

ISEとASAv間のTrustSec SXPの設定

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概要

このドキュメントでは、ISE(Identity Services Engine)とASAv (仮想適応型セキュリティアプライアンス) の間にSXP(Security Group Exchange Protocol)接続を設定する方法について説明します

。

SXPは、TrustSecによってTrustSecデバイスへのIPからSGTへのマッピングを伝播するために使用されるSGT (セキュリティグループタグ) 交換プロトコルです。SXPは、SGTインラインタギングをサポートしていないサードパーティ製デバイスや従来のシスコデバイスを含むネットワークでTrustSec機能を使用できるように開発されました。SXPはピアリングプロトコルであり、1つのデバイスがスピーカーとして機能し、もう1つのデバイスがリスナーとして機能します。SXPスピーカーはIP-SGTバインディングを送信し、リスナーはこれらのバインディングを収集します。SXP接続では、メッセージの整合性/完全性のために、基盤となるトランスポートプロトコルとしてTCPポート64999とMD5が使用されます。

SXPは、次のリンクでIETFドラフトとして公開されています。

<https://datatracker.ietf.org/doc/draft-smith-kandula-sxp/>

前提条件

要件

TrustSec互換性マトリクス :

<http://www.cisco.com/c/en/us/solutions/enterprise-networks/trustsec/solution-overview-listing.html>

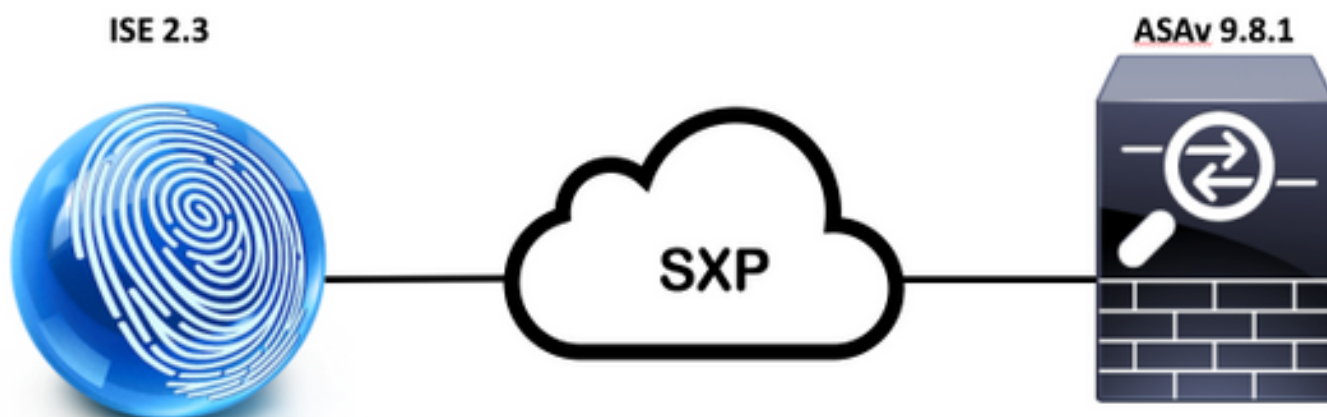
使用するコンポーネント

ISE 2.3

ASAv 9.8.1

ASDM 7.8.1.150

ネットワーク図



[IP アドレス (IP Addresses)]

ISE : 14.36.143.223

初期設定

ISEネットワークデバイス

ネットワークデバイスとしてのASAの登録

[WorkCenters] > [TrueSec] > [Components] > [Network Devices] > [Add]

Network Devices List > **New Network Device**

Network Devices

* Name

Description

IP Address /

RADIUS Authentication Settings

RADIUS UDP Settings

Protocol **RADIUS**

* Shared Secret

CoA Port

Advanced TrustSec Settings

▼ Device Authentication Settings

Use Device ID for TrustSec

Identification

Device Id

* Password

▼ TrustSec Notifications and Updates

* Download environment data every

* Download peer authorization policy every

* Reauthentication every ⓘ

* Download SGACL lists every

Other TrustSec devices to trust this device

Send configuration changes to device Using CoA CLI (SSH)

Ssh Key

アウトオブバンド(OOB)PAC(Protected Access Credential)の生成とダウンロード

▼ Out Of Band (OOB) TrustSec PAC

Issue Date

Expiration Date

Issued By

Generate PAC

The Identity field specifies the username or machine name presented as the "inner username" by the EAP-FAST protocol. If the Identity string entered here does not match that username, authentication will fail.

