

IBM SevOne NPM高可用性設定ガイド

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はじめに

■ 当資料の位置づけ

- 当資料は、IBM SevOne Network Performance Management (NPM) ソリューションのうち、Data Appliance NMS の冗長構成および分散構成についての構成手順および動作確認結果をまとめたものです。SevOneの全機能、もしくはそれらの組み合わせを網羅した資料ではありません。

■ 注意事項

- 当資料に含まれる情報は可能な限り正確を期しておりますが、正式なレビューを受けておらず、当資料に記載された内容に関して何ら保証するものではありません。ここでの記載内容はあくまでも支援情報であり、使用者の責任において取扱われるものとし、資料の内容によって受けたいかなる損害に関して一切の保証をするものではありません。

■ 変更履歴

- 2022年10月 初版 (v1.0) 作成

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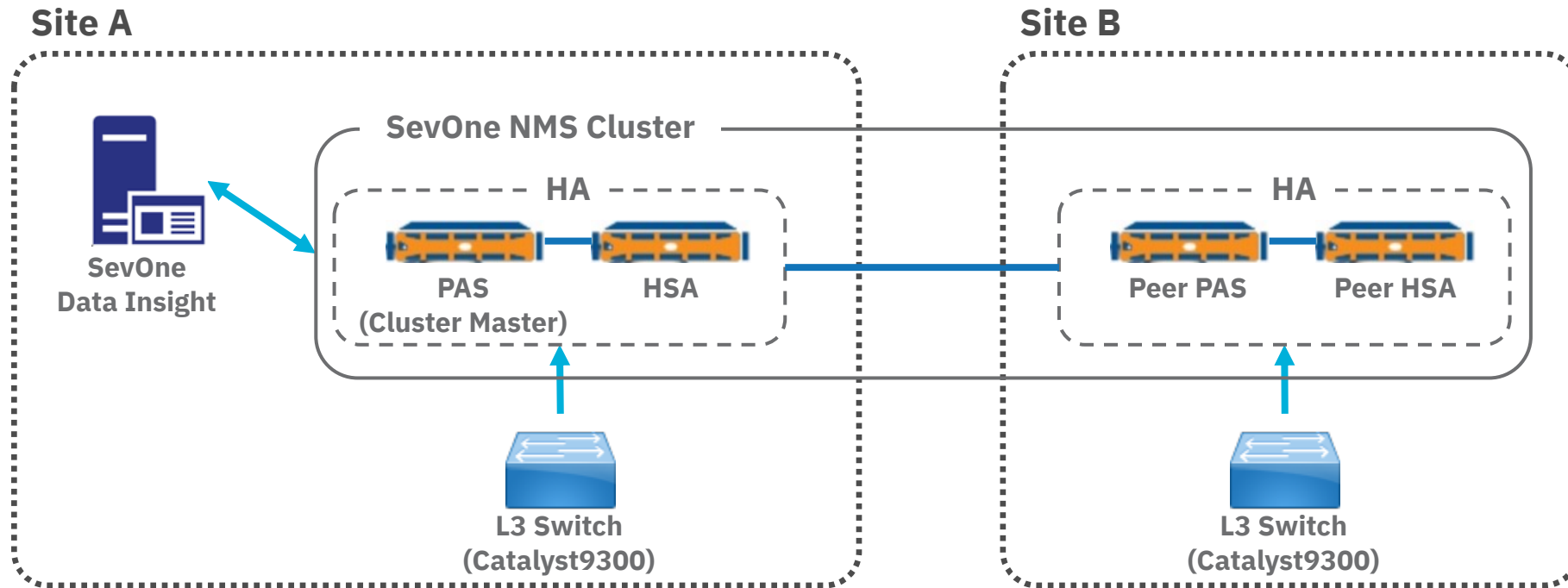
1. 概要

1.1. 目的・内容

- SevOne NMSを冗長構成、分散構成するために必要なセットアップ手順を整理する
- 障害発生時の挙動を検証する

- SevOne NMSの以下の機能を検証対象とする
 - HA構成
 - Virtual IP(VIP)構成
 - クラスター構成

1.2. 検証環境 – 全体像



※ PAS, HSAは同一イメージのNMSアプライアンス

NMS: Network Management System
PAS: Performance Appliance System
HSA: Hot Standby Appliance

1.2.1. 機器情報

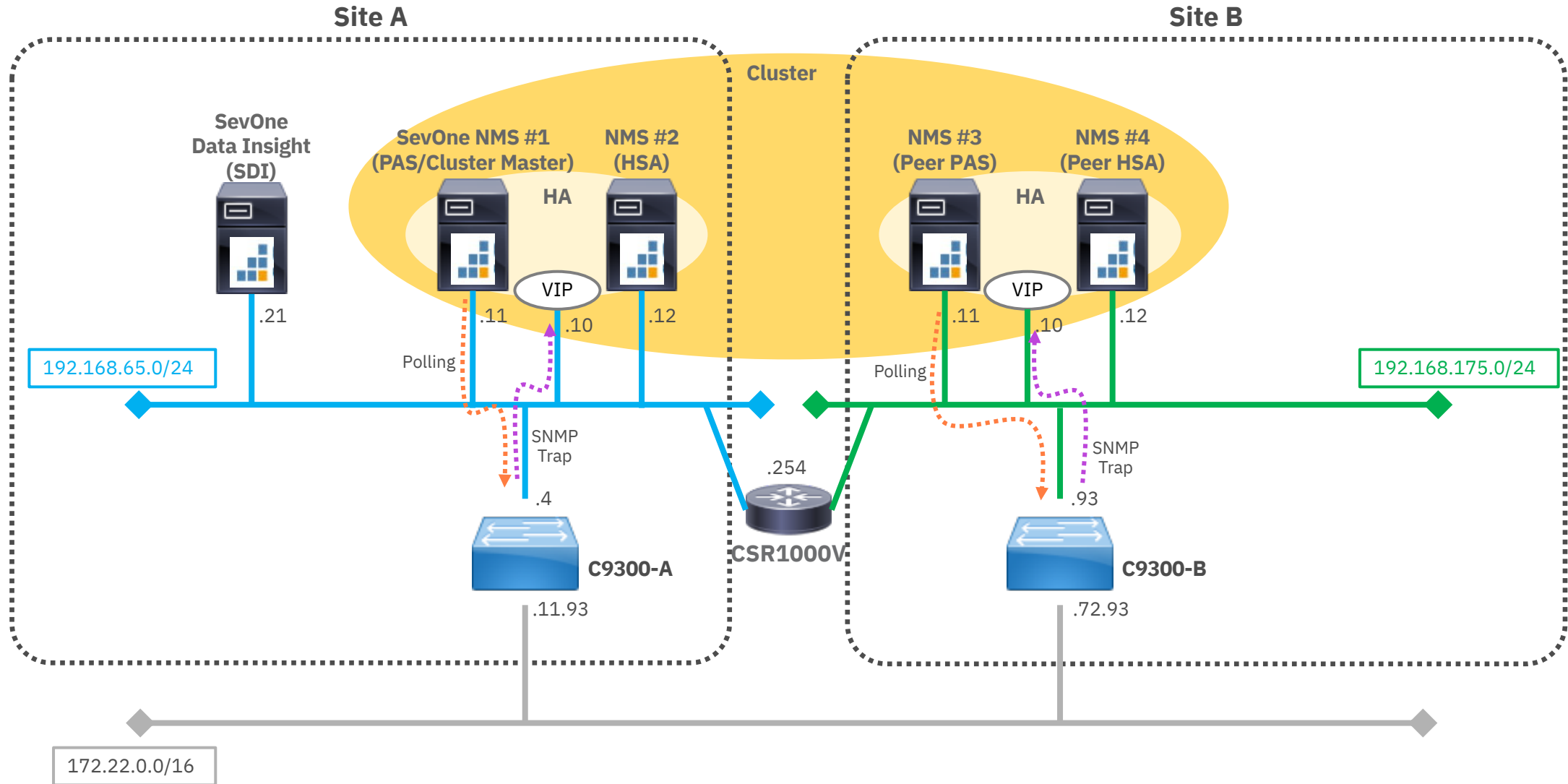
■ 検証機器

- SevOne Data Appliance NMS v6.3.0 SW Appliance (VM)
 - PAS / HSA / Peer PAS / Peer HSA
- SevOne Data Insight (SDI) v3.13.0 SW Appliance (VM)

■ 使用ネットワーク機器

機器	用途	ベンダー	モデル	バージョン
Catalyst9300 (C9300)	L3 Switch (Site A)	Cisco	C9300-48U	IOS XE 16.12.3a
	L3 Switch (Site B)	Cisco	C9300-48U	IOS XE 16.12.4

1.2.2. 構成図



2. 冗長構成手順

2.1. 冗長構成手順概要

■ 前提

- NMSのインストールが完了していること
 - 今回の構成では4台 (PAS / HSA / Peer PAS / Peer HSA) のNMSをインストール
 - 手順は以下の資料を参照
 - IBM SevOne NPM設定ガイド

■ 冗長構成手順

1. HSAの構成

- (参考) SevOne Best Practices Guide – Cluster, Peer and HSA (8章 Hot Standby Appliances)
 - https://www.ibm.com/docs/en/SSUWLY_6.3/nms/deployment/SevOne_Best_Practices_Guide_Cluster_Peer_and_HSA.pdf

2. Virtual IP(VIP)の構成

- (参考) SevOne NMS Advanced Network Configuration Guide (2章 Configure Virtual IP (VIP))
 - https://www.ibm.com/docs/en/SSUWLY_6.3/nms/deployment/SevOne_NMS_Advanced_Network_Configuration_Guide.pdf

3. Cluster Peerの構成

- (参考) SevOne Best Practices Guide – Cluster, Peer and HSA (6章 Add Peers)
 - https://www.ibm.com/docs/en/SSUWLY_6.3/nms/deployment/SevOne_Best_Practices_Guide_Cluster_Peer_and_HSA.pdf

4. Peer HSAの構成

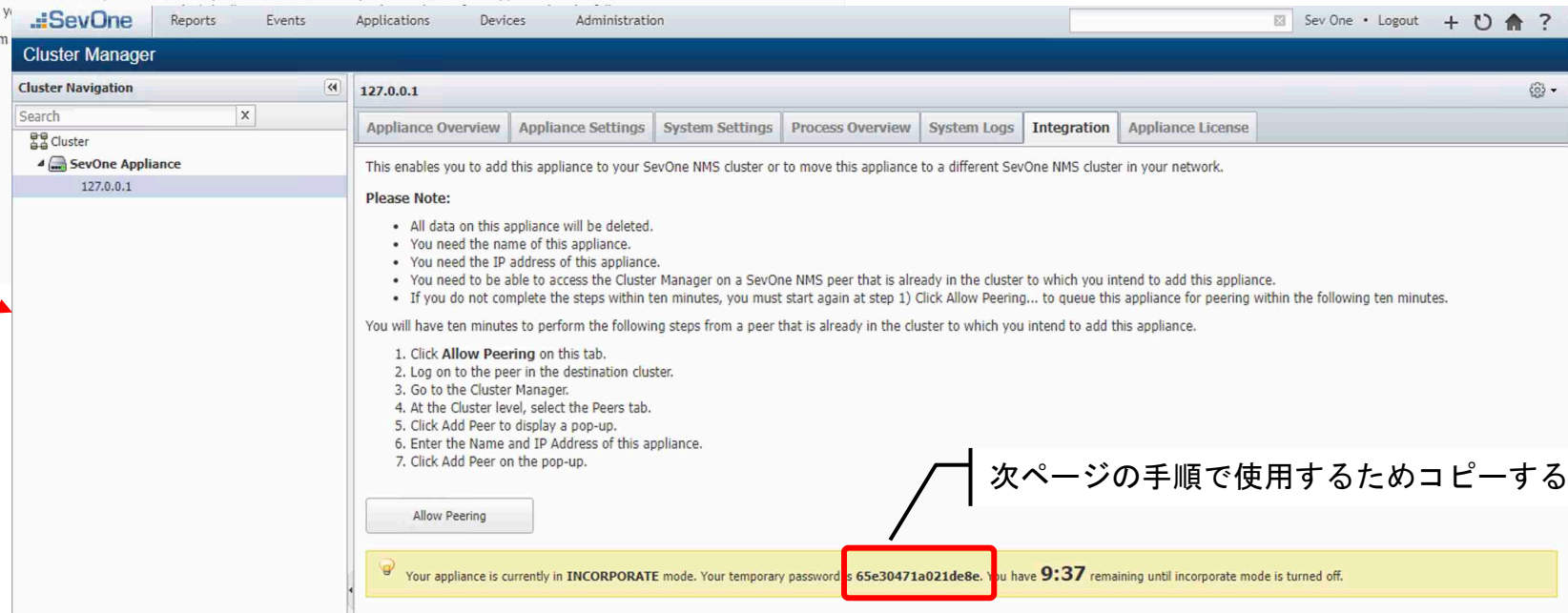
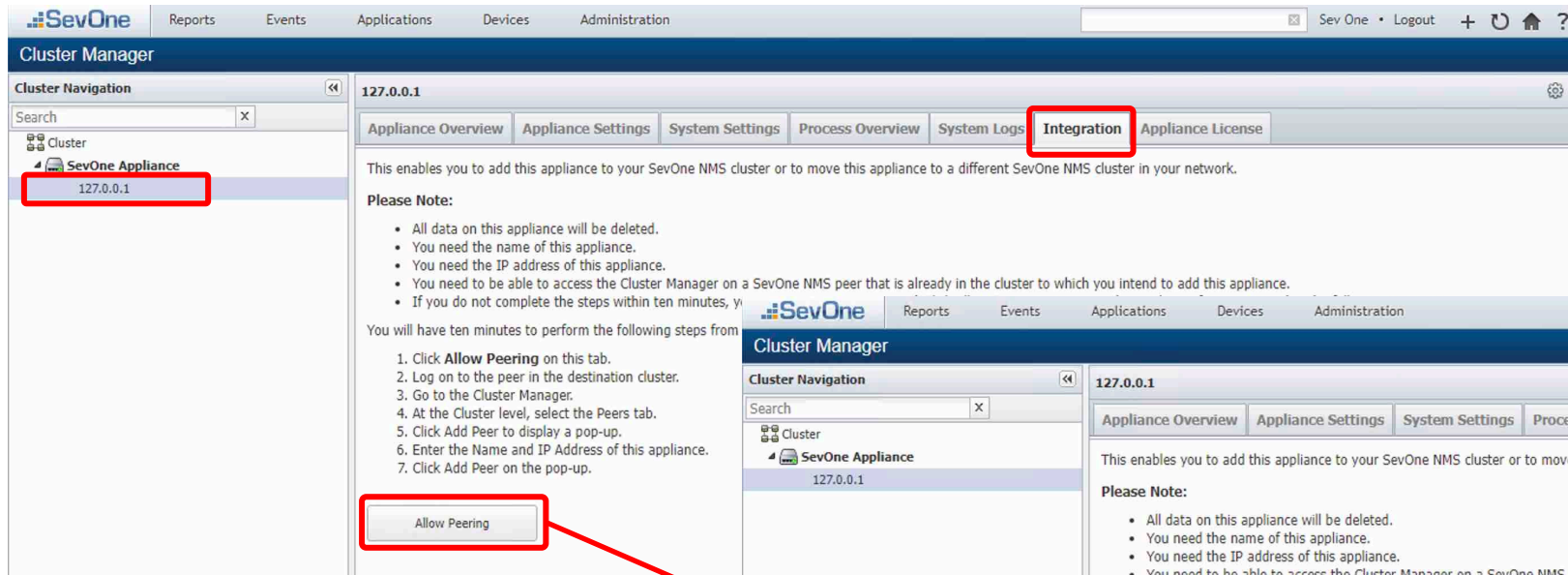
- 手順は「1. HSAの構成」と同様

5. PeerのVIP構成

- 手順は「2. Virtual IP(VIP)の構成」と同様

2.1.1. HSAの構成 (1/5)

- 2号機(192.168.65.12) にGUIログインし、[Administration] > [Cluster Manager]を選択
- 左メニューの[Cluster Navigation]パネルで「127.0.0.1」を選択
- [Integration]タブを開き、[Allow Peering]ボタンを押下



次ページの手順で使用するためコピーする

2.1.1. HSAの構成 (2/5)

■ 1号機(192.168.65.11)にrootユーザーでSSHログイン

– "screen"コマンドを実行してから、"SevOne-hsa-add"コマンドを実行

```
root@sevone-nms-a1:~ [6.3.0] [01:54:30] $ screen
root@sevone-nms-a1:~ [6.3.0] [01:56:45] $ SevOne-hsa-add
--- SevOne Hot Stand-by Add started ---
```

```
--- Checking that you're using screen.
--- You're using screen.
--- Checking that the SevOne NMS is installed.
--- SevOne NMS is installed.
--- Checking that the SevOne NMS services are running normally.
--- SevOne NMS services check succeeded.
--- Fetching our IP address from the peers table.
--- Our current IP address is 127.0.0.1.
--- We need to change this peer's IP address from 127.0.0.1.
--- Fetching visible IP addresses from the network interfaces.
```

```
1) 172.17.0.1
2) 192.168.65.11
```

```
>>> Select a new IP address for this peer:
```

```
2
```

```
--- You selected 192.168.65.11.
```

```
>>> Enter IP Of the secondary
```

```
192.168.65.12
```

```
>>> Enter incorporate password of the secondary
```

←前手順で取得したパスワードを入力

```
--- Primary IP is 192.168.65.11
```

```
--- Secondary IP is 192.168.65.12
```

```
>>> Continue (yes/no)?
```

```
yes
```

```
--- Checking if secondary appliance is in incorporate mode...
```

```
--- ssh check with command /usr/bin/php /usr/local/scripts/isInIncorporateMode.php >/dev/null 2>&1
```

```
Warning: Permanently added '192.168.65.12' (ECDSA) to the list of known hosts.
```

```
--- Secondary appliance is in incorporate mode.
--- Checking the ports on the secondary.
--- Secondary ports check succeeded.
--- Fetching the hostname of the new secondary.
Password: ←rootパスワードを入力
--- Hostname of the new secondary is sevone-nms-a2.iselab.local.
--- Setting up secondary's SSH authorized_keys file.
Password: ←rootパスワードを入力
--- Delivered primary's public key to secondary.
--- Updated secondary's authorized_keys file.
--- Checking secondary for SSH keys, creating them if necessary.
--- Verified secondary's SSH keys.
--- Copying secondary's public SSH key to primary.
--- Copied secondary's public SSH key to primary.
--- Adding secondary's public key to our authorized_keys file.
--- Added secondary's public SSH key to our authorized_keys file.
--- Copying our authorized_keys file to the secondary.
--- Copied authorized_keys to new secondary.
--- Added secondary's IP to its SSH known_hosts file.
--- Added secondary's IP to its SSH known_hosts file.
--- SevOne models match.
--- Stopping alertmanager prometheus on secondary peer
--- Stopping pushgateway on primary peer
--- kafka certs and keys are distributed to the new hsa.
--- kafka certs and keys are distributed to the new hsa.
--- kafka certs and keys are distributed to the new hsa.
--- kafka certs and keys are distributed to the new hsa.
--- kafka certs and keys are distributed to the new hsa.
--- kafka certs and keys are assigned to kafka user.
--- Running SevOne-fix-kafka-properties to fix kafka properties.
--- Kafka properties fixed.
--- mysql encrypt/decrypt password file is distributed to the new hsa.
--- mysql certs and keys are distributed to the new hsa.
--- mysql certs and keys are distributed to the new hsa.
--- mysql certs and keys are distributed to the new hsa.
```


2.1.1. HSAの構成 (3/5)

■ (前頁から続き)

```

--- mysql certs and keys are distributed to the new hsa.
--- mysql certs and keys are distributed to the new hsa.
--- mysql certs and keys are distributed to the new hsa.
--- Installing requestd keys with scp.
--- requestd certs and keys are distributed to the new hsa.
--- requestd certs and keys are distributed to the new hsa.
--- Wait for requestd to restart.
--- Waiting for mysqldata on the secondary
--- Waiting for mysqlconfig on secondary
--- Checking primary to secondary connectivity over required ports.
--- Port 22 is open.
--- Port 3306 is open.
--- Port 3307 is open.
--- Checking secondary to primary connectivity over required ports.
--- Port 22 is open.
--- Port 3306 is open.
--- Port 3307 is open.
--- Checking that primary and secondary are the same SevOne version.
--- SevOne versions match.
--- Checking that primary and secondary have the same MySQL login/password.
--- MySQL username and password match.
--- Checking RAM compatibility between the pair.
--- Primary has 7.644 GB of RAM.
--- Secondary has 7.644 GB of RAM.
--- RAM is compatible between the pair.
--- Checking HDD compatibility between the pair.
--- HSA's HDD size must be at least 99% of the Primary's HDD size.
--- Primary has a 497.45 GB sda partition.
--- Secondary has a 497.45 GB sda partition.
--- HDD sda is compatible between the pair.
--- Checking IO_DISK compatibility between the pair.
--- Primary has 0 GB of IO_DISK.
--- Secondary has 0 GB of IO_DISK.
--- IO_DISK is compatible between the pair.
--- Changing our IP address from 127.0.0.1 to 192.168.65.11 in the peers table.

```

```
>>> Continue (yes/no)?
```

yes

```

--- Updated the peers table.
--- Running SevOne-fix-mysql-permissions to fix mysql permissions.
--- Mysql permissions fixed.
--- Please confirm the following IP addresses of cluster members:

```

```
1) 127.0.0.1
```

```
2) 192.168.65.12 (new hot stand-by)
```

```
>>> Continue (yes/no)?
```

yes

```

--- Acquiring cluster-wide locks.
--- Acquired lock file for cluster-changes, fd is 200
--- Acquiring discovery locks.
--- Acquired lock file for SevOne-discover-devices, fd is 201
--- Acquired lock file for discover-netflow, fd is 202
Warning: Permanently added '192.168.65.11' (ECDSA) to the list of known hosts.
--- Configuring 192.168.65.11 to expect a passive counterpart.
--- Fetching the server_id of the config server on primary.
--- The server_id is 1655238997.
--- Changing the server-id of the config server to 3232252171 on primary.
--- Server-id changed.
--- Fetching the report_host of the config server on primary.
--- The report_host is 127.0.0.1.
--- Changing the report-host of the config server to 192.168.65.11 on primary.
--- Report-host changed.
--- Restarting primary's config server to apply changes.
--- Server restarted.
--- Waiting for mysqlconfig on primary
--- Configuring 192.168.65.12 to be a secondary.
--- HSA's UUID updated.
--- HSA's UUID updated.
--- Configuring secondary's crontab.

```

2.1.1. HSAの構成 (4/5)

■ (前頁から続き)

```

--- Secondary's crontab configured.
--- Configuring secondary's supervisord.
--- Secondary's supervisord configured.
--- Waking secondary's init.
--- Secondary's init woken.
--- Setting secondary's role to non-primary.
--- Secondary's non-primary role set.
--- Setting secondary's role to non-primary.
--- Secondary's non-primary role set.
--- Fetching the server_id of the config server on the secondary.
--- The server_id is 1655238997.
--- Changing the server-id of the config server to 3232252172 on the secondary.
--- Server-id changed.
--- Fetching the report_host of the config server on the secondary.
--- The report_host is 127.0.0.1.
--- Changing the report-host of the config server to 192.168.65.12 on the secondary.
--- Report-host changed.
--- Successfully selected mysql server as secondary.
--- Restarting the secondary's config server to apply changes.
--- Server restarted.
--- Waiting for mysqlconfig on secondary
--- Restarting the secondary's data server to apply changes.
--- Server restarted.
--- Waiting for mysqldata on the secondary
--- Installing 192.168.65.12 as 192.168.65.11's Hot Stand-by.
--- Updating peers table.
--- Configured primary_ip in primary's net.peers.
--- Configured secondary_ip in primary's net.peers.
--- Configured net.peers on the secondary.
--- Configured local.settings on the secondary.
--- Running SevOne-fix-kafka-properties 192.168.65.11 to fix kafka properties.
--- Kafka properties fixed.
--- Running SevOne-fix-mysql-permissions to fix mysql permissions.
--- Mysql permissions fixed.
--- SevOne-masterslaved restarted on the primary.
--- SevOne-masterslaved restarted on the secondary.

```

```

--- SevOne-masterslaved is running on the primary.
--- SevOne-masterslaved is running on the secondary.
--- Formatting the secondary.
--- Secondary format in progress. This can take a while!
--- Secondary format complete. Checking results.
--- Secondary format succeeded.
--- Releasing cluster-wide locks.
--- Running SevOne-fix-ssh-keys to propagate the new HSA key through the cluster.
--- SevOne-fix-ssh-keys succeeded.
Migration started on Wed Aug 17 02:07:29 UTC 2022
--- SevOne-migrate-data started.
Tail the file /var/SevOne/cluster-migrate-data.log.1660702049 to view data migration progress.
--- Copying baseline data from primary to secondary.
--- Baseline and aggregate data migration successful.
Migration finished on Wed Aug 17 02:07:33 UTC 2022
--- Running proxy-write-config on all cluster members.
--- Successfully wrote web proxy config across cluster
--- Successfully copy 00_upstream.conf on 192.168.65.12 HSA
--- Successfully reloaded nginx on 192.168.65.12
--- Successfully restarted SevOne-restapi on 192.168.65.12
--- Starting pushgateway, alertmanager, prometheus on clustermasters' HSA
alertmanager: ERROR (abnormal termination)
prometheus: ERROR (abnormal termination)
pushgateway: ERROR (already started)
--- Starting pushgateway on primary peer
pushgateway: started
--- Successfully fixed hosts file on all peers
--- Discovery hook files are copied to hsa from master.
--- /opt/patches does not exist.
--- Patch files are installed.
--- Updating license info for primary and secondary.
--- Updated License info.
--- All done.
--- Log into each peer and run SevOne-act check peers to verify keys.
--- SevOne Hot Stand-by Add is finished ---
root@sevone-nms-a1:~ [6.3.0] [02:08:43] $

```

2.1.1. HSAの構成 (5/5)

- 1号機(192.168.65.11)にGUIログインし、[Administration] > [Cluster Manager]より、PAS(active)/HSA(passive)が正しく構成されていることを確認

The screenshot displays the SevOne Cluster Manager interface. The top navigation bar includes tabs for Reports, Events, Applications, Devices, and Administration. The main header is 'Cluster Manager'. On the left, the 'Cluster Navigation' pane shows a search bar and a list of clusters. Under 'Cluster', there is a 'SevOne Appliance' entry with two sub-items: '192.168.65.11' and '192.168.65.12 (passive)'. The '192.168.65.11' item is highlighted with a red box. The main content area shows the 'Cluster Overview' tab selected. Below this, there are tabs for 'Peers', 'Cluster Settings', 'Cluster Upgrade', and 'SevOne Data Bus Configuration'. The 'Info' section displays various system metrics and configuration details.

