Quantum Maestro Hyperscale

Introduction

Lari Luoma | Principal Security Consultant, Maestro SME | Check Point

May 28, 2024

YOU DESERVE THE BEST SECURITY

Agenda

Check Point Scalable Platforms

Maestro Introduction

Maestro Installation and Deployment Options

Working with Maestro Security Groups

SMO Concept

Traffic Distribution

Global Command Line

01

Introduction to Scalable Security and Quantum Maestro

SECURE THE **ENTERPRISE**

AI-Powered. Cloud-Delivered.

Infinity Platform

SECURE THE **NETWORK**

Quantum

- **Maestro** Hyperscale Data Center
- **VPN** Virtual Private Remote Access
- **Force** Enterprise Firewalls
- **SD-WAN** Optimized Connectivity
- **Spark** SMB Suite
- **Rugged** ICS Security
- **IoT Protect** IoT Security
- **Smart-1 Cloud** Security Management

SECURE THE **CLOUD**

CloudGuard

- **Network** Cloud Access Control and Prevention
- **WAF** Web Application Firewall
- **Cloud Native Application Protection (CNAPP)** Unified Security from Code to Cloud
- **Cloud Detection and Response** Contextual and Actionable Intelligence

SECURE THE **WORKSPACE**

Harmony

- **Endpoint** Protection & Posture Management
- **Email** Cloud Email and Collaboration Suite Security
- **Mobile** Mobile Threat Defense
- **SASE** Internet Access Private Access
- **SaaS** Threat Prevention for SaaS Applications

COLLABORATIVE SECURITY **OPERATIONS & SERVICES**

Infinity Core Services

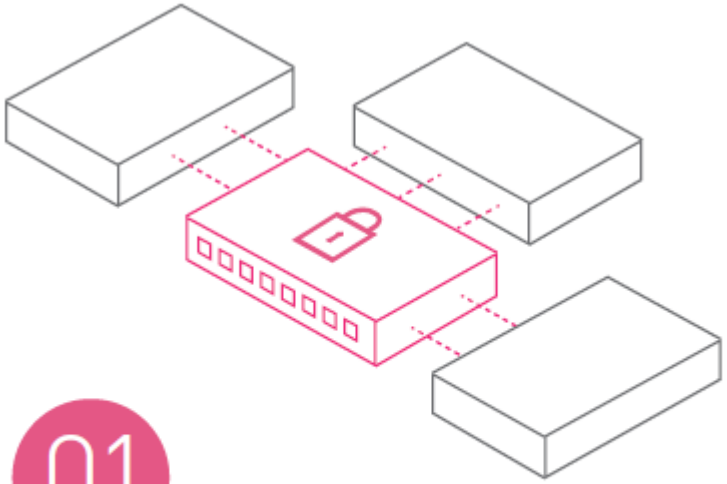
Security Operations and AI

- **XDR/XPR** Extended Prevention and Response
- **Playblocks** Orchestration and Automation
- **Events** Unified Events
- **ThreatCloud AI** AI-Powered Threat Intelligence
- **AI Copilot** Automating Security with AI

Global Services

- **MDR/MPR** Managed Prevention and Response
- **Incident Response** Keep Your Business Running
- **Consulting & Training** Leverage security architecture design experts

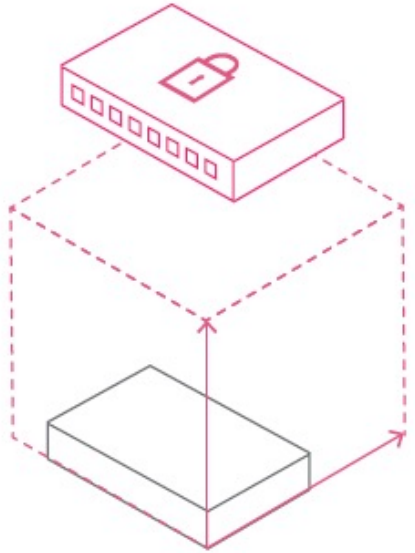
What are the Benefits of Hyperscale Systems?



01

Operational Supremacy

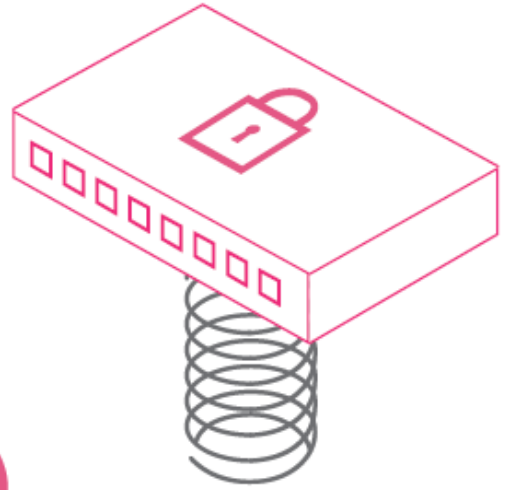
Hyperscale deployments are managed intuitively by Hyperscale Orchestrators using the same R81.x code as maintrain / JHFAs



02

Hyperscale Security

Provides seamless expansion to Hyperscale security, while protecting organizations' existing and future investments

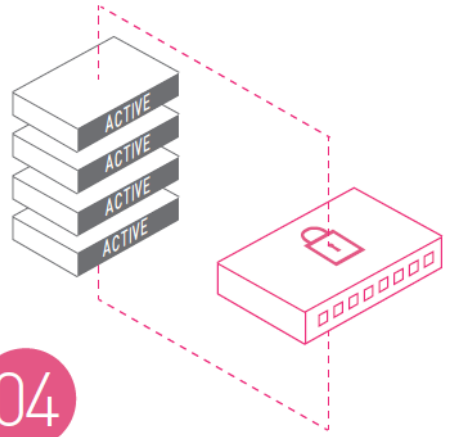


03

Cloud-Level Resiliency

Offers cloud-level resilience and reliability to all deployments, with Check Point's patented HyperSync technology

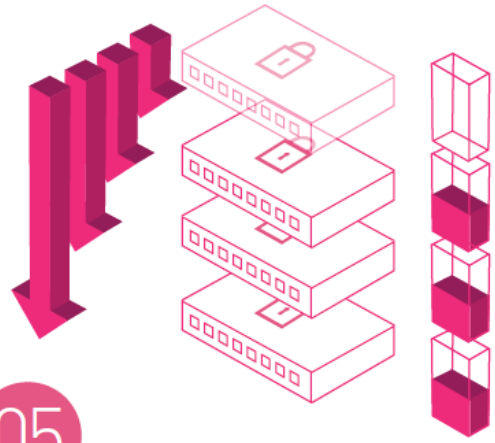
What are the Benefits of Hyperscale Systems?



04

Maximum Cost-Efficiency

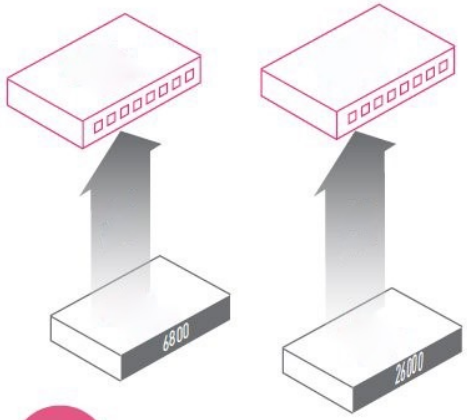
Fully utilises all hardware deployed in the system



05

Telco-Grade Technology

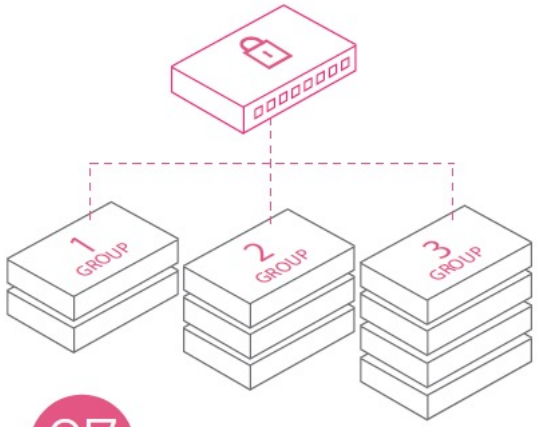
Minimise risk of downtime with N+N clustering