* Identity


* Encryption Key

* PAC Time to Live

Expiration Date 29 Jan 2018 22:47:42 GMT

Opening ASAv.pac

You have chosen to open:

 **ASAv.pac**
which is: **Binary File**
from: **https://14.36.143.223**

Would you like to save this file?

ASDM AAAサーバの設定

AAAサーバグループの作成

[Configuration] > [Firewall] > [Identity by TrustSec] > [Server Group Setup] > [Manage...]

Server Group Setup

Server Group Name:

[AAA Server Groups] > [Add]

AAA Server Groups							Add
Server Group	Protocol	Accounting Mode	Reactivation Mode	Dead Time	Max Failed Attempts	Realm Id	
LOCAL	LOCAL						Edit
							Delete

- AAAサーバグループ : <グループ名>
- 動的認可の有効化

AAA Server Group:

Protocol:

Realm-id:

Accounting Mode: Simultaneous Single

Reactivation Mode: Depletion Timed

Dead Time: minutes

Max Failed Attempts:

Enable interim accounting update

Update Interval: Hours

Enable Active Directory Agent mode

ISE Policy Enforcement

Enable dynamic authorization

Dynamic Authorization Port:

Use authorization only mode (no common password configuration required)

VPN3K Compatibility Option ^

Specify whether a downloadable ACL received from RADIUS should be merged with a Cisco AV-Pair ACL.

Do not merge

Place the downloadable ACL after Cisco AV-Pair ACL

Place the downloadable ACL before Cisco AV-Pair ACL

サーバグループへのサーバの追加

[Servers in the Selected Group] > [Add]

Server Name or IP Address	Interface	Timeout
---------------------------	-----------	---------

Add

Edit

Delete

Move Up

Move Down

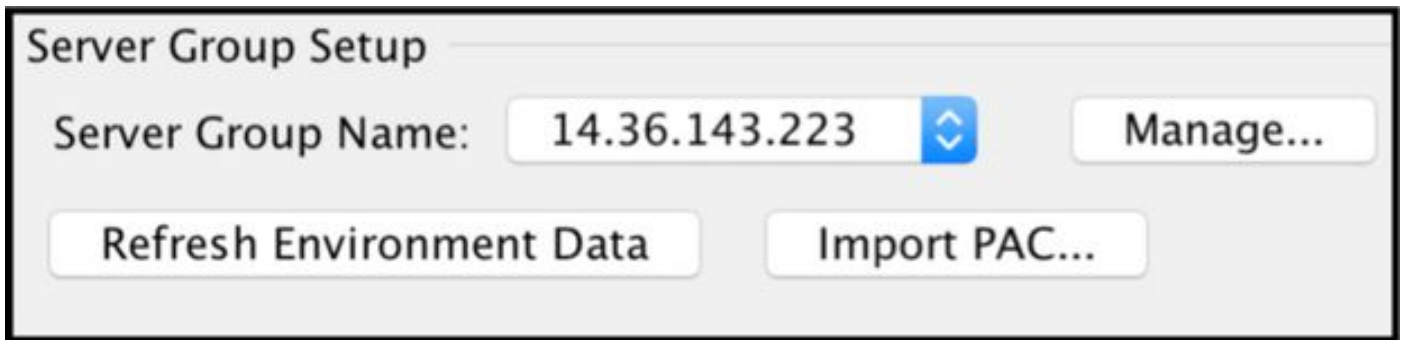
Test

- サーバ名またはIPアドレス : <ISE IP address>
- サーバ認証ポート : 1812
- サーバアカウントポート : 1813
- サーバシークレットキー : Cisco0123
- 共通パスワード : Cisco0123

Server Group:	14.36.143.223
Interface Name:	outside
Server Name or IP Address:	14.36.143.223
Timeout:	10 seconds
RADIUS Parameters	
Server Authentication Port:	1812
Server Accounting Port:	1813
Retry Interval:	10 seconds
Server Secret Key:	●●●●●●●●
Common Password:	●●●●●●●●
ACL Netmask Convert:	Standard
Microsoft CHAPv2 Capable:	<input checked="" type="checkbox"/>
SDI Messages	
Message Table	

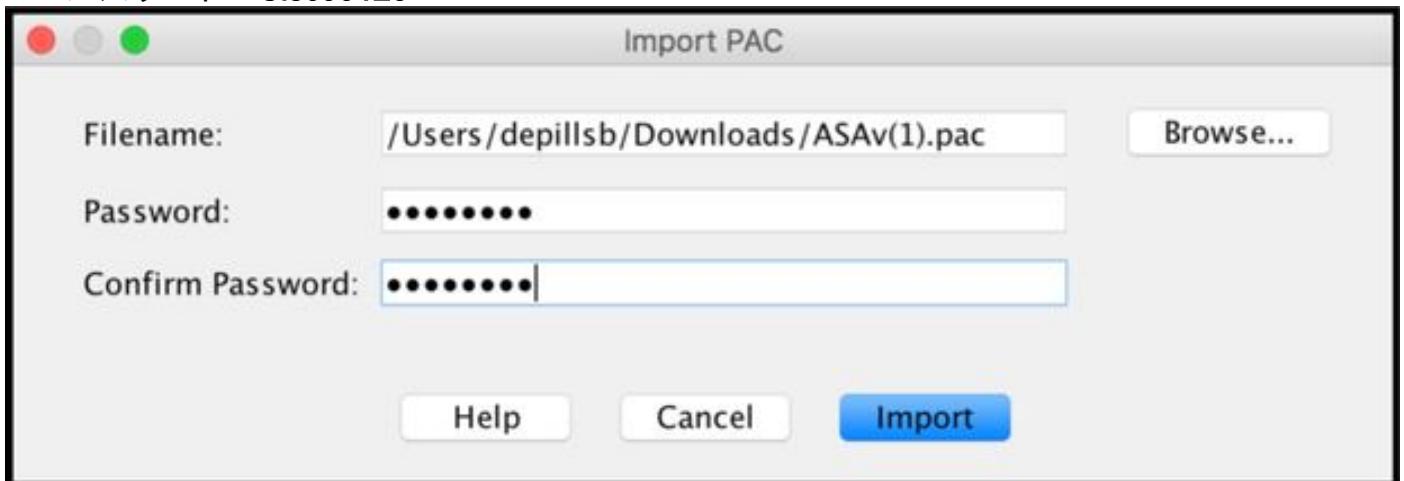
ISEからダウンロードしたPACのインポート

[Configuration] > [Firewall] > [Identity by TrustSec] > [Server Group Setup] > [Import PAC...]

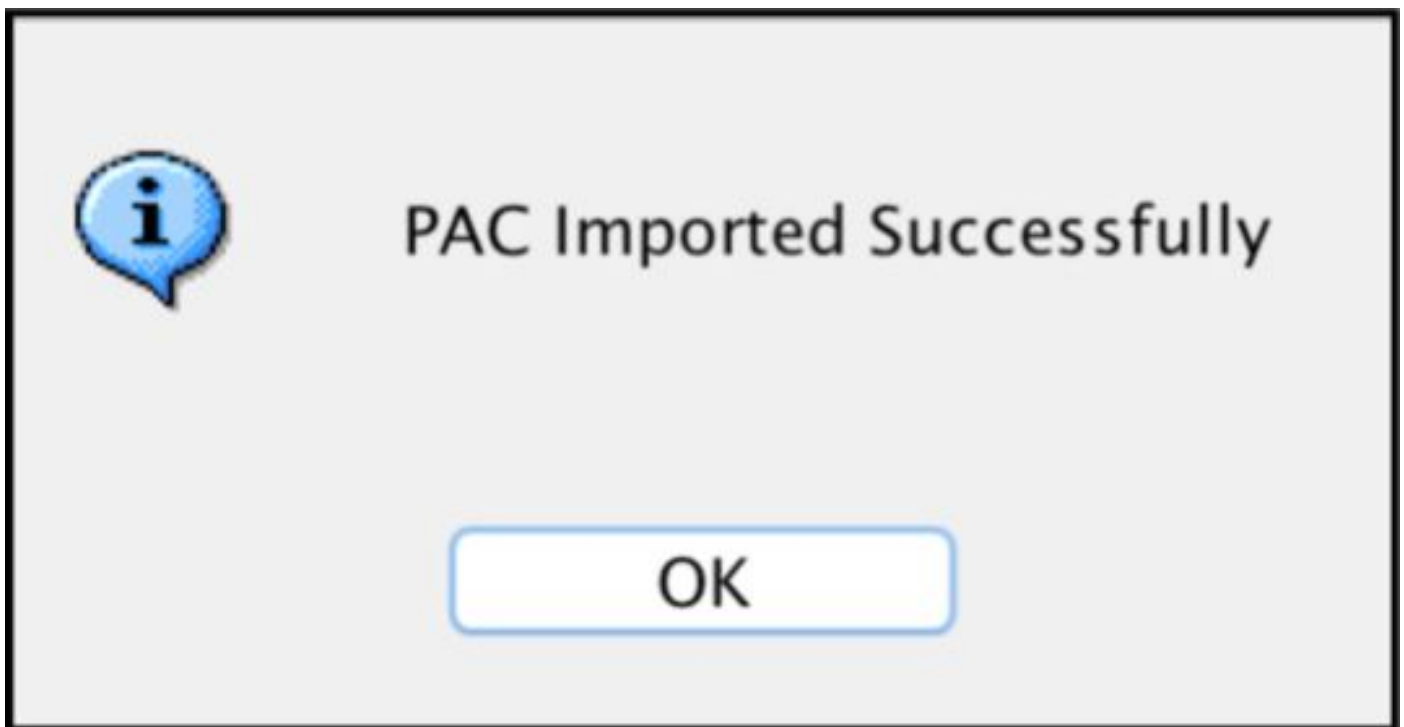


The screenshot shows the 'Server Group Setup' configuration window. At the top, the title is 'Server Group Setup'. Below the title, there is a 'Server Group Name' field containing the IP address '14.36.143.223' and a dropdown arrow. To the right of this field is a 'Manage...' button. Below the name field, there are two buttons: 'Refresh Environment Data' on the left and 'Import PAC...' on the right.

• パスワード : Cisco0123



The screenshot shows the 'Import PAC' dialog box. It has a title bar with the text 'Import PAC'. Inside the dialog, there are three input fields: 'Filename:' with the path '/Users/depillsb/Downloads/ASAv(1).pac' and a 'Browse...' button to its right; 'Password:' with a masked field of ten dots; and 'Confirm Password:' with a masked field of ten dots and a cursor. At the bottom of the dialog, there are three buttons: 'Help', 'Cancel', and 'Import'.



環境データの更新

[Configuration] > [Firewall] > [Identity by TrustSec] > [Server Group Setup] > [Refresh Environment Data]

Server Group Setup

Server Group Name: 

確認

ISEライブログ

[Operations] > [RADIUS] > [Live Logs]

		ASAv	#CTSREQUEST#	
		ASAv	#CTSREQUEST#	NetworkDeviceAuthorization >> NDAC

Authentication Details

Source Timestamp	2017-07-30 00:05:53.432
Received Timestamp	2017-07-30 00:05:53.433
Policy Server	ISE23
Event	5233 TrustSec Data Download Succeeded
Username	#CTSREQUEST#
Network Device	ASAv
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	14.36.143.30
NAS Port Type	Virtual
Security Group	TrustSec_Devices
Response Time	33 milliseconds

CiscoAVPair

```
cts-environment-data=ASAv,  
cts-environment-version=1,  
cts-device-capability=env-data-fragment,  
cts-pac-opaque=****,  
coa-push=true
```

Result

State	ReauthSession:0e248dff2i7TiOfK10NeCx1yRhjPAO8_ssZ9U9VVy/o3dFT_tk
Class	CACS:0e248dff2i7TiOfK10NeCx1yRhjPAO8_ssZ9U9VVy/o3dFT_tk:ISE23/290687604/9
cisco-av-pair	cts:server-list=CTSServerList1-0001
cisco-av-pair	cts:security-group-tag=0002-02
cisco-av-pair	cts:environment-data-expiry=86400
cisco-av-pair	cts:security-group-table=0001-18

CiscoAVPair

```
cts-security-group-table=0001,  
cts-pac-opaque=****,  
coa-push=true
```

Result

State	ReauthSession:0e248fdcf4PVaU72zvhHwsT3F4qpdgq4rMsifPkqEcQiG4O_YZw
Class	CACS:0e248fdcf4PVaU72zvhHwsT3F4qpdgq4rMsifPkqEcQiG4O_YZw:ISE23/290687604/10
cisco-av-pair	cts:security-group-table=0001-18
cisco-av-pair	cts:security-group-info=0-0-00-Unknown
cisco-av-pair	cts:security-group-info=ffff-1-00-ANY
cisco-av-pair	cts:security-group-info=9-0-00-Auditors
cisco-av-pair	cts:security-group-info=f-0-00-BYOD
cisco-av-pair	cts:security-group-info=5-0-00-Contractors
cisco-av-pair	cts:security-group-info=8-0-00-Developers
cisco-av-pair	cts:security-group-info=c-0-00-Development_Servers
cisco-av-pair	cts:security-group-info=4-0-00-Employees
cisco-av-pair	cts:security-group-info=6-2-00-Guests
cisco-av-pair	cts:security-group-info=3-0-00-Network_Services
cisco-av-pair	cts:security-group-info=e-0-00-PCI_Servers
cisco-av-pair	cts:security-group-info=a-0-00-Point_of_Sale_Systems
cisco-av-pair	cts:security-group-info=b-0-00-Production_Servers
cisco-av-pair	cts:security-group-info=7-0-00-Production_Users
cisco-av-pair	cts:security-group-info=ff-0-00-Quarantined_Systems
cisco-av-pair	cts:security-group-info=d-0-00-Test_Servers
cisco-av-pair	cts:security-group-info=2-2-00-TrustSec_Devices
cisco-av-pair	cts:security-group-info=10-0-00-Tester


















ISEセキュリティグループ

[Work Centers] > [TrustSec] > [Components] > [Security Groups]

Security Groups

For Policy Export go to [Administration](#) > [System](#) > [Backup & Restore](#) > [Policy Export Page](#)

 Edit  Add  Import  Export  Trash  Push

<input type="checkbox"/>	Icon	Name 	SGT (Dec / Hex)	Description
<input type="checkbox"/>		Auditors	9/0009	Auditor Security Group
<input type="checkbox"/>		BYOD	15/000F	BYOD Security Group
<input type="checkbox"/>		Contractors	5/0005	Contractor Security Group
<input type="checkbox"/>		Developers	8/0008	Developer Security Group
<input type="checkbox"/>		Development_Servers	12/000C	Development Servers Security Group
<input type="checkbox"/>		Employees	4/0004	Employee Security Group
<input type="checkbox"/>		Guests	6/0006	Guest Security Group
<input type="checkbox"/>		Network_Services	3/0003	Network Services Security Group
<input type="checkbox"/>		PCI_Servers	14/000E	PCI Servers Security Group
<input type="checkbox"/>		Point_of_Sale_Systems	10/000A	Point of Sale Security Group
<input type="checkbox"/>		Production_Servers	11/000B	Production Servers Security Group
<input type="checkbox"/>		Production_Users	7/0007	Production User Security Group
<input type="checkbox"/>		Quarantined_Systems	255/00FF	Quarantine Security Group
<input type="checkbox"/>		Tester	16/0010	
<input type="checkbox"/>		Test_Servers	13/000D	Test Servers Security Group
<input type="checkbox"/>		TrustSec_Devices	2/0002	TrustSec Devices Security Group

ASDM PAC

[Monitoring] > [Properties] > [Identity by TrustSec] > [PAC]

PAC Information:

Valid until: **Jan 30 2018 05:46:44**
AID: 6f5719523570b8d229f23073404e2d37
I-ID: ASAv
A-ID-Info: ISE 2.2p1
PAC-type: Cisco Trustsec

PAC Opaque:

```
000200b000030001000400106f5719523570b8d229f23073404e2d3700060094000301
00359249c4dd61484890f29bbe81859edb00000013597a55c100093a803f883e4ddafa
d162ae02fac03da08f9424cb323fa8aaeae44c6d6d7db3659516132f71b25aa5be3f38
9b76fdbbc1216d1d14e689ebb36d7344a5166247e950bbf62a370ea8fc941fa1d6c4ce5
9f438e787052db75a4e45ff2f0ab8488dfdd887a02119cc0c4174fc234f33d9ee9f9d4
dad759e9c8
```

ASDM環境のデータおよびセキュリティグループ

[Monitoring] > [Properties] > [Identity by TrustSec] > [Environment Data]

Environment Data:

Status: Active
Last download attempt: Successful
Environment Data Lifetime: 86400 secs
Last update time: 21:07:01 UTC Jul 29 2017
Env-data expires in: 0:21:39:07 (dd:hr:mm:sec)
Env-data refreshes in: 0:21:29:07 (dd:hr:mm:sec)

Security Group Table:

Valid until: 21:07:01 UTC Jul 30 2017
Total entries: 18

Name	Tag	Type
ANY	65535	unicast
Auditors	9	unicast
BYOD	15	unicast
Contractors	5	unicast
Developers	8	unicast
Development_Servers	12	unicast
Employees	4	unicast
Guests	6	unicast
Network_Services	3	unicast
PCI_Servers	14	unicast
Point_of_Sale_Systems	10	unicast
Production_Servers	11	unicast
Production_Users	7	unicast
Quarantined_Systems	255	unicast
Test_Servers	13	unicast
Tester	16	unicast
TrustSec_Devices	2	unicast
Unknown	0	unicast

ASDM SXPの設定

SXPの有効化

[Configuration] > [Firewall] > [Identity by TrustSec] > [Enable SGT Exchange Protocol (SXP)]

Enable SGT Exchange Protocol (SXP)

デフォルトSXP送信元IPアドレスとデフォルトSXPパスワードの設定

[Configuration] > [Firewall] > [Identity by TrustSec] > [Connection Peers]

Default Source: 14.36.143.30

Default Password: ●●●●●●●●

Confirm Password: ●●●●●●●●

SXPピアの追加

[Configuration] > [Firewall] > [Identity by TrustSec] > [Connection Peers] > [Add]

Connection Peers

Filter: Peer IP Address Filter Clear

Peer IP Address	Source IP Address	Password	Mode	Role
-----------------	-------------------	----------	------	------

Add Edit Delete

- ピアの IP アドレス:<ISE IP address>

Peer IP Address: 14.36.143.223

Password: Default

Mode: Local

Role: Listener

ISE SXPの設定

グローバルSXPパスワード設定

[WorkCenters] > [TrustSec] > [Settings] > [SXP Settings]

- グローバルパスワード : Cisco0123

SXP Settings

- Publish SXP bindings on PxGrid
- Add radius mappings into SXP IP SGT mapping table

Global Password

Global Password

This global password will be overridden by the device specific password

SXPデバイスの追加

[WorkCenters] > [TrustSec] > [SXP] > [SXP Devices] > [Add]

▼ Add Single Device

Input fields marked with an asterisk (*) are required.

name

IP Address *

Peer Role *

Connected PSNs *

SXP Domain *

Status *

Password Type *

Password

Version *

▶ Advanced Settings

SXPの検証

ISE SXPの検証

[WorkCenters] > [TrustSec] > [SXP] > [SXP Devices]

SXP Devices

0 Selected Rows/Page / 1 Total Rows

<input type="checkbox"/>	Name	IP Address	Status	Peer Role	Pass...	Negoti...	SX...	Connected To	Duration [d...	SXP Domain
<input type="checkbox"/>	ASAv	14.36.143.30	ON	LISTENER	DEFAULT	V3	V4	ISE23	00:00:00:02	default

ISE SXPのマッピング

[WorkCenters] > [TrustSec] > [SXP] > [All SXP Mappings]

Refresh Add SXP Domain filter Manage SXP Domain filters

IP Address	SGT	Learned From	Learned By	SXP Domain	PSNs Involved
10.122.158.253/32	Guests (6/0006)	14.36.143.223	Local	default	ISE23
10.122.160.93/32	Guests (6/0006)	14.36.143.223	Local	default	ISE23
10.122.165.49/32	Employees (4/0004)	14.36.143.223	Local	default	ISE23
10.122.165.58/32	Guests (6/0006)	14.36.143.223	Local	default	ISE23
14.0.69.220/32	Guests (6/0006)	14.36.143.223	Local	default	ISE23
14.36.143.99/32	Employees (4/0004)	14.36.143.223	Local	default	ISE23
14.36.143.105/32	TrustSec_Devices (2/0002)	14.36.143.223	Local	default	ISE23
14.36.147.70/32	Employees (4/0004)	14.36.143.223	Local	default	ISE23
172.18.250.123/32	Employees (4/0004)	14.36.143.223	Local	default	ISE23
192.168.1.0/24	Contractors (5/0005)	14.36.143.223	Local	default	ISE23

ASDM SXPの検証

[Monitoring] > [Properties] > [Identity by TrustSec] > [SXP Connections]

SGT Exchange Protocol (SXP) Connections:

SXP: Enabled
 Highest version: 3
 Default password: Set
 Default local IP: 14.36.143.30
 Reconcile period: 120 secs
 Retry open period: 120 secs
 Retry open timer: Not Running
 Total number of SXP connections: 1
 Total number of SXP connections shown: 1

Peer Connection Status:

Filter: Peer IP Address ...

Peer	Source	Status	Version	Role	Instance #	Password	Reconcile Timer	Delete	Hold-down Timer	Last Changed
14.36.143.223	14.36.143.30	On	3	Listener	1	Default	Not Running	Not Running		0:00:22:56 (dd:hr:mm:se)

ASDMがSXPのIPからSGTへのマッピングを学習

[Monitoring] > [Properties] > [Identity by TrustSec] > [IP Mappings]

Security Group IP Mapping Table:

Total number of Security Group IP Mappings: 10

Total number of Security Group IP Mappings shown: 10

Filter:

TAG



Tag	Name	IP Address
4	Employees	14.36.143.99
6	Guests	10.122.158.253
6	Guests	10.122.160.93
4	Employees	14.36.147.70
2	TrustSec_Devices	14.36.143.105
4	Employees	172.18.250.123
4	Employees	10.122.165.49
6	Guests	14.0.69.220
6	Guests	10.122.165.58
5	Contractors	192.168.1.0/24

ISEでのパケットキャプチャ

2060	0.000000	14.36.143.223	14.36.143.30	TCP	86	25982 → 64999 [SYN] Seq=0 Win=29200 Len=0 MD5 MSS=1460 SACK_PERM=1 WS=1
2061	0.000782	14.36.143.30	14.36.143.223	TCP	78	64999 → 25982 [SYN, ACK] Seq=0 Ack=1 Win=32768 Len=0 MSS=1460 MD5
2062	0.000039	14.36.143.223	14.36.143.30	TCP	74	25982 → 64999 [ACK] Seq=1 Ack=1 Win=29200 Len=0 MD5
2074	0.039078	14.36.143.223	14.36.143.30	SMPP	102	SMPP Bind_receiver
2075	0.000522	14.36.143.30	14.36.143.223	TCP	74	64999 → 25982 [ACK] Seq=1 Ack=29 Win=32768 Len=0 MD5
2076	0.000212	14.36.143.30	14.36.143.223	SMPP	90	SMPP Bind_transmitter
2077	0.000024	14.36.143.223	14.36.143.30	TCP	74	25982 → 64999 [ACK] Seq=29 Ack=17 Win=29200 Len=0 MD5
2085	0.008444	14.36.143.223	14.36.143.30	SMPP	311	SMPP Query_sm
2086	0.000529	14.36.143.30	14.36.143.223	TCP	74	64999 → 25982 [ACK] Seq=17 Ack=266 Win=32768 Len=0 MD5