Info	
SevOne Version	6.3.0
Cluster Master	SevOne Appliance
Total Devices	0
Licensed Devices	0
Selfmon Devices	0
Group Poller Devices	0
Total Flow Devices	0
Total License Consumption	0/5000 0%
Total Object License Consumption	0/5000 0%
Total Flow License Consumption	0/5000 0%
Total Object Load	0
Selfmon Objects	0
Group Poller Objects	0
Peers	1
SNMPv3 Engine ID	80001F888082DEB61F34F2A8620000000

2.1.2. Virtual IP(VIP)の構成 (1/6)

■ rootユーザーでログイン

■ 環境変数の定義

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [02:12:56] $ pas_ip='192.168.65.11'
root@sevone-nms-a1:~ [6.3.0] [02:13:35] $ hsa_ip='192.168.65.12'
root@sevone-nms-a1:~ [6.3.0] [02:13:44] $ base_network='192.168.65.0'
root@sevone-nms-a1:~ [6.3.0] [02:13:52] $ base_prefix='24'
root@sevone-nms-a1:~ [6.3.0] [02:13:59] $ base_gateway='192.168.65.254'
root@sevone-nms-a1:~ [6.3.0] [02:14:07] $ peer_id=$(mysqlconfig -Ne "select server_id from net.peers where
primary_ip = HEX(INET6_ATON(¥¥"$pas_ip¥"))")
root@sevone-nms-a1:~ [6.3.0] [02:14:16] $ vip='192.168.65.10'
root@sevone-nms-a1:~ [6.3.0] [02:14:33] $ vip_prefix='24'
root@sevone-nms-a1:~ [6.3.0] [02:15:14] $ vip_network='192.168.65.0'
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [02:13:23] $ pas_ip='192.168.65.11'
root@sevone-nms-a2:~ [6.3.0] [02:13:38] $ hsa_ip='192.168.65.12'
root@sevone-nms-a2:~ [6.3.0] [02:13:46] $ base_network='192.168.65.0'
root@sevone-nms-a2:~ [6.3.0] [02:13:53] $ base_prefix='24'
root@sevone-nms-a2:~ [6.3.0] [02:14:02] $ base_gateway='192.168.65.254'
root@sevone-nms-a2:~ [6.3.0] [02:14:09] $ peer_id=$(mysqlconfig -Ne "select server_id from net.peers where
primary_iip = HEX(INET6_ATON(¥¥"$hsa_ip¥"))")
root@sevone-nms-a2:~ [6.3.0] [02:14:24] $ vip='192.168.65.10'
root@sevone-nms-a2:~ [6.3.0] [02:15:04] $ vip_prefix='24'
root@sevone-nms-a2:~ [6.3.0] [02:15:16] $ vip_network='192.168.65.0'
```

■ PASとHSAにVIPを構成

ー コネクションを確認し、コネクション名を環境変数にセット

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [02:15:35] $ nmcli connection show
NAME UUID TYPE DEVICE
ens160 c4fd388a-30fd-4abf-a50d-c2206b6c3bca ethernet ens160
docker0 bcdcd346-403c-44cd-a8af-fca8b622372a bridge docker0
root@sevone-nms-a1:~ [6.3.0] [02:16:02] $ connection_name='ens160'
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [02:15:37] $ nmcli connection show
NAME UUID TYPE DEVICE
ens160 c4fd388a-30fd-4abf-a50d-c2206b6c3bca ethernet ens160
docker0 0e8166a3-bbd3-4632-a0c9-91acdc9475 bridge docker0
root@sevone-nms-a2:~ [6.3.0] [02:16:04] $ connection_name='ens160'
```

ー passive時のVIP構成用に現行コネクション構成をコピー

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [02:16:27] $ cp -a /etc/sysconfig/network-scripts/ifcfg-${connection_name}
/etc/sysconfig/network-scripts/vip-disabled-ifcfg-${connection_name}
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [02:16:29] $ cp -a /etc/sysconfig/network-scripts/ifcfg-${connection_name}
/etc/sysconfig/network-scripts/vip-disabled-ifcfg-${connection_name}
```


2.1.2. Virtual IP(VIP)の構成 (2/6)

■ PASとHSAにVIPを構成 (続き)

– active時のVIP構成用にネットワーク・コネクションにVIPを追加

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [02:16:44] $ nmcli connection modify ${connection_name} +ipv4.addresses
"$vip/$vip_prefix"
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [02:16:46] $ nmcli connection modify ${connection_name} +ipv4.addresses
"$vip/$vip_prefix"
```

■ VIP用のNICの構成

– インターフェース設定ファイルの確認

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [02:17:25] $ cat /etc/sysconfig/network-scripts/ifcfg-${connection_name}
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=none
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=ens160
UUID=c4fd388a-30fd-4abf-a50d-c2206b6c3bca
DEVICE=ens160
ONBOOT=yes
dhcp_ens160="nodns"
IPADDR=192.168.65.11
PREFIX=24
GATEWAY=192.168.65.254
IPADDR1=192.168.65.10
PREFIX1=24
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [02:17:27] $ cat /etc/sysconfig/network-scripts/ifcfg-${connection_name}
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=none
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=ens160
UUID=c4fd388a-30fd-4abf-a50d-c2206b6c3bca
DEVICE=ens160
ONBOOT=yes
IPADDR=192.168.65.12
PREFIX=24
GATEWAY=192.168.65.254
dhcp_ens160="nodns"
IPADDR1=192.168.65.10
PREFIX1=24
```

2.1.2. Virtual IP(VIP)の構成 (3/6)

■ インターフェース設定ファイルをNMSがactiveの場合に使用するファイルに移動

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [02:18:40] $ mv /etc/sysconfig/network-scripts/ifcfg-${connection_name}
/etc/sysconfig/network-scripts/vip-enabled-ifcfg-${connection_name}
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [02:18:42] $ mv /etc/sysconfig/network-scripts/ifcfg-${connection_name}
/etc/sysconfig/network-scripts/vip-enabled-ifcfg-${connection_name}
```

■ NMSのロール(active/pasive)に基づいて適切なVIP構成ファイルを使用するシンボリックリンクを作成

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [02:19:05] $ cd /etc/sysconfig/network-scripts/
root@sevone-nms-a1:/etc/sysconfig/network-scripts [6.3.0] [02:20:44] $ ln -sf vip-enabled-ifcfg-
${connection_name} ifcfg-${connection_name}
root@sevone-nms-a1:/etc/sysconfig/network-scripts [6.3.0] [02:20:57] $ ls -l /etc/sysconfig/network-
scripts/ifcfg-${connection_name}
lrwxrwxrwx. 1 root root 24 Aug 17 02:20 /etc/sysconfig/network-scripts/ifcfg-ens160 -> vip-enabled-ifcfg-ens160
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [02:19:07] $ cd /etc/sysconfig/network-scripts/
root@sevone-nms-a2:/etc/sysconfig/network-scripts [6.3.0] [02:20:46] $ ln -sf vip-disabled-ifcfg-
${connection_name} ifcfg-${connection_name}
root@sevone-nms-a2:/etc/sysconfig/network-scripts [6.3.0] [02:20:59] $ ls -l /etc/sysconfig/network-
scripts/ifcfg-${connection_name}
lrwxrwxrwx. 1 root root 24 Aug 17 02:20 /etc/sysconfig/network-scripts/ifcfg-ens160 -> vip-disabled-ifcfg-ens160
```

2.1.2. Virtual IP(VIP)の構成 (4/6)

■ NMSがVIPを使用できるようにCluster Masterからデータベースを更新

– PASのみで実行

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:/etc/sysconfig/network-scripts [6.3.0] [02:22:04] $ cluster_master_ip=$(mysqlconfig -Ne "select ip_normalize(ip) from net.peers where master = 1")
root@sevone-nms-a1:/etc/sysconfig/network-scripts [6.3.0] [02:22:08] $ cmd=$(echo "update net.peers set virtual_ip = HEX(INET6_ATON( '{{vip}} ')) where server_id = $peer_id")
root@sevone-nms-a1:/etc/sysconfig/network-scripts [6.3.0] [02:22:26] $ ssh $cluster_master_ip "mysqlconfig -e ¥"$cmd¥" "
```

– 確認

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:/etc/sysconfig/network-scripts [6.3.0] [02:22:52] $ mysqlconfig -e "select * from net.peers
where server_id = $peer_id ¥G"
***** 1. row *****
server_id: 1
name: SevOne Appliance
ip: COA8410B
primary_ip: COA8410B
secondary_ip: COA8410C
active_appliance: PRIMARY
disabled: 0
virtual_ip: COA8410A
master: 1
user: root
pass: vXvuHKpxs5XG+odPHZqW1w==
capacity: 5000
interface_limit: 15
flow_limit: 4500
netflow_interface_count: 0
server_load: 0
flow_load: 0
model: PAS
proxy_port: 8123
proxy_user: vXvuHKpxs5XG+odPHZqW1w==
proxy_pass: vXvuHKpxs5XG+odPHZqW1w==
group_poller_device_count: 0
group_poller_object_count: 0
selfmon_device_count: 0
selfmon_object_count: 0
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:/etc/sysconfig/network-scripts [6.3.0] [02:25:18] $ mysqlconfig -e "select * from net.peers
where server_id = $peer_id ¥G"
***** 1. row *****
server_id: 1
name: SevOne Appliance
ip: COA8410B
primary_ip: COA8410B
secondary_ip: COA8410C
active_appliance: PRIMARY
disabled: 0
virtual_ip: COA8410A
master: 1
user: root
pass: vXvuHKpxs5XG+odPHZqW1w==
capacity: 5000
interface_limit: 15
flow_limit: 4500
netflow_interface_count: 0
server_load: 0
flow_load: 0
model: PAS
proxy_port: 8123
proxy_user: vXvuHKpxs5XG+odPHZqW1w==
proxy_pass: vXvuHKpxs5XG+odPHZqW1w==
group_poller_device_count: 0
group_poller_object_count: 0
selfmon_device_count: 0
selfmon_object_count: 0
```

2.1.2. Virtual IP(VIP)の構成 (5/6)

■ NMSを再起動

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:/etc/sysconfig/network-scripts [6.3.0] [02:29:20] $ SevOne-shutdown reboot
=== Started on 17 Aug '22 2:29
--- Settings:
--- * last_shortterm_backup_directory: 'backup-on-2022.08.17-02:05:1660701904'.
--- * last_shortterm_backup_time: '1660701904'.
--- * last_shortterm_restore_time: '1660700105'.
--- * force_netflow_backup: ".
--- Forcing backup.
+++ /usr/local/scripts/SevOne-shortterm-backup '/SevOne/appliance/settings/periodic-shortterm-backup/backups/backup-on-2022.08.17-02:29:1660703362' 2>&1
=== [17 Aug '22 2:29]: Started.
[[[ /SevOne/appliance/settings/periodic-shortterm-backup/backups/backup-on-2022.08.17-02:29:1660703362 ]]]
=== [17 Aug '22 2:29]: Finished.
--- Removing previous backup.
+++ rm -rf '/SevOne/appliance/settings/periodic-shortterm-backup/backups/backup-on-2022.08.17-02:05:1660701904'
<<< Setting 'last_shortterm_backup_directory' to 'backup-on-2022.08.17-02:29:1660703362'.
<<< Setting 'last_shortterm_backup_time' to '1660703362'.
=== Finished on 17 Aug '22 2:29
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:/etc/sysconfig/network-scripts [6.3.0] [02:29:24] $ SevOne-shutdown reboot
=== Started on 2022-08-17T02:29:25+0000
--- Settings:
--- * last_shortterm_backup_directory: 'backup-on-2022.08.17-01:35:1660700104'.
--- * last_shortterm_backup_time: '1660700104'.
--- * last_shortterm_restore_time: '1660702203'.
--- * force_netflow_backup: ".
--- Forcing backup.
+++ /usr/local/scripts/SevOne-shortterm-backup '/SevOne/appliance/settings/periodic-shortterm-backup/backups/backup-on-2022.08.17-02:29:1660703365' 2>&1
=== [2022-08-17T02:29:25+0000]: Started.
[[[ /SevOne/appliance/settings/periodic-shortterm-backup/backups/backup-on-2022.08.17-02:29:1660703365 ]]]
=== [2022-08-17T02:29:26+0000]: Finished.
--- Removing previous backup.
+++ rm -rf '/SevOne/appliance/settings/periodic-shortterm-backup/backups/backup-on-2022.08.17-01:35:1660700104'
<<< Setting 'last_shortterm_backup_directory' to 'backup-on-2022.08.17-02:29:1660703365'.
<<< Setting 'last_shortterm_backup_time' to '1660703365'.
=== Finished on 2022-08-17T02:29:26+0000
```

■ VIPの確認

1号機 PAS(192.168.65.11)

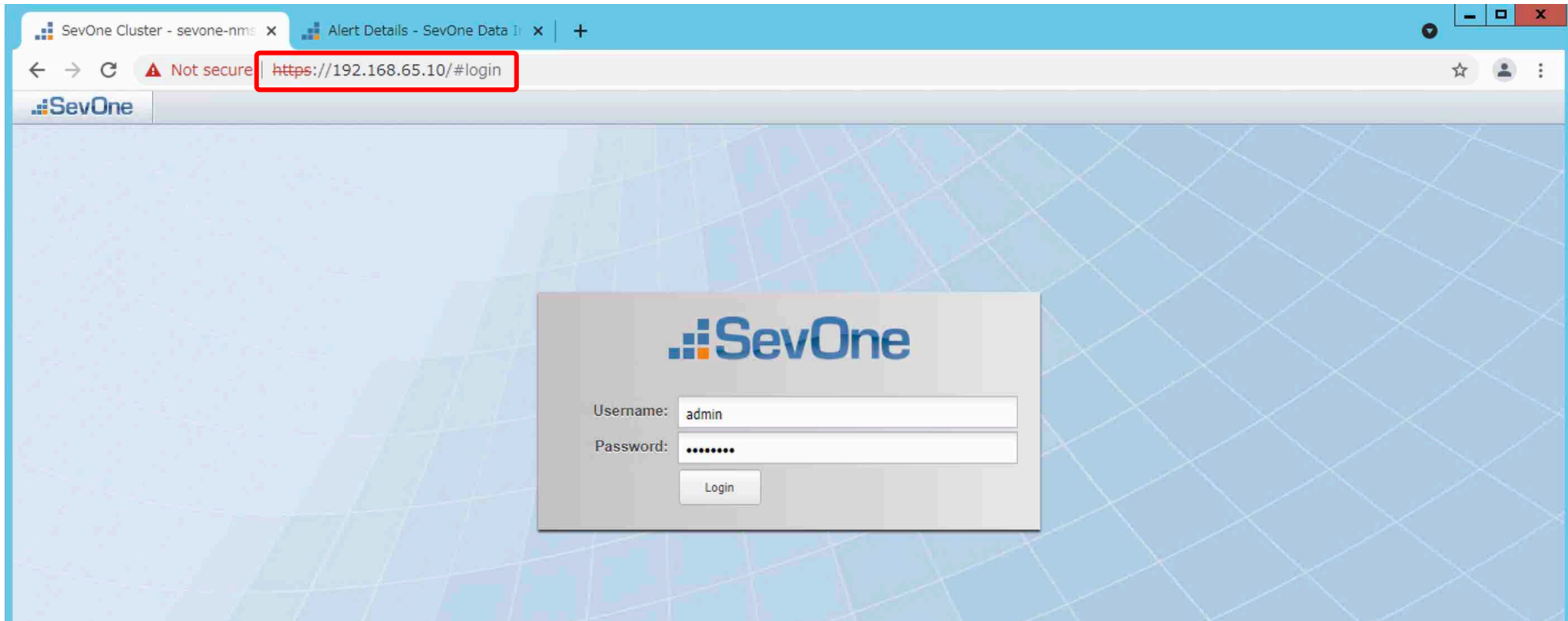
```
root@sevone-nms-a1:~ [6.3.0] [02:32:54] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:5b:c8 brd ff:ff:ff:ff:ff:ff
inet 192.168.65.11/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::d453:cdaa:33c0:c79d/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [02:33:09] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:51:5c brd ff:ff:ff:ff:ff:ff
inet 192.168.65.12/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::3a1c:cd71:3bee:37ab/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

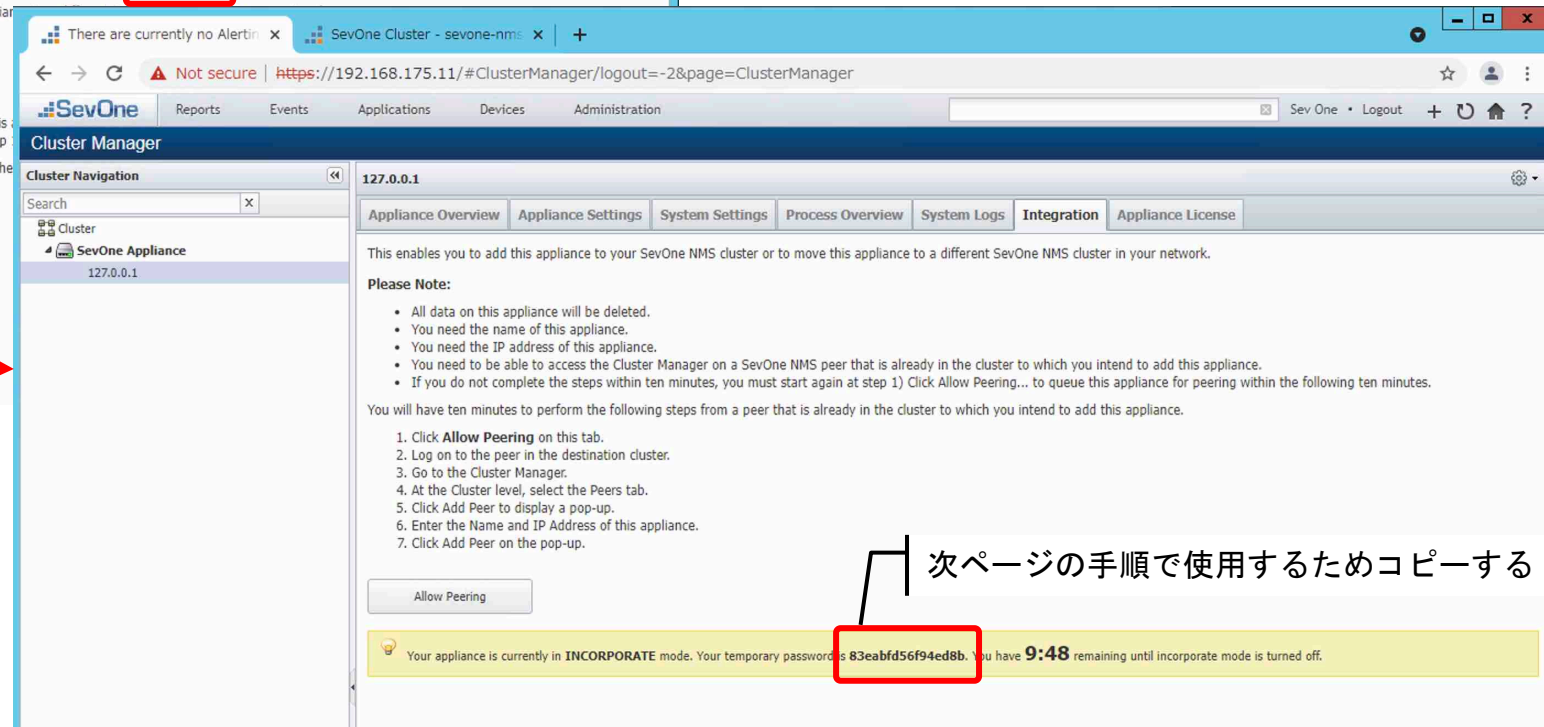
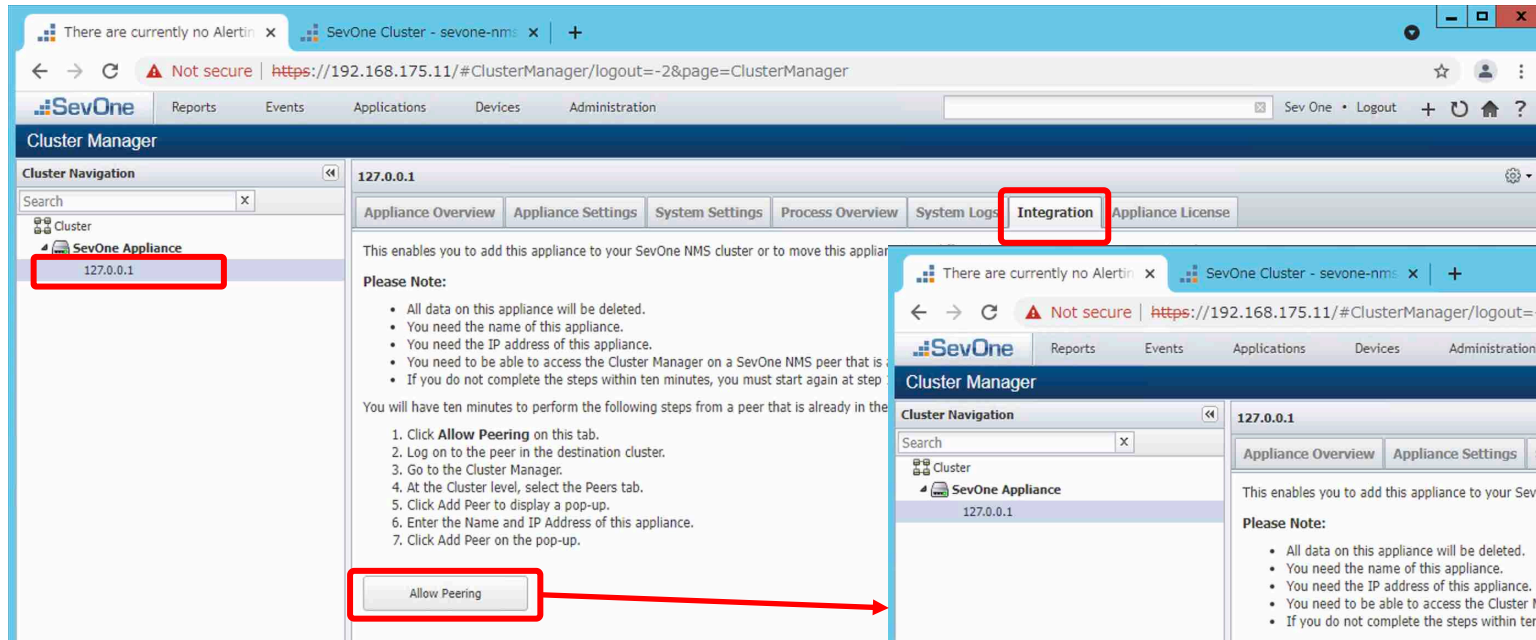

2.1.2. Virtual IP(VIP)の構成 (6/6)

- VIP(192.168.65.10)でGUIアクセスできることを確認



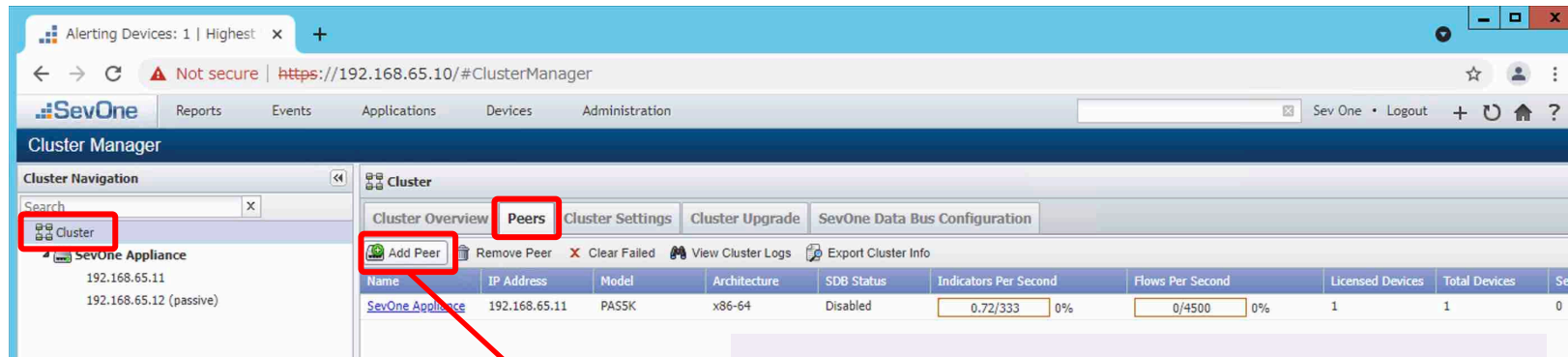
2.1.3. Cluster Peerの構成 (1/4)

- 3号機(192.168.175.11)にGUIログインし、[Administration] > [Cluster Manager]を選択
- 左メニューの[Cluster Navigation]パネルで「127.0.0.1」を選択
- [Integration]タブを開き、[Allow Peering]ボタンを押下



2.1.3. Cluster Peerの構成 (2/4)

- Site-AのVIP(192.168.65.10)にGUIログインし、[Administration] > [Cluster Manager]を選択
- 左メニューの[Cluster Navigation]パネルで「Cluster」を選択
- [Peers]タブを開き、[Add Peer]ボタンを押下
- Peer PASの情報を入力し、[Add Peer]ボタンを押下



Peer Name: Site-B
IP Address: 192.168.175.11
Password: 83eabfd56f94ed8b

WARNING: This process will overwrite all data on the new peer.

Add Peer Cancel

Peer Name: 任意の名前
IP Address: 3号機 Peer PASのIPアドレス
Password: 前手順で発行されたパスワード

2.1.3. Cluster Peerの構成 (3/4)

- Peerの追加が成功すると、[Peers]タブに表示され、同期が開始する
 - 同期状況は[Status]列で進捗状況を確認可能

Cluster Manager

Cluster Navigation

Cluster

Cluster Overview | **Peers** | Cluster Settings | Cluster Upgrade | SevOne Data Bus Configuration

Add Peer Remove Peer Clear Failed View Cluster Logs Export Cluster Info

Name	IP Address	Model	Architecture	SDB Status	Indicators Per Second	Flows Per Second	Licensed Devices	Total Devices
sevone-nms-a1.iselab.local	192.168.65.11	PAS5K	x86-64	Disabled	0.80/333 0%	0/4500 0%	1	1
Site-B	192.168.175.11	PAS5K	x86-64	Disabled	0/333 0%	/4500 0%	0	0

Cluster Manager

Cluster Navigation

Cluster

Cluster Overview | **Peers** | Cluster Settings | Cluster Upgrade | SevOne Data Bus Configuration

Add Peer Remove Peer Clear Failed View Cluster Logs Export Cluster Info

Consumption	Licensed Objects	Total Objects	Selfmon Objects	Group Poller Object	Flow License Consumption	Dropped Flows per	Interfaces	Status	Actions
1%	69	69	0	0	0/5000 0%	0	0/15	Ready to use	
0%	0	0	0	0	0/5000 0%		0/15	50%	

2.1.3. Cluster Peerの構成 (4/4)

- 同期が完了すると、左メニューの[Cluster Navigation]パネルにPeerが表示される

The screenshot displays the SevOne Cluster Manager web interface. The left sidebar, titled 'Cluster Navigation', shows a tree structure under 'Cluster'. Two entries are visible: 'sevone-nms-a1.iselab.local' (192.168.65.11) and 'Site-B' (192.168.175.11). The 'Site-B' entry is highlighted with a red rectangle. The main content area is titled '192.168.175.11' and contains several tabs: 'Appliance Overview', 'Appliance Settings', 'System Settings', 'Process Overview', 'System Logs', 'Integration', and 'Appliance License'. The 'Appliance Overview' tab is active, showing two sections: 'Data Database' and 'Config Database'. Each section contains a table with the following data:

Data Database	
Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000016
Seconds Behind	0

Config Database	
Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000020
Seconds Behind	0

2.1.4. Peer HSAの構成 (1/3)

- 4号機(192.168.175.12)にGUIログインし、[Administration] > [Cluster Manager]を選択
- 左メニューの[Cluster Navigation]パネルで「127.0.0.1」を選択
- [Integration]タブを開き、[Allow Peering]ボタンを押下

The image displays two sequential screenshots of the SevOne Cluster Manager web interface. Both screenshots show the 'Integration' tab selected in the top navigation bar. The left screenshot shows the 'Allow Peering' button highlighted with a red rectangle and an arrow pointing to the right. The right screenshot shows the same interface, but with a yellow banner at the bottom indicating the appliance is in 'INCORPORATE' mode and displaying a temporary password 'e6ceb78eef25cc1' and a 9:48 timer. A red arrow points from the 'Allow Peering' button in the left screenshot to the password in the right screenshot.

次ページの手順で使用するためコピーする

2.1.4. Peer HSAの構成 (2/3)

■ 3号機(192.168.175.11)にrootユーザーでSSHログイン

– "screen"コマンドを実行してから、"SevOne-hsa-add"コマンドを実行

```
root@sevone-nms-b1:~ [6.3.0] [04:59:36] $ screen
root@sevone-nms-b1:~ [6.3.0] [04:59:40] $ SevOne-hsa-add
--- SevOne Hot Stand-by Add started ---
```

```
--- Checking that you're using screen.
--- You're using screen.
--- Checking that the SevOne NMS is installed.
--- SevOne NMS is installed.
--- Checking that the SevOne NMS services are running normally.
--- SevOne NMS services check succeeded.
--- Fetching our IP address from the peers table.
--- Our current IP address is 192.168.175.11.
```

```
>>> Enter IP Of the secondary
192.168.175.12
```

```
>>> Enter incorporate password of the secondary      ←前手順で取得したパスワードを入力
--- Primary IP is 192.168.175.11
--- Secondary IP is 192.168.175.12
```

```
>>> Continue (yes/no)?
```

yes

```
--- Checking if secondary appliance is in incorporate mode...
--- ssh check with command /usr/bin/php /usr/local/scripts/isInIncorporateMode.php >/dev/null 2>&1
Warning: Permanently added '192.168.175.12' (ECDSA) to the list of known hosts.
--- Secondary appliance is in incorporate mode.
--- Checking the ports on the secondary.
--- Secondary ports check succeeded.
--- Fetching the hostname of the new secondary.
Password:      ←root/パスワードを入力
--- Hostname of the new secondary is sevone-nms-b2.iselab.local.
--- Setting up secondary's SSH authorized_keys file.
Password:      ←root/パスワードを入力
--- Delivered primary's public key to secondary.
--- Updated secondary's authorized_keys file.
```

```
<...snip...>
```

```
--- Please confirm the following IP addresses of cluster members:
```

```
1) 192.168.65.11
2) 192.168.65.12
3) 192.168.175.11
4) 192.168.175.12 (new hot stand-by)
```

```
>>> Continue (yes/no)?
```

yes

```
--- Acquiring cluster-wide locks.
--- Acquired lock file for cluster-changes, fd is 200
--- Acquiring discovery locks.
--- Acquired lock file for SevOne-discover-devices, fd is 201
--- Acquired lock file for discover-netflow, fd is 202
--- Configuring 192.168.175.11 to expect a passive counterpart.
```

```
<...snip...>
```

```
--- Successfully wrote web proxy config across cluster
--- Successfully copy 00_upstream.conf on 192.168.175.12 HSA
--- Successfully reloaded nginx on 192.168.175.12
--- Successfully restarted SevOne-restapi on 192.168.175.12
--- Starting pushgateway on HSA
pushgateway: ERROR (already started)
--- Starting pushgateway on primary peer
pushgateway: started
--- Successfully fixed hosts file on all peers
--- Discovery hook files are copied to hsa from master.
--- /opt/patches does not exist.
--- Patch files are installed.
--- Updating license info for primary and secondary.
--- Updated License info.
--- All done.
--- Log into each peer and run SevOne-act check peers to verify keys.
--- SevOne Hot Stand-by Add is finished ---
```

2.1.4. Peer HSAの構成 (3/3)

- Site-AのVIP(192.168.65.10)にGUIログインし、[Administration] > [Cluster Manager]より、Peer PAS(active)/Peer HSA(passive)が正しく構成されていることを確認

The screenshot displays the SevOne Cluster Manager web interface. The browser address bar shows the URL <https://192.168.65.10/#ClusterManager/logout=-2&page=ClusterManager>. The interface includes a navigation menu with options like Reports, Events, Applications, Devices, and Administration. The main content area is titled 'Cluster Manager' and features a 'Cluster Navigation' sidebar on the left. In this sidebar, 'Site-B' is highlighted with a red rectangle, showing its IP addresses: 192.168.175.11 and 192.168.175.12 (passive). The main panel displays the 'Cluster Overview' tab, which includes an 'Info' section with various system metrics.

Info	
SevOne Version	6.3.0
Cluster Master	sevone-nms-a1.iselab.local
Total Devices	1
Licensed Devices	1
Selfmon Devices	0
Group Poller Devices	0
Total Flow Devices	0
Total License Consumption	246/10000 2%
Total Object License Consumption	246/10000 2%
Total Flow License Consumption	0/10000 0%
Total Object Load	246
Selfmon Objects	0
Group Poller Objects	0
Peers	2
SNMPv3 Engine ID	80001F888082DEB61F34F2A8620000000

(参考) Peer名の変更

- [Administration] > [Cluster Manager]
 - 左メニューの[Cluster Navigation]パネルで対象Peerを選択
 - Peer名のリンクをクリックして名前を変更可能

The left screenshot shows the SevOne Cluster Manager interface. The 'Cluster Navigation' panel on the left lists the following peers:

- Cluster
 - sevone-nms-a1.iselab.local
 - 192.168.65.11
 - 192.168.65.12 (passive)
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

The 'Peer Overview' tab for 'sevone-nms-a1.iselab.local' is selected, showing the following information:

Info	
IP Address	192.168.65.11
Model	PASSK
Architecture	x86-64
Licensed Devices	1
Total Devices	1
Selfmon Devices	0
Group Poller D	
Total Objects	
Selfmon Objec	
Group Poller O	

A 'Rename Peer' dialog box is open, showing the current name 'sevone-nms-a1.iselab.local' and the new name 'Site-A'. The 'OK' button is highlighted.

The right screenshot shows the SevOne Cluster Manager interface with the 'Peer Overview' tab selected for 'Site-A'. The 'Cluster Navigation' panel on the left lists the following peers:

- Cluster
 - Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

The 'Peer Overview' tab for 'Site-A' is selected, showing the following information:

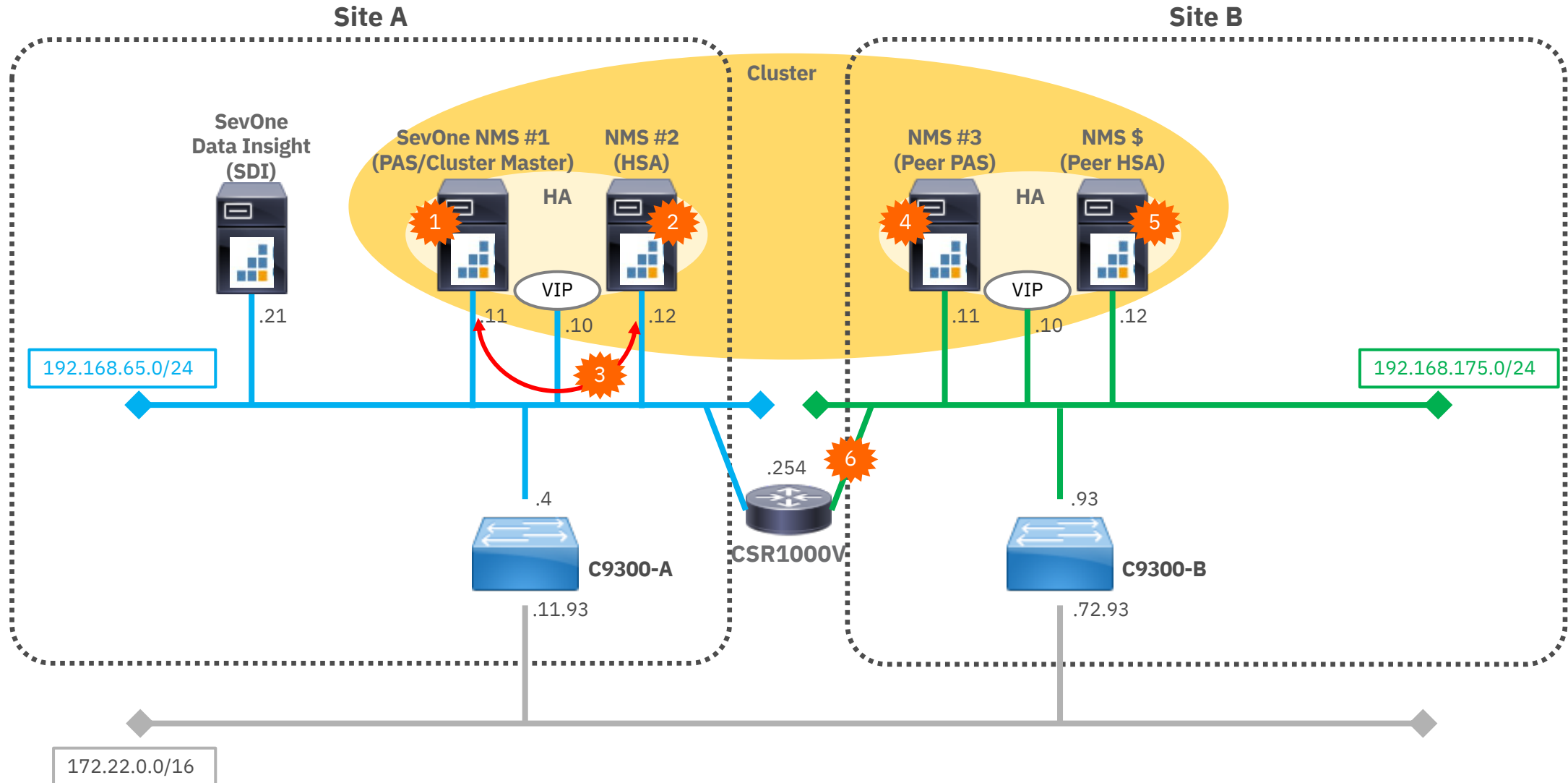
Info	
IP Address	192.168.65.11
Model	PASSK
Architecture	x86-64
Licensed Devices	1
Total Devices	1
Selfmon Devices	0
Group Poller Devices	0
Total Objects	246
Selfmon Objects	0
Group Poller Objects	0
Total License Consumption	246/5000 5%
Object License Consumption	246/5000 5%
Flow Device Count	0
Flow License Consumption	0/5000 0%
Indicators Per Second	3.79/333 1%
Flows per Second	0/4500 0%
Dropped Flows per Second	0
Interface Count	0/15
SDB Enabled	No

2.1.5. PeerのVIP構成

- 「2.1.2. Virtual IP(VIP)の構成」と同様の手順で3号機Peer PASと4号機Peer HSAでVIP(192.168.175.10)を構成

3. 障害テスト概要

3.1. 障害ポイント



3.2. 検証項目と確認ポイント

No.	項目	確認ポイント
1.	PAS(Cluster Master)ノード障害 / 復旧	<ul style="list-style-type: none"> • Site-AのHSAがpassiveからactiveに自動で切り替わること • Site-AのVIPにアクセスできること • PASの障害を検知できるか • 障害時にネットワーク・デバイスの障害を検知できるか • 復旧時に自動でactiveが切り替わるか • 手動でのactive切り替え手順
2.	HSAノード障害 / 復旧	<ul style="list-style-type: none"> • HSAノード障害を検知できるか
3.	PAS(Cluster Master) – HSA間通信障害 / 復旧	<ul style="list-style-type: none"> • Split Brainになることおよびその影響 • Split Brainになったときの対応手順 • 復旧時の影響
4.	Peer PASノード障害 / 復旧	<ul style="list-style-type: none"> • Peer HSAがpassiveからactiveに自動で切り替わること • Site-BのVIPにアクセスできること • Peer PASノード障害を検知できるか
5.	Peer HSAノード障害 / 復旧	<ul style="list-style-type: none"> • Peer HSAノード障害を検知できるか
6.	PAS(Cluster Master) – Peer PAS間の通信障害 / 復旧	<ul style="list-style-type: none"> • Cluster Masterで障害検知できるか • 復旧後Peer PASのデータがPASに送信されるか

3.3. 検証結果サマリー

No.	項目	結果サマリー		
		想定(仕様)通り	サービス影響 (Down Time)	説明
1.	PAS(Cluster Master)ノード障害 / 復旧	×	有 (Failover Time 設定値 + α)*	<ul style="list-style-type: none"> 障害時に、設定したFailover TimeでHSAがactiveに切り替わりサービス継続可能 PASの障害/復旧はNMS管理コンソールまたはHSAのログで検知可能 PASは復旧後passiveとなるため元の状態に戻すためには手動でTake Over(もしくはFail Over)によりactiveの切り替えが必要 PASは復旧後passiveにも関わらずVIPが有効となりVIPが重複する事象が発生 (調査中)
2.	HSAノード障害 / 復旧	○	無	<ul style="list-style-type: none"> NMSとしてのサービス影響なし HSAの障害/復旧はNMS管理コンソールまたはPASのログで検知可能
3.	PAS(Cluster Master) – HSA間通信障害 / 復旧	×	無	<ul style="list-style-type: none"> 障害からFailover Time経過後両activeのSplit Brainとなり、PASとHSAでそれぞれVIPが有効になりVIPが重複する Peerから見たCluster MasterはHSAに切り替わる 復旧後はSplit Brainの状態が自動で解消されないため、手動でSplit Brainの修正が必要 Split Brain修正後、passiveにしたNMSのVIPが有効のままとなりVIPが重複する事象が発生 (調査中)
4.	Peer PASノード障害 / 復旧	×	有 (Failover Time 設定値 + α)*	<ul style="list-style-type: none"> 障害時に設定したFailover TimeでPeer HSAがactiveに切り替わりサービス継続可能 Peer PASの障害/復旧はNMS管理コンソールまたはPeer HSAのログで検知可能 Peer PASは復旧後passiveとなるため元の状態に戻すためには手動でTake Over(もしくはFail Over)によりactiveの切り替えが必要 Peer PASは復旧後passiveにも関わらずVIPが有効となりVIPが重複する事象が発生 (調査中)
5.	Peer HSAノード障害 / 復旧	○	無	<ul style="list-style-type: none"> NMSとしてのサービス影響なし Peer HSAの障害/復旧はNMS管理コンソールまたはPeer PASのログで検知可能
6.	PAS(Cluster Master) – Peer PAS間の通信障害 / 復旧	○	無	<ul style="list-style-type: none"> 障害時はPeer(Site-B)側NMS管理コンソールにはログイン不可 障害中SDIはPeer(Site-B)の情報が取得できない 障害中にPeer PASが受信したTrapなどのデータは復旧後にPAS(Cluster Master)に同期される

* Failover Timeは障害検知時間。Peer毎に設定可能でデフォルト600秒 (最小1秒～)。

+ α は障害検知からactiveに切り替わりサービス再開するまでの時間。環境や状況で前後するが、実績値として今回の検証では約30秒～2分程度。

4. 障害テスト結果詳細

4.0. 正常時

4.0. 正常時の状態確認 (1/2)

■ [Administration] > [Cluster Manager] ※どのIPアドレスでログインしても同じ情報が表示される

SevOne Cluster Manager interface showing Site-A configuration. The selected IP is 192.168.65.11. The Master Host for the Data Database is 127.0.0.1, and for the Config Database is 0.0.0.1.

Database	Master Host	I/O Thread	Update Thread	Master Log File	Seconds Behind
Data Database	127.0.0.1	Running	Running	peer-bin.000027	0
Config Database	0.0.0.1	Not Running	Running		0

SevOne Cluster Manager interface showing Site-A configuration. The selected IP is 192.168.65.12 (passive). The Master Host for the Data Database is 192.168.65.11, and for the Config Database is 192.168.65.11.

Database	Master Host	I/O Thread	Update Thread	Master Log File	Seconds Behind
Data Database	192.168.65.11	Running	Running	peer-bin.000026	0
Config Database	192.168.65.11	Running	Running	peer-bin.000027	0

SevOne Cluster Manager interface showing Site-B configuration. The selected IP is 192.168.175.11. The Master Host for the Data Database is 127.0.0.1, and for the Config Database is 192.168.65.11.

Database	Master Host	I/O Thread	Update Thread	Master Log File	Seconds Behind
Data Database	127.0.0.1	Running	Running	peer-bin.000019	0
Config Database	192.168.65.11	Running	Running	peer-bin.000027	0

SevOne Cluster Manager interface showing Site-B configuration. The selected IP is 192.168.175.12 (passive). The Master Host for the Data Database is 192.168.175.11, and for the Config Database is 192.168.175.11.

Database	Master Host	I/O Thread	Update Thread	Master Log File	Seconds Behind
Data Database	192.168.175.11	Running	Running	peer-bin.000021	0
Config Database	192.168.175.11	Running	Running	peer-bin.000019	0

4.0. 正常時の状態確認 (2/2)

■ VIP

– Site-A

1号機 PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [08:49:56] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:50:56:86:5b:c8 brd ff:ff:ff:ff:ff:ff
    inet 192.168.65.11/24 brd 192.168.65.255 scope global noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet6 fe80::d453:cdaa:33c0:c79d/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

2号機 HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [08:49:59] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:50:56:86:51:5c brd ff:ff:ff:ff:ff:ff
    inet 192.168.65.12/24 brd 192.168.65.255 scope global noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet6 fe80::3a1c:cd71:3bee:37ab/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

– Site-B

3号機 Peer PAS(192.168.175.11)

```
root@sevone-nms-b1:~ [6.3.0] [08:50:35] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:50:56:86:4a:9f brd ff:ff:ff:ff:ff:ff
    inet 192.168.175.11/24 brd 192.168.175.255 scope global noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet 192.168.175.10/24 brd 192.168.175.255 scope global secondary noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet6 fe80::d453:cdaa:33c0:c79d/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

4号機 Peer HSA(192.168.175.12)

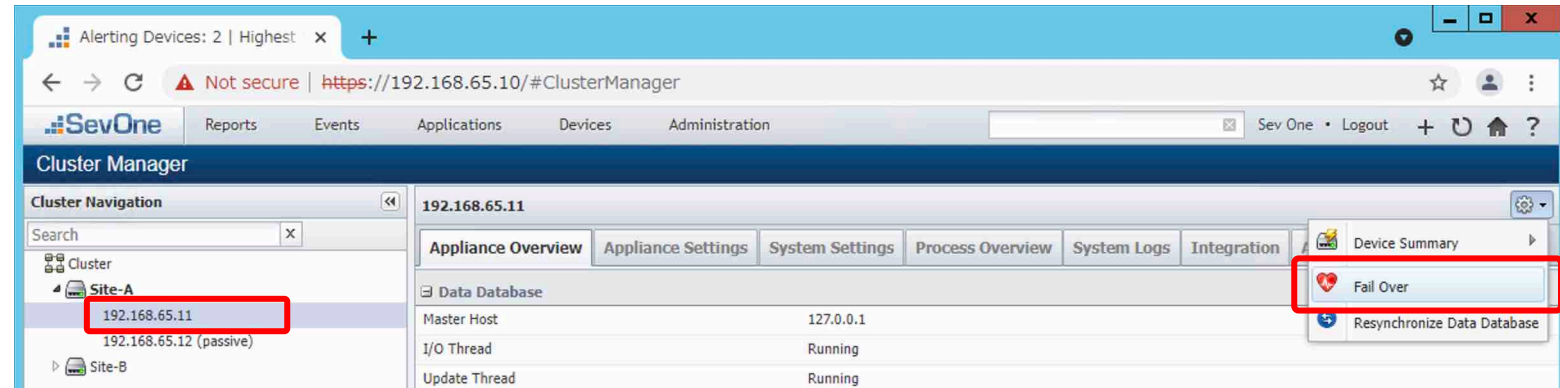
```
root@sevone-nms-b2:~ [6.3.0] [08:50:47] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:50:56:86:d7:a5 brd ff:ff:ff:ff:ff:ff
    inet 192.168.175.12/24 brd 192.168.175.255 scope global noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet6 fe80::3a1c:cd71:3bee:37ab/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

(参考) Fail OverとTake Over

- active機、passive機それぞれでactive/passiveの切り替えが可能
- 操作の主体によって呼び方が異なる

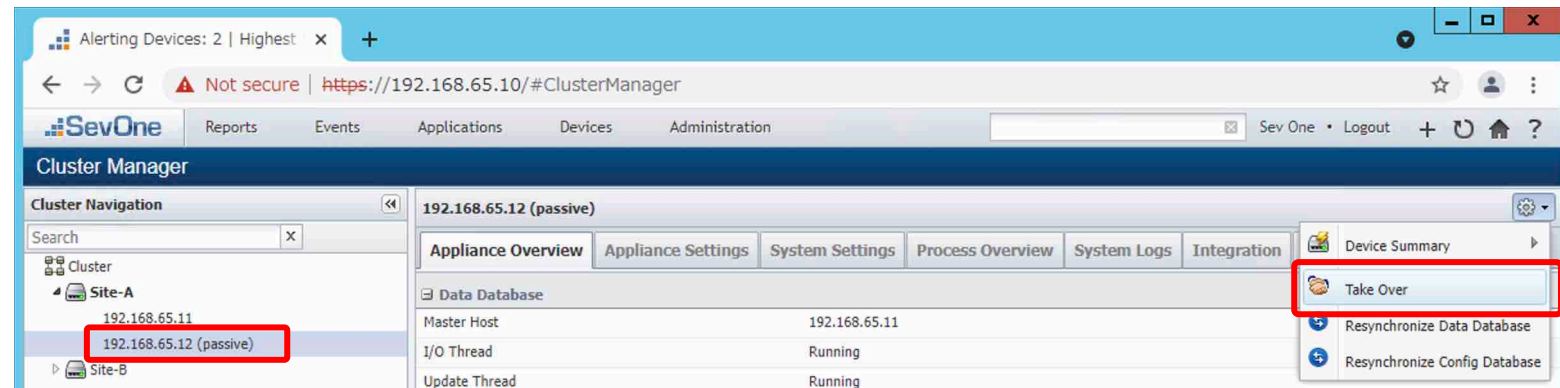
– Fail Over

- active機にて実施する操作
- active機からpassive機にactiveを移す



– Take Over

- passive機にて実施する操作
- passive機をactiveに昇格する



4.1. PAS(Cluster Master)ノード障害 / 復旧

4.1. PAS(Cluster Master)ノード障害 / 復旧 (1/2)

■ 確認手順

– PASノード障害

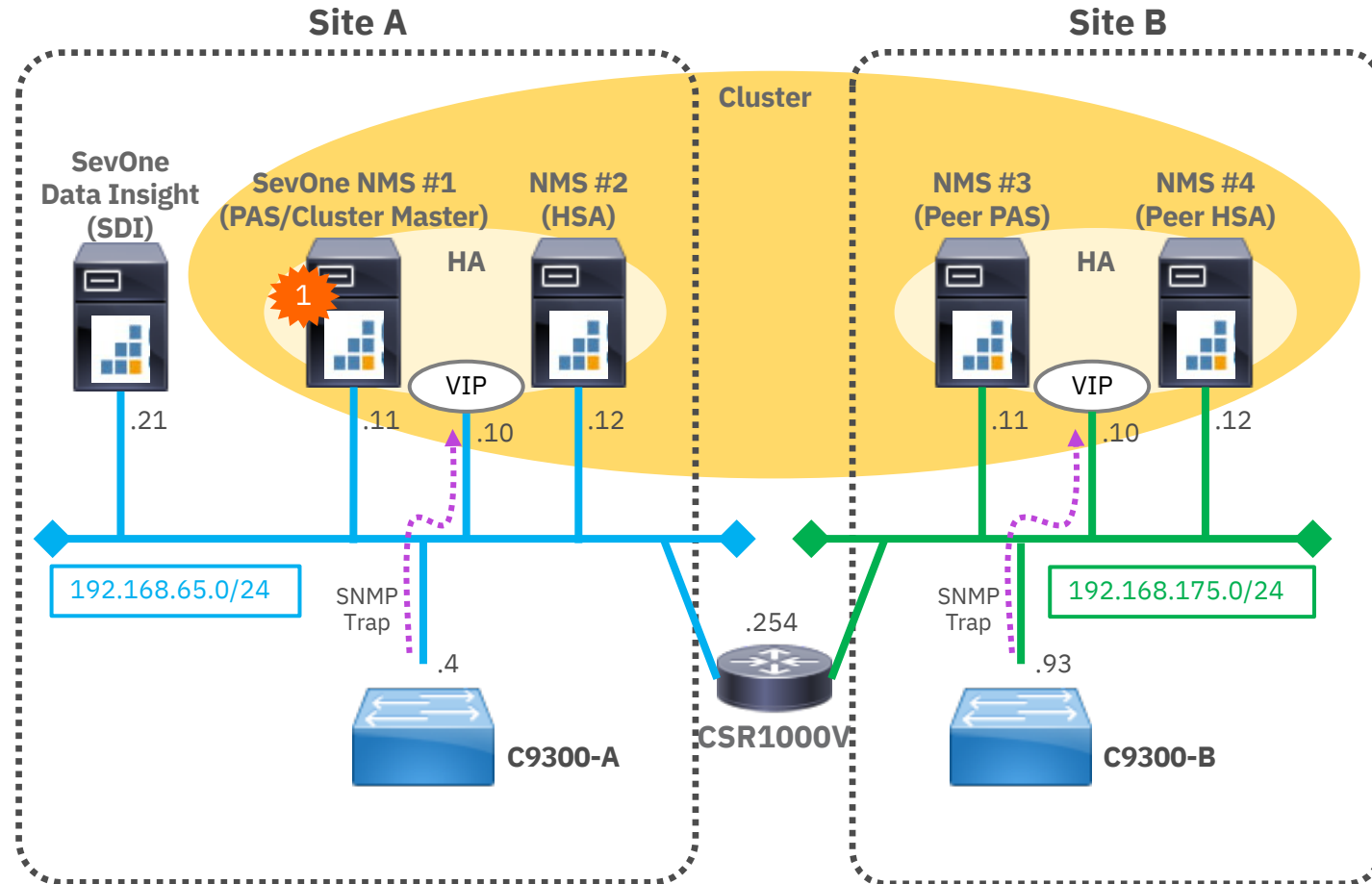
1. "SevOne-shutdown shutdown"コマンドでPASノードをshutdownする
2. Fail Over前後でC9300-AおよびC9300-BのインターフェースをshutdownしてSNMP Trapを発生させ、NMSおよびSDIの管理コンソールでAlertを確認する
3. NMSの管理コンソールでFail Overされたことを確認する
4. ログを確認する

– PASノード復旧

1. PASノードを起動する (電源ON)
2. NMSの管理コンソールでactive/passiveの状態を確認する
3. NMSのログを確認する

– 手動Take Over

1. 手動Take Overにより、復旧したノードをactiveにする



4.1. PAS(Cluster Master)ノード障害 / 復旧 (2/2)

■ Failover Time設定

– [Administration] > [Cluster Manager] > Site-A > [Peer Settings] > [Primary/Secondary]

The screenshot displays the SevOne Cluster Manager web interface. The browser address bar shows the URL `https://192.168.65.10/#ClusterManager/logout=-2&page=ClusterManager`. The interface includes a navigation menu on the left with 'Cluster Navigation' and a search bar. The main content area is titled 'Cluster Manager' and shows 'Site-A' selected. Under 'Peer Settings', the 'Primary/Secondary' tab is active. The 'Failover Time' is set to 300 seconds, highlighted by a red box. A callout points to this field with the text: 'Peer毎に設定可能 (デフォルトは600秒)'. Other settings visible include Primary Appliance IP Address (192.168.65.11), Secondary Appliance IP Address (192.168.65.12), and Virtual IP Address (192.168.65.10). 'Save' and 'Reset' buttons are at the bottom right.

Setting	Value
Primary Appliance IP Address	192.168.65.11
Secondary Appliance IP Address	192.168.65.12
Virtual IP Address	192.168.65.10
Failover Time	300 seconds

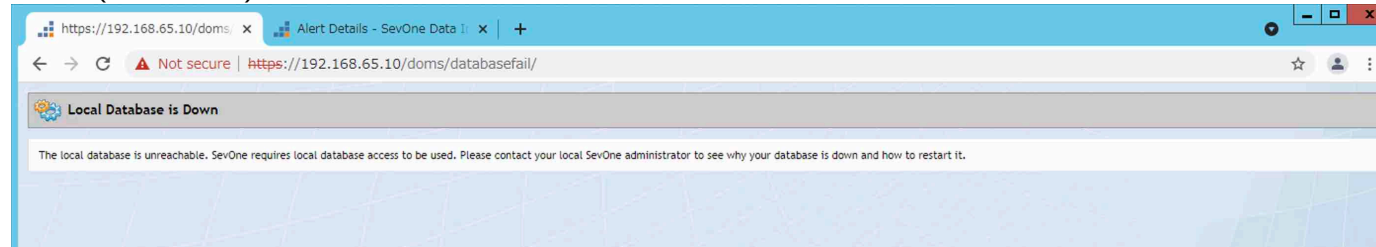
Peer毎に設定可能
(デフォルトは600秒)

4.1.1. PASノード障害 (1/6)

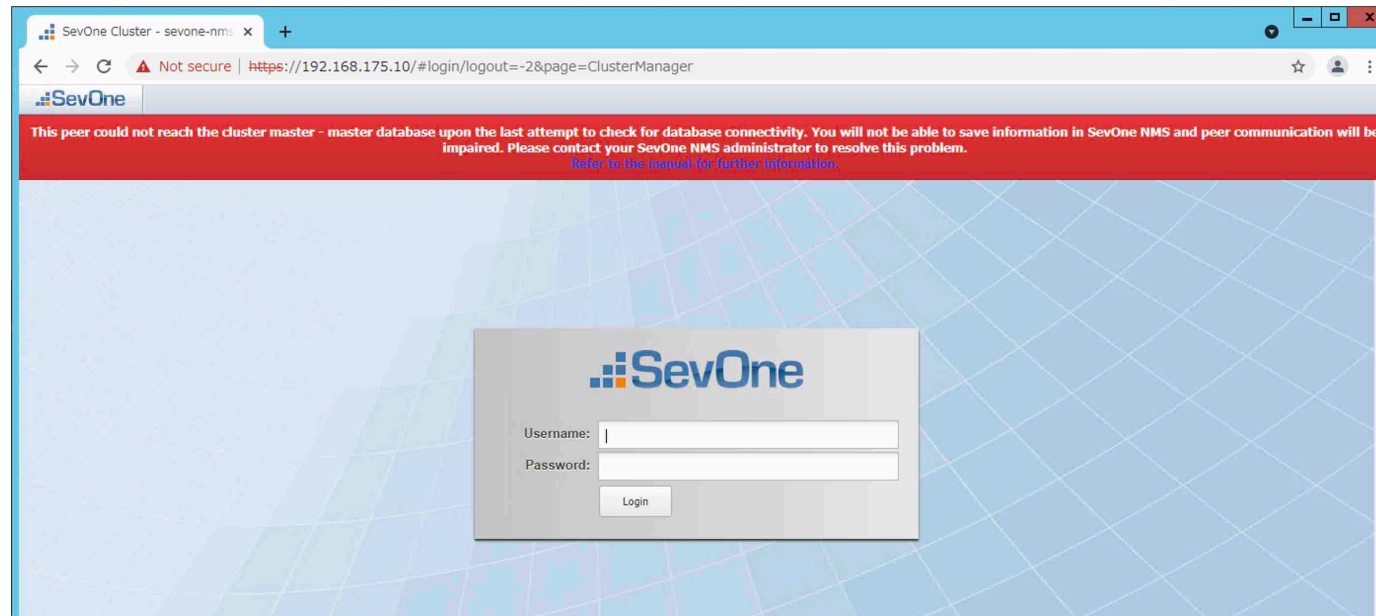
■ NMS

- HSAがMaster(active)に切り替わるまでVIPが有効にならず接続不可
- VIPが有効になってもHSAノードがMasterとしてReadyになるまでログイン不可 (Failover Time + α)
 - + α は環境や状況に依存するが、今回の検証ではFailover Time + 約30秒～2分程度だった。

NMS(Site-A VIP)

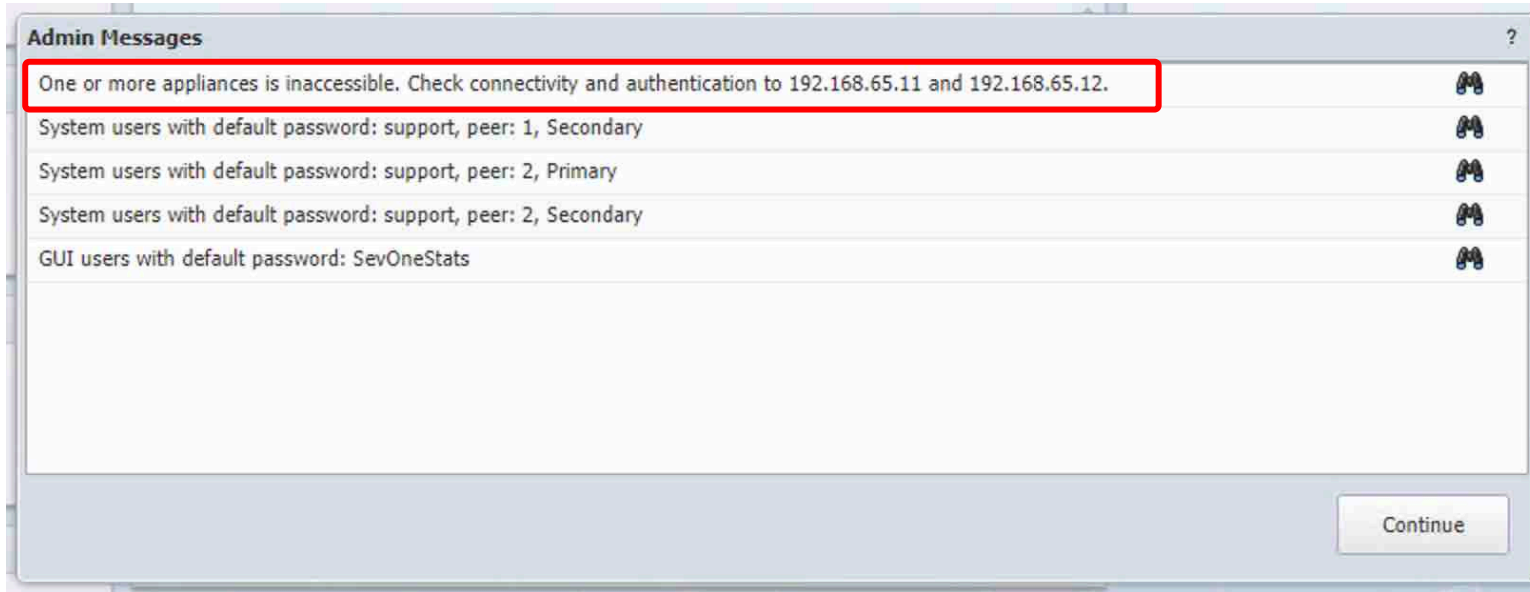


NMS(Site-B VIP)



4.1.1. PASノード障害 (2/6)

■ NMS(Site-A VIP): ログイン後のメッセージ



4.1.1. PASノード障害 (3/6)

- NMS(Site-A VIP): [Administration] > [Cluster Manager]
 - HSAノード(192.168.65.12)がCluster Masterとなる

Alerting Devices: 2 | Highest x Alert Details - SevOne Data I x +

Not secure | https://192.168.65.10/#ClusterManager

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

Cluster

- Site-A
 - 192.168.65.11 (passive)
 - 192.168.65.12
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.12

Appliance Overview Appliance Settings System Settings Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000023
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

Alerting Devices: 2 | Highest x Alert Details - SevOne Data I x +

Not secure | https://192.168.65.10/#ClusterManager

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

Cluster

- Site-A
 - 192.168.65.11 (passive)
 - 192.168.65.12
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.175.11

Appliance Overview Appliance Settings System Settings Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000017
Seconds Behind	0

Config Database

Master Host	192.168.65.12
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000023
Seconds Behind	0

4.1.1. PASノード障害 (4/6)

■ 以下のログが出力される

HSA(192.168.65.12): /var/log/SevOne-masterslaved.log 抜粋

