主路由器

```
interface Loopback0
  ip address 10.10.10.10 255.255.255.255

domain PFRv3
  vrf default
  border
    source-interface Loopback0
    master local
  master branch
    source-interface Loopback0
    hub 10.3.3.3
```

驗證

檢查和驗證EIGRP SAF

R3將與分支主控制器（R9和R10）和中心邊界路由器（R4和R5）形成EIGRP SAF鄰接關係。

R3#show eigrp service-family ipv4 neighbors

EIGRP-SFv4 VR(#AUTOCFG#) Service-Family Neighbors for AS(59501)

H	Address	Interface	Hold (sec)	Uptime	SRTT (ms)	RTO	Q Cnt	Seq Num
3	10.4.4.4	Lo0	503	01:30:28	9	100	0	7
2	10.5.5.5	Lo0	592	01:30:28	11	100	0	7
1	10.9.9.9	Lo0	505	01:30:28	22	132	0	10
0	10.10.10.10	Lo0	519	01:30:28	21	132	0	10

分支主路由器將與中心主控制器形成SAF鄰居關係

R9#show eigrp service-family ipv4 neighbors

EIGRP-SFv4 VR(#AUTOCFG#) Service-Family Neighbors for AS(59501)

H	Address	Interface	Hold (sec)	Uptime	SRTT (ms)	RTO	Q Cnt	Seq Num
0	10.3.3.3	Lo0	530	01:34:43	32	192	0	19

PfRv3EIGRP SAFEIGRP SAF(BR)

EIGRP SAFSAF(PMI)

EIGRP SAF

R3#show domain one master policy

```
No Policy publish pending
class VOICE sequence 10
  path-preference MPLS fallback INET
  class type: Dscp Based
  match dscp ef policy voice
  priority 2 packet-loss-rate threshold 1.0 percent
  priority 1 one-way-delay threshold 150 msec
  priority 3 jitter threshold 30000 usec
  priority 2 byte-loss-rate threshold 1.0 percent
```

R9#show domain one master policy

```
class VOICE sequence 10
  path-preference MPLS fallback INET
  class type: Dscp Based
  match dscp ef policy voice
  priority 2 packet-loss-rate threshold 1.0 percent
  priority 1 one-way-delay threshold 150 msec
  priority 3 jitter threshold 30000 usec
  priority 2 byte-loss-rate threshold 1.0 percent
```

站點字首也被推送到SAF地址系列上

站點字首是每個站點的內部字首。站點字首資料庫位於主控制器和邊界路由器上。從每個站點向分支位置發起流量時，會學習站點字首。主控制器和邊界路由器將維護應在每個PFR運行站點同步的

站點字首表。site-prefix表中的標誌有助於瞭解字首的學習方式。

L標誌: — 表示通過監控wan鏈路上的出口流量而本地學習的字首。

S標誌: — 表示通過SAF地址系列獲取的字首。

C標誌: — 表示使用命令「site-prefixes」在主機上配置的字首。

T標誌: — 表示字首為企業字首。

在以下示例中，字首10.2.3.0/24在R3上本地獲取，其資訊通過SAF傳遞到R9:

```
R3#sh domain one master site-prefix
```

```
Change will be published between 5-60 seconds
```

```
Next Publish 01:54:04 later
```

```
Prefix DB Origin: 10.3.3.3
```

```
Prefix Flag: S-From SAF; L-Learned; T-Top Level; C-Configured;
```

Site-id	Site-prefix	Last Updated	Flag
10.3.3.3	10.2.3.0/24	1w1d ago	L,
10.9.9.9	10.20.20.0/24	00:06:30 ago	S,

```
R9#sh domain one master site-prefix
```

```
Change will be published between 5-60 seconds
```

```
Next Publish 01:55:53 later
```

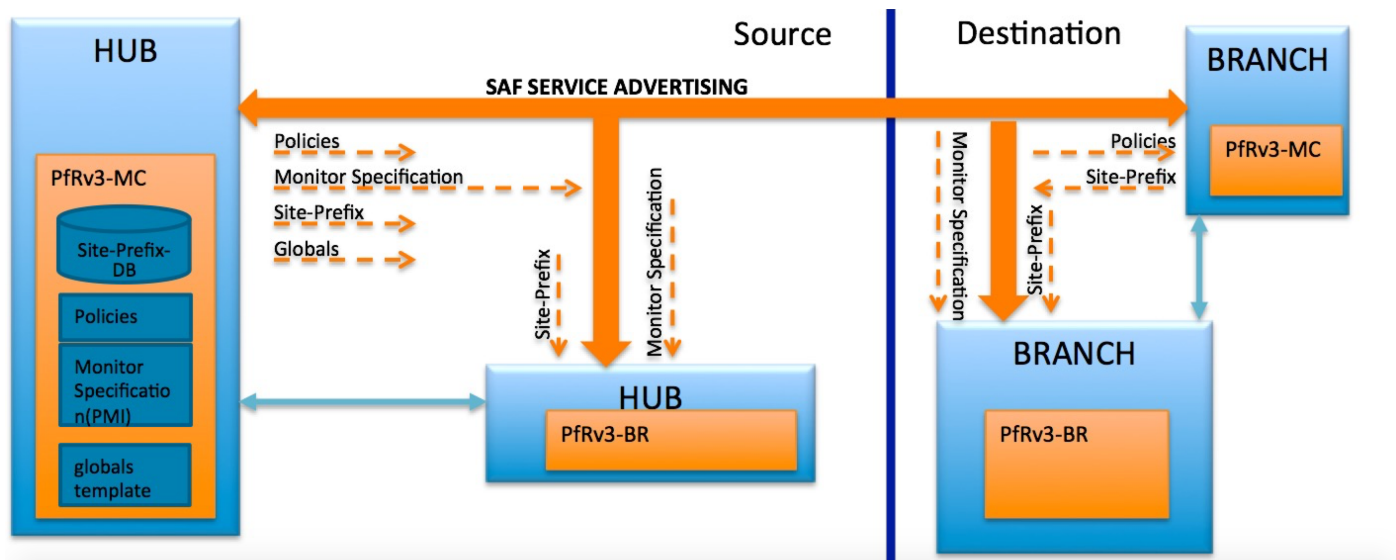
```
Prefix DB Origin: 10.9.9.9
```

```
Prefix Flag: S-From SAF; L-Learned; T-Top Level; C-Configured;
```