06

Linear Scalability

Hypersync offers unique Scalability when adding more resources

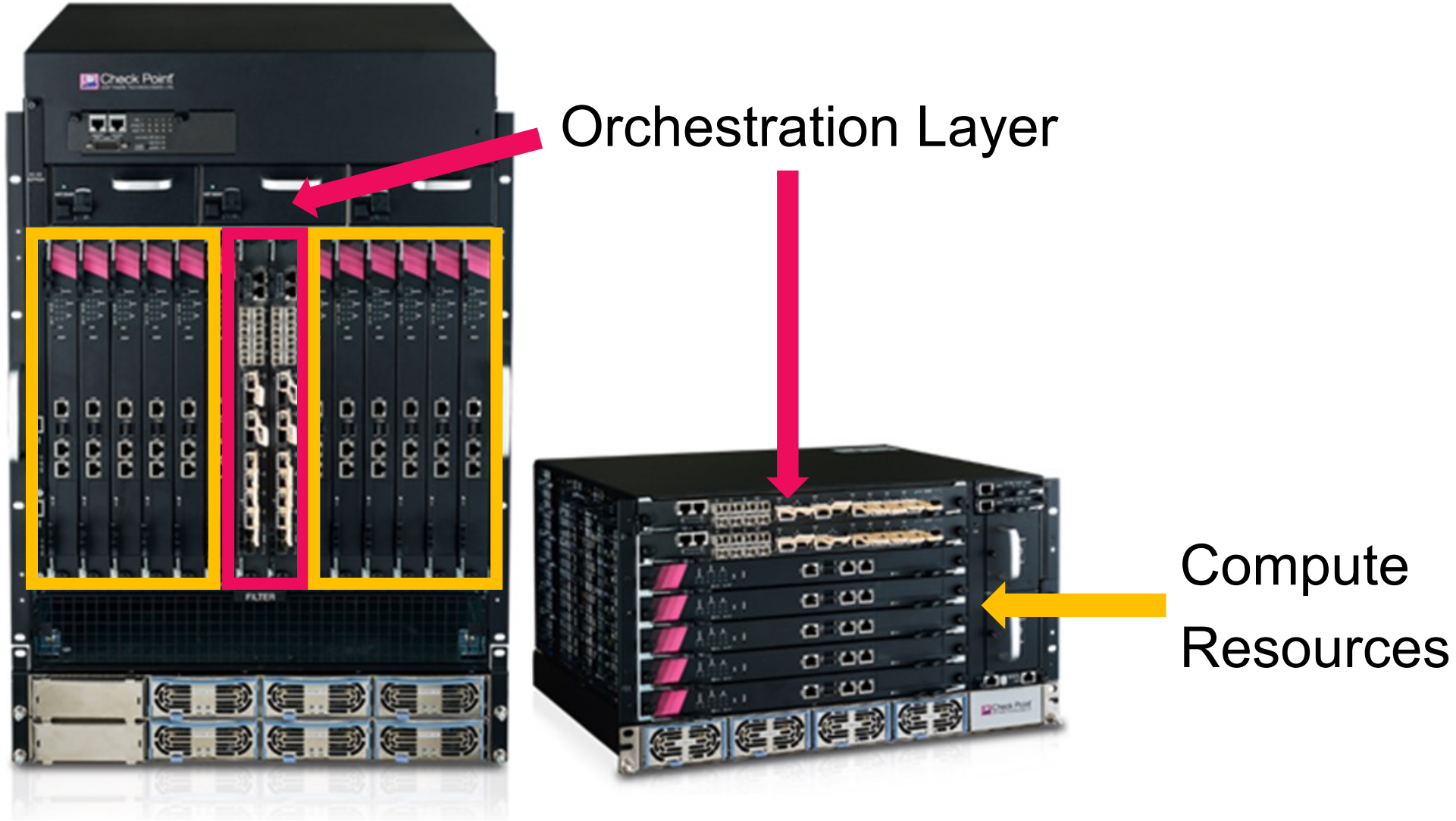


07

Security Groups

Group appliances to perform the same function reducing admin overhead

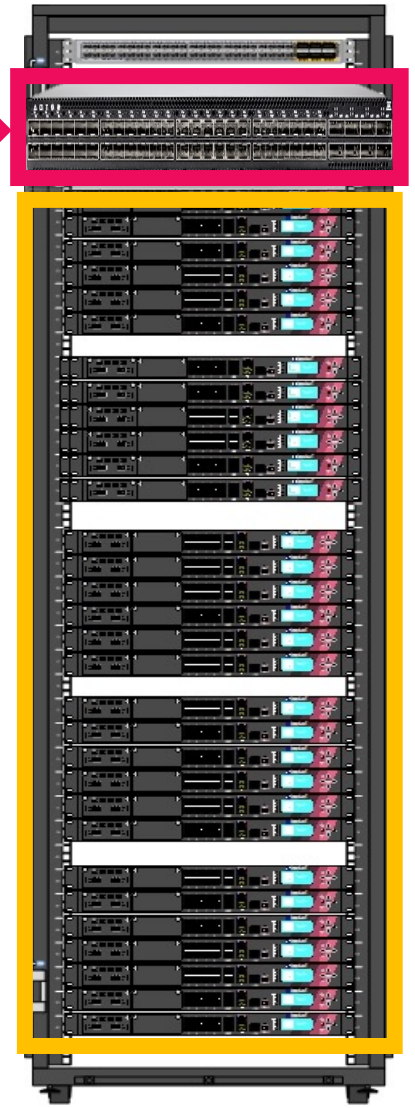
It all Started with a Scalable Chassis



Scalable Clustering Reinvented - **Hyperscale**

Orchestration Layer

Compute Resources



The Orchestration Layer

Maestro Hyperscale Orchestrator 140

48 x 1/10/25GbE ports
8 x 40/100GbE ports

Maestro Hyperscale Orchestrator 175

32 x 40/100GbE ports
Options for 10/25GbE with adapters/splitters

Compute Resource

All supported Appliance Models: SK181433

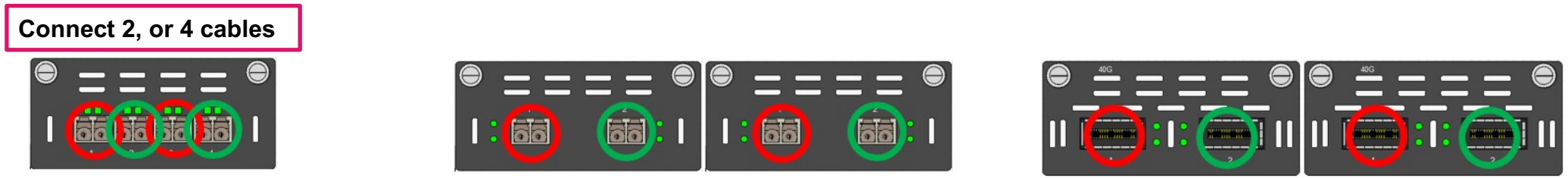
Connect the Components

Downlinks: Between Appliances and Orchestrators **– use DAC or Fibre**

Uplinks: Between Orchestrators and your network – use **Fibre**

Connectivity and Redundancy

- **Two orchestrators are recommended** for any location
- Always **bond your uplinks**
  - **Switches should present as a single device** towards the MHOs
- Ensure **the appliances are connected correctly** to the MHOs
  - Odd ports to Orchestrator 1, and even ports to Orchestrator 2
- Ensure you have **capacity to handle the load during upgrades**
  - On the available appliances and downlink ports



02

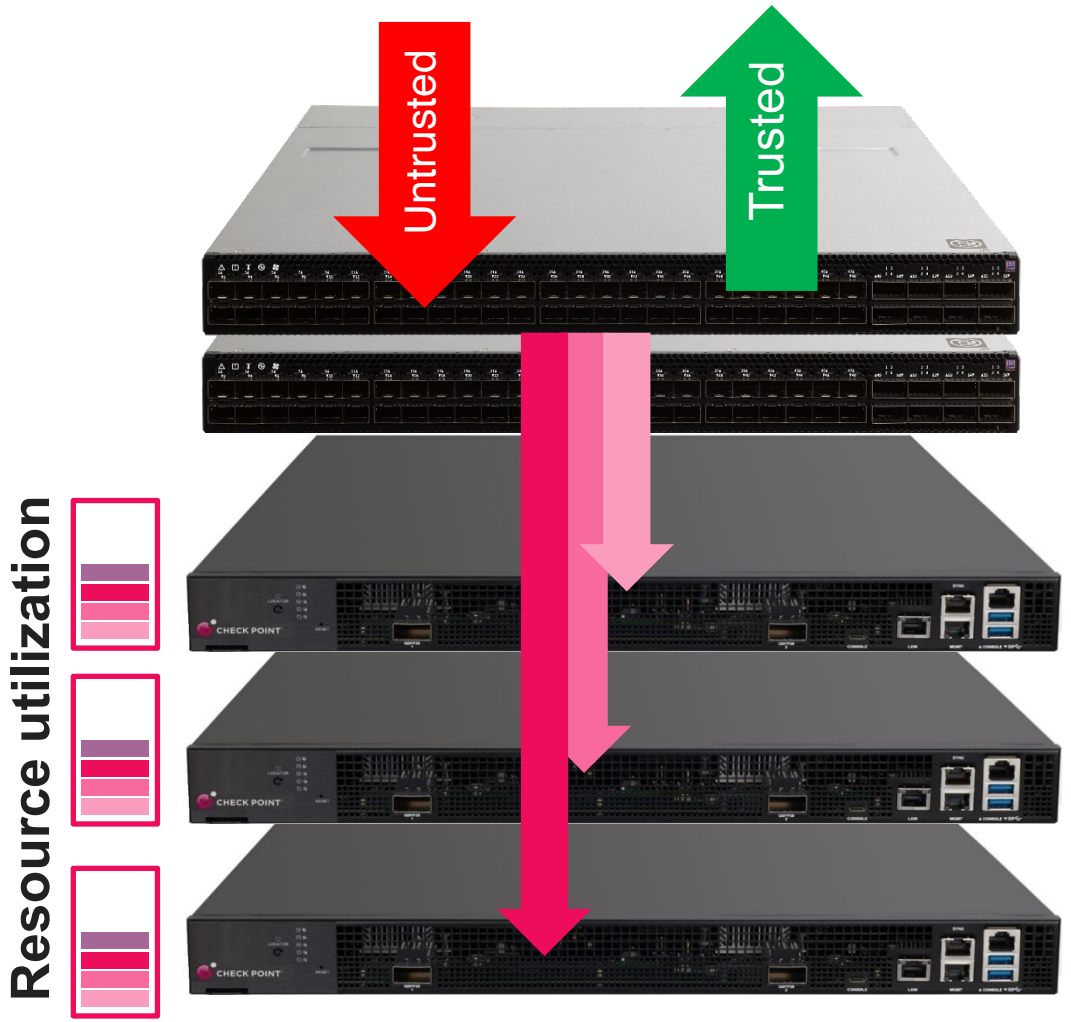
Maestro Installation and Operation

Traffic flow

Traffic is received from **Untrusted** networks and distributed to the appliances.

Security and **threat prevention** enforced on the traffic by each appliance

Traffic is then forwarded from the appliances to **trusted** networks

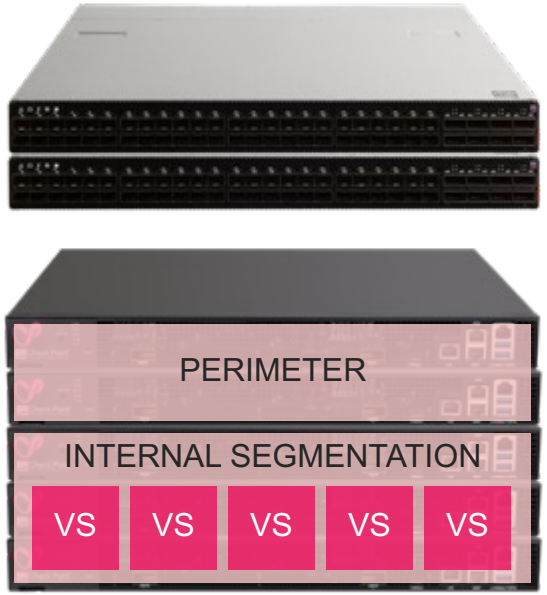


Create Security Groups to mirror business needs

Physical Implementation

1 or 2 Maestro Hyperscale Orchestrators

Up to 14 Security Gateways per group per site



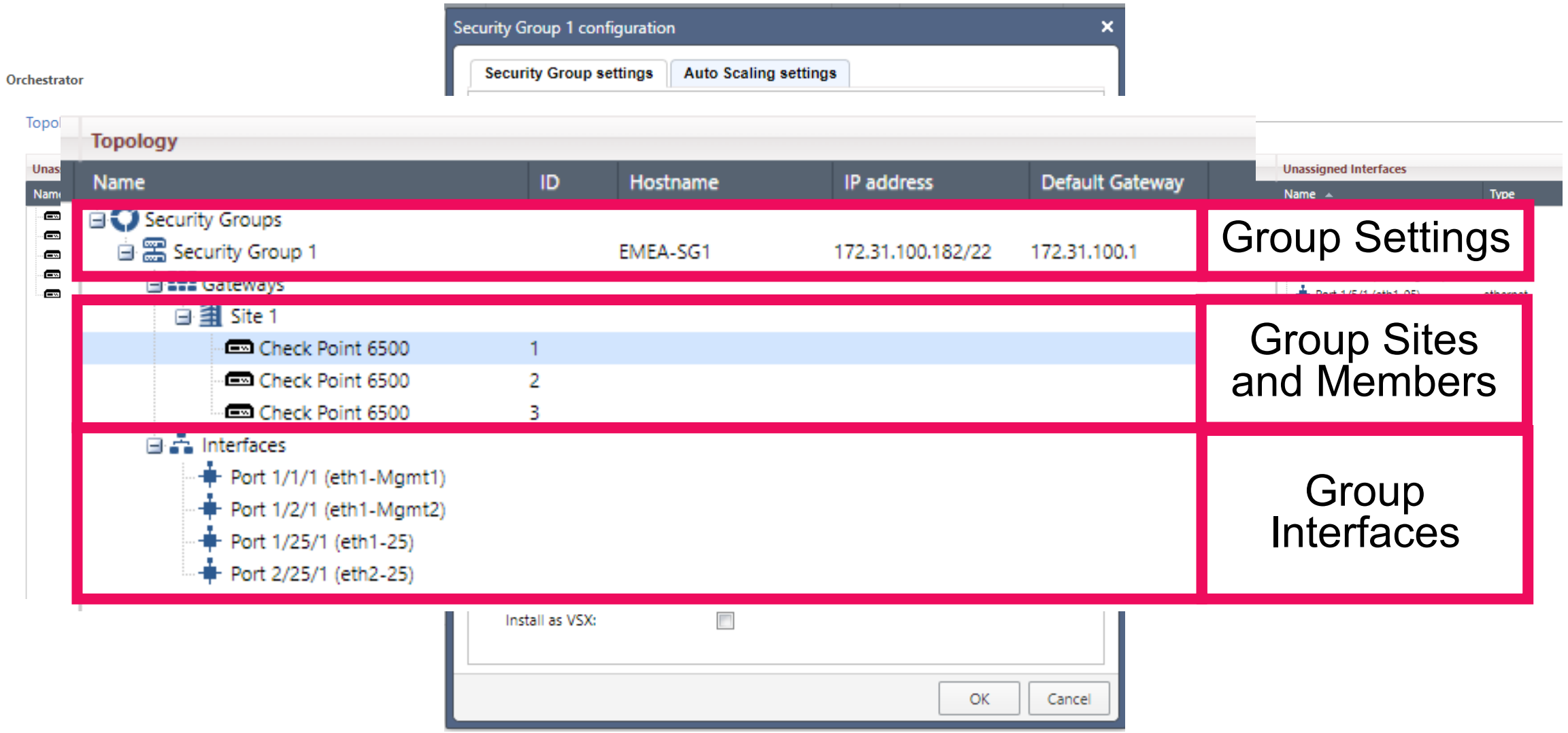
Logical Implementation

Up to 8 Security Groups

Virtual Systems

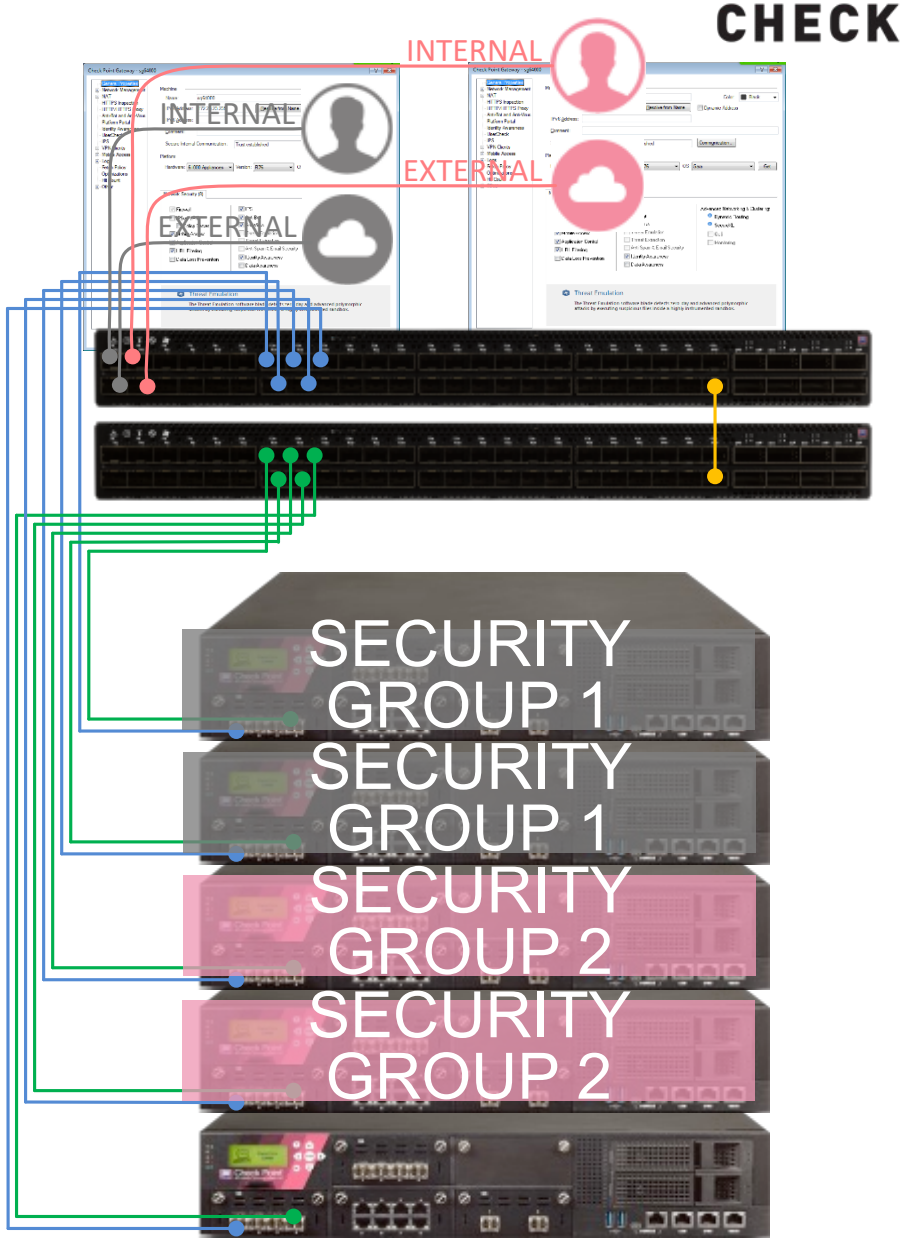
Each Security Group is an independent security gateway **segregated** from other security groups

Drag and Drop Security Group Creation



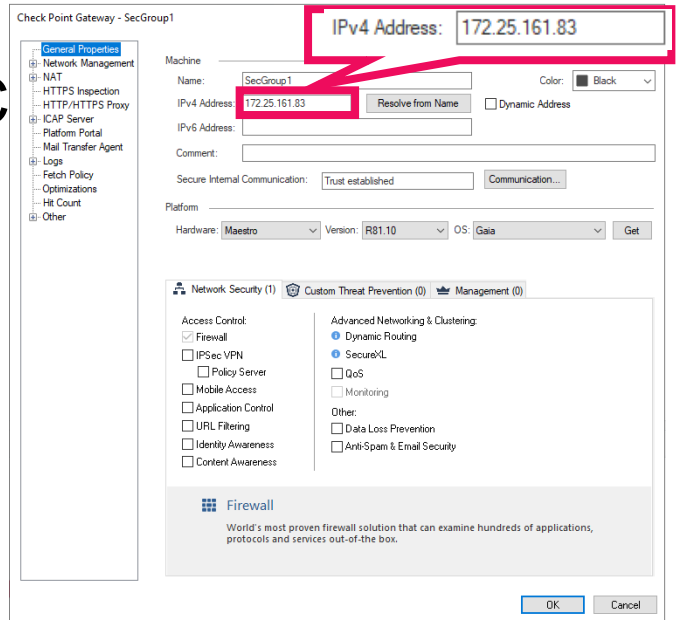
Working with Security Groups

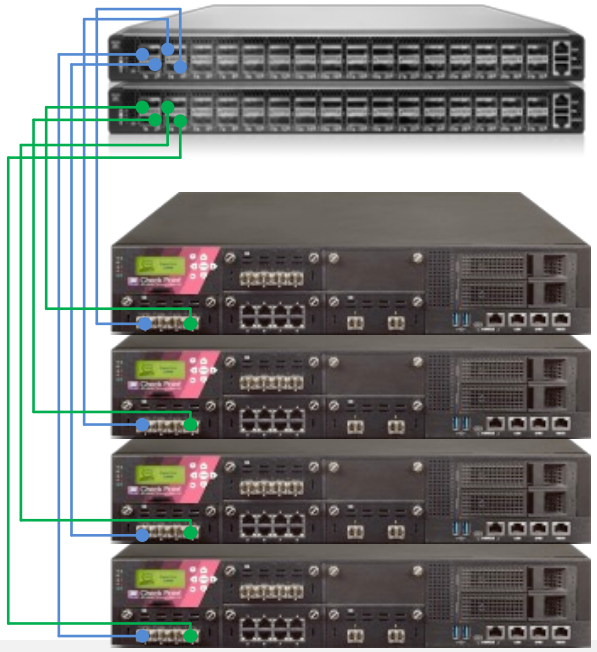
- Each SGM acts like a blade in a chassis boosting the performance of the Security Group.
- When adding a new SGM, it will clone configuration and JHFA from the SMO.
- No changes in SmartConsole necessary when adding gateways to an existing SG.
- Each SGM can only be assigned to one Security Group at a time.



Single Management Object (SMO)

- **Single** Security GW object per Security Group in SmartC
- **Single** IP-address for management
- **Clone** all configurations between members
- **Faster** policy installation
- **Hierarchic** System Stats
- **Cluster** Abstraction



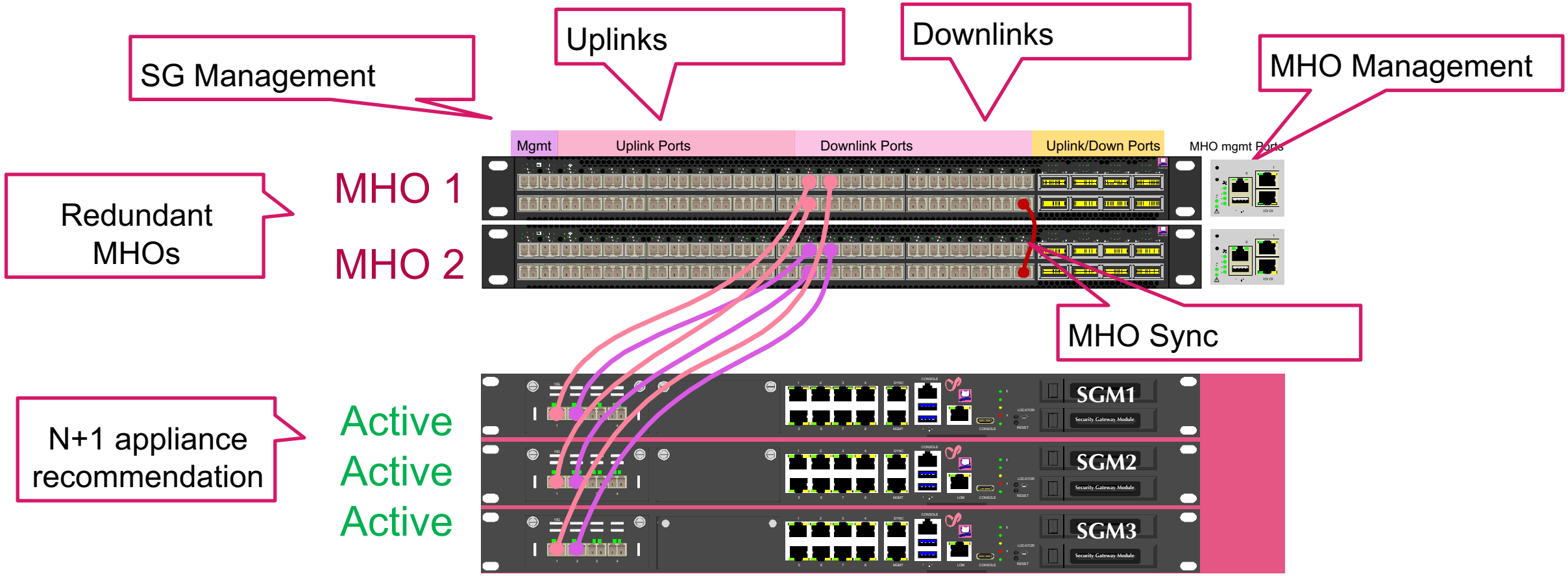


SMO Master is always the upmost active appliance in the stack.

```
# asg_blade_config
get_smo_ip
SMO ip is: 192.0.2.1
# grep '192.0.2.1 ' /etc/hosts
192.0.2.1  1_01
```

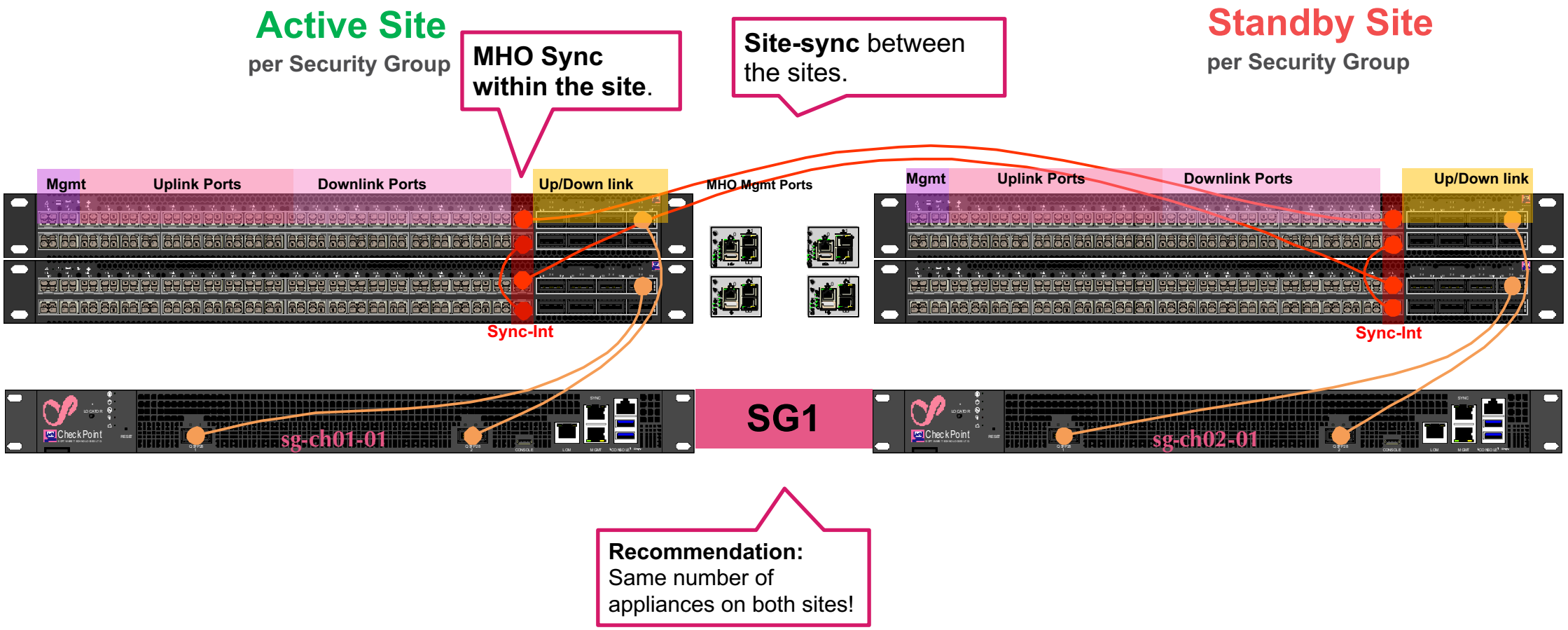
Maestro Deployments: Single Site Maestro

MHOs and gateways on the same site. All gateways active. One entity in the network.



Maestro Deployments: Dual Site Maestro

Operate in active/standby. One logical entity in the network.



Maestro Clustering

CHECK POINT™

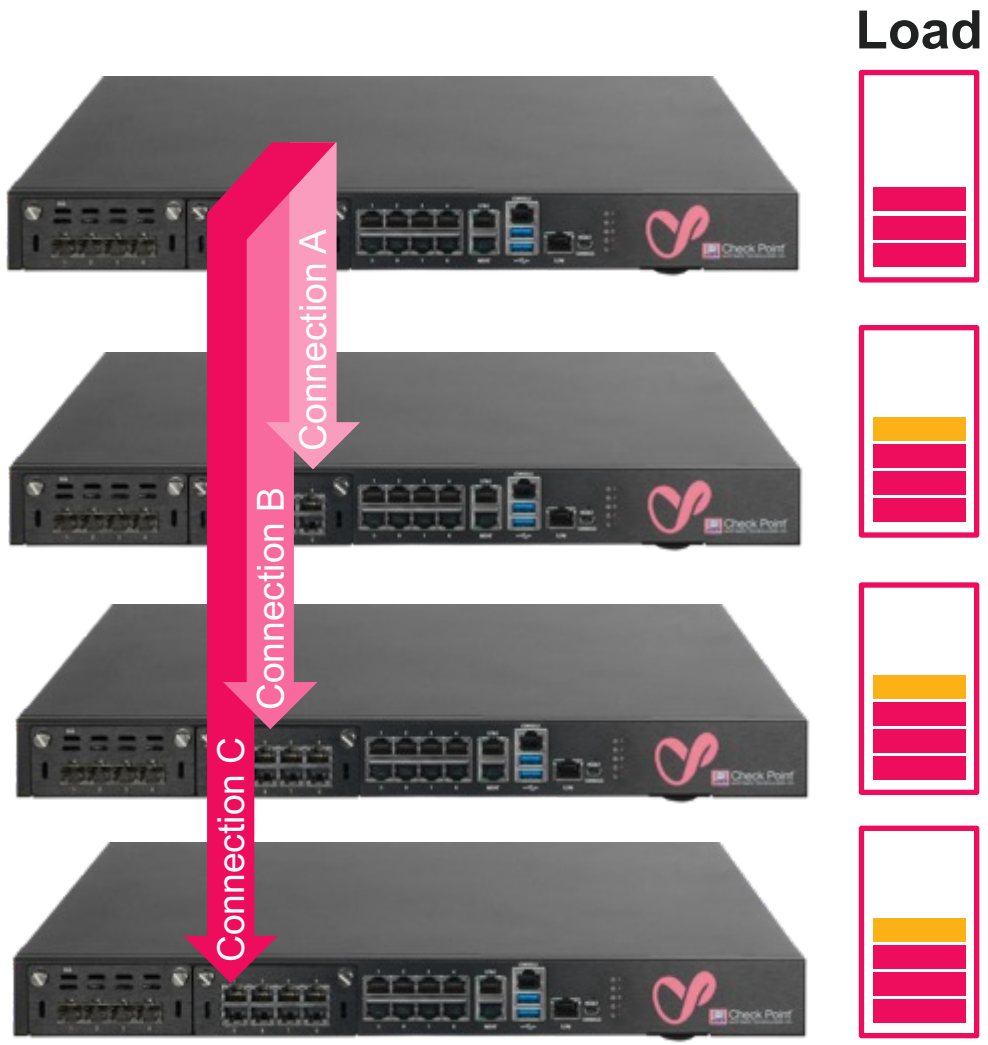
PATENT

HyperSync

Full Redundancy within a system

Cost Efficient cluster Deployment

All Hardware resources utilized



Traffic Distribution

- Traffic load-balancing mechanism across Security Group members
  - Calculated dynamically, members can be seamlessly added/removed
  - Uses combinations of Source/Destination IP-addresses and ports
- Sk168814 – Recommendation
  - Perimeter (NAT): Auto Topology (default)
  - Data Center (no NAT): Manual General
  - Disable L4-mode unless told to be enabled by Check Point support or PS *(set distribution l4-mode disabled)*

Traffic Distribution

Check Point CHECKMATES

Single Site - Perimeter

```
# gclish -c "show distribution configuration"; dxl stat
Distribution Mode: auto-topology (per-port)
Chassis:  Blade:  State:        Distribution:
1         1       Active        33.4%  171/512
1         2       Active        33.4%  171/512
1         3       Active        33.2%  170/512
1         4       Not In Group  -
1         5       Not In Group  -
1         6       Not In Group  -
1         7       Not In Group  -
1         8       Not In Group  -
1         9       Not In Group  -
1         10      Not In Group  -
1         11      Not In Group  -
1         12      Not In Group  -
1         13      Not In Group  -
1         14      Not In Group  -

Chassis:  Activity:
1         Active

General Mode   : Disabled
Control Blade : Disabled
Static Mode    : Disabled
```

Dual Site – Data Center

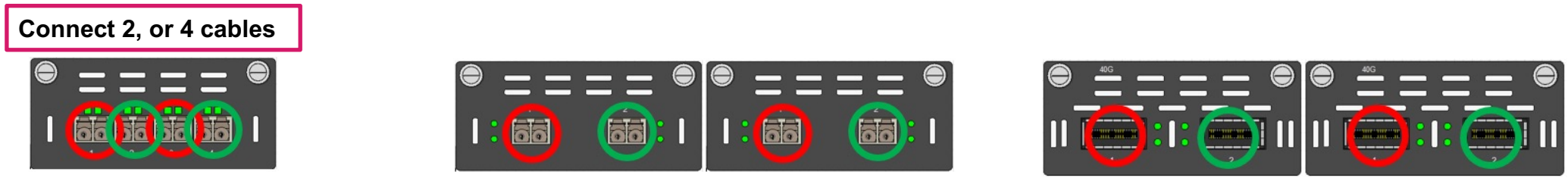
```
# gclish -c "show distribution configuration"; dxl stat
Distribution Mode: manual-general
Chassis:  Blade:  State:        Distribution:
1         1       Active        100.0%  512/512
1         2       Not In Group  -
1         3       Not In Group  -
1         4       Not In Group  -
1         5       Not In Group  -
1         6       Not In Group  -
1         7       Not In Group  -
1         8       Not In Group  -
1         9       Not In Group  -
1         10      Not In Group  -
1         11      Not In Group  -
1         12      Not In Group  -
1         13      Not In Group  -
1         14      Not In Group  -
2         1       Active        100.0%  512/512
2         2       Not In Group  -
2         3       Not In Group  -
2         4       Not In Group  -
2         5       Not In Group  -
2         6       Not In Group  -
2         7       Not In Group  -
2         8       Not In Group  -
2         9       Not In Group  -
2         10      Not In Group  -
2         11      Not In Group  -
2         12      Not In Group  -
2         13      Not In Group  -
2         14      Not In Group  -

Chassis:  Activity:
1         Active
2         Standby

General Mode   : Enabled
Control Blade : Disabled
Static Mode    : Disabled
```

Deployment Tips – Redundancy

- **Two orchestrators are recommended** for any location
- Always **bond your uplinks**
  - **Switches should present as a single device** towards the MHOs
- Ensure **the appliances are connected correctly** to the MHOs
  - Odd ports to Orchestrator 1, and even ports to Orchestrator 2
- Ensure you have **capacity to handle the load during upgrades**
  - On the available appliances and downlink ports



Deployment Tips – CLI goes Global

```
[Global] DR-SG01-VSX-ch01-01:0> set interface magg0 comments "Management"
1_01:
success

1_02:
success

1_03:
success

1_04:
success

[Global] DR-SG01-VSX-ch01-01:0>
```

Best Practices:

- Commands **Synchronized** to all gateways
- **Automatic SAVE**
- **Expert-mode** commands can be run globally with **global prefixes**
- **Avoid** use of local CLISH

Moving Between Components

Check Point CHECKMATES

m

member command

How does it work?

`m` is an **SSH** wrapper.
You could also type:
`ssh 1_02` or `ssh 1_02`

`m` re-uses your **username** and looks up the pre-configured entries in `/etc/hosts` to connect.

- You can connect between components using the **m**-command (short for member).
  Example: **m 1_02**
- You can also use just the SGM number, e.g. **m 2**. This will connect you to that SGM on the site you are currently connected to.
- To connect MHO from SGM use **m ssm1** or **m ssm2**

```
[Expert@SG1-md-ch01-01:0]# m 2
Moving to member 1_2
This system is for authorized use only.
Last login: Mon May  2 23:07:38 2022 from 192.0.2.1
You have logged into the system.
Warning: System diagnostics failed on the following tests: Licenses.
[Expert@SG1-md-ch01-02:0]# m 2_1
Moving to member 2_1
Warning: Permanently added '192.0.2.15' (ECDSA) to the list of known hosts.
This system is for authorized use only.
Last login: Mon May  2 23:07:54 2022 from 192.0.2.16
You have logged into the system.
Warning: System diagnostics failed on the following tests: Licenses.
[Expert@SG1-md-ch02-01:0]# m 2
Moving to member 2_2
Warning: Permanently added '192.0.2.16' (ECDSA) to the list of known hosts.
This system is for authorized use only.
Last login: Mon May  2 23:07:42 2022 from 192.0.2.1
You have logged into the system.
Warning: System diagnostics failed on the following tests: Licenses.
[Expert@SG1-md-ch02-02:0]#
```

```
[Expert@LAB-test-ch01-01:0]# m ssm1
Moving to ssm1
The authenticity of host 'ssm1 (198.51.101.126)' can't be established.
RSA key fingerprint is 35:ae:ce:6b:50:51:4f:bc:61:05:be:1f:8c:76:55:c3.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ssm1,198.51.101.126' (RSA) to the list of known hosts.
This system is for authorized use only.
admin@ssm1's password:
Last login: Wed Oct 21 23:48:48 2020 from 172.25.215.195
[Expert@MHO140_01-AN32:0]#
```

Running Commands Globally in Expert-mode

- Expert-mode is always local to the SGM where you are connected to.
- Maestro allows running commands globally also in expert-mode by using global prefixes of g_, g_all, g_alls, g_allc and gexec.
- You can also run commands on specific blades by using -b switch.
- g_ is not supported by all commands, g_allc shows the output in the same format in one line that can be useful in some cases.

```
[Expert@lab-ch01-01:0]# g_cat /home/admin/testfile
-*- 2 blades: 1_01 1_02 -*-
This is a testfile!!!

[Expert@lab-ch01-01:0]# g_all 'cat /home/admin/testfile'
1_01:
This is a testfile!!!
1_02:
This is a testfile!!!
[Expert@lab-ch01-01:0]# g_alls 'cat /home/admin/testfile'
[1_01]This is a testfile!!!
[1_02]This is a testfile!!!
[Expert@lab-ch01-01:0]# g_allc 'cat /home/admin/testfile'
-*- 2 blades: 1_01 1_02 -*-
This is a testfile!!!

[Expert@lab-ch01-01:0]#
```

- gexec allows execution of commands on specific blades.

```
[Expert@lab-ch01-01:0]# gexec -b 1_01-1_02 -c 'tail /home/admin/testfile'
[1_01]This is a testfile!!!
[1_02]This is a testfile!!!
[Expert@lab-ch01-01:0]#
```

03

R82 Features

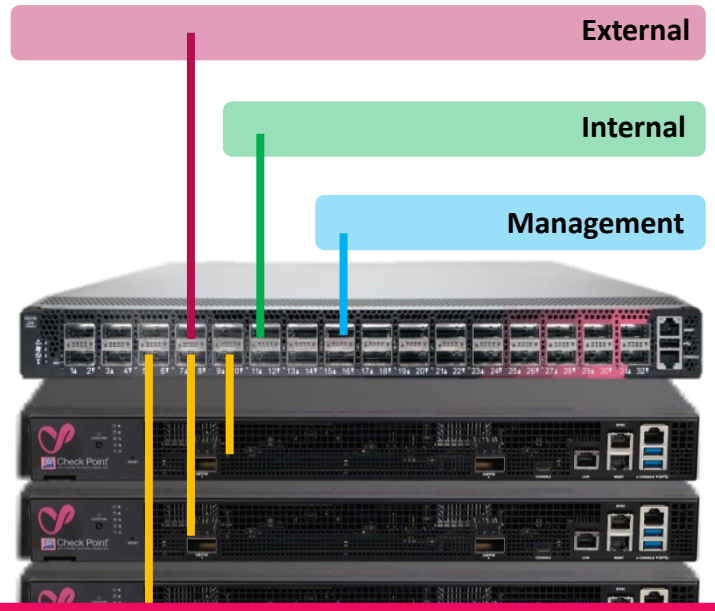
R82 in Maestro

- R82 is Check Point's newest software release (coming up in 2024). Fully supported in Maestro.
- The focus in Maestro is Simplification and Unification
- We provide a "One gateway for All" mindset - One ISO
- Users of Maestro will see operations get simpler
- Users of the new ElasticXL solution will see many of the Maestro benefits carried over
- Activities will have common look and feel, and unified command set, tools and utilities

Maestro vs. ElasticXL

Maestro

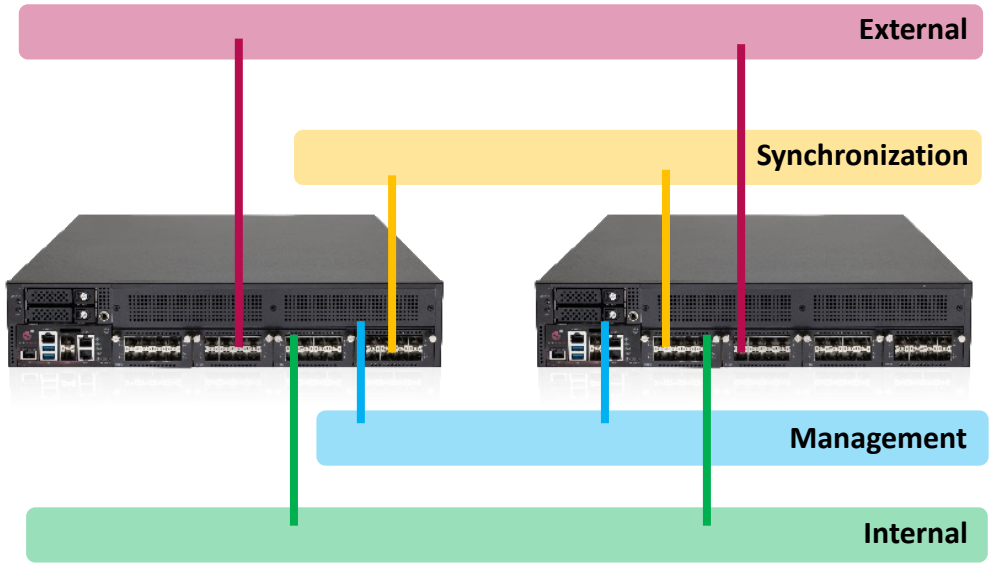
- Hardware-based load balancer with **linear scaling**
- Unique separate orchestration layer (up to 8 security groups)
- Simplified cabling & integration



Up to 14 appliances per security Group per site

ElasticXL

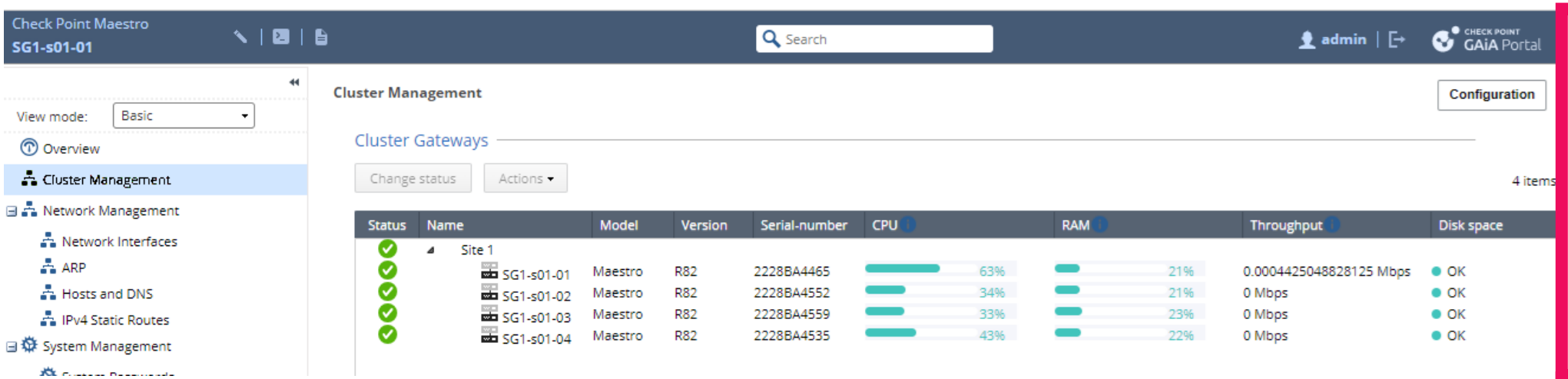
- **Simplified** & automated clustering
- Up to three nodes per site (in 1 group)
- Pivot mode-based traffic forwarding

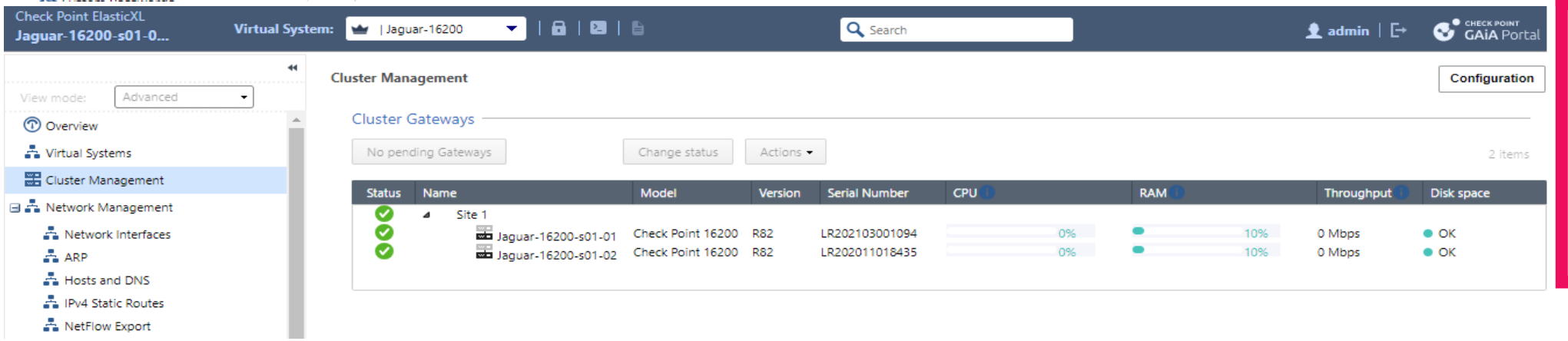


Up to 3 appliances per security Group per site

One Gateway For All

Unification

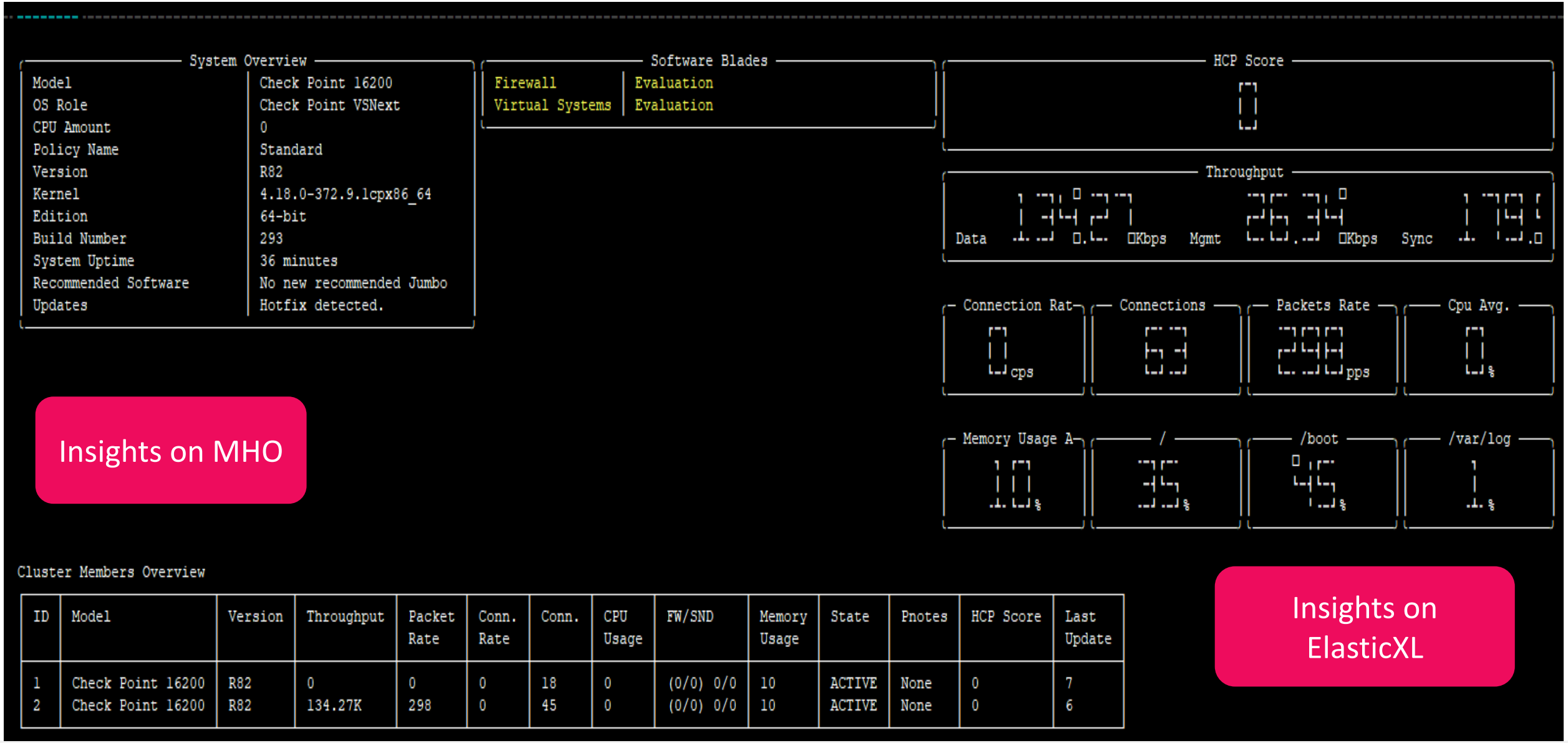




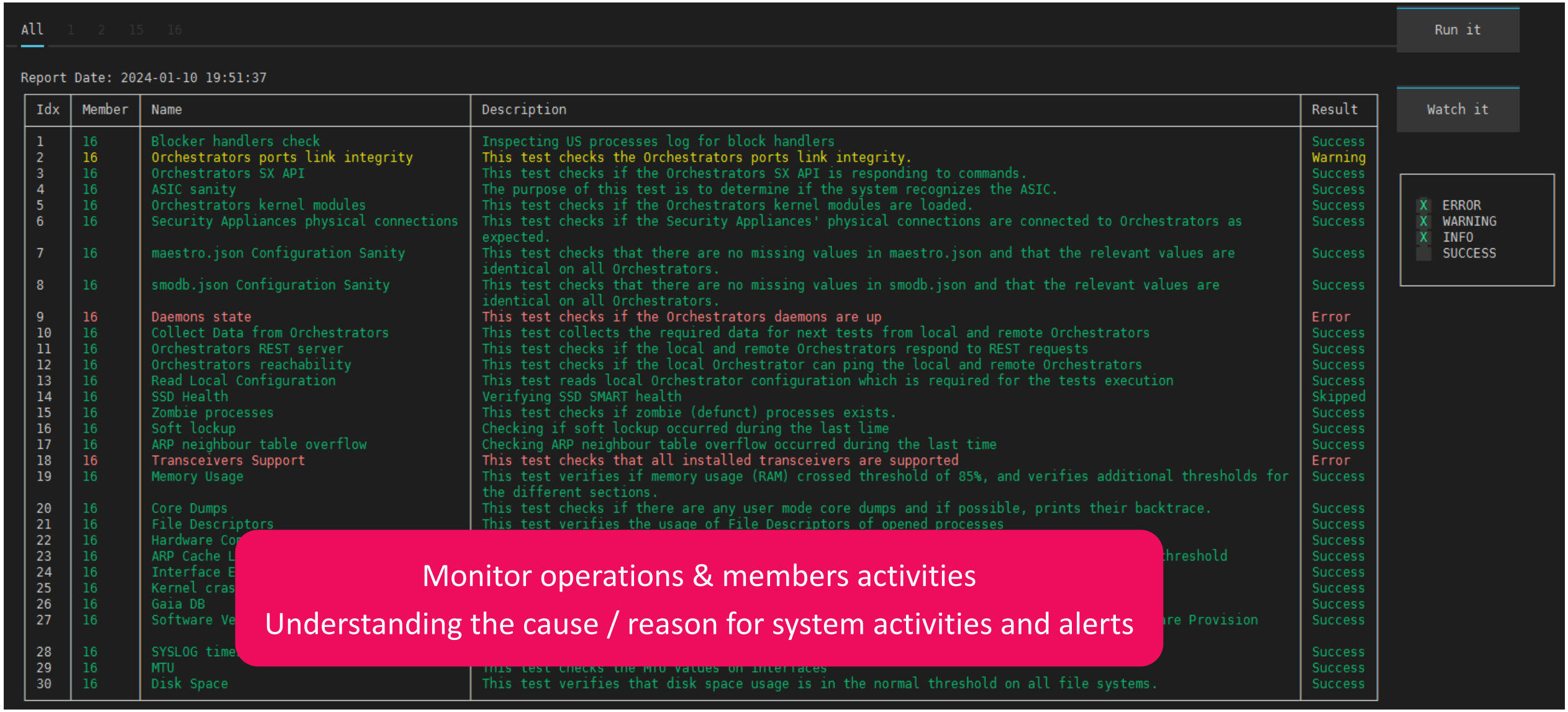
Maestro Cluster Management

ElasticXL Cluster Management

One Gateway For All

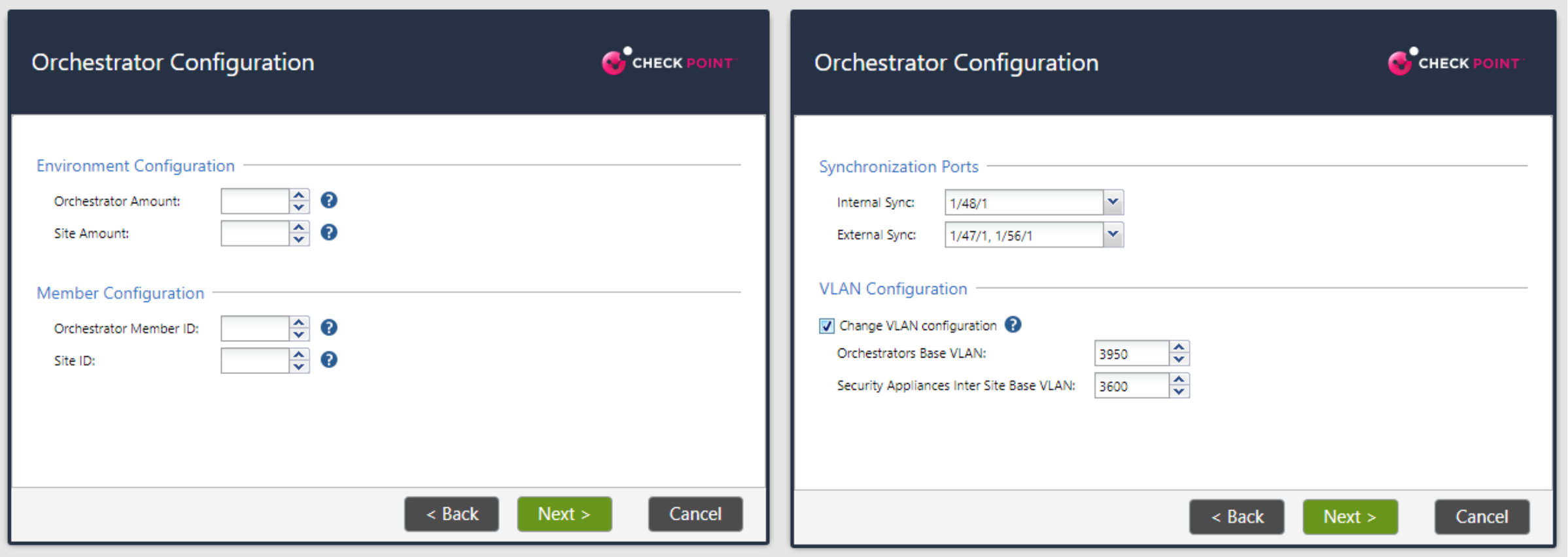


R82: Monitoring Maestro



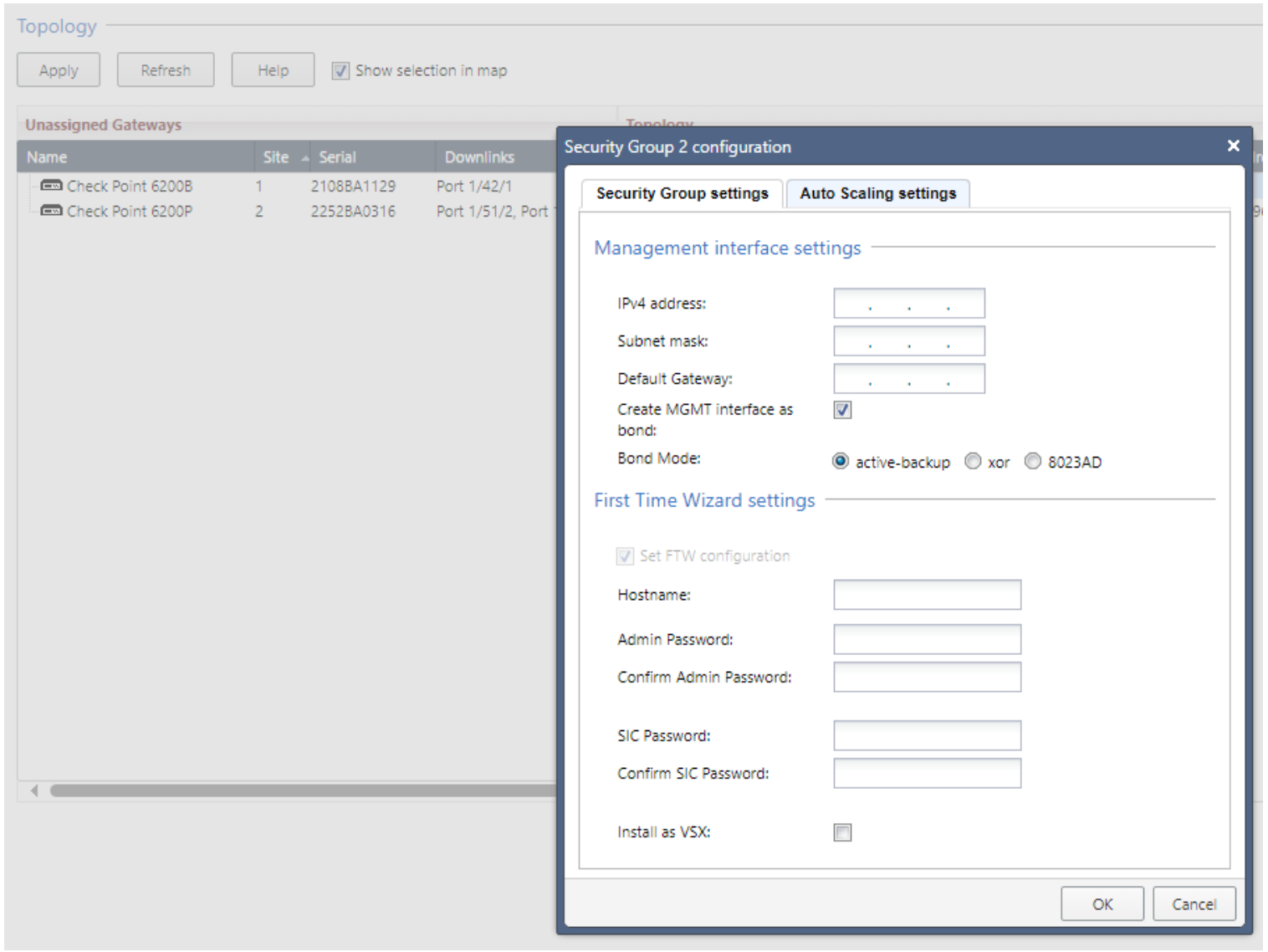
Idx	Member	Name	Description	Result
1	16	Blocker handlers check	Inspecting US processes log for block handlers	Success
2	16	Orchestrators ports link integrity	This test checks the Orchestrators ports link integrity.	Warning
3	16	Orchestrators SX API	This test checks if the Orchestrators SX API is responding to commands.	Success
4	16	ASIC sanity	The purpose of this test is to determine if the system recognizes the ASIC.	Success
5	16	Orchestrators kernel modules	This test checks if the Orchestrators kernel modules are loaded.	Success
6	16	Security Appliances physical connections	This test checks if the Security Appliances' physical connections are connected to Orchestrators as expected.	Success
7	16	maestro.json Configuration Sanity	This test checks that there are no missing values in maestro.json and that the relevant values are identical on all Orchestrators.	Success
8	16	smodb.json Configuration Sanity	This test checks that there are no missing values in smodb.json and that the relevant values are identical on all Orchestrators.	Success
9	16	Daemons state	This test checks if the Orchestrators daemons are up	Error
10	16	Collect Data from Orchestrators	This test collects the required data for next tests from local and remote Orchestrators	Success
11	16	Orchestrators REST server	This test checks if the local and remote Orchestrators respond to REST requests	Success
12	16	Orchestrators reachability	This test checks if the local Orchestrator can ping the local and remote Orchestrators	Success
13	16	Read Local Configuration	This test reads local Orchestrator configuration which is required for the tests execution	Success
14	16	SSD Health	Verifying SSD SMART health	Skipped
15	16	Zombie processes	This test checks if zombie (defunct) processes exists.	Success
16	16	Soft lockup	Checking if soft lockup occurred during the last lime	Success
17	16	ARP neighbour table overflow	Checking ARP neighbour table overflow occurred during the last time	Success
18	16	Transceivers Support	This test checks that all installed transceivers are supported	Error
19	16	Memory Usage	This test verifies if memory usage (RAM) crossed threshold of 85%, and verifies additional thresholds for the different sections.	Success
20	16	Core Dumps	This test checks if there are any user mode core dumps and if possible, prints their backtrace.	Success
21	16	File Descriptors	This test verifies the usage of File Descriptors of opened processes	Success
22	16	Hardware Co		Success
23	16	ARP Cache L	hreshold	Success
24	16	Interface E		Success
25	16	Kernel cras		Success
26	16	Gaia DB		Success
27	16	Software Ve	re Provision	Success
28	16	SYSLOG time		Success
29	16	MTU	This test checks the MTU values on interfaces	Success
30	16	Disk Space	This test verifies that disk space usage is in the normal threshold on all file systems.	Success

R82: MHO First Time Wizard



Maestro First Time Wizard on MHO allows Environment, Member, Sync-port and dual-site VLAN settings to be configured.

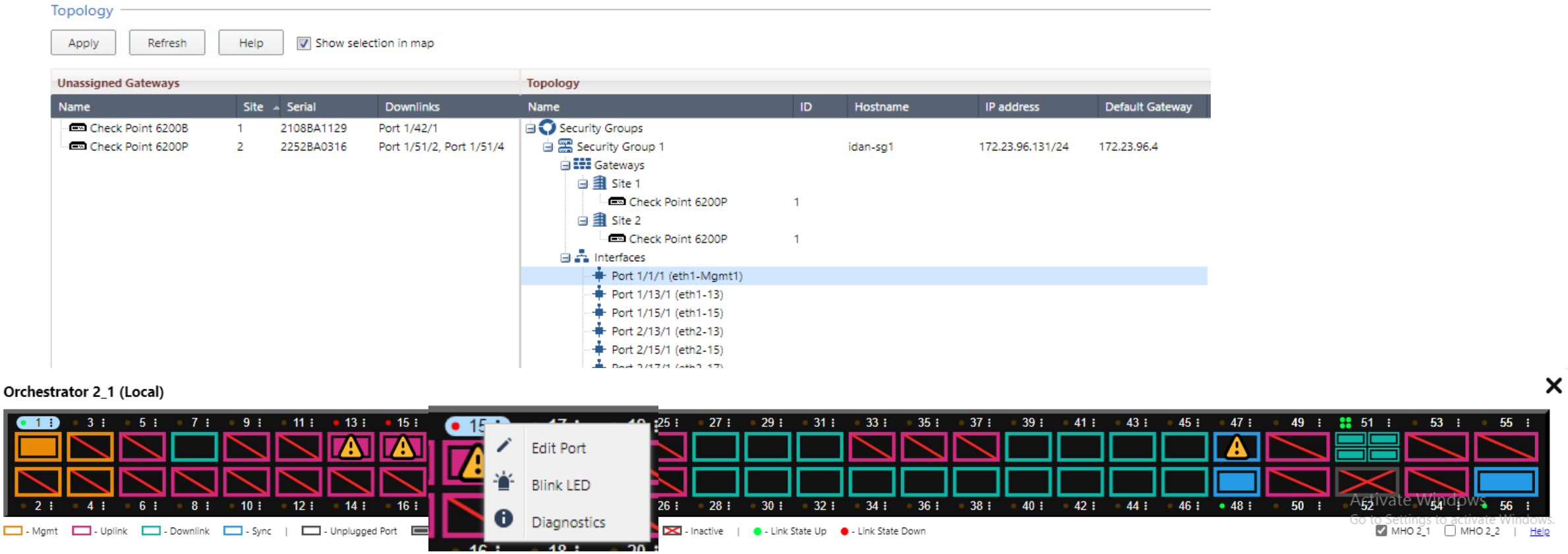
R82: Simpler Security Group Creation



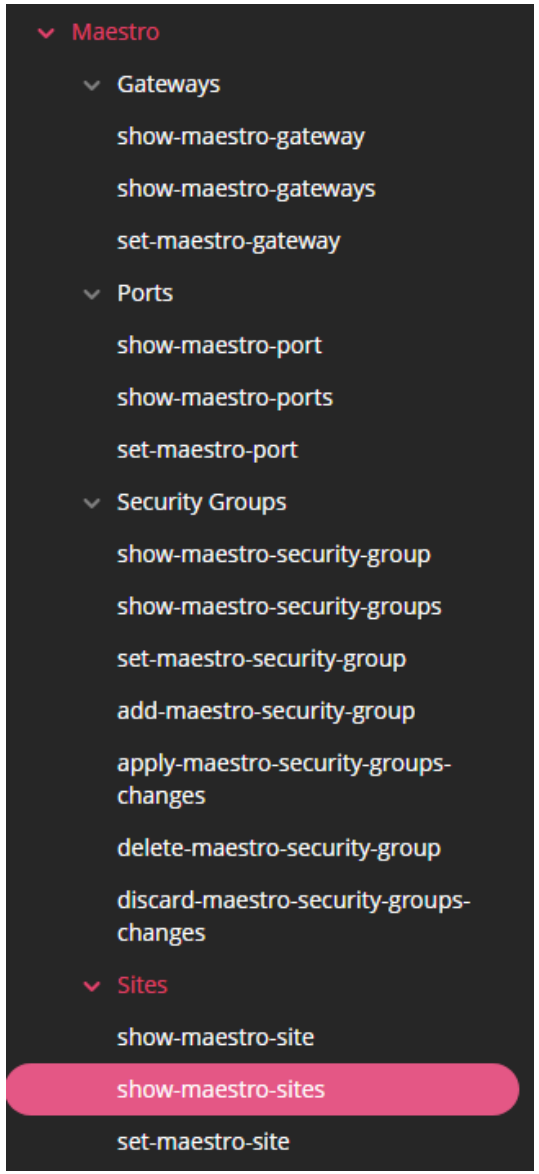
In R82 you can create the Management bond during the Security Group creation wizard

R82: New MHO View

- New MHO view shows:
  - Port connectivity / diagnostics / status / usage



R82: Build Maestro via API



Command

```
mgmt_cli add maestro-security-group interfaces.id "1/1/1" gateways.1.id "2108BA1058" gateways.1.description "GW 2108BA1058 Description" sites.1.id 1 sites.1.description "site1 description in new SG context" ftw-configuration.hostname "My_Host_Name" ftw-configuration.is-vsx True ftw-configuration.one-time-password "otp_pass" ftw-configuration.admin-password "admin_pass" mgmt-connectivity.ipv4-address "1.1.1.1" mgmt-connectivity.ipv4-mask-length 24 mgmt-connectivity.default-gateway "1.1.1.4" description "New Security Group Description" --context gaia_api --version 1.8 --format json
* "--format json" is optional. By default the output is presented in plain text.
```

R82 adds API with the ability to manipulate:

- Maestro **Gateways**
- Maestro **Ports**
- Maestro **Security Groups**
- Maestro **Sites**

Maestro Training Resources

- Official CCME Certification and Training
  https://training-certifications.checkpoint.com/#/courses/Check%20Point%20Certified%20Maestro%20Expert
- Jump Start Series in CheckMates
  https://community.checkpoint.com/t5/Check-Point-for-Beginners-2-0/Check-Point-Jump-Start-Course-Maestro/bap/153352?cat=10
- Maestro Masters in CheckMates
  https://community.checkpoint.com/t5/Maestro/bd-p/maestro
- https://www.youtube.com/c/checkpoint
- https://www.brighttalk.com/channel/16731/

CHECK POINT

Thank You!

YOU DESERVE THE BEST SECURITY