```
2022-09-07T05:06:33+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:06:35+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3598>shouldRetryQuery: We lost connection to MySQL.
2022-09-07T05:06:35+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3598>shouldRetryQuery: Attempting to reconnect to MySQL.
2022-09-07T05:06:35+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3598>dbQuery: Retrying the query 1/10.
2022-09-07T05:06:35+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 2.00 seconds out of 300 seconds).
2022-09-07T05:06:36+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:06:37+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 4.00 seconds out of 300 seconds).
2022-09-07T05:06:38+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:06:39+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 6.00 seconds out of 300 seconds).
2022-09-07T05:06:40+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:06:41+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 8.00 seconds out of 300 seconds).
<...snip...>
2022-09-07T05:11:29+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 294.00 seconds out of 300 seconds).
2022-09-07T05:11:29+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (113)
2022-09-07T05:11:31+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 296.00 seconds out of 300 seconds).
2022-09-07T05:11:32+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (113)
2022-09-07T05:11:33+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 298.00 seconds out of 300 seconds).
2022-09-07T05:11:35+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 300.00 seconds out of 300 seconds).
2022-09-07T05:11:35+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.65.11) has died.
2022-09-07T05:11:35+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): I am going to attempt to become the pair master.
2022-09-07T05:11:35+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): Successfully Attempt to become the pair master.
2022-09-07T05:11:35+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (113)
2022-09-07T05:11:38+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (113)
<...snip...>
```

2秒間隔でcheckDeathDetectionRoutine()が実行され、300秒でHSAノード障害を検知

4.1.1. PASノード障害 (5/6)

■ SNMP Trap

– NMS(Site-A VIP): [Events] > [Archives] > [Logged Traps]

- Fail Overが完了するまでTrap受信不可
- Fail Over完了後はHSA(新Master)でTrap受信可能

Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x | +

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	7 Sep '22 5:13:33	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1507631327
192.168.65.4	7 Sep '22 5:13:31	BRIDGE-MIB::newRoot	2	IF-MIB::ifIndex.54	Integer	54
192.168.65.4	7 Sep '22 5:13:31	BRIDGE-MIB::newRoot	2	IF-MIB::ifDescr.54	Octet String	GigabitEthernet1/0/46
192.168.65.4	7 Sep '22 5:05:44	CISCO-SMI::ciscoMgmt.43.2.0.1	5	IF-MIB::ifType.54	Integer	6
192.168.65.4	7 Sep '22 5:05:37	CISCO-SMI::ciscoMgmt.43.2.0.1	5	CISCO-SMI::local.2.1.1.20.54	Octet String	administratively down

Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x | +

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	7 Sep '22 5:13:48	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1507611409
192.168.175.93	7 Sep '22 5:13:48	IF-MIB::linkDown	5	IF-MIB::ifIndex.22	Integer	22
192.168.175.93	7 Sep '22 5:13:45	BRIDGE-MIB::newRoot	2	IF-MIB::ifDescr.22	Octet String	GigabitEthernet1/0/14
192.168.175.93	7 Sep '22 5:13:42	IF-MIB::linkUp	5	IF-MIB::ifType.22	Integer	6
192.168.175.93	7 Sep '22 5:13:41	IF-MIB::linkUp	5	CISCO-SMI::local.2.1.1.20.22	Octet String	administratively down
192.168.175.93	7 Sep '22 5:13:38	BRIDGE-MIB::topologyChange	3			
192.168.175.93	7 Sep '22 5:07:28	IF-MIB::linkDown	5			
192.168.175.93	7 Sep '22 5:07:28	IF-MIB::linkDown	5			
192.168.175.93	7 Sep '22 5:07:25	BRIDGE-MIB::newRoot	2			
192.168.175.93	7 Sep '22 5:05:47	IF-MIB::linkUp	5			
192.168.175.93	7 Sep '22 5:05:45	IF-MIB::linkUp	5			
192.168.175.93	7 Sep '22 5:05:44	BRIDGE-MIB::topologyChange	3			
192.168.175.93	7 Sep '22 5:05:28	CISCO-SMI::ciscoMgmt.43.2.0.1	5			
192.168.175.93	7 Sep '22 5:05:21	CISCO-SMI::ciscoMgmt.43.2.0.1	5			

4.1.1. PASノード障害 (6/6)

■ SNMP Trap

– SDI: Alert Details

- Site-AおよびSite-BともにNMSから情報取得可能

The screenshot shows the SevOne Alert Details page. The left sidebar contains navigation links: Create, Reports (selected), Explore, Configure, and Administer. The main content area displays a table of alerts for the device group 'All Device Groups'. The table has columns for Severity, Device Name, Object Name, First, Last, Message, and Occurrences. A red box highlights a specific alert row.

Severity	Device Name	Object Name	First	Last	Message	Occurrences
Alert	C9300-B	Temperature Monitor 1014	Aug 18, 2022 4:03 (UTC-04:00) EDT	Sep 7, 2022 1:15 (UTC-04:00) EDT	Threshold triggered -- C93...	25.24K
Alert	C9300-A	Temperature Monitor 1014	Aug 18, 2022 0:09 (UTC-04:00) EDT	Sep 7, 2022 1:15 (UTC-04:00) EDT	Threshold triggered -- C93...	12.81K
Error	C9300-B		Sep 1, 2022 3:10 (UTC-04:00) EDT	Sep 7, 2022 1:13 (UTC-04:00) EDT	Trap received from C9300-...	34
Error	C9300-A		Aug 31, 2022 21:18 (UTC-04:00) EDT	Sep 7, 2022 1:13 (UTC-04:00) EDT	Trap received from C9300-A: IF-MIB::linkDown -- Bindings: DISMAN-EVENT- MIB::sysUpTimeInstance = 1507631327, IF- MIB::ifIndex.54 = 54, IF- MIB::ifDescr.54 = GigabitEthernet1/0/46, IF- MIB::ifType.54 = 6, CISCO- SMI::local2.1.1.20.54 = administratively down -- An interface has gone down.	1.32K

4.1.2. PASノード復旧 (1/4)

- NMS(Site-A VIP): [Administration] > [Cluster Manager]
 - 復旧後はHSAノード(192.168.65.12)がMaster(active)のままとなる

Alerting Devices: 2 | Highest x Alert Details - SevOne Data I x +

Not secure | <https://192.168.65.10/#ClusterManager/logout=-3&page=ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

- Cluster
 - Site-A
 - 192.168.65.11 (passive)
 - 192.168.65.12
 - Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.11 (passive)

Appliance Overview Appliance Settings System Settings Process Ov

Data Database

Master Host	192.168.65.12
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database

Master Host	192.168.65.12
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000023
Seconds Behind	0

Alerting Devices: 2 | Highest x Alert Details - SevOne Data I x +

Not secure | <https://192.168.65.10/#ClusterManager/logout=-3&page=ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

- Cluster
 - Site-A
 - 192.168.65.11 (passive)
 - 192.168.65.12
 - Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.12

Appliance Overview Appliance Settings System Settings Process Ov

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000023
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

4.1.2. PASノード復旧 (2/4)

■ 以下のログが出力される

HSA(192.168.65.12): /var/log/SevOne-masterslaved.log 抜粋

```
2022-09-07T05:55:08+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:55:10+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:55:12+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:55:14+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:55:16+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:55:18+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:55:20+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:55:22+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:55:24+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: <3597>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (111)
2022-09-07T05:55:32+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.65.11) is now alive.
2022-09-07T05:55:33+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: interactionRoutine(): Established connection from 127.0.0.1 on socket 8
2022-09-07T05:55:33+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: userRoutine(): Socket 8 hanging up.
2022-09-07T05:55:40+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: interactionRoutine(): Established connection from 127.0.0.1 on socket 9
2022-09-07T05:55:40+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: userRoutine(): Socket 9 hanging up.
2022-09-07T05:56:05+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: interactionRoutine(): Established connection from 127.0.0.1 on socket 8
2022-09-07T05:56:05+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1877]: userRoutine(): Socket 8 hanging up.
<...snip...>
```

4.1.2. PASノード復旧 (3/4)

■ PASノードを起動すると、VIPが重複する事象が発生 ※現在サポート問い合わせ中

PASノード障害前

PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [00:08:47] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:5b:c8 brd ff:ff:ff:ff:ff:ff
inet 192.168.65.11/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::d453:cdaa:33c0:c79d/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [00:08:43] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:51:5c brd ff:ff:ff:ff:ff:ff
inet 192.168.65.12/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::3a1c:cd71:3bee:37ab/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

PASノード障害時

HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [06:50:08] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:51:5c brd ff:ff:ff:ff:ff:ff
inet 192.168.65.12/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::3a1c:cd71:3bee:37ab/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

PASノード復旧後

PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [06:49:40] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:5b:c8 brd ff:ff:ff:ff:ff:ff
inet 192.168.65.11/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::d453:cdaa:33c0:c79d/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [06:49:54] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:51:5c brd ff:ff:ff:ff:ff:ff
inet 192.168.65.12/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::3a1c:cd71:3bee:37ab/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```


4.1.2. PASノード復旧 (4/4)

■ VIP重複が発生した場合、以下のいずれかの方法で解消可能

– passive機のネットワーク再起動

```
root@sevone-nms-a2:~ [6.3.0] [04:38:14] $ systemctl restart network
```

– 手動Fail Over(またはTake Over)

- 一度active/passiveを切り替えることでVIP重複が解消される

4.1.3. 手動Take Over (1/2)

- NMS(Site-A VIP): [Administration] > [Cluster Manager]
 - passive機を選択して、右上の歯車アイコンより、[Take Over]を選択

The screenshot shows the SevOne Cluster Manager web interface. In the left-hand 'Cluster Navigation' pane, the 'Site-A' cluster is expanded, and the peer '192.168.65.11 (passive)' is selected and highlighted with a red box. The main content area displays the configuration for this peer, including 'Appliance Overview', 'Data Database', and 'Config Database' sections. In the top right corner of the main content area, a gear icon (settings) is visible. A red arrow points from the 'Take Over' button in the settings dropdown menu to a 'Warning' dialog box that has appeared at the bottom of the screen. The 'Take Over' button is also highlighted with a red box. The 'Warning' dialog box contains the text: 'This will make the passive peer take over to become the active peer. Do you want to continue?' and has 'OK' and 'Cancel' buttons at the bottom, with the 'OK' button highlighted by a red box.

4.1.3. 手動Take Over (2/2)

- NMS(Site-A VIP): [Administration] > [Cluster Manager]
 - 手動Take Over実行後は正常時と同じ状態になる

Alerting Devices: 2 | Highest x +

Not secure | <https://192.168.65.10/#ClusterManager/logout=-3&page=ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

- Cluster
 - Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
 - Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.11

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

Alerting Devices: 2 | Highest x +

Not secure | <https://192.168.65.10/#ClusterManager/logout=-3&page=ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

- Cluster
 - Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
 - Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.12 (passive)

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000022
Seconds Behind	0

Config Database

Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

4.2. HSAノード障害 / 復旧

4.2. HSAノード障害 / 復旧

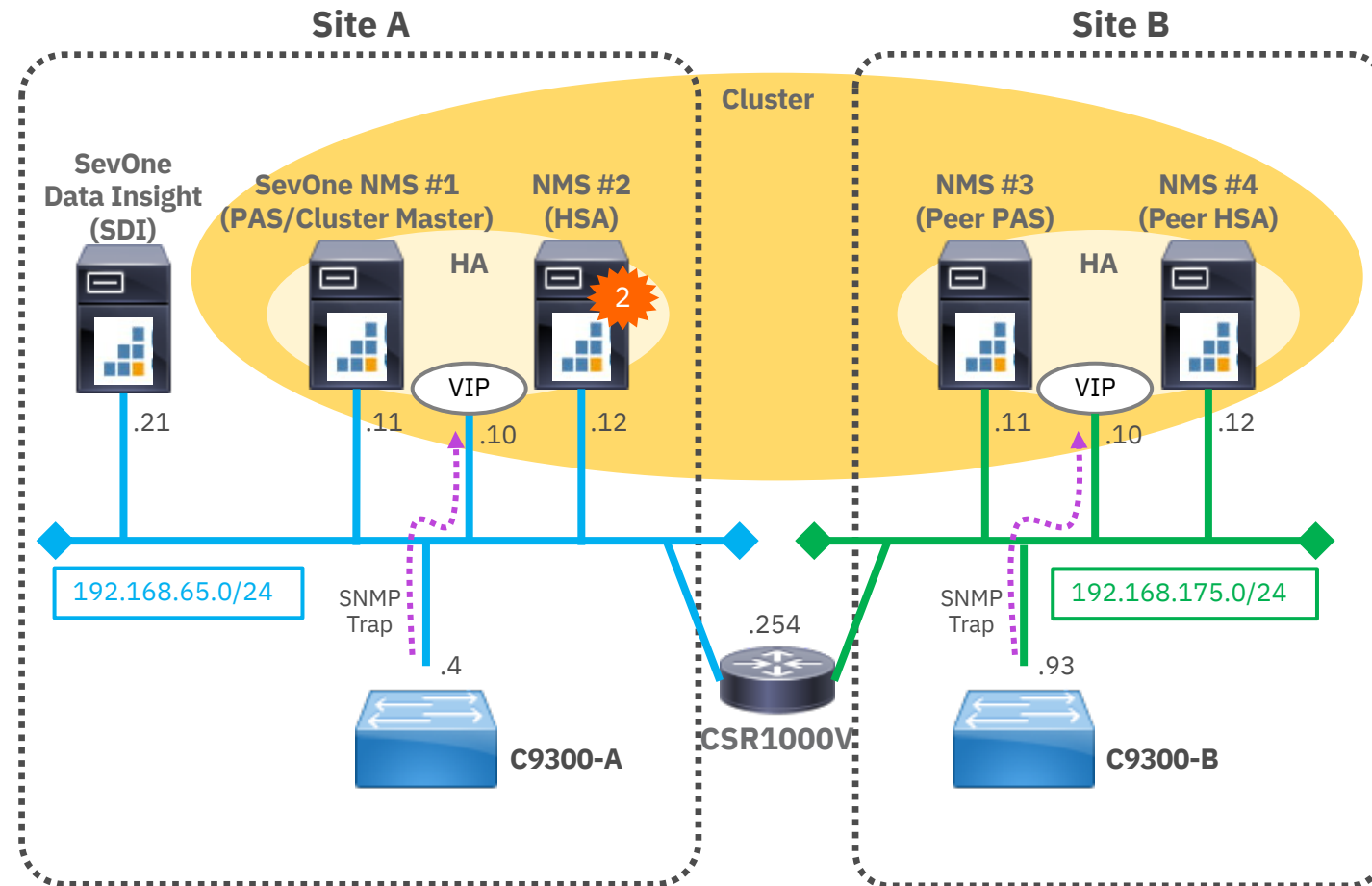
■ 確認手順

– HSAノード障害

1. "SevOne-shutdown shutdown"コマンドでHSAノードをshutdownする
2. C9300-AおよびC9300-BのインターフェースをshutdownしてSNMP Trapを発生させる
3. NMSの管理コンソールでHSAの状態を確認する
4. NMSのログを確認する
5. NMSおよびSDIの管理コンソールでAlertを確認する

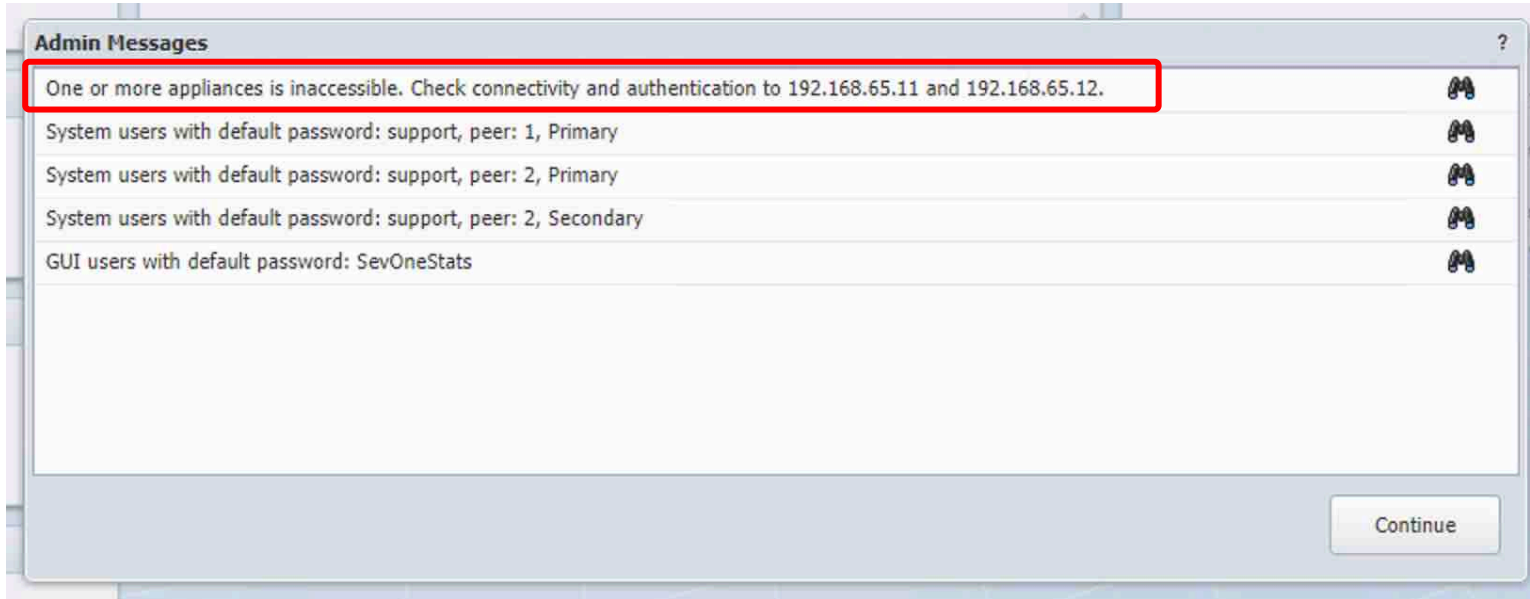
– HSAノード復旧

1. HSAノードを起動する (電源ON)
2. NMSの管理コンソールでactive/passiveの状態を確認する
3. NMSのログを確認する
4. NMSの管理コンソールでAlertを確認する



4.2.1. HSAノード障害 (1/5)

■ NMS(Site-A VIP): ログイン後のメッセージ



4.2.1. HSAノード障害 (2/5)

- NMS(Site-A VIP): [Administration] > [Cluster Manager]
 - PAS(Cluster Master)に影響はなく、HSAがNot Running状態となる

Alerting Devices: 2 | Highest x +

Not secure | <https://192.168.65.10/#ClusterManager/logout=-2&page=ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

Cluster

- Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.11

Appliance Overview Appliance Settings System Settings Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

Alerting Devices: 2 | Highest x +

Not secure | <https://192.168.65.10/#ClusterManager/logout=-2&page=ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

Cluster

- Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.12 (passive)

Appliance Overview Appliance Settings System Settings Process Overview

Data Database

Master Host	
I/O Thread	Not Running
Update Thread	Not Running
Master Log File	
Seconds Behind	

Config Database

Master Host	
I/O Thread	Not Running
Update Thread	Not Running
Master Log File	
Seconds Behind	

4.2.1. HSAノード障害 (3/5)

■ 以下のログが出力される

PAS(192.168.65.11): /var/log/SevOne-masterslaved.log 抜粋

```
2022-09-16T16:02:21+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:02:22+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5024>shouldRetryQuery: We lost connection to MySQL.
2022-09-16T16:02:22+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5024>shouldRetryQuery: Attempting to reconnect to MySQL.
2022-09-16T16:02:22+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5024>dbQuery: Retrying the query 1/10.
2022-09-16T16:02:22+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 2.00 seconds out of 300 seconds).
2022-09-16T16:02:24+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:02:24+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 4.00 seconds out of 300 seconds).
2022-09-16T16:02:26+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:02:26+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 6.00 seconds out of 300 seconds).
2022-09-16T16:02:28+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:02:28+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 8.00 seconds out of 300 seconds).
<...snip...>
2022-09-16T16:07:11+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 290.00 seconds out of 300 seconds).
2022-09-16T16:07:11+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (113)
2022-09-16T16:07:13+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 292.00 seconds out of 300 seconds).
2022-09-16T16:07:14+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (113)
2022-09-16T16:07:15+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 294.00 seconds out of 300 seconds).
2022-09-16T16:07:17+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 296.00 seconds out of 300 seconds).
2022-09-16T16:07:17+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (113)
2022-09-16T16:07:19+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 298.00 seconds out of 300 seconds).
2022-09-16T16:07:20+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (113)
2022-09-16T16:07:21+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 300.00 seconds out of 300 seconds).
2022-09-16T16:07:21+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.65.12) has died.
2022-09-16T16:07:23+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (113)
<...snip...>
```

2秒間隔でcheckDeathDetectionRoutine()が実行され、300秒でHSAノード障害を検知

4.2.1. HSAノード障害 (4/5)

■ SNMP Trap

- NMS(Site-A VIP): [Events] > [Archives] > [Logged Traps]
 - C9300-AおよびC9300-BのTrapが表示される

Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x +

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	16 Sep '22 16:08:45	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1589321686
192.168.65.4	16 Sep '22 16:08:42	BRIDGE-MIB::newRoot	2	IF-MIB::ifIndex.54	Integer	54
192.168.65.4	16 Sep '22 16:05:40	BRIDGE-MIB::topologyChange	3	IF-MIB::ifDescr.54	Octet String	GigabitEthernet1/0/46
192.168.65.4	16 Sep '22 16:05:40	IF-MIB::linkUp	5	IF-MIB::ifType.54	Integer	6
192.168.65.4	16 Sep '22 16:05:39	BRIDGE-MIB::topologyChange	3	CISCO-SMI::local2.1.1.20.54	Octet String	administratively down
192.168.65.4	16 Sep '22 16:05:18	IF-MIB::linkDown	5			
192.168.65.4	16 Sep '22 16:05:15	BRIDGE-MIB::newRoot	2			

Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x +

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	16 Sep '22 16:08:48	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1589338553
192.168.175.93	16 Sep '22 16:08:45	BRIDGE-MIB::newRoot	2	IF-MIB::ifIndex.22	Integer	22
192.168.175.93	16 Sep '22 16:05:42	IF-MIB::linkUp	5	IF-MIB::ifDescr.22	Octet String	GigabitEthernet1/0/14
192.168.175.93	16 Sep '22 16:05:41	IF-MIB::linkUp	5	IF-MIB::ifType.22	Integer	6
192.168.175.93	16 Sep '22 16:05:39	BRIDGE-MIB::topologyChange	3	CISCO-SMI::local2.1.1.20.22	Octet String	administratively down
192.168.175.93	16 Sep '22 16:05:21	IF-MIB::linkDown	5			
192.168.175.93	16 Sep '22 16:05:21	IF-MIB::linkDown	5			

4.2.1. HSAノード障害 (5/5)

■ SNMP Trap

– SDI: Alert Details

- Site-AおよびSite-BともにNMSから情報取得可能

The screenshot shows the SevOne Alert Details page. The left sidebar contains navigation options: Create, Reports (selected), Explore, Configure, and Administer. The main content area displays a table of alerts for the device group 'All Device Groups'. The table has columns for Severity, Device Name, Object Name, First, Last, Message, and Occurrences. A red box highlights two error alerts:

Severity	Device Name	Object Name	First	Last	Message	Occurrences
Alert	C9300-B	Temperature Monitor 1014	Aug 18, 2022 4:03 (UTC-04:00) EDT	Sep 16, 2022 12:09 (UTC-04:00) EDT	Threshold triggered -- C93...	30.53K
Alert	C9300-A	Temperature Monitor 1014	Aug 18, 2022 0:09 (UTC-04:00) EDT	Sep 16, 2022 12:09 (UTC-04:00) EDT	Threshold triggered -- C93...	14.13K
Error	C9300-B		Sep 1, 2022 3:10 (UTC-04:00) EDT	Sep 16, 2022 12:08 (UTC-04:00) EDT	Trap received from C9300-...	70
Error	C9300-A		Aug 31, 2022 21:18 (UTC-04:00) EDT	Sep 16, 2022 12:08 (UTC-04:00) EDT	Trap received from C9300-A: IF-MIB::linkDown -- Bindings: DISMAN-EVENT- MIB::sysUpTimeInstance = 1589321686, IF- MIB::ifIndex.54 = 54, IF- MIB::ifDescr.54 = GigabitEthernet1/0/46, IF- MIB::ifType.54 = 6, CISCO- SMI::local.2.1.1.20.54 = administratively down -- An interface has gone down.	359

4.2.2. HSAノード復旧 (1/3)

- NMS(Site-A VIP): [Administration] > [Cluster Manager]
 - 復旧後は正常時と同じ状態が表示される

The screenshot shows the SevOne Cluster Manager interface. The left sidebar shows a tree view with 'Site-A' selected. Under 'Site-A', the IP address '192.168.65.11' is highlighted with a red box. The main panel displays the 'Appliance Overview' for '192.168.65.11'. The 'Data Database' section shows 'Master Host' as '127.0.0.1'. The 'Config Database' section shows 'Master Host' as '0.0.0.1'.

Data Database	
Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database	
Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

The screenshot shows the SevOne Cluster Manager interface. The left sidebar shows a tree view with 'Site-A' selected. Under 'Site-A', the IP address '192.168.65.12 (passive)' is highlighted with a red box. The main panel displays the 'Appliance Overview' for '192.168.65.12 (passive)'. The 'Data Database' section shows 'Master Host' as '192.168.65.11'. The 'Config Database' section shows 'Master Host' as '192.168.65.11'.

Data Database	
Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000022
Seconds Behind	0

Config Database	
Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

4.2.2. HSAノード復旧 (2/3)

■ 以下のログが出力される

PAS(192.168.65.11): /var/log/SevOne-masterslaved.log 抜粋

```
2022-09-16T16:13:26+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (113)
2022-09-16T16:13:29+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (113)
2022-09-16T16:13:32+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (113)
2022-09-16T16:13:34+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:13:36+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:13:38+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:13:40+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:13:42+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:13:44+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:13:46+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: <5023>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (111)
2022-09-16T16:13:52+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.65.12) is now alive.
2022-09-16T16:14:05+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: interactionRoutine(): Established connection from 127.0.0.1 on socket 8
2022-09-16T16:14:05+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: userRoutine(): Socket 8 hanging up.
2022-09-16T16:14:07+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: interactionRoutine(): Established connection from 127.0.0.1 on socket 9
2022-09-16T16:14:08+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[4116]: userRoutine(): Socket 9 hanging up.
<...snip...>
```


4.2.2. HSAノード復旧 (3/3)

■ SNMP Trap

- NMS(Site-A VIP): [Events] > [Archives] > [Logged Traps]
 - Trap受信に影響なし

Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x +

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	16 Sep '22 16:17:30	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1589374215
192.168.65.4	16 Sep '22 16:17:28	BRIDGE-MIB::newRoot	2	IF-MIB::ifIndex.54	Integer	54
192.168.65.4	16 Sep '22 16:12:38	BRIDGE-MIB::topologyChange	3	IF-MIB::ifDescr.54	Octet String	GigabitEthernet1/0/46
192.168.65.4	16 Sep '22 16:12:37	BRIDGE-MIB::topologyChange	3	IF-MIB::ifType.54	Integer	6
192.168.65.4	16 Sep '22 16:12:37	IF-MIB::linkUp	5	CISCO-SMI::local2.1.1.20.54	Octet String	administratively down
192.168.65.4	16 Sep '22 16:08:45	IF-MIB::linkDown	5			

Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x +

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	16 Sep '22 16:17:33	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1589391041
192.168.175.93	16 Sep '22 16:17:30	BRIDGE-MIB::newRoot	2	IF-MIB::ifIndex.22	Integer	22
192.168.175.93	16 Sep '22 16:12:39	IF-MIB::linkUp	5	IF-MIB::ifDescr.22	Octet String	GigabitEthernet1/0/14
192.168.175.93	16 Sep '22 16:12:38	IF-MIB::linkUp	5	IF-MIB::ifType.22	Integer	6
192.168.175.93	16 Sep '22 16:12:36	BRIDGE-MIB::topologyChange	3	CISCO-SMI::local2.1.1.20.22	Octet String	administratively down
192.168.175.93	16 Sep '22 16:08:48	IF-MIB::linkDown	5			

4.3. PAS – HSA間通信障害 / 復旧

4.3. PAS – HSA間通信障害 / 復旧

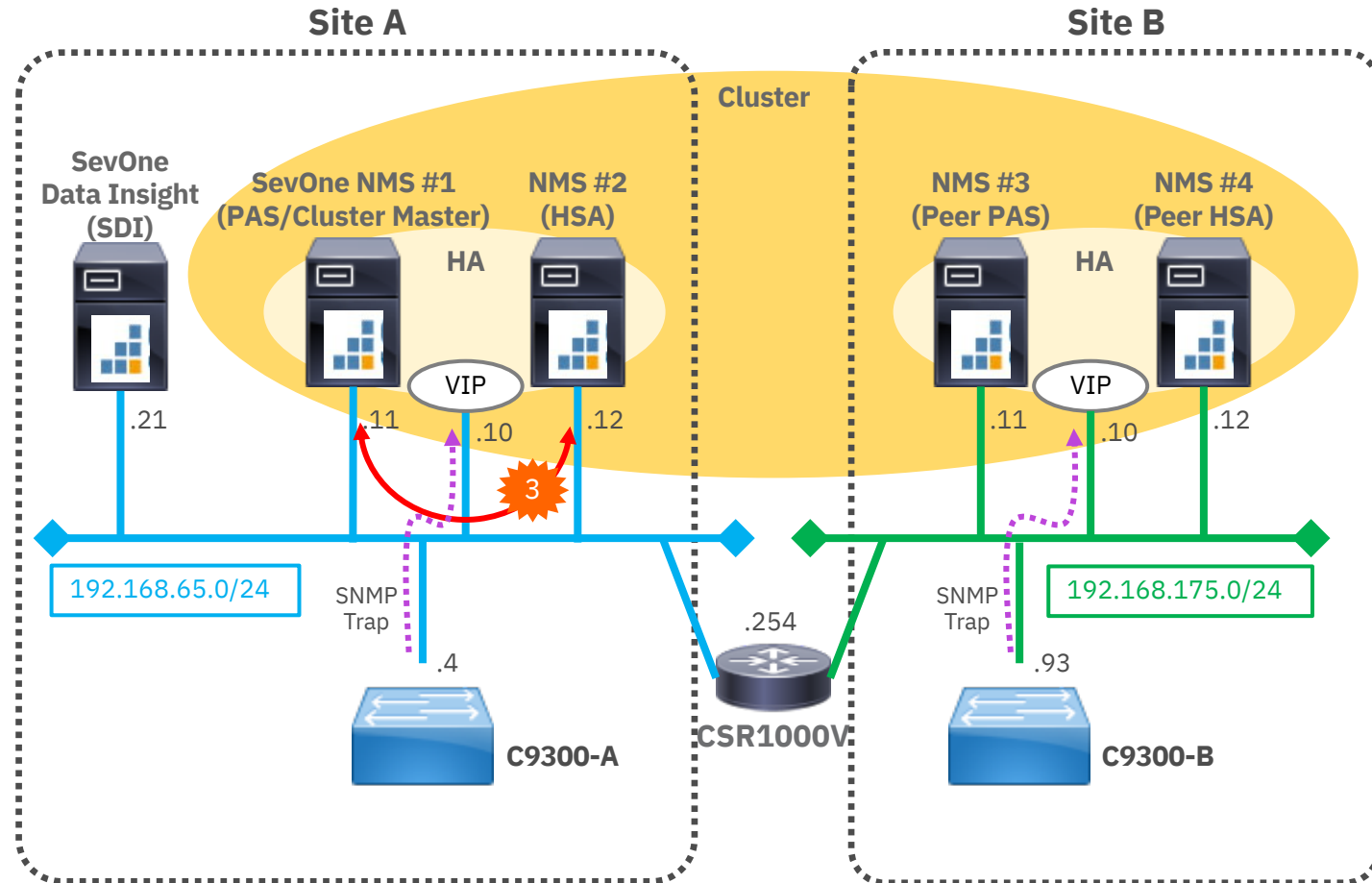
■ 確認手順

– PAS – HSA間通信障害

1. VMのACL機能により、Cluster Master – HSA間の通信をDropする
2. C9300-AおよびC9300-BのインターフェースをshutdownしてSNMP Trapを発生させる
3. NMSの管理コンソールでactive/passive状態を確認する (Split Brainになっていることを確認する)
4. NMSのログを確認する
5. NMSおよびSDIの管理コンソールでAlertを確認する

– PAS – HSA間通信復旧

1. VMのACL機能を無効化し、Cluster Master – HSA間の通信を復旧させる
2. NMSの管理コンソールでactive/passiveの状態を確認する
3. Split Brainの状態から復旧する
4. NMSおよびSDIの管理コンソールでAlertを確認する
5. NMSのログを確認する

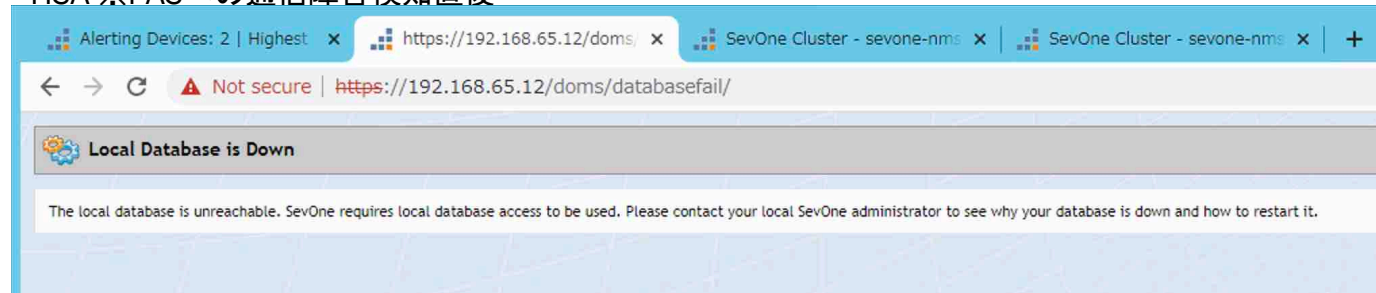


4.3.1. PAS – HSA間通信障害 (1/8)

■ NMS

- PAS(192.168.65.11): HSAへの通信障害を検知するが、元々自身がMaster(active)のため影響なし
- HSA(192.168.65.12): PASへの通信障害を検知し、自身がMaster(active)に切り替わるまで接続不可
 - 環境や状況に依存するが、今回の検証では障害発生からactiveになるまでの時間は、Failover Time(5分) + 4分で計9分程度だった。

HSA ※PASへの通信障害検知直後

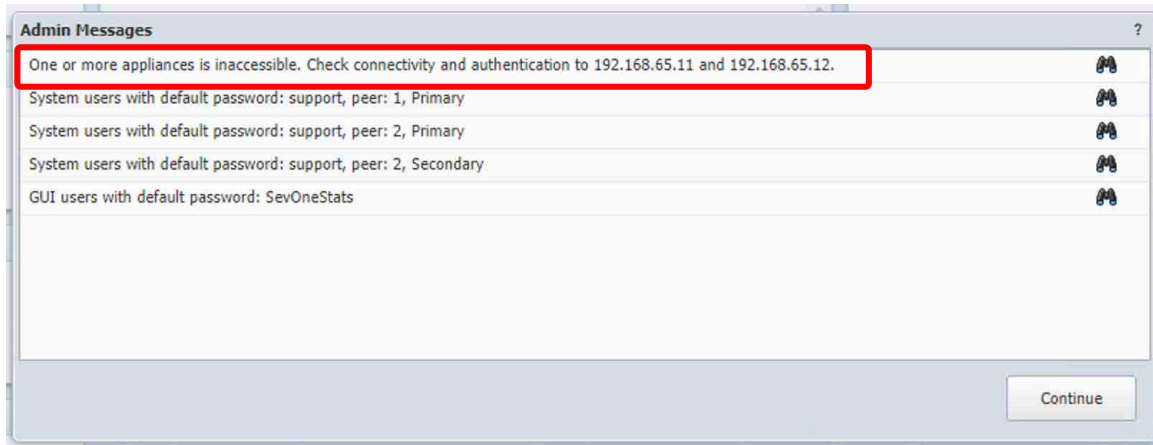


- Site-A VIP: PASとHSAそれぞれのVIPが有効になる

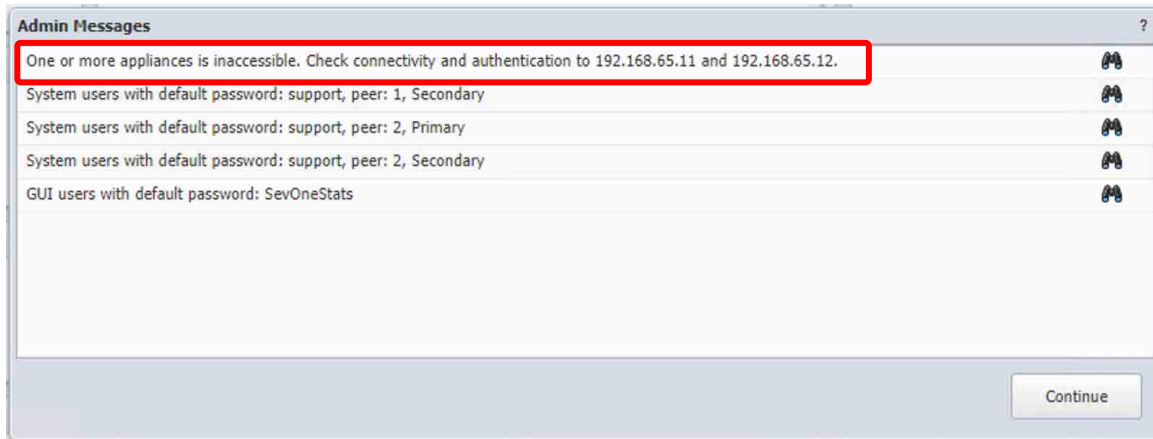
4.3.1. PAS – HSA間通信障害 (2/8)

■ NMS: ログイン後のメッセージ

PAS(192.168.65.11)



HSA(192.168.65.12)



4.3.1. PAS – HSA間通信障害 (3/8)

- NMS(PAS): [Administration] > [Cluster Manager]
 - PASおよびHSAのそれぞれ自身がMasterと認識する (Split Brain)
 - Peer(Site-B)に対するMasterはHSA(192.168.65.12)に切り替わる
 - 後からactiveになったHSAをMasterとして認識していると考えられる

PAS(192.168.65.11)

Cluster Manager

Cluster Navigation

Search

Cluster

Site-A

192.168.65.11

192.168.65.12 (passive)

Site-B

192.168.175.11

192.168.175.12 (passive)

192.168.65.11

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

Cluster Manager

Cluster Navigation

Search

Cluster

Site-A

192.168.65.11

192.168.65.12 (passive)

Site-B

192.168.175.11

192.168.175.12 (passive)

192.168.175.11

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000017
Seconds Behind	0

Config Database

Master Host	192.168.65.12
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

4.3.1. PAS – HSA間通信障害 (4/8)

- NMS(HSA): [Administration] > [Cluster Manager]
 - PASおよびHSAのそれぞれ自身がMasterと認識する (Split Brain)
 - Peer(Site-B)に対するMasterはHSA(192.168.65.12)に切り替わる

HSA(192.168.65.12)

Cluster Manager

Cluster Navigation

Search

Cluster

- Site-A
 - 192.168.65.11 (passive)
 - 192.168.65.12
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.12

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

Cluster Manager

Cluster Navigation

Search

Cluster

- Site-A
 - 192.168.65.11 (passive)
 - 192.168.65.12
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.175.11

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000017
Seconds Behind	0

Config Database

Master Host	192.168.65.12
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

4.3.1. PAS – HSA間通信障害 (5/8)

■ 以下のログが出力される

PAS(192.168.65.11): /var/log/SevOne-masterslaved.log 抜粋

```
2022-10-21T05:01:16+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: <4395>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (110)
2022-10-21T05:01:17+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: <4396>shouldRetryQuery: We lost connection to MySQL.
2022-10-21T05:01:17+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: <4396>shouldRetryQuery: Attempting to reconnect to MySQL.
2022-10-21T05:01:17+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: <4396>dbQuery: Retrying the query 1/10.
2022-10-21T05:01:17+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 2.00 seconds out of 300 seconds).
2022-10-21T05:01:19+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 4.00 seconds out of 300 seconds).
<...snip...>
2022-10-21T05:06:12+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 296.00 seconds out of 300 seconds).
2022-10-21T05:06:14+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 298.00 seconds out of 300 seconds).
2022-10-21T05:06:15+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: interactionRoutine(): Established connection from 127.0.0.1 on socket 8
2022-10-21T05:06:15+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: MasterSlaveMessage:sendMessageToNeighbor: No response from the neighbor. Trying again...
2022-10-21T05:06:16+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.12) (it's been 300.00 seconds out of 300 seconds).
2022-10-21T05:06:16+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.65.12) has died.
2022-10-21T05:06:16+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: MasterSlaveMessage:sendMessageToNeighbor: No response from the neighbor. Trying again...
<...snip...>
```

HSA(192.168.65.12): /var/log/SevOne-masterslaved.log 抜粋

```
2022-10-21T05:01:16+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: <3235>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (110)
2022-10-21T05:01:18+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: <3236>shouldRetryQuery: We lost connection to MySQL.
2022-10-21T05:01:18+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: <3236>shouldRetryQuery: Attempting to reconnect to MySQL.
2022-10-21T05:01:18+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: <3236>dbQuery: Retrying the query 1/10.
2022-10-21T05:01:18+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 2.00 seconds out of 300 seconds).
2022-10-21T05:01:20+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 4.00 seconds out of 300 seconds).
<...snip...>
2022-10-21T05:06:15+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 298.00 seconds out of 300 seconds).
2022-10-21T05:06:17+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.65.11) (it's been 300.00 seconds out of 300 seconds).
2022-10-21T05:06:17+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.65.11) has died.
2022-10-21T05:06:17+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: checkDeathDetectionRoutine(): I am going to attempt to become the pair master.
2022-10-21T05:06:17+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: checkDeathDetectionRoutine(): Successfully Attempt to become the pair master.
2022-10-21T05:06:37+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: <3235>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (110)
<...snip...>
```

4.3.1. PAS – HSA間通信障害 (6/8)

■ SNMP Trap

– NMS(PAS): [Events] > [Archives] > [Logged Traps]

- C9300-AのTrapはVIP(192.168.65.10)に送信しており、このときVIPはHSAにARP解決されているためPASには表示されない
- C9300-BのTrapは表示される (影響なし)

PAS(192.168.65.11)

SevOne Alerts Devices: 2 | Highest x x +

Not secure | https://192.168.65.11/#LoggedTraps

SevOne Reports Events Applications Devices Administration

Sev One • Logout + ↺ ⌂ ?

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value

SevOne Alerts Devices: 2 | Highest x x +

Not secure | https://192.168.65.11/#LoggedTraps

SevOne Reports Events Applications Devices Administration

Sev One • Logout + ↺ ⌂ ?

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	21 Oct '22 5:15:54	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1887817885
192.168.175.93	21 Oct '22 5:15:53	IF-MIB::linkDown	5	IF-MIB::ifIndex.22	Integer	22
192.168.175.93	21 Oct '22 5:15:14	IF-MIB::linkUp	5	IF-MIB::ifDescr.22	Octet String	GigabitEthernet1/0/14
192.168.175.93	21 Oct '22 5:15:14	IF-MIB::linkUp	5	IF-MIB::ifType.22	Integer	6
192.168.175.93	21 Oct '22 5:15:11	BRIDGE-MIB::topologyChange	3	CISCO-SMI::local.2.1.1.20.22	Octet String	administratively down
192.168.175.93	21 Oct '22 5:15:06	CISCO-SMI::ciscoMgmt.43.2.0.1	5			
192.168.175.93	21 Oct '22 5:14:59	CISCO-SMI::ciscoMgmt.43.2.0.1	5			

4.3.1. PAS – HSA間通信障害 (7/8)

■ SNMP Trap

– NMS(HSA): [Events] > [Archives] > [Logged Traps]

- C9300-AのTrapはVIP(192.168.65.10)に送信しており、このときVIPはHSAにARP解決されているためHSAに表示される
- C9300-BのTrapは表示される (影響なし)

HSA(192.168.65.12)

Alerting Devices: 2 | Highest x

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

IP Address	Time	OID	Variable Number	Variables
192.168.65.4	21 Oct '22 5:15:51	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance
192.168.65.4	21 Oct '22 5:15:50	IF-MIB::linkDown	5	IF-MIB::ifIndex.54
192.168.65.4	21 Oct '22 5:15:50	IF-MIB::linkDown	5	IF-MIB::ifDescr.54
192.168.65.4	21 Oct '22 5:15:48	BRIDGE-MIB::newRoot	2	IF-MIB::ifType.54
192.168.65.4	21 Oct '22 5:15:47	BRIDGE-MIB::newRoot	2	CISCO-SMI::local2.1.1.20.54
192.168.65.4	21 Oct '22 5:15:39	BRIDGE-MIB::topologyChange	3	
192.168.65.4	21 Oct '22 5:15:38	BRIDGE-MIB::topologyChange	3	
192.168.65.4	21 Oct '22 5:15:37	IF-MIB::linkUp	5	

Alerting Devices: 2 | Highest x

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

IP Address	Time	OID	Variable Number	Variables
192.168.175.93	21 Oct '22 5:15:54	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance
192.168.175.93	21 Oct '22 5:15:53	IF-MIB::linkDown	5	IF-MIB::ifIndex.22
192.168.175.93	21 Oct '22 5:15:51	BRIDGE-MIB::newRoot	2	IF-MIB::ifDescr.22
192.168.175.93	21 Oct '22 5:15:14	IF-MIB::linkUp	5	IF-MIB::ifType.22
192.168.175.93	21 Oct '22 5:15:14	IF-MIB::linkUp	5	CISCO-SMI::local2.1.1.20.22
192.168.175.93	21 Oct '22 5:15:11	BRIDGE-MIB::topologyChange	3	
192.168.175.93	21 Oct '22 5:15:06	CISCO-SMI::ciscoMgmt.43.2.0.1	5	
192.168.175.93	21 Oct '22 5:14:59	CISCO-SMI::ciscoMgmt.43.2.0.1	5	

4.3.1. PAS – HSA間通信障害 (8/8)

■ SNMP Trap

– SDI: Alert Details

- Site-AおよびSite-BともにNMSから情報取得可能

The screenshot shows the SevOne Alert Details page. The browser address bar indicates the URL: <https://192.168.65.21/reports/1/1?variables=eJxdjDEOgzAQBp%2BySkkKW6CKIXZhYsENudzESH%2FPYeUAqUczeyOJ0pcuQUMJx6yYIDSRV6rPZdgoa...>

The page title is "Alert Details". The left sidebar contains navigation options: Create, Reports, Explore, Configure, and Administer. The main content area shows a table of alerts for the "Device Group: All Device Groups" and "All open alerts".

Severity	Device Name	Object Name	First	Last	Message	Occurrences
Alert	C9300-A	Temperature Monitor 1014	Aug 18, 2022 0:09 (UTC-04:00) EDT	Oct 21, 2022 1:18 (UTC-04:00) EDT	Threshold triggered -- C93...	39.61K
Alert	C9300-B	Temperature Monitor 1014	Aug 18, 2022 4:03 (UTC-04:00) EDT	Oct 21, 2022 1:15 (UTC-04:00) EDT	Threshold triggered -- C93...	51.47K
Error	C9300-B		Sep 1, 2022 3:10 (UTC-04:00) EDT	Oct 21, 2022 1:15 (UTC-04:00) EDT	Trap received from C9300-...	88
Error	C9300-A		Aug 31, 2022 21:18 (UTC-04:00) EDT	Oct 21, 2022 1:15 (UTC-04:00) EDT	Trap received from C9300-A: IF-MIB::linkDown -- Bindings: DISMAN-EVENT- MIB::sysUpTimeInstance = 1887801278, IF- MIB::ifIndex.79 = 79, IF- MIB::ifDescr.79 = Vlan64, IF- MIB::ifType.79 = 53, CISCO- SMI::local.2.1.1.20.79 = down -- An interface has gone down.	3.23K
Warning	C9300-B		Sep 1, 2022 3:10 (UTC-04:00) EDT	Oct 21, 2022 1:15 (UTC-04:00) EDT	Trap received from C9300-...	50

(参考) Split Brain中のVIP

■ VIP(192.168.65.10)はPAS(192.168.65.11)およびHSA(192.168.65.12)の両方で有効になる

PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [02:37:16] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:50:56:86:5b:c8 brd ff:ff:ff:ff:ff:ff
    inet 192.168.65.11/24 brd 192.168.65.255 scope global noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet6 fe80::d453:cdaa:33c0:c79d/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [02:41:40] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:50:56:86:51:5c brd ff:ff:ff:ff:ff:ff
    inet 192.168.65.12/24 brd 192.168.65.255 scope global noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
        valid_lft forever preferred_lft forever
    inet6 fe80::3a1c:cd71:3bee:37ab/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

■ C9300-AからVIPに対する接続はHSA(192.168.65.12)に向いている

– 障害前はPAS(192.168.65.11)に向いていた

C9300-A#show arp | in 192.168.65.

```
Internet 192.168.65.4      - 007e.95a5.757b ARPA  Vlan65
Internet 192.168.65.10    13 0050.5686.515c ARPA  Vlan65
Internet 192.168.65.11    0 0050.5686.5bc8 ARPA  Vlan65
Internet 192.168.65.12    2 0050.5686.515c ARPA  Vlan65
Internet 192.168.65.170   4 0050.5686.d20b ARPA  Vlan65
Internet 192.168.65.253   162 0013.8098.d048 ARPA  Vlan65
Internet 192.168.65.254   248 0050.5686.5520 ARPA  Vlan65
```


4.3.2. PAS – HSA間通信復旧 (1/6)

■ NMS(Site-A VIP): ログイン後のメッセージ

※HSAにログインしても同様のメッセージが表示される

The screenshot shows the SevOne dashboard interface. The top navigation bar includes 'Alerting Devices: 2 | Highest', 'Alert Details - SevOne Data', and a '+'. The address bar shows 'https://192.168.65.10/#Dashboard/reload=1'. The dashboard has a 'Welcome Sev' message and several sections: 'Favorite Reports', 'Discovery Status', 'Manage Events', 'Analyze Application Traffic', and 'Utilize Reporting Tools'. The 'Alert Summary' section displays a timeline for '21 Oct '22 00:00:00 to 21 Oct '22 03:20:40' with a red bar indicating an outage. The 'Instant Status' and 'Alerts' sections are also visible. A modal window titled 'Admin Messages' is open, listing system and GUI users. A red arrow points from the first message in this list to a smaller 'Message' dialog box. The message in the dialog box states: 'Both appliances in your Hot Standby pair with IP addresses 192.168.65.11 and 192.168.65.12 are active. Please use the Cluster Manager to correct this or contact SevOne Support.' The dialog box has a 'Continue' button and a 'Close' button.

Alerting Devices: 2 | Highest x Alert Details - SevOne Data x +

← → ↻ ⚠ Not secure | https://192.168.65.10/#Dashboard/reload=1

SevOne Reports Events Applications Devices Administration Sev One • Logout + ↺ 🏠 ?

Welcome Sev

Favorite Reports

📋 Manage Create Report

Discovery Status

- 0 Device in queue for discovery.
- 0 Device in discovery.
- 0 New device found during discovery.
- 0 Device cannot be discovered due to capacity restraints.

Manage Events

- View and Acknowledge Alerts.
- Create Alert Summary Reports.
- Manage Policies and Thresholds.
- Manage Status Maps.

Analyze Application Traffic

- Create FlowFalcon Reports.
- Create NBAR Reports.
- Manage Response Probes.

Utilize Reporting Tools

- Manage Reports.
- Create TopN Reports.
- Create Graphs.

Alert Summary

21 Oct '22 00:00:00 to 21 Oct '22 03:20:40

Everything

Outages: 13 • Outage Time: 3h 20m • Up Time: 0s • MTTR: 15m 26s • Event Free: 0.00% • Affected: 2/2

Instant Status **Alerts**

Admin Messages

- Both appliances in your Hot Standby pair with IP addresses 192.168.65.11 and 192.168.65.12 are active. Please use the Cluster Manager to corr...
- System users with default password: support, peer: 1, Primary
- System users with default password: support, peer: 1, Secondary
- System users with default password: support, peer: 2, Primary
- System users with default password: support, peer: 2, Secondary
- GUI users with default password: SevOneStats

Message

Both appliances in your Hot Standby pair with IP addresses 192.168.65.11 and 192.168.65.12 are active. Please use the Cluster Manager to correct this or contact SevOne Support.

Continue

Close

4.3.2. PAS – HSA間通信復旧 (2/6)

■ NMS(Site-A VIP): [Administration] > [Cluster Manager]

– 復旧後もSplit Brainのままの状態となり、PASおよびHSAのそれぞれ自身がMasterと認識する

※HSAでも同様の内容が表示される

Cluster Manager

Cluster Navigation

Search

Cluster

Site-A

192.168.65.11

192.168.65.12

Site-B

192.168.175.11

192.168.175.12 (passive)

192.168.65.11

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

Cluster Manager

Cluster Navigation

Search

Cluster

Site-A

192.168.65.11

192.168.65.12

Site-B

192.168.175.11

192.168.175.12 (passive)

192.168.65.12

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

4.3.2. PAS – HSA間通信復旧 (3/6)

■ 以下のログが出力される

PAS(192.168.65.11): /var/log/SevOne-masterslaved.log 抜粋

```
2022-10-21T05:18:54+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: <4395> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (110)
2022-10-21T05:19:04+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: interactionRoutine(): Established connection from 127.0.0.1 on socket 9
2022-10-21T05:19:04+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: userRoutine(): Socket 9 hanging up.
2022-10-21T05:19:05+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: interactionRoutine(): Established connection from 127.0.0.1 on socket 10
2022-10-21T05:19:05+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: userRoutine(): Socket 10 hanging up.
2022-10-21T05:19:14+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: interactionRoutine(): Established connection from 127.0.0.1 on socket 9
2022-10-21T05:19:14+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: MasterSlaveMessage:sendMessageToNeighbor: No response from the neighbor. Trying again...
2022-10-21T05:19:15+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: MasterSlaveMessage:sendMessageToNeighbor: No response from the neighbor. Trying again...
2022-10-21T05:19:16+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: MasterSlaveMessage:sendMessageToNeighbor: No response from the neighbor. Trying again...
2022-10-21T05:19:17+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: userRoutine(): Socket 9 hanging up.
2022-10-21T05:19:26+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: <4395> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (110)
2022-10-21T05:19:58+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: <4395> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.12' (110)
2022-10-21T05:20:03+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.65.12) is now alive.
2022-10-21T05:20:07+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: interactionRoutine(): Established connection from 127.0.0.1 on socket 10
2022-10-21T05:20:07+00:00 sevone-nms-a1.iselab.local SevOne-masterslaved[3296]: userRoutine(): Socket 10 hanging up.
<...snip...>
```

HSA(192.168.65.12): /var/log/SevOne-masterslaved.log 抜粋

```
2022-10-21T05:18:24+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: <3235> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (110)
2022-10-21T05:18:56+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: <3235> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (110)
2022-10-21T05:19:05+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: interactionRoutine(): Established connection from 127.0.0.1 on socket 9
2022-10-21T05:19:05+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: userRoutine(): Socket 9 hanging up.
2022-10-21T05:19:28+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: <3235> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (110)
2022-10-21T05:20:00+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: <3235> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.65.11' (110)
2022-10-21T05:20:04+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.65.11) is now alive.
2022-10-21T05:20:07+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: interactionRoutine(): Established connection from 127.0.0.1 on socket 10
2022-10-21T05:20:07+00:00 sevone-nms-a2.iselab.local SevOne-masterslaved[1903]: userRoutine(): Socket 10 hanging up.
<...snip...>
```

4.3.2. PAS – HSA間通信復旧 (4/6)

■ SNMP Trap

– NMS(Site-A VIP): [Events] > [Archives] > [Logged Traps]

- C9300-AのTrapはVIP(192.168.65.10)に送信しており、このときVIPはHSAにARP解決されているためPASには表示されない
- C9300-BのTrapは表示される (影響なし)

PAS(192.168.65.11)

SevOne Alerts

Alerting Devices: 2 | Highest

Not secure | https://192.168.65.11/#LoggedTraps

Reports Events Applications Devices Administration

Sev One • Logout + ↺ 🏠 ?

Logged Traps

Filter

Peer: **Site-A**

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps				Variables		
IP Address	Time	OID	Variable Number	Variable	Type	Value

SevOne Alerts

Alerting Devices: 2 | Highest

Not secure | https://192.168.65.11/#LoggedTraps

Reports Events Applications Devices Administration

Sev One • Logout + ↺ 🏠 ?

Logged Traps

Filter

Peer: **Site-B**

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps				Variables		
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	21 Oct '22 5:23:18	IF-MIB::linkDown	5	DISHMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1887862272
192.168.175.93	21 Oct '22 5:23:17	IF-MIB::linkDown	5	IF-MIB::ifIndex.22	Integer	22
192.168.175.93	21 Oct '22 5:23:15	BRIDGE-MIB::newRoot	2	IF-MIB::ifDescr.22	Octet String	GigabitEthernet1/0/14
192.168.175.93	21 Oct '22 5:20:39	IF-MIB::linkUp	5	IF-MIB::ifType.22	Integer	6
192.168.175.93	21 Oct '22 5:20:38	IF-MIB::linkUp	5	CISCO-SMI::local.2.1.1.20.22	Octet String	administratively down
192.168.175.93	21 Oct '22 5:20:36	BRIDGE-MIB::topologyChange	3			
192.168.175.93	21 Oct '22 5:15:54	IF-MIB::linkDown	5			
192.168.175.93	21 Oct '22 5:15:53	IF-MIB::linkDown	5			

4.3.2. PAS – HSA間通信復旧 (5/6)

■ SNMP Trap

– NMS(HSA): [Events] > [Archives] > [Logged Traps]

- C9300-AのTrapはVIP(192.168.65.10)に送信しており、このときVIPはHSAにARP解決されているためHSAに表示される
- C9300-BのTrapは表示される (影響なし)

HSA(192.168.65.12)

SevOne Alerts Devices: 2 | Highest x x +

Not secure | https://192.168.65.12/#LoggedTraps

SevOne Reports Events Applications Devices Administration

Sev One • Logout + U Home ?

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	21 Oct '22 5:23:16	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1887845782
192.168.65.4	21 Oct '22 5:23:15	IF-MIB::linkDown	5	IF-MIB::ifIndex.54	Integer	54
192.168.65.4	21 Oct '22 5:23:15	IF-MIB::linkDown	5	IF-MIB::ifDescr.54	Octet String	GigabitEthernet1/0/46
192.168.65.4	21 Oct '22 5:23:13	BRIDGE-MIB::newRoot	2	IF-MIB::ifType.54	Integer	6
192.168.65.4	21 Oct '22 5:23:12	BRIDGE-MIB::newRoot	2	CISCO-SMI::local.2.1.1.20.54	Octet String	administratively down
192.168.65.4	21 Oct '22 5:23:08	IF-MIB::linkUp	5			
192.168.65.4	21 Oct '22 5:22:59	IF-MIB::linkDown	5			
192.168.65.4	21 Oct '22 5:22:20	BRIDGE-MIB::topologyChange	3			

SevOne Alerts Devices: 2 | Highest x x +

Not secure | https://192.168.65.12/#LoggedTraps

SevOne Reports Events Applications Devices Administration

Sev One • Logout + U Home ?

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	21 Oct '22 5:23:18	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1887862272
192.168.175.93	21 Oct '22 5:23:17	IF-MIB::linkDown	5	IF-MIB::ifIndex.22	Integer	22
192.168.175.93	21 Oct '22 5:23:15	BRIDGE-MIB::newRoot	2	IF-MIB::ifDescr.22	Octet String	GigabitEthernet1/0/14
192.168.175.93	21 Oct '22 5:20:39	IF-MIB::linkUp	5	IF-MIB::ifType.22	Integer	6
192.168.175.93	21 Oct '22 5:20:38	IF-MIB::linkUp	5	CISCO-SMI::local.2.1.1.20.22	Octet String	administratively down
192.168.175.93	21 Oct '22 5:20:36	BRIDGE-MIB::topologyChange	3			
192.168.175.93	21 Oct '22 5:15:54	IF-MIB::linkDown	5			
192.168.175.93	21 Oct '22 5:15:53	IF-MIB::linkDown	5			

4.3.2. PAS – HSA間通信復旧 (6/6)

■ SNMP Trap

– SDI: Alert Details

- Site-AおよびSite-BともにNMS(Site-A VIP)から情報取得可能

The screenshot shows the SevOne Alert Details page. The left sidebar contains navigation links: Create, Reports (selected), Explore, Configure, and Administer. The main content area displays a table of alerts for the device group 'All Device Groups'.

Severity	Device Name	Object Name	First	Last	Message	Occurrences
Alert	C9300-A	Temperature Monitor 1014	Aug 18, 2022 0:09 (UTC-04:00) EDT	Oct 21, 2022 1:24 (UTC-04:00) EDT	Threshold triggered -- C93...	39.61K
Alert	C9300-B	Temperature Monitor 1014	Aug 18, 2022 4:03 (UTC-04:00) EDT	Oct 21, 2022 1:24 (UTC-04:00) EDT	Threshold triggered -- C93...	51.47K
Error	C9300-B		Sep 1, 2022 3:10 (UTC-04:00) EDT	Oct 21, 2022 1:23 (UTC-04:00) EDT	Trap received from C9300-...	90
Error	C9300-A		Aug 31, 2022 21:18 (UTC-04:00) EDT	Oct 21, 2022 1:23 (UTC-04:00) EDT	Trap received from C9300-A: IF-MIB::linkDown -- Bindings: DISMAN-EVENT- MIB::sysUpTimeInstance = 1887845782, IF- MIB::ifIndex.79 = 79, IF- MIB::ifDescr.79 = Vlan64, IF- MIB::ifType.79 = 53, CISCO- SMI::local.2.1.1.20.79 = down -- An interface has gone down.	3.23K
Warning	C9300-A		Aug 31, 2022 22:48 (UTC-04:00) EDT	Oct 21, 2022 1:23 (UTC-04:00) EDT	Trap received from C9300-...	1.33K

4.3.2. Split Brainの修正 (1/4)

■ NMS(Site-A VIP): [Administration] > [Cluster Manager]

– 両方がactiveの場合、**passiveにしたいアプライアンス**(PAS)を選択して、右上の歯車アイコンより、[Rectify Split-brain]を選択

- passiveにするアプライアンスが障害中に取得した情報は消失するため要注意
- 今回の場合、PASをactiveにしてしまうと、障害中にVIPを持つHSAが受信したSNMP Trapが消失する

The screenshot displays the SevOne Cluster Manager web interface. In the left sidebar, under 'Cluster Navigation', 'Site-A' is expanded, and the IP address '192.168.65.11' is highlighted with a red box. The main content area shows the 'Appliance Overview' for this IP, with tabs for 'Appliance Overview', 'Appliance Settings', 'System Settings', 'Process Overview', 'System Logs', 'Integration', and 'Appliance License'. The 'Data Database' section shows 'Master Host' as '127.0.0.1', 'I/O Thread' as 'Running', 'Update Thread' as 'Running', 'Master Log File' as 'peer-bin.000028', and 'Seconds Behind' as '0'. The 'Config Database' section shows 'Master Host' as '0.0.0.1', 'I/O Thread' as 'Not Running', 'Update Thread' as 'Running', and 'Master Log File'. In the top right corner, a gear icon opens a menu with 'Rectify Split-brain' and 'Resynchronize Data Database' options. The 'Rectify Split-brain' option is highlighted with a red box. A red arrow points from this option to a 'Warning' dialog box at the bottom. The dialog box has a yellow warning icon and the text: 'This will attempt to automatically rectify the split-brained condition. Do you want to continue?'. The 'OK' button in the dialog is highlighted with a red box.

4.3.2. Split Brainの修正 (2/4)

- NMS(Site-A VIP): [Administration] > [Cluster Manager]
 - "Rectify Split-brain" 実行後はHSAがactiveとなる

Cluster Manager

Cluster Navigation

Search

Cluster

- Site-A
 - 192.168.65.11 (passive)
 - 192.168.65.12
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.11 (passive)

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	192.168.65.12
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000045
Seconds Behind	0

Config Database

Master Host	192.168.65.12
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000038
Seconds Behind	0

Cluster Manager

Cluster Navigation

Search

Cluster

- Site-A
 - 192.168.65.11 (passive)
 - 192.168.65.12
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.12

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000038
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

4.3.2. Split Brainの修正 (3/4)

■ SNMP Trap

– NMS(Site-A VIP): [Events] > [Archives] > [Logged Traps]

- Split Brain中に受信したSite-AおよびSite-BのTrapが残っていることが確認できる

Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x +

Not secure | https://192.168.65.10/#LoggedTraps

SevOne Reports Events Applications Devices Administration Sev One Logout + ?

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	21 Oct '22 5:23:40	IF-MIB::linkUp	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1887801278
192.168.65.4	21 Oct '22 5:23:40	IF-MIB::linkUp	5	IF-MIB::ifIndex.54	Integer	54
192.168.65.4	21 Oct '22 5:23:37	BRIDGE-MIB::topologyChange	3	IF-MIB::ifDescr.54	Octet String	GigabitEthernet1/0/46
192.168.65.4	21 Oct '22 5:23:37	BRIDGE-MIB::topologyChange	3	IF-MIB::ifType.54	Integer	6
192.168.65.4	21 Oct '22 5:23:16	IF-MIB::linkDown	5	CISCO-SMI::local.2.1.1.20.54	Octet String	administratively down
192.168.65.4	21 Oct '22 5:23:15	IF-MIB::linkDown	5			
192.168.65.4	21 Oct '22 5:23:15	IF-MIB::linkDown	5			
192.168.65.4	21 Oct '22 5:23:13	BRIDGE-MIB::newRoot	2			
192.168.65.4	21 Oct '22 5:23:12	BRIDGE-MIB::newRoot	2			
192.168.65.4	21 Oct '22 5:23:08	IF-MIB::linkUp	5			
192.168.65.4	21 Oct '22 5:22:59	IF-MIB::linkDown	5			
192.168.65.4	21 Oct '22 5:22:20	BRIDGE-MIB::topologyChange	3			
192.168.65.4	21 Oct '22 5:22:19	BRIDGE-MIB::topologyChange	3			
192.168.65.4	21 Oct '22 5:21:50	IF-MIB::linkUp	5			
192.168.65.4	21 Oct '22 5:21:30	IF-MIB::linkDown	5			
192.168.65.4	21 Oct '22 5:20:44	BRIDGE-MIB::topologyChange	3			
192.168.65.4	21 Oct '22 5:20:42	BRIDGE-MIB::topologyChange	3			
192.168.65.4	21 Oct '22 5:20:42	IF-MIB::linkUp	5			
192.168.65.4	21 Oct '22 5:16:12	IF-MIB::linkUp	5			
192.168.65.4	21 Oct '22 5:16:11	IF-MIB::linkUp	5			
192.168.65.4	21 Oct '22 5:15:51	IF-MIB::linkDown	5			
192.168.65.4	21 Oct '22 5:15:50	IF-MIB::linkDown	5			
192.168.65.4	21 Oct '22 5:15:50	IF-MIB::linkDown	5			

Page 1 of 2

Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x +

Not secure | https://192.168.65.10/#LoggedTraps

SevOne Reports Events Applications Devices Administration Sev One Logout + ?

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	21 Oct '22 5:23:18	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1887817885
192.168.175.93	21 Oct '22 5:23:17	IF-MIB::linkDown	5	IF-MIB::ifIndex.22	Integer	22
192.168.175.93	21 Oct '22 5:23:15	BRIDGE-MIB::newRoot	2	IF-MIB::ifDescr.22	Octet String	GigabitEthernet1/0/14
192.168.175.93	21 Oct '22 5:20:39	IF-MIB::linkUp	5	IF-MIB::ifType.22	Integer	6
192.168.175.93	21 Oct '22 5:20:38	IF-MIB::linkUp	5	CISCO-SMI::local.2.1.1.20.22	Octet String	administratively down
192.168.175.93	21 Oct '22 5:20:36	BRIDGE-MIB::topologyChange	3			
192.168.175.93	21 Oct '22 5:15:54	IF-MIB::linkDown	5			
192.168.175.93	21 Oct '22 5:15:53	IF-MIB::linkDown	5			
192.168.175.93	21 Oct '22 5:15:14	IF-MIB::linkUp	5			
192.168.175.93	21 Oct '22 5:15:14	IF-MIB::linkUp	5			
192.168.175.93	21 Oct '22 5:15:11	BRIDGE-MIB::topologyChange	3			
192.168.175.93	21 Oct '22 5:15:06	CISCO-SMI::ciscoMgmt.43.2.0.1	5			
192.168.175.93	21 Oct '22 5:14:59	CISCO-SMI::ciscoMgmt.43.2.0.1	5			

Page 1 of 1

4.3.2. Split Brainの修正 (4/4)

- "Rectify Split-brain" 実行後、passiveにしたNMS 1号機のVIPが有効のままになり、VIPが重複する事象が発生
 - 「4.1.2. PASノード復旧」時のVIP重複と類似の問題と考えられる

Split Brain修正前

PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [05:19:51] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:5b:c8 brd ff:ff:ff:ff:ff:ff
inet 192.168.65.11/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::d453:cdaa:33c0:c79d/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [05:19:52] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:51:5c brd ff:ff:ff:ff:ff:ff
inet 192.168.65.12/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::3a1c:cd71:3bee:37ab/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

Split Brain修正後

PAS(192.168.65.11)

```
root@sevone-nms-a1:~ [6.3.0] [05:48:50] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:5b:c8 brd ff:ff:ff:ff:ff:ff
inet 192.168.65.11/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::d453:cdaa:33c0:c79d/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

HSA(192.168.65.12)

```
root@sevone-nms-a2:~ [6.3.0] [05:48:52] $ ip addr show ens160
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
link/ether 00:50:56:86:51:5c brd ff:ff:ff:ff:ff:ff
inet 192.168.65.12/24 brd 192.168.65.255 scope global noprefixroute ens160
    valid_lft forever preferred_lft forever
inet 192.168.65.10/24 brd 192.168.65.255 scope global secondary noprefixroute ens160
    valid_lft forever preferred_lft forever
inet6 fe80::3a1c:cd71:3bee:37ab/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

4.4. Peer PASノード障害 / 復旧

4.4. Peer PASノード障害 / 復旧 (1/2)

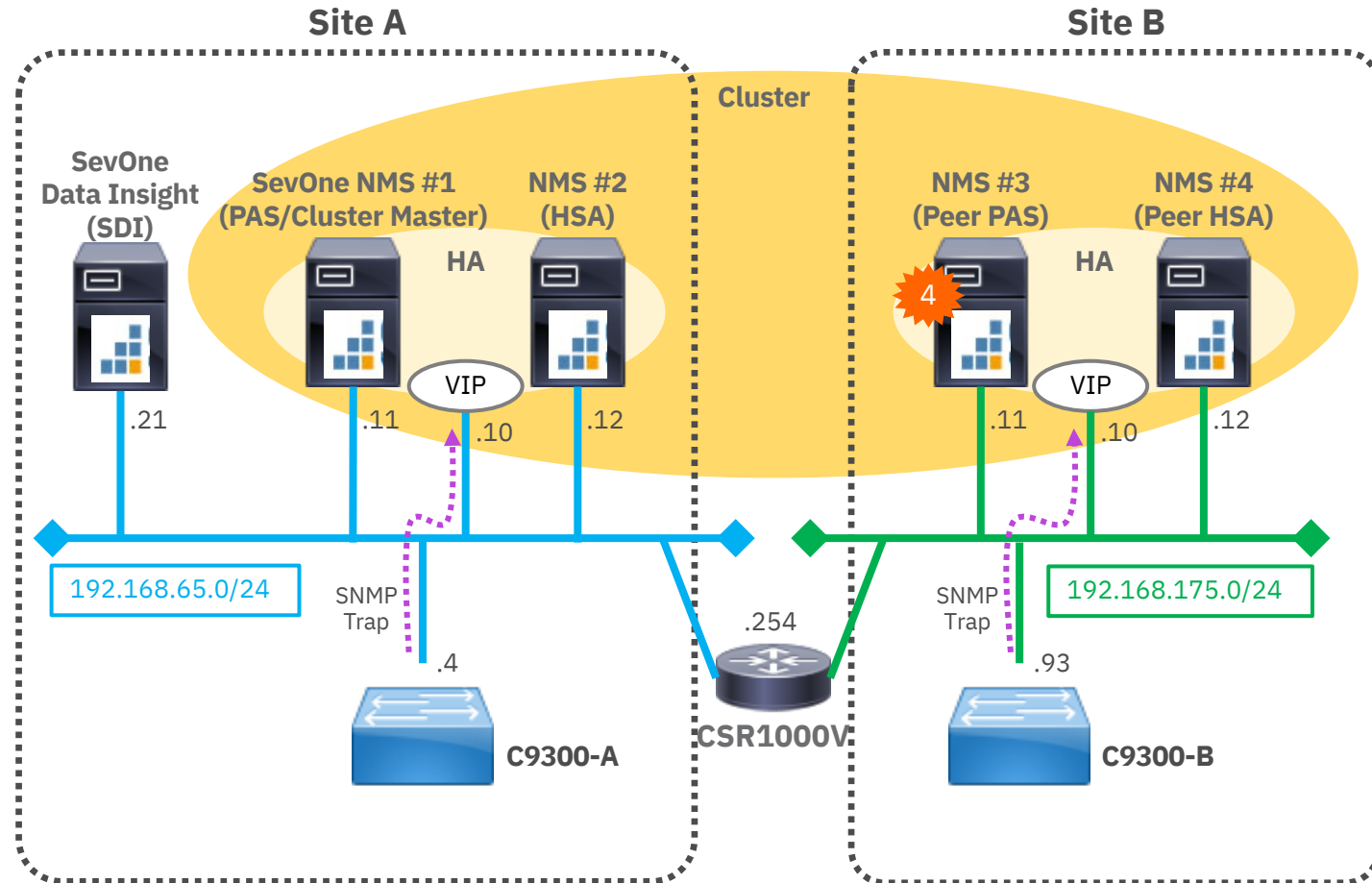
■ 確認手順

– Peer PASノード障害

1. "SevOne-shutdown shutdown"コマンドでPeer PASノードをshutdownする
2. Fail Over前後でC9300-AおよびC9300-BのインターフェースをshutdownしてSNMP Trapを発生させる
3. NMSの管理コンソールでPeer側がFail Overされたことを確認する
4. NMSのログを確認する
5. NMSおよびSDIの管理コンソールでAlertを確認する

– Peer PASノード復旧

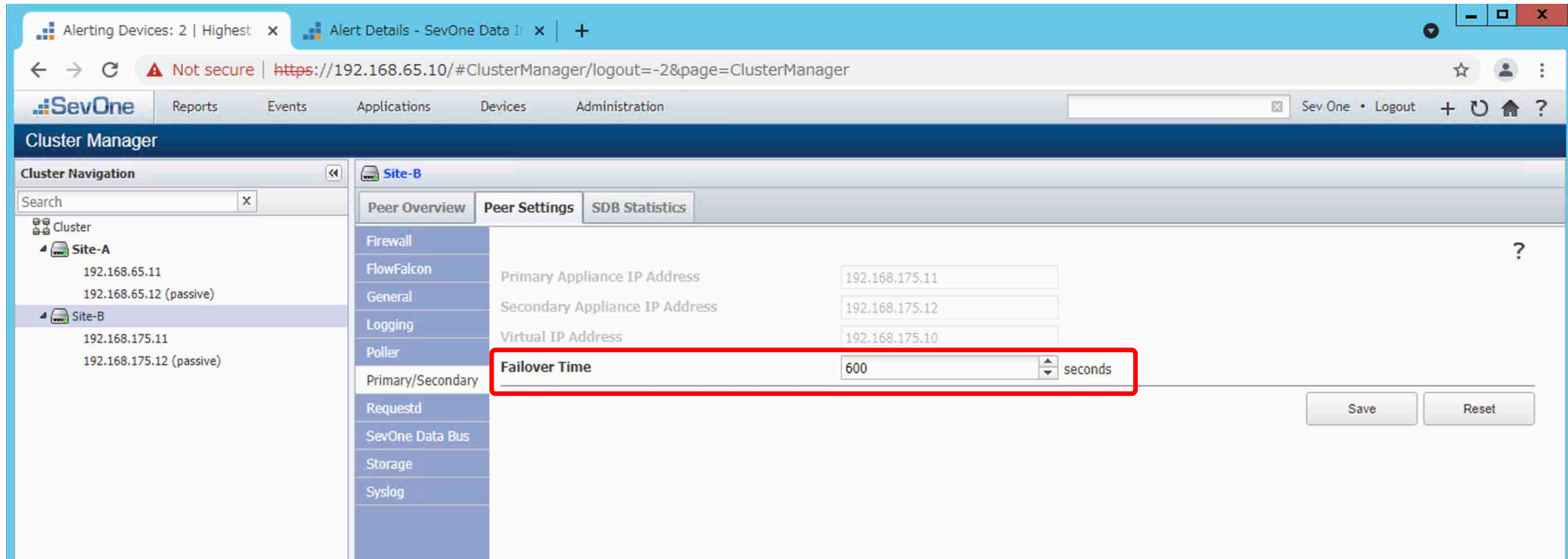
1. Peer PASノードを起動する (電源ON)
2. NMSの管理コンソールでPeerのactive/passiveの状態を確認する
3. NMSのログを確認する



4.4. Peer PASノード障害 / 復旧 (2/2)

■ Failover Time設定

– [Administration] > [Cluster Manager] > *Site-B* > [Peer Settings] > [Primary/Secondary]



4.4.1. Peer PASノード障害 (1/8)

■ NMS

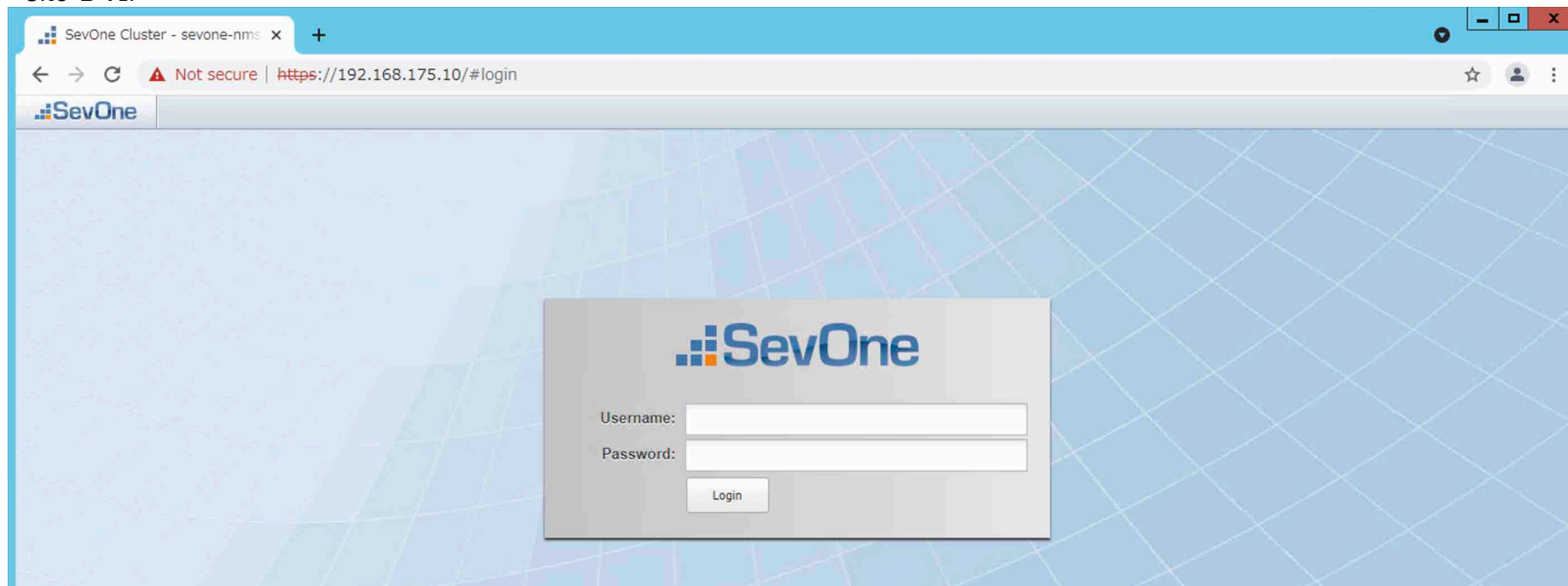
– Site-A VIP

- 影響なし

– Site-B VIP

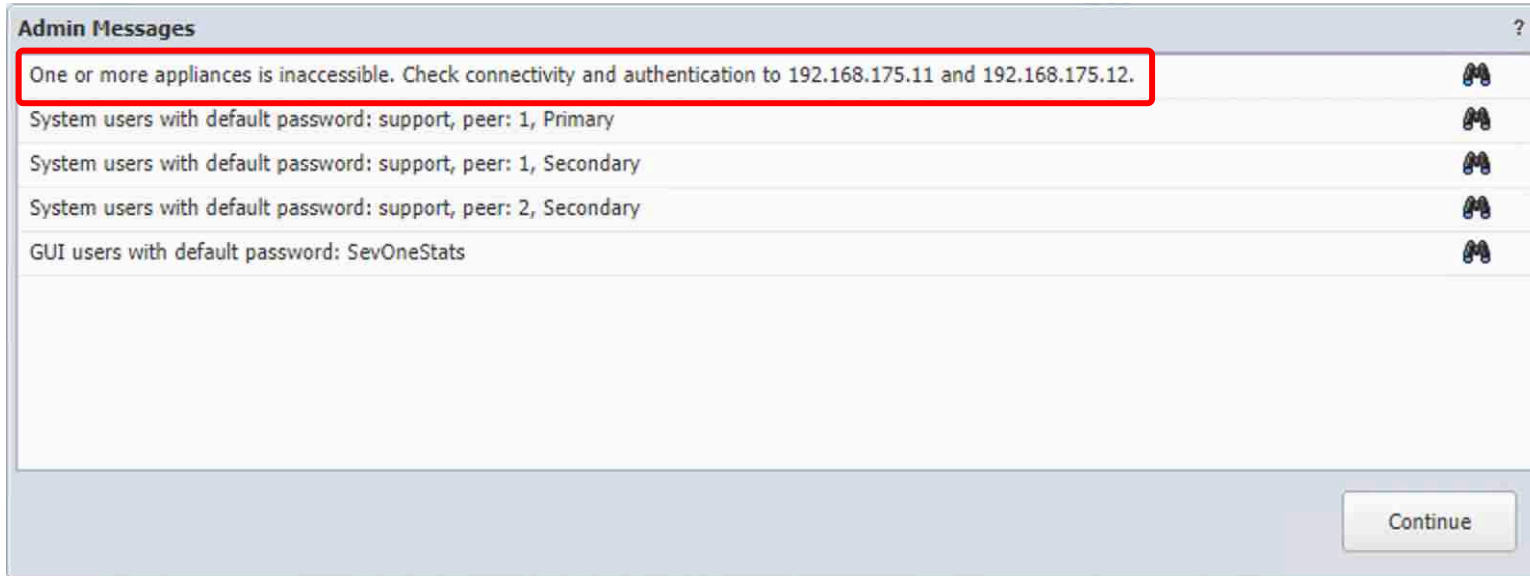
- Peer HSAがactiveに切り替わるまでVIPが有効にならず接続不可
- VIPが有効になってもPeer HSAノードがSite-BのMasterとしてReadyになるまでログイン不可 (Failover Time + α)
- $+\alpha$ は環境や状況に依存するが、今回の検証ではFailover Time + 約30秒～2分程度だった。

Site-B VIP



4.4.1. Peer PASノード障害 (2/8)

■ NMS(Site-A VIP): ログイン後のメッセージ



4.4.1. Peer PASノード障害 (3/8)

■ NMS(Site-A VIP): [Administration] > [Cluster Manager]

- PAS: 影響なし
- HSA: 影響なし

Alerting Devices: 2 | Highest x Alert Details - SevOne Data In x +

Not secure | <https://192.168.65.10/#ClusterManager/logout=-2&page=ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

- Cluster
 - Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
 - Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.11

Appliance Overview | Appliance Settings | System Settings | Process Ov

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000027
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

Alerting Devices: 2 | Highest x Alert Details - SevOne Data In x +

Not secure | <https://192.168.65.10/#ClusterManager/logout=-2&page=ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

- Cluster
 - Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
 - Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.65.12 (passive)

Appliance Overview | Appliance Settings | System Settings | Process Ov

Data Database

Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000026
Seconds Behind	0

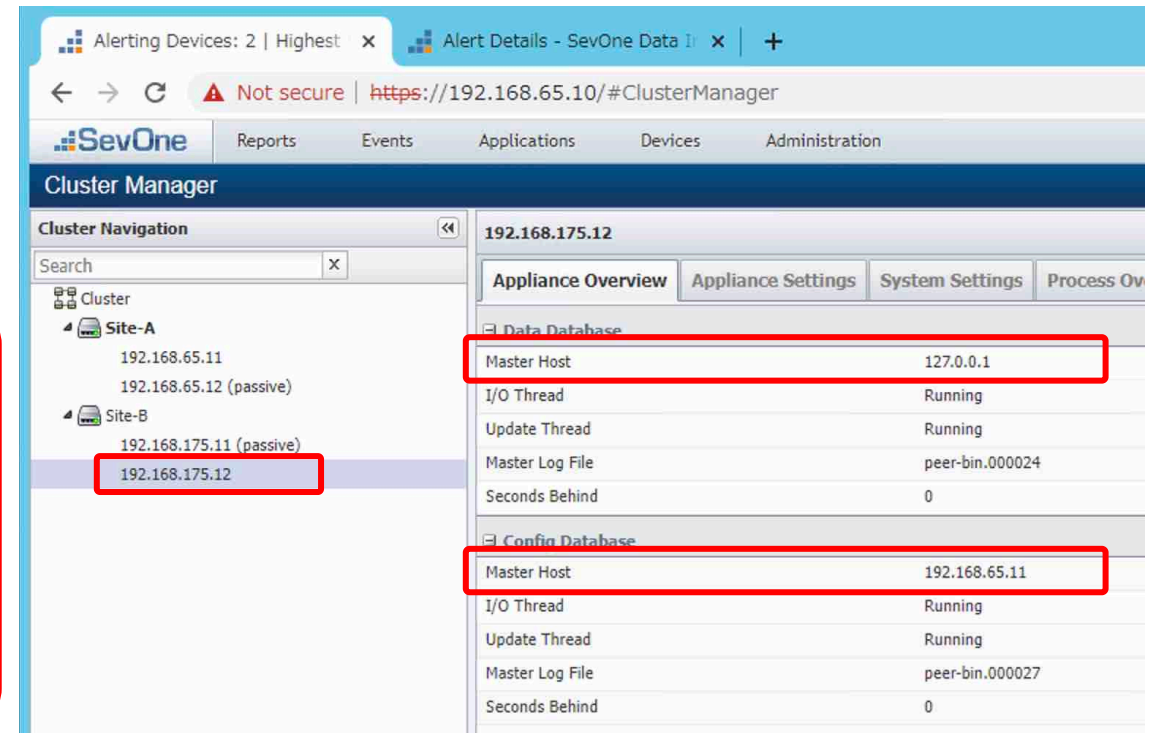
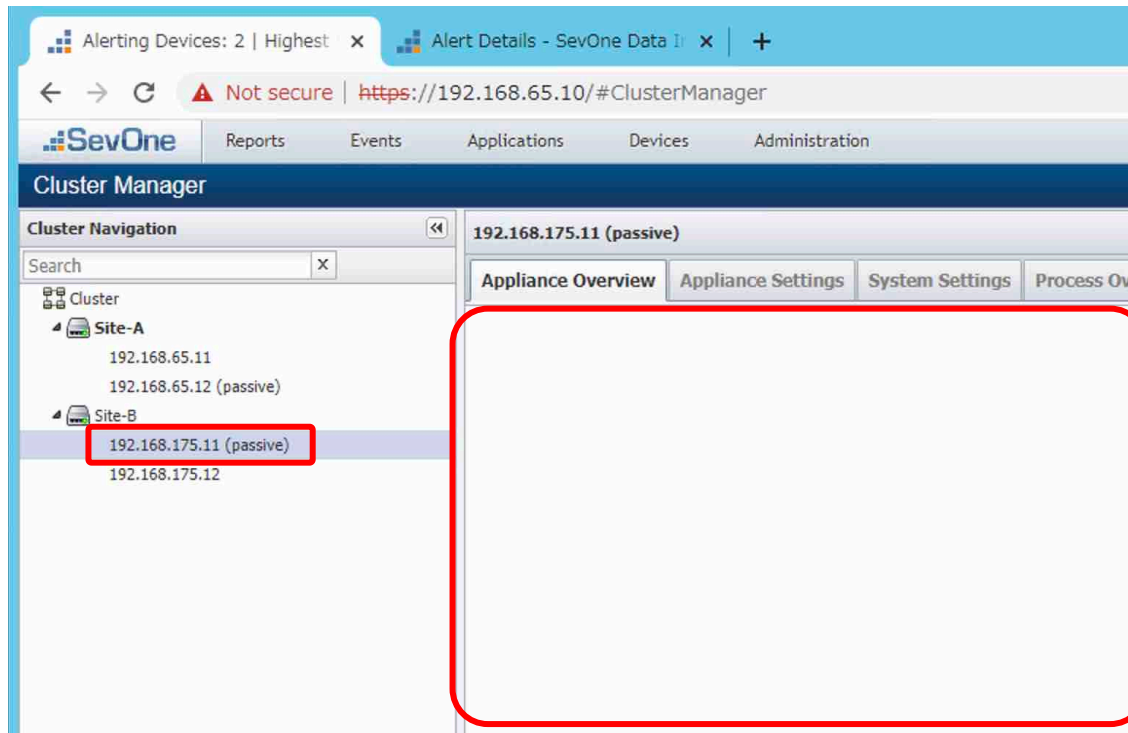
Config Database

Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000027
Seconds Behind	0

4.4.1. Peer PASノード障害 (4/8)

■ NMS(Site-A VIP): [Administration] > [Cluster Manager]

- Peer PAS: passiveとなり情報が表示されない
- Peer HSA: Failover Time経過後activeになる



4.4.1. Peer PASノード障害 (5/8)

■ 以下のログが出力される

Peer PAS(192.168.175.12): /var/log/SevOne-masterslaved.log 抜粋

```
2022-10-06T00:34:26+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T00:34:27+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4162>shouldRetryQuery: We lost connection to MySQL.
2022-10-06T00:34:27+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4162>shouldRetryQuery: Attempting to reconnect to MySQL.
2022-10-06T00:34:27+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4162>dbQuery: Retrying the query 1/10.
2022-10-06T00:34:27+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.11) (it's been 2.00 seconds out of 600 seconds).
2022-10-06T00:34:28+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T00:34:29+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.11) (it's been 4.00 seconds out of 600 seconds).
2022-10-06T00:34:30+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T00:34:31+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.11) (it's been 6.00 seconds out of 600 seconds).
2022-10-06T00:34:32+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T00:34:33+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.11) (it's been 8.00 seconds out of 600 seconds).
<...snip...>
2022-10-06T00:44:19+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.11) (it's been 592.00 seconds out of 600 seconds).
2022-10-06T00:44:21+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-10-06T00:44:21+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.11) (it's been 594.00 seconds out of 600 seconds).
2022-10-06T00:44:23+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.11) (it's been 596.00 seconds out of 600 seconds).
2022-10-06T00:44:24+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-10-06T00:44:25+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.11) (it's been 598.00 seconds out of 600 seconds).
2022-10-06T00:44:27+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-10-06T00:44:27+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.11) (it's been 600.00 seconds out of 600 seconds).
2022-10-06T00:44:27+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.175.11) has died.
2022-10-06T00:44:27+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): I am going to attempt to become the pair master.
2022-10-06T00:44:27+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): Successfully Attempt to become the pair master.
2022-10-06T00:44:30+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
<...snip...>
```

2秒間隔でcheckDeathDetectionRoutine()が実行され、600秒でPeer HSAノード障害を検知

4.4.1. Peer PASノード障害 (6/8)

■ 以下のログが出力される

PAS(192.168.65.11): /var/log/SevOne-clusterd.log 抜粋

```
2022-09-30T09:09:00+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:09:00+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Commencing retry 1 / 2.
2022-09-30T09:09:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:09:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Commencing retry 2 / 2.
2022-09-30T09:10:00+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:10:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:10:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Commencing retry 1 / 2.
2022-09-30T09:11:00+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:11:00+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Commencing retry 2 / 2.
2022-09-30T09:11:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:13:00+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:13:00+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Commencing retry 1 / 2.
2022-09-30T09:13:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:13:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Commencing retry 2 / 2.
2022-09-30T09:14:00+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:14:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:14:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Commencing retry 1 / 2.
2022-09-30T09:15:00+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:15:00+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Commencing retry 2 / 2.
2022-09-30T09:15:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:17:01+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:17:01+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Commencing retry 1 / 2.
2022-09-30T09:17:31+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-09-30T09:17:31+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[34215]: <34303> __dbConnect: Commencing retry 2 / 2.
<...snip...>
```

30秒間隔でDBへの接続が試行され、接続エラーが出力され続ける

4.4.1. Peer PASノード障害 (7/8)

■ SNMP Trap

– NMS (Site-A VIP): [Events] > [Archives] > [Logged Traps]

SevOne Alerting Devices: 2 | Highest | Alert Details - SevOne Data | x | +

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	6 Oct '22 1:04:29	IF-MIB::linkUp	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1756690920
192.168.65.4	6 Oct '22 1:04:22	IF-MIB::linkDown	5	IF-MIB::ifIndex.54	Integer	54
192.168.65.4	6 Oct '22 1:04:22	IF-MIB::linkDown	5	IF-MIB::ifDescr.54	Octet String	GigabitEthernet1/0/46
192.168.65.4	6 Oct '22 1:04:20	IF-MIB::linkDown	5	IF-MIB::ifType.54	Integer	6
192.168.65.4	6 Oct '22 1:03:54	IF-MIB::linkDown	5	CISCO-SMI::local.2.1.1.20.54	Octet String	administratively down
192.168.65.4	6 Oct '22 1:03:51	BRIDGE-MIB::newRoot	2			
192.168.65.4	6 Oct '22 1:03:51	BRIDGE-MIB::newRoot	2			

SevOne Alerting Devices: 2 | Highest | Alert Details - SevOne Data | x | +

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	6 Oct '22 1:04:08	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1756708742
192.168.175.93	6 Oct '22 1:04:08	IF-MIB::linkDown	5	IF-MIB::ifIndex.22	Integer	22
192.168.175.93	6 Oct '22 1:04:05	BRIDGE-MIB::newRoot	2	IF-MIB::ifDescr.22	Octet String	GigabitEthernet1/0/14
192.168.175.93	6 Oct '22 1:02:28	IF-MIB::linkUp	5	IF-MIB::ifType.22	Integer	6
192.168.175.93	6 Oct '22 1:02:26	BRIDGE-MIB::topologyChange	3	CISCO-SMI::local.2.1.1.20.22	Octet String	administratively down
192.168.175.93	6 Oct '22 1:02:20	CISCO-SMI::ciscoMgmt.43.2.0.1	5			
192.168.175.93	6 Oct '22 1:02:16	CISCO-SMI::ciscoMgmt.43.2.0.1	5			

4.4.1. Peer PASノード障害 (8/8)

■ SNMP Trap

– SDI: Alert Details

- Site-AおよびSite-BともにNMSから情報取得可能

The screenshot shows the SevOne Alert Details page. The browser address bar indicates the URL: <https://192.168.65.21/reports/1/1?variables=eJxdjDEOgzAQBp%2BySkkKWrc6CKIXzhYsENudzESH%2FPYeUAqUczeyOJ0pcuQUMJx6yYIDSRV6rPZdgoa...>

The page title is "Alert Details". The left sidebar contains navigation options: Create, Reports, Explore, Configure, and Administer. The main content area shows a table of alerts for the "Device Group: All Device Groups" and "All open alerts".

Severity	Device Name	Object Name	First	Last	Message	Occurrences
Alert	C9300-A	Temperature Monitor 1014	Aug 18, 2022 0:09 (UTC-04:00) EDT	Oct 5, 2022 21:06 (UTC-04:00) EDT	Threshold triggered -- C93...	23.41K
Alert	C9300-B	Temperature Monitor 1014	Aug 18, 2022 4:03 (UTC-04:00) EDT	Oct 5, 2022 21:06 (UTC-04:00) EDT	Threshold triggered -- C93...	39.79K
Error	C9300-A		Aug 31, 2022 21:18 (UTC-04:00) EDT	Oct 5, 2022 21:04 (UTC-04:00) EDT	Trap received from C9300-A: IF-MIB::linkDown -- Bindings: DISMAN-EVENT-MIB::sysUpTimeInstance = 1756693751, IF-MIB::ifIndex.79 = 79, IF-MIB::ifDescr.79 = Vlan64, IF-MIB::ifType.79 = 53, CISCO-SMI::local.2.1.1.20.79 = down -- An interface has gone down.	1.01K
Error	C9300-B		Sep 1, 2022 3:10 (UTC-04:00) EDT	Oct 5, 2022 21:04 (UTC-04:00) EDT	Trap received from C9300-...	74
Warning	C9300-A		Aug 31, 2022 22:48 (UTC-04:00) EDT	Oct 5, 2022 21:04 (UTC-04:00) EDT	Trap received from C9300-...	694

4.4.2. Peer PASノード復旧 (1/3)

■ NMS(Site-A VIP): [Administration] > [Cluster Manager]

- 復旧後はPeer HSAノード(192.168.175.12)がactiveのままとなるため、元の状態に戻す場合は手動で切り替えが必要

Alerting Devices: 2 | Highest x Alert Details - SevOne Data I x +

Not secure | <https://192.168.65.10/#ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

- Cluster
 - Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
 - Site-B
 - 192.168.175.11 (passive)**
 - 192.168.175.12

192.168.175.11 (passive)

Appliance Overview | Appliance Settings | System Settings | Process Ov

Data Database

Master Host	192.168.175.12
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000026
Seconds Behind	0

Config Database

Master Host	192.168.175.12
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Alerting Devices: 2 | Highest x Alert Details - SevOne Data I x +

Not secure | <https://192.168.65.10/#ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

- Cluster
 - Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
 - Site-B
 - 192.168.175.11 (passive)
 - 192.168.175.12**

192.168.175.12

Appliance Overview | Appliance Settings | System Settings | Process Ov

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database

Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000027
Seconds Behind	0

4.4.2. Peer PASノード復旧 (2/3)

■ 以下のログが出力される

Peer PAS(192.168.175.12): /var/log/SevOne-masterslaved.log 抜粋

```
2022-10-06T01:10:35+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:37+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:39+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:41+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:43+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:45+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:47+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:49+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:51+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:53+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:55+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: <4161> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (111)
2022-10-06T01:10:59+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.175.11) is now alive.
2022-10-06T01:11:05+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: interactionRoutine(): Established connection from 127.0.0.1 on socket 9
2022-10-06T01:11:05+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: userRoutine(): Socket 9 hanging up.
2022-10-06T01:12:05+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: interactionRoutine(): Established connection from 127.0.0.1 on socket 8
2022-10-06T01:12:05+00:00 sevone-nms-b2.iselab.local SevOne-masterslaved[3149]: userRoutine(): Socket 8 hanging up.
<...snip...>
```

4.4.2. Peer PASノード復旧 (3/3)

■ SNMP Trap

- NMS(Site-A VIP): [Events] > [Archives] > [Logged Traps]
 - C9300-AのTrapは表示される
 - C9300-BはVIPが復旧したPeer PAS(passive)に向いているためTrapが表示されない
- 「4.1.2. PASノード復旧」と同様の問題で、Peer PASとPeer HSAでVIPが重複するため

SevOne Alert Details - SevOne Data | x | +

Alerting Devices: 2 | Highest x

Not secure | https://192.168.65.10/#LoggedTraps

SevOne Reports Events Applications Devices Administration

Sev One • Logout + ?

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	6 Oct '22 1:28:16	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1756837140
192.168.65.4	6 Oct '22 1:28:14	BRIDGE-MIB::newRoot	2	IF-MIB::ifIndex.54	Integer	54
192.168.65.4	6 Oct '22 1:28:13	BRIDGE-MIB::newRoot	2	IF-MIB::ifDescr.54	Octet String	GigabitEthernet1/0/46
192.168.65.4	6 Oct '22 1:28:11	CISCO-SMI::ciscoMgmt.43.2.0.1	5	IF-MIB::ifType.54	Integer	6
192.168.65.4	6 Oct '22 1:27:59	CISCO-SMI::ciscoMgmt.43.2.0.1	5	CISCO-SMI::local.2.1.1.20.54	Octet String	administratively down
192.168.65.4	6 Oct '22 1:11:58	BRIDGE-MIB::topologyChange	3			

SevOne Alert Details - SevOne Data | x | +

Alerting Devices: 2 | Highest x

Not secure | https://192.168.65.10/#LoggedTraps

SevOne Reports Events Applications Devices Administration

Sev One • Logout + ?

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	6 Oct '22 1:09:07	IF-MIB::linkUp	5			
192.168.175.93	6 Oct '22 1:09:07	IF-MIB::linkUp	5			
192.168.175.93	6 Oct '22 1:09:04	BRIDGE-MIB::topologyChange	3			
192.168.175.93	6 Oct '22 1:04:08	IF-MIB::linkDown	5			
192.168.175.93	6 Oct '22 1:04:08	IF-MIB::linkDown	5			
192.168.175.93	6 Oct '22 1:04:05	BRIDGE-MIB::newRoot	2			

C9300-BのARPテーブル

```
C9300-B#show arp | in 192.168.175.
Internet 192.168.175.1 0 0050.5686.b2f1 ARPA Vlan75
Internet 192.168.175.10 11 0050.5686.4a9f ARPA Vlan75
Internet 192.168.175.11 0 0050.5686.4a9f ARPA Vlan75
Internet 192.168.175.12 0 0050.5686.d7a5 ARPA Vlan75
Internet 192.168.175.93 - 007e.95ac.c2d8 ARPA Vlan75
Internet 192.168.175.103 1 0050.5686.326d ARPA Vlan75
Internet 192.168.175.170 0 0050.5686.c6f1 ARPA Vlan75
Internet 192.168.175.200 83 0050.5686.30a0 ARPA Vlan75
```


4.5. Peer HSAノード障害 / 復旧

4.5. Peer HSAノード障害 / 復旧

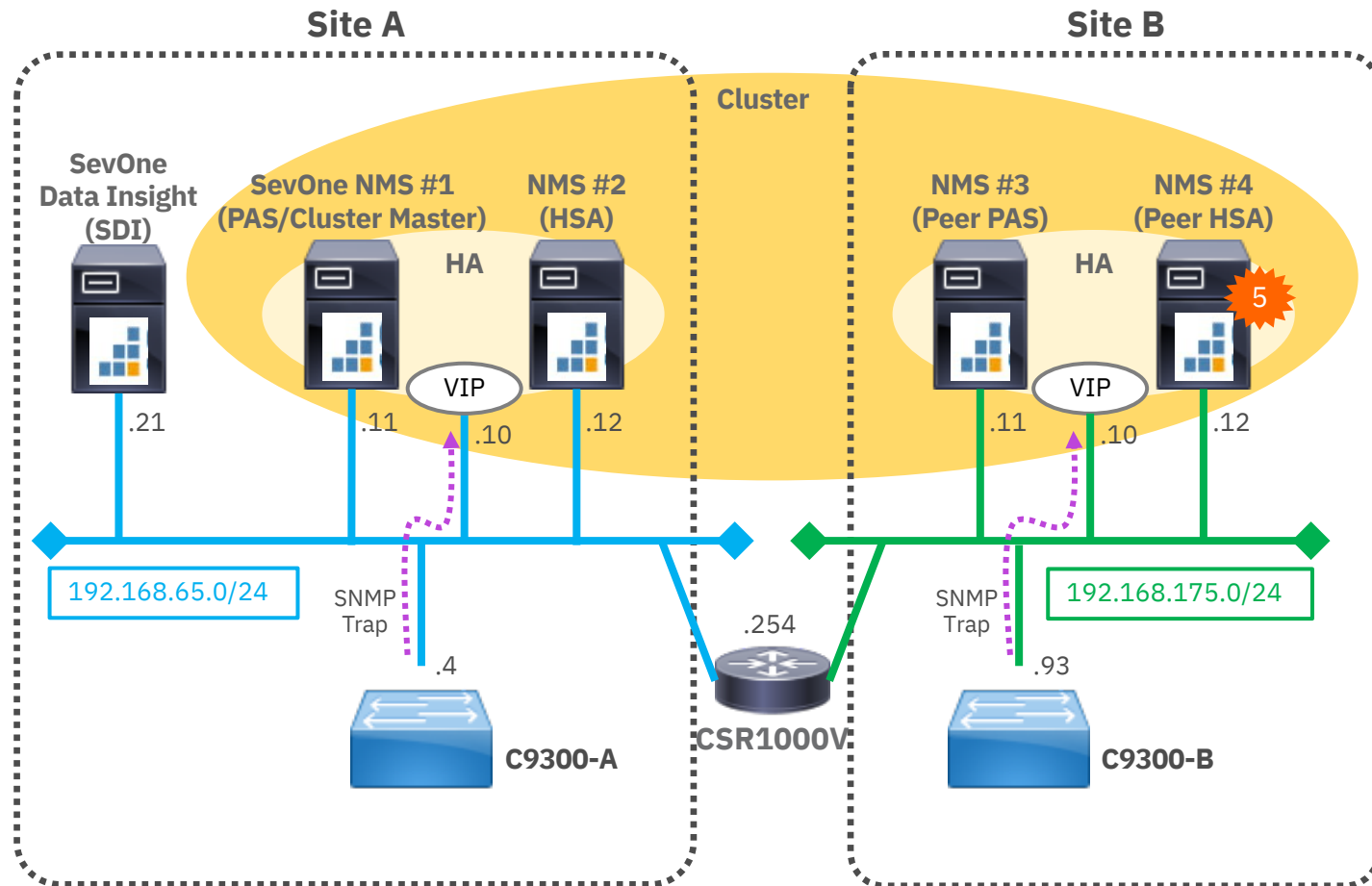
■ 確認手順

– Peer HSAノード障害

1. "SevOne-shutdown shutdown"コマンドでPeer HSAノードをshutdownする
2. C9300-AおよびC9300-BのインターフェースをshutdownしてSNMP Trapを発生させる
3. NMSの管理コンソールでPeer HSAの状態を確認する
4. NMSのログを確認する
5. NMSおよびSDIの管理コンソールでAlertを確認する

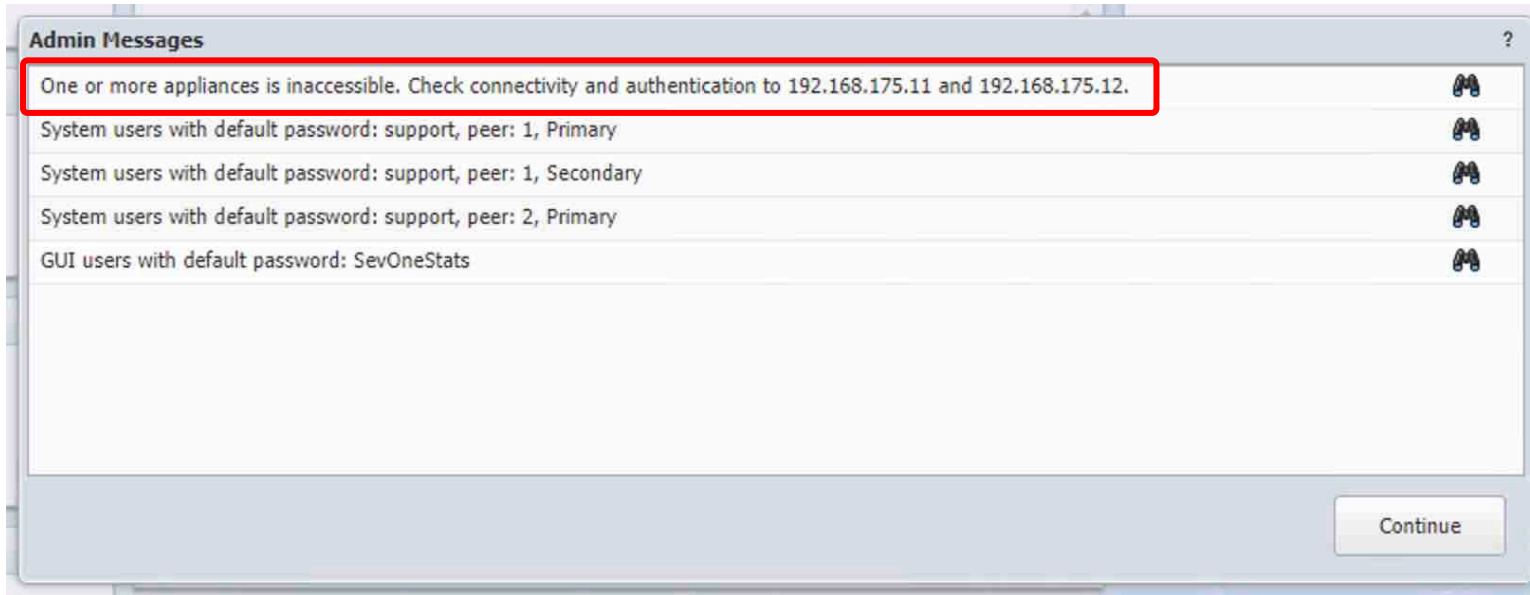
– Peer HSAノード復旧

1. Peer HSAノードを起動する (電源ON)
2. NMSの管理コンソールでPeerのactive/passiveの状態を確認する
3. NMSのログを確認する



4.5.1. Peer HSAノード障害 (1/7)

■ NMS(Site-A VIP): ログイン後のメッセージ



4.5.1. Peer HSAノード障害 (2/7)

■ NMS(Site-A VIP): [Administration] > [Cluster Manager]

- PAS: 影響なし
- HSA: 影響なし

Cluster Manager

Cluster Navigation

Search

Cluster

Site-A

192.168.65.11

192.168.65.12 (passive)

Site-B

192.168.175.11

192.168.175.12 (passive)

192.168.65.11

Appliance Overview | Appliance Settings | System Settings | Process Ov

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000027
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

Cluster Manager

Cluster Navigation

Search

Cluster

Site-A

192.168.65.11

192.168.65.12 (passive)

Site-B

192.168.175.11

192.168.175.12 (passive)

192.168.65.12 (passive)

Appliance Overview | Appliance Settings | System Settings | Process Ov

Data Database

Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000026
Seconds Behind	0

Config Database

Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000027
Seconds Behind	0

4.5.1. Peer HSAノード障害 (3/7)

■ NMS(Site-A VIP): [Administration] > [Cluster Manager]

- Peer PAS: 影響なし
- Peer HSA: 情報が表示されない

Alerting Devices: 2 | Highest x Alert Details - SevOne Data I x +

Not secure | <https://192.168.65.10/#ClusterManager/logout=-2&page=ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

Cluster

- Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.175.11

Appliance Overview Appliance Settings System Settings Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000019
Seconds Behind	0

Config Database

Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000027
Seconds Behind	0

Alerting Devices: 2 | Highest x Alert Details - SevOne Data I x +

Not secure | <https://192.168.65.10/#ClusterManager/logout=-2&page=ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

Cluster

- Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.175.12 (passive)

Appliance Overview Appliance Settings System Settings Process Overview

Data Database

Config Database

4.5.1. Peer HSAノード障害 (4/7)

■ 以下のログが出力される

Peer PAS(192.168.175.11): /var/log/SevOne-masterslaved.log 抜粋

```
2022-10-06T14:28:03+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:28:03+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3469>shouldRetryQuery: We lost connection to MySQL.
2022-10-06T14:28:03+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3469>shouldRetryQuery: Attempting to reconnect to MySQL.
2022-10-06T14:28:03+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3469>dbQuery: Retrying the query 1/10.
2022-10-06T14:28:03+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.12) (it's been 2.00 seconds out of 600 seconds).
2022-10-06T14:28:05+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:28:05+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: interactionRoutine(): Established connection from 127.0.0.1 on socket 9
2022-10-06T14:28:05+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: userRoutine(): Socket 9 hanging up.
2022-10-06T14:28:05+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: interactionRoutine(): Established connection from 127.0.0.1 on socket 8
2022-10-06T14:28:05+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: interactionRoutine(): Established connection from 127.0.0.1 on socket 9
2022-10-06T14:28:05+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: userRoutine(): Socket 9 hanging up.
2022-10-06T14:28:05+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.12) (it's been 4.00 seconds out of 600 seconds).
2022-10-06T14:28:07+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:28:07+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.12) (it's been 6.00 seconds out of 600 seconds).
<...snip...>
2022-10-06T14:37:57+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.12) (it's been 594.00 seconds out of 600 seconds).
2022-10-06T14:37:58+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (113)
2022-10-06T14:37:59+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.12) (it's been 596.00 seconds out of 600 seconds).
2022-10-06T14:38:01+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (113)
2022-10-06T14:38:01+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.12) (it's been 598.00 seconds out of 600 seconds).
2022-10-06T14:38:03+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: checkDeathDetectionRoutine(): Failed to test my neighbor (192.168.175.12) (it's been 600.00 seconds out of 600 seconds).
2022-10-06T14:38:03+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.175.12) has died.
2022-10-06T14:38:04+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468>__dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (113)
2022-10-06T14:38:04+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: interactionRoutine(): Established connection from 127.0.0.1 on socket 8
2022-10-06T14:38:04+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: userRoutine(): Socket 8 hanging up.
<...snip...>
```

2秒間隔でcheckDeathDetectionRoutine()が実行され、600秒でPeer HSAノード障害を検知

4.5.1. Peer HSAノード障害 (5/7)

■ 以下のログが出力される

PAS(192.168.65.11): /var/log/SevOne-clusterd.log 抜粋

```
2022-10-06T14:29:17+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:29:17+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Commencing retry 1 / 2.
2022-10-06T14:29:47+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:29:47+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Commencing retry 2 / 2.
2022-10-06T14:30:17+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:30:47+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:30:47+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Commencing retry 1 / 2.
2022-10-06T14:31:17+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:31:17+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Commencing retry 2 / 2.
2022-10-06T14:31:47+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:33:18+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:33:18+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Commencing retry 1 / 2.
2022-10-06T14:33:48+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:33:48+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Commencing retry 2 / 2.
2022-10-06T14:34:18+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:34:48+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:34:48+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Commencing retry 1 / 2.
2022-10-06T14:35:18+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:35:18+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Commencing retry 2 / 2.
2022-10-06T14:35:48+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:37:18+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:37:18+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Commencing retry 1 / 2.
2022-10-06T14:37:48+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (110)
2022-10-06T14:37:48+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[3313002]: <3313229> __dbConnect: Commencing retry 2 / 2.
<...snip...>
```

30秒間隔でPeer HSAのDBへの接続が試行され、接続エラーが出力され続ける

4.5.1. Peer HSAノード障害 (6/7)

■ SNMP Trap

- NMS(Site-A VIP): [Events] > [Archives] > [Logged Traps]
 - C9300-AおよびC9300-BのTrapが表示される

Alerting Devices: 2 | Highest | Alert Details - SevOne Data | x | +

Not secure | https://192.168.65.10/#LoggedTraps

SevOne | Reports | Events | Applications | Devices | Administration | Sev One • Logout + ↺ 🏠 ?

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	6 Oct '22 14:42:27	IF-MIB::linkUp	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1761600289
192.168.65.4	6 Oct '22 14:42:09	IF-MIB::linkDown	5	IF-MIB::ifIndex.54	Integer	54
192.168.65.4	6 Oct '22 14:42:09	IF-MIB::linkDown	5	IF-MIB::ifDescr.54	Octet String	GigabitEthernet1/0/46
192.168.65.4	6 Oct '22 14:42:08	IF-MIB::linkDown	5	IF-MIB::ifType.54	Integer	6
192.168.65.4	6 Oct '22 14:42:07	IF-MIB::linkDown	5	CISCO-SMI::local.2.1.1.20.54	Octet String	administratively down
192.168.65.4	6 Oct '22 14:42:06	BRIDGE-MIB::newRoot	2			

Alerting Devices: 2 | Highest | Alert Details - SevOne Data | x | +

Not secure | https://192.168.65.10/#LoggedTraps

SevOne | Reports | Events | Applications | Devices | Administration | Sev One • Logout + ↺ 🏠 ?

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	6 Oct '22 14:42:10	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1761616904
192.168.175.93	6 Oct '22 14:42:10	IF-MIB::linkDown	5	IF-MIB::ifIndex.22	Integer	22
192.168.175.93	6 Oct '22 14:42:07	BRIDGE-MIB::newRoot	2	IF-MIB::ifDescr.22	Octet String	GigabitEthernet1/0/14
192.168.175.93	6 Oct '22 14:41:41	IF-MIB::linkUp	5	IF-MIB::ifType.22	Integer	6
192.168.175.93	6 Oct '22 14:41:40	IF-MIB::linkUp	5	CISCO-SMI::local.2.1.1.20.22	Octet String	administratively down
192.168.175.93	6 Oct '22 14:41:38	BRIDGE-MIB::topologyChange	3			

4.5.1. Peer HSAノード障害 (7/7)

■ SNMP Trap

– SDI: Alert Details

- Site-AおよびSite-BともにNMSから情報取得可能

The screenshot shows the SevOne Alert Details page. The browser address bar indicates the URL: <https://192.168.65.21/reports/1/1?variables=eJxdjDEOgzAQBp%2BySkkKWr6CKIXZhYsENudzESH%2FPYeUAqUczeyOJOpcuQUMJx6yYIDSRV6rPZdgoa...>

The page title is "Alert Details". The left sidebar contains navigation options: Create, Reports (selected), Explore, Configure, and Administer.

The main content area shows "Alert Details" for "Device Group: All Device Groups" and "All open alerts". A search bar is present. The table below lists the alerts:

Severity	Device Name	Object Name	First	Last	Message	Occurrences
Alert	C9300-A	Temperature Monitor 1014	Aug 18, 2022 0:09 (UTC-04:00) EDT	Oct 6, 2022 10:42 (UTC-04:00) EDT	Threshold triggered -- C93...	23.72K
Alert	C9300-B	Temperature Monitor 1014	Aug 18, 2022 4:03 (UTC-04:00) EDT	Oct 6, 2022 10:42 (UTC-04:00) EDT	Threshold triggered -- C93...	40.23K
Error	C9300-A		Aug 31, 2022 21:18 (UTC-04:00) EDT	Oct 6, 2022 10:43 (UTC-04:00) EDT	Trap received from C9300-A: IF-MIB::linkDown -- Bindings: DISMAN-EVENT- MIB::sysUpTimeInstance = 1761609244, IF- MIB::ifIndex.79 = 79, IF- MIB::ifDescr.79 = Vlan64, IF- MIB::ifType.79 = 53, CISCO- SMI::local.2.1.1.20.79 = down -- An interface has gone down.	1.04K
Error	C9300-B		Sep 1, 2022 3:10 (UTC-04:00) EDT	Oct 6, 2022 10:42 (UTC-04:00) EDT	Trap received from C9300-...	82
Warning	C9300-A		Aug 31, 2022 22:48 (UTC-04:00) EDT	Oct 6, 2022 10:42 (UTC-04:00) EDT	Trap received from C9300-...	718

A red box highlights the "Error" alert for device C9300-A, which details a trap received from C9300-A regarding a link down event on interface Vlan64.

4.5.2. Peer HSAノード復旧 (1/2)

■ NMS(Site-A VIP): [Administration] > [Cluster Manager]

– 復旧後は正常時と同じ状態が表示される

Cluster Manager

Cluster Navigation

Search

Cluster

- Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.175.11

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000019
Seconds Behind	0

Config Database

Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000027
Seconds Behind	0

Cluster Manager

Cluster Navigation

Search

Cluster

- Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
- Site-B
 - 192.168.175.11
 - 192.168.175.12 (passive)

192.168.175.12 (passive)

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	192.168.175.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000017
Seconds Behind	0

Config Database

Master Host	192.168.175.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000017
Seconds Behind	0

4.5.2. Peer HSAノード復旧 (2/2)

■ 以下のログが出力される

Peer PAS(192.168.175.11): /var/log/SevOne-masterslaved.log 抜粋

```
2022-10-06T14:47:59+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:01+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:03+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:04+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: interactionRoutine(): Established connection from 127.0.0.1 on socket 8
2022-10-06T14:48:04+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: userRoutine(): Socket 8 hanging up.
2022-10-06T14:48:04+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: interactionRoutine(): Established connection from 127.0.0.1 on socket 9
2022-10-06T14:48:04+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: MasterSlaveMessage:sendMessageToNeighbor: No response from the neighbor. Trying again...
2022-10-06T14:48:05+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:05+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: MasterSlaveMessage:sendMessageToNeighbor: No response from the neighbor. Trying again...
2022-10-06T14:48:06+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: MasterSlaveMessage:sendMessageToNeighbor: No response from the neighbor. Trying again...
2022-10-06T14:48:07+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: userRoutine(): Socket 9 hanging up.
2022-10-06T14:48:07+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:10+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:12+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:14+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:16+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:18+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:20+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:22+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:24+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:26+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:28+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:30+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: <3468> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (111)
2022-10-06T14:48:33+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: checkDeathDetectionRoutine(): I believe that my neighbor (192.168.175.12) is now alive.
2022-10-06T14:48:59+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: interactionRoutine(): Established connection from 127.0.0.1 on socket 8
2022-10-06T14:48:59+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: userRoutine(): Socket 8 hanging up.
2022-10-06T14:48:59+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: interactionRoutine(): Established connection from 127.0.0.1 on socket 13
2022-10-06T14:48:59+00:00 sevone-nms-b1.iselab.local SevOne-masterslaved[1888]: userRoutine(): Socket 13 hanging up.
<...snip...>
```


4.6. PAS(Cluster Master) – Peer PAS間 通信障害 / 復旧

4.6. PAS(Cluster Master) – Peer PAS間通信障害 / 復旧

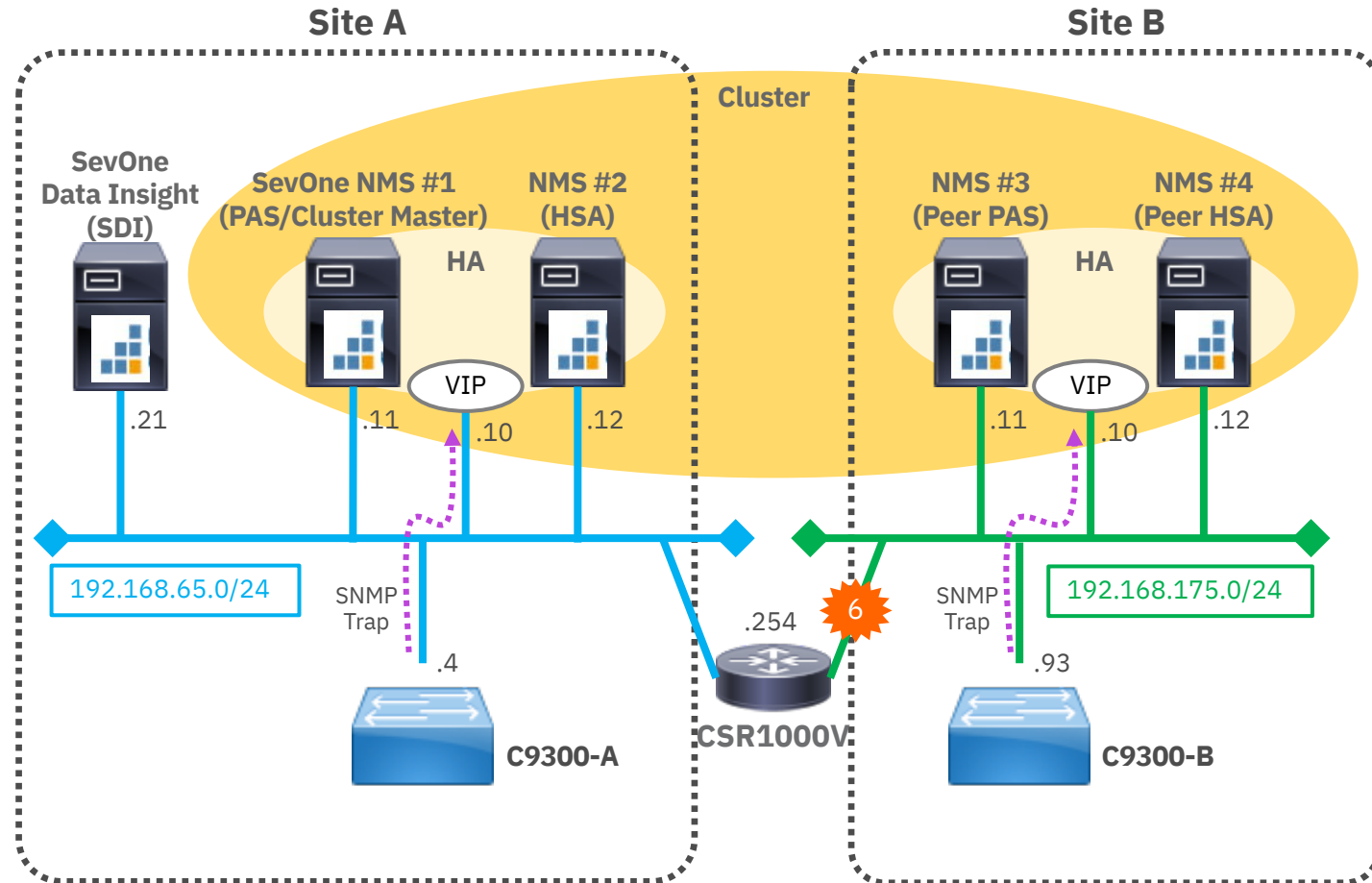
■ 確認手順

– PAS – Peer PAS間通信障害

1. CSR1000Vのインターフェースを切断し、PAS – Peer PAS間の通信障害を発生させる
2. C9300-AおよびC9300-BのインターフェースをshutdownしてSNMP Trapを発生させる
3. NMSの管理コンソールでactive/passiveの状態を確認する
4. NMSのログを確認する
5. NMSおよびSDIの管理コンソールでAlertを確認する

– PAS – Peer PAS間通信復旧

1. CSR1000Vのインターフェースを接続し、PAS – Peer PAS間の通信障害を復旧させる
2. NMSの管理コンソールでAlertを確認する
3. NMSのログを確認する

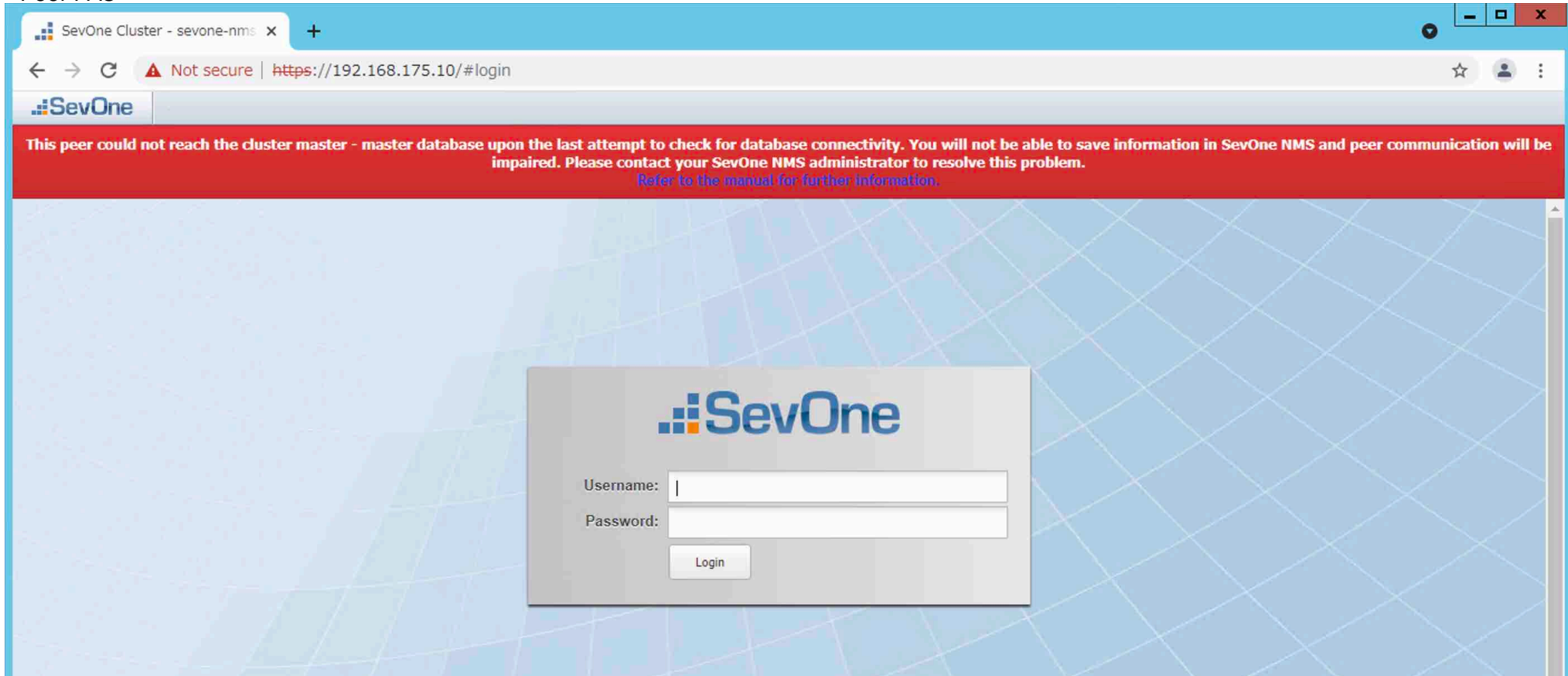


4.6.1. PAS – Peer PAS間通信障害 (1/6)

■ NMS

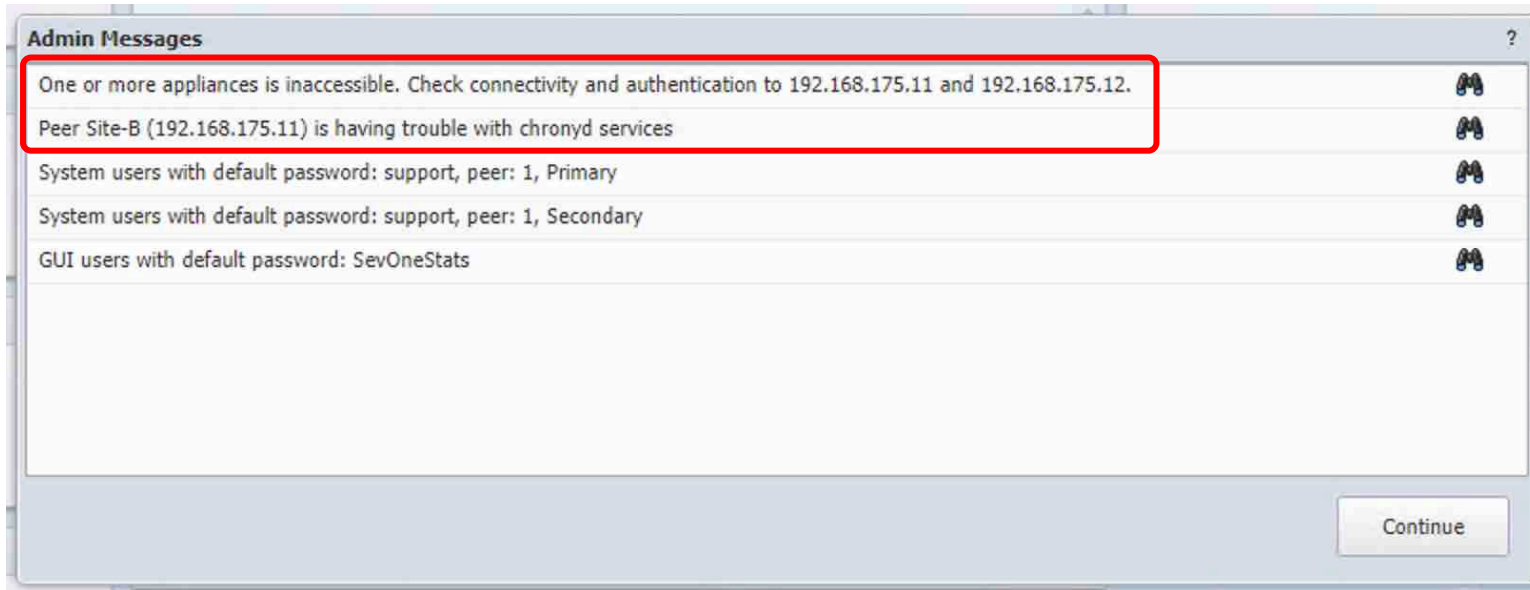
- PAS(Site-A VIP): 影響なし
- Peer PAS(Site-B VIP): Cluster Masterにアクセスできないためログイン不可状態となる

Peer PAS



4.6.1. PAS – Peer PAS間通信障害 (2/6)

■ NMS(Site-A VIP): ログイン後のメッセージ



4.6.1. PAS – Peer PAS間通信障害 (3/6)

- NMS(Site-A VIP): [Administration] > [Cluster Manager]
 - Peer PASがpassiveになる

Alerting Devices: 2 | Highest x Alert Details - SevOne Data 1 x +

Not secure | <https://192.168.65.10/#ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

- Cluster
 - Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
 - Site-B
 - 192.168.175.11 (passive)
 - 192.168.175.12 (passive)

192.168.65.11

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database

Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

Alerting Devices: 2 | Highest x Alert Details - SevOne Data 1 x +

Not secure | <https://192.168.65.10/#ClusterManager>

SevOne Reports Events Applications Devices Administration

Cluster Manager

Cluster Navigation

Search x

- Cluster
 - Site-A
 - 192.168.65.11
 - 192.168.65.12 (passive)
 - Site-B
 - 192.168.175.11 (passive)
 - 192.168.175.12 (passive)

192.168.175.11 (passive)

Appliance Overview | Appliance Settings | System Settings | Process Overview

Data Database

Master Host	
I/O Thread	Not Running
Update Thread	Not Running
Master Log File	
Seconds Behind	

Config Database

Master Host	
I/O Thread	Not Running
Update Thread	Not Running
Master Log File	
Seconds Behind	

4.6.1. PAS – Peer PAS間通信障害 (4/6)

■ 以下のログが出力される

PAS(192.168.65.11): /var/log/SevOne-clusterd.log 抜粋

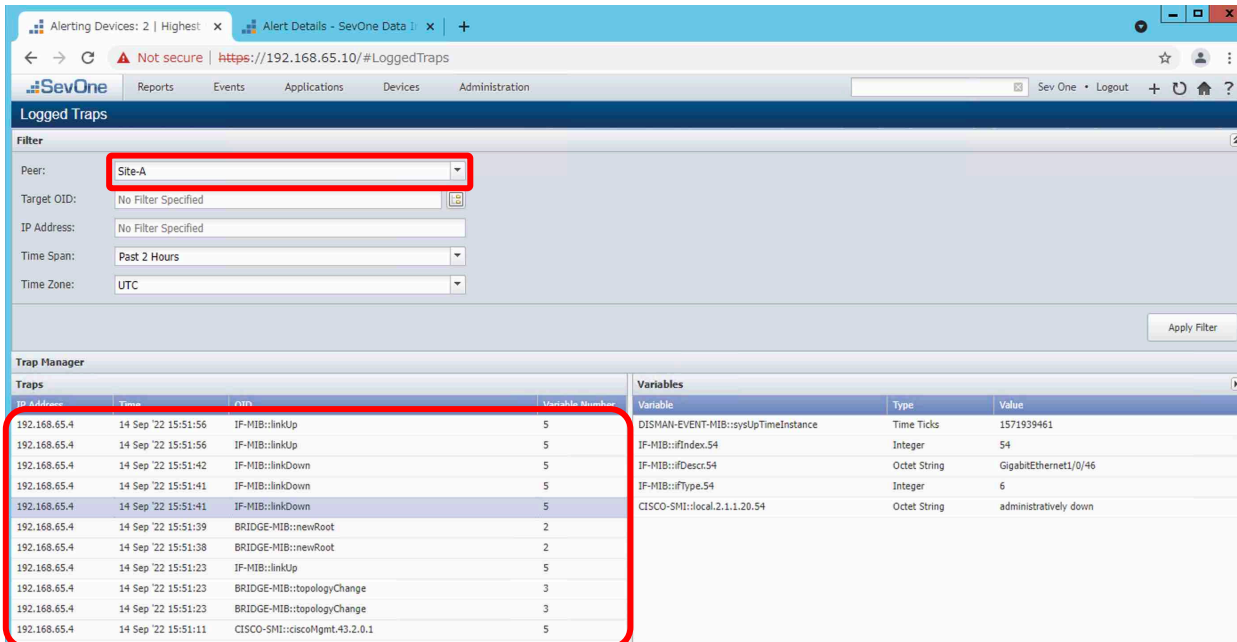
```
2022-09-14T07:53:14+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-09-14T07:53:14+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Commencing retry 1 / 2.
2022-09-14T07:53:18+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-09-14T07:53:18+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Commencing retry 2 / 2.
2022-09-14T07:53:19+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-09-14T07:53:26+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-09-14T07:53:26+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Commencing retry 1 / 2.
2022-09-14T07:53:27+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-09-14T07:53:27+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Commencing retry 2 / 2.
2022-09-14T07:53:28+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-09-14T07:53:29+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (113)
2022-09-14T07:53:29+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Commencing retry 1 / 2.
2022-09-14T07:53:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (113)
2022-09-14T07:53:30+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Commencing retry 2 / 2.
2022-09-14T07:53:31+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (113)
2022-09-14T07:53:34+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (113)
2022-09-14T07:53:34+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Commencing retry 1 / 2.
2022-09-14T07:53:37+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (113)
2022-09-14T07:53:37+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Commencing retry 2 / 2.
2022-09-14T07:53:41+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.12' (113)
2022-09-14T07:53:41+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: pushStatusToAllPeers(): Peer ID 2 didn't get the status update.
2022-09-14T07:54:41+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-09-14T07:54:41+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Commencing retry 1 / 2.
2022-09-14T07:54:42+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Cannot connect to database. Error was: Can't connect to MySQL server on '192.168.175.11' (113)
2022-09-14T07:54:42+00:00 sevone-nms-a1.iselab.local SevOne-clusterd[44923]: <45031> __dbConnect: Commencing retry 2 / 2.
<...snip...>
```

4.6.1. PAS – Peer PAS間通信障害 (5/6)

■ SNMP Trap

– NMS(Site-A VIP): [Events] > [Archives] > [Logged Traps]

- Site-AのTrapは表示されるが、Site-Bの情報はPeer PASから取得できないため表示されない



Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x +

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

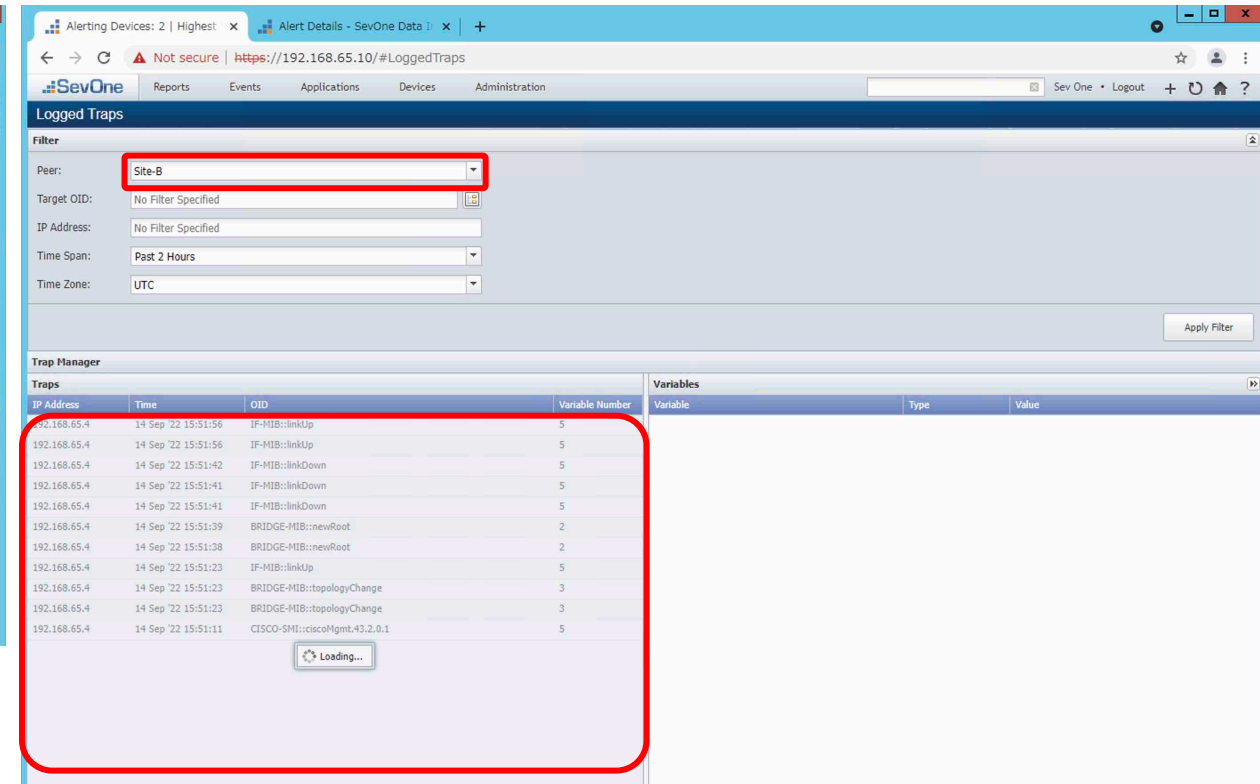
Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	14 Sep '22 15:51:56	IF-MIB::linkUp	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1571939461
192.168.65.4	14 Sep '22 15:51:56	IF-MIB::linkUp	5	IF-MIB::ifIndex.54	Integer	54
192.168.65.4	14 Sep '22 15:51:42	IF-MIB::linkDown	5	IF-MIB::ifDescr.54	Octet String	GigabitEthernet1/0/46
192.168.65.4	14 Sep '22 15:51:41	IF-MIB::linkDown	5	IF-MIB::ifType.54	Integer	6
192.168.65.4	14 Sep '22 15:51:41	IF-MIB::linkDown	5	CISCO-SMI::local.2.1.1.20.54	Octet String	administratively down
192.168.65.4	14 Sep '22 15:51:39	BRIDGE-MIB::newRoot	2			
192.168.65.4	14 Sep '22 15:51:38	BRIDGE-MIB::newRoot	2			
192.168.65.4	14 Sep '22 15:51:23	IF-MIB::linkUp	5			
192.168.65.4	14 Sep '22 15:51:23	BRIDGE-MIB::topologyChange	3			
192.168.65.4	14 Sep '22 15:51:23	BRIDGE-MIB::topologyChange	3			
192.168.65.4	14 Sep '22 15:51:11	CISCO-SMI::ciscoMgmt.43.2.0.1	5			



Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x +

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	14 Sep '22 15:51:56	IF-MIB::linkUp	5			
192.168.65.4	14 Sep '22 15:51:42	IF-MIB::linkDown	5			
192.168.65.4	14 Sep '22 15:51:41	IF-MIB::linkDown	5			
192.168.65.4	14 Sep '22 15:51:41	IF-MIB::linkDown	5			
192.168.65.4	14 Sep '22 15:51:39	BRIDGE-MIB::newRoot	2			
192.168.65.4	14 Sep '22 15:51:38	BRIDGE-MIB::newRoot	2			
192.168.65.4	14 Sep '22 15:51:23	IF-MIB::linkUp	5			
192.168.65.4	14 Sep '22 15:51:23	BRIDGE-MIB::topologyChange	3			
192.168.65.4	14 Sep '22 15:51:23	BRIDGE-MIB::topologyChange	3			
192.168.65.4	14 Sep '22 15:51:11	CISCO-SMI::ciscoMgmt.43.2.0.1	5			

Loading...

4.6.1. PAS – Peer PAS間通信障害 (6/6)

■ SNMP Trap

– SDI: Alert Details

- Site-Bの情報は取得できないため、Site-Aの情報のみ表示される

The screenshot shows the SevOne Alert Details page. The left sidebar contains navigation links: Create, Reports, Explore, Configure, and Administer. The main content area displays a table of alerts for the device group 'All Device Groups'. The table has columns for Severity, Device Name, Object Name, First, Last, Message, and Occurrences. The 'Error' alert is highlighted with a red box.

Severity	Device Name	Object Name	First	Last	Message	Occurrences
Alert	C9300-A	Temperature Monitor 1014	Aug 18, 2022 0:09 (UTC-04:00) EDT	Sep 14, 2022 11:57 (UTC-04:00) EDT	Threshold triggered -- C93...	13.17K
Error	C9300-A		Aug 31, 2022 21:18 (UTC-04:00) EDT	Sep 14, 2022 11:51 (UTC-04:00) EDT	Trap received from C9300-A: IF-MIB::linkDown -- Bindings: DISMAN-EVENT-MIB::sysUpTimeInstance = 1571939461, IF-MIB::ifIndex.79 = 79, IF-MIB::ifDescr.79 = Vlan64, IF-MIB::ifType.79 = 53, CISCO-SMI::local.2.1.1.20.79 = down -- An interface has gone down.	282
Warning	C9300-A		Aug 31, 2022 22:47 (UTC-04:00) EDT	Sep 14, 2022 11:51 (UTC-04:00) EDT	Trap received from C9300-...	36
Warning	C9300-A		Aug 31, 2022 22:48 (UTC-04:00) EDT	Sep 14, 2022 11:51 (UTC-04:00) EDT	Trap received from C9300-...	200
Warning	C9300-A		Aug 18, 2022 0:01 (UTC-04:00) EDT	Aug 27, 2022 0:00 (UTC-04:00) EDT	Trap received from C9300-...	12
Notice	C9300-A		Aug 31, 2022 21:21 (UTC-04:00) EDT	Sep 14, 2022 11:51 (UTC-04:00) EDT	Trap received from C9300-...	282
Notice	C9300-A		Aug 17, 2022 21:06 (UTC-04:00) EDT	Sep 14, 2022 11:51 (UTC-04:00) EDT	Trap received from C9300-...	55

Results shown may be incomplete due to database access issue. Contact administrator for more info.

SevOne Data Insight Software (v3.13.0-build.54 sha1:es0d0bdc)

4.6.2. PAS – Peer PAS間通信復旧 (1/2)

- NMS(Site-A VIP): [Administration] > [Cluster Manager]
 - 通信復旧後、約1-2分でPeer PASにアクセスできるようになる

The screenshot shows the SevOne Cluster Manager interface. The left sidebar lists the cluster hierarchy: Cluster > Site-A > 192.168.65.11 (highlighted with a red box) > 192.168.65.12 (passive). The main panel displays the 'Appliance Overview' for 192.168.65.11. The 'Data Database' section shows the Master Host as 127.0.0.1. The 'Config Database' section shows the Master Host as 0.0.0.1.

Data Database	
Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

Config Database	
Master Host	0.0.0.1
I/O Thread	Not Running
Update Thread	Running
Master Log File	
Seconds Behind	0

The screenshot shows the SevOne Cluster Manager interface. The left sidebar lists the cluster hierarchy: Cluster > Site-A > 192.168.65.11 > 192.168.65.12 (passive) > Site-B > 192.168.175.11 (highlighted with a red box) > 192.168.175.12 (passive). The main panel displays the 'Appliance Overview' for 192.168.175.11. The 'Data Database' section shows the Master Host as 127.0.0.1. The 'Config Database' section shows the Master Host as 192.168.65.11 (highlighted with a red box).

Data Database	
Master Host	127.0.0.1
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000017
Seconds Behind	0

Config Database	
Master Host	192.168.65.11
I/O Thread	Running
Update Thread	Running
Master Log File	peer-bin.000024
Seconds Behind	0

4.6.2. PAS – Peer PAS間通信復旧 (2/2)

■ SNMP Trap

- NMS(Site-A VIP): [Events] > [Archives] > [Logged Traps]
 - 障害中のSite-Bの情報が表示されるようになる

Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x +

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-A

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.65.4	14 Sep '22 15:51:56	IF-MIB::linkUp	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1571939461
192.168.65.4	14 Sep '22 15:51:56	IF-MIB::linkUp	5	IF-MIB::ifIndex.54	Integer	54
192.168.65.4	14 Sep '22 15:51:42	IF-MIB::linkDown	5	IF-MIB::ifDescr.54	Octet String	GigabitEthernet1/0/46
192.168.65.4	14 Sep '22 15:51:41	IF-MIB::linkDown	5	IF-MIB::ifType.54	Integer	6
192.168.65.4	14 Sep '22 15:51:41	IF-MIB::linkDown	5	CISCO-SMI::local.2.1.1.20.54	Octet String	administratively down
192.168.65.4	14 Sep '22 15:51:39	BRIDGE-MIB::newRoot	2			
192.168.65.4	14 Sep '22 15:51:38	BRIDGE-MIB::newRoot	2			
192.168.65.4	14 Sep '22 15:51:23	IF-MIB::linkUp	5			
192.168.65.4	14 Sep '22 15:51:23	BRIDGE-MIB::topologyChange	3			
192.168.65.4	14 Sep '22 15:51:23	BRIDGE-MIB::topologyChange	3			
192.168.65.4	14 Sep '22 15:51:11	CISCO-SMI::ciscoMgmt.43.2.0.1	5			

Alerting Devices: 2 | Highest x Alert Details - SevOne Data | x +

SevOne Reports Events Applications Devices Administration

Logged Traps

Filter

Peer: Site-B

Target OID: No Filter Specified

IP Address: No Filter Specified

Time Span: Past 2 Hours

Time Zone: UTC

Apply Filter

Trap Manager

Traps	Variables					
IP Address	Time	OID	Variable Number	Variable	Type	Value
192.168.175.93	14 Sep '22 15:51:52	IF-MIB::linkDown	5	DISMAN-EVENT-MIB::sysUpTimeInstance	Time Ticks	1571957093
192.168.175.93	14 Sep '22 15:51:49	BRIDGE-MIB::newRoot	2	IF-MIB::ifIndex.22	Integer	22
192.168.175.93	14 Sep '22 15:51:40	IF-MIB::linkUp	5	IF-MIB::ifDescr.22	Octet String	GigabitEthernet1/0/14
192.168.175.93	14 Sep '22 15:51:39	IF-MIB::linkUp	5	IF-MIB::ifType.22	Integer	6
192.168.175.93	14 Sep '22 15:51:37	BRIDGE-MIB::topologyChange	3	CISCO-SMI::local.2.1.1.20.22	Octet String	administratively down
192.168.175.93	14 Sep '22 15:51:30	CISCO-SMI::ciscoMgmt.43.2.0.1	5			

参考リンク

■ 製品マニュアル

– IBM SevOne Network Performance Management

- 各種ドキュメント(PDF)へのリンクを提供
- <https://www.ibm.com/docs/en/sevone-npm/6.3>