Site-id	Site-prefix	Last Updated	Flag
10.3.3.3	10.2.3.0/24	00:11:41 ago	S,
10.9.9.9	10.20.20.0/24	00:04:06 ago	L,

下圖顯示了通過EIGRP SAF系列推送的各種屬性：

1. EIGRP SAF會將集線器MC上的站點字首資料庫、監控規範和全域性模板推送到所有集線器邊界裝置。
2. Master Hub還會使用SAF將站點字首和全域性模板推送到邊界主機。
3. 然後，Border Master將其本地站點字首以及從集線器MC訂閱的屬性（如步驟2所示）推送到其BR。



下面是主中心路由器的輸出，顯示它正在發佈服務

```
R3#show domain one master peering
```

```
Peering state: Enabled
```

```
Origin:      Loopback0(10.3.3.3)
```

```
Peering type: Listener
```

```
Subscribed service:
```

```
cent-policy (2) :
```

```
site-prefix (1) :
```

```
Last Notification Info: 01:06:33 ago, Size: 242, Compressed size: 160, Status: No Error,
Count: 31
```

```
service-provider (4) :
```

```
globals (5) :
```

```
pmi (3) :
```

```
Published service:
```

```
site-prefix (1) :
```

```
Last Publish Info: 01:06:33 ago, Size: 168, Compressed size: 132, Status: No Error
```

```
cent-policy (2) :
```

```
Last Publish Info: 1w0d ago, Size: 1380, Compressed size: 345, Status: No Error
```

```
pmi (3) :
```

```
Last Publish Info: 1w0d ago, Size: 1535, Compressed size: 432, Status: No Error
```

```
globals (5) :
```

```
Last Publish Info: 1w0d ago, Size: 325, Compressed size: 197, Status: No Error
```

下面是集線器邊界路由器的輸出

```
R5#show domain one border peering
```

```
Peering state: Enabled
```

```
Origin:      Loopback0(10.5.5.5)
```

```
Peering type: Peer(With 10.3.3.3)
```

```
Subscribed service:
```

```
pmi (3) :
```

```
Last Notification Info: 01:30:58 ago, Size: 1535, Compressed size: 452, Status: No Error,
Count: 47
```

```
site-prefix (1) :
```

```
Last Notification Info: 01:07:09 ago, Size: 242, Compressed size: 160, Status: No Error,
Count: 464
```

```
globals (5) :
```

```
Last Notification Info: 01:30:58 ago, Size: 325, Compressed size: 217, Status: No Error,
Count: 47
```

Published service:

因此，它只訂閱中心主路由器提供的服務。

R9#show domain one maste peering

Peering state: Enabled

Origin: Loopback0(10.9.9.9)

Peering type: Listener, Peer(With 10.3.3.3)

Subscribed service:

cent-policy (2) :

Last Notification Info: 01:35:29 ago, Size: 1380, Compressed size: 365, Status: No Error,
Count: 25

site-prefix (1) :

Last Notification Info: 01:11:39 ago, Size: 242, Compressed size: 160, Status: No Error,
Count: 339

service-provider (4) :

globals (5) :

Last Notification Info: 01:35:29 ago, Size: 325, Compressed size: 217, Status: No Error,
Count: 50

Published service:

site-prefix (1) :

Last Publish Info: 01:11:40 ago, Size: 242, Compressed size: 140, Status: No Error

R9#show domain one border peering

Peering state: Enabled

Origin: Loopback0(10.9.9.9)

Peering type: Peer(With 10.9.9.9)

Subscribed service:

pmi (3) :

Last Notification Info: 01:36:26 ago, Size: 1535, Compressed size: 452, Status: No Error,
Count: 25

site-prefix (1) :

Last Notification Info: 01:12:36 ago, Size: 242, Compressed size: 160, Status: No Error,
Count: 339

globals (5) :

Last Notification Info: 01:36:26 ago, Size: 325, Compressed size: 217, Status: No Error,
Count: 50

Published service: