

SYMKLOUD 

KONTRON SYMCLOUD

제품 소개서

AGENDA



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I. 시스템 특징점

1. SYMCLOUD 구조적 특징

개방형 서비스 플랫폼 / SDN – NFV READY UP TO 시스템당 600GB/s THROUGHPUT

Form Factor

1U and 2U RACK TYPE

High Density Compute

2U RACK TYPE 의 경우,
최대 18대, 144 코어 탑재가능

Modular Design

PSU, 컴퓨터노드, 스위치가 탑재
된 완전한 Modular 서버



Redundancy

스위치, 파워서플라이, Shelf
management의 이중화

통합Switching

1/10/40/100GB 제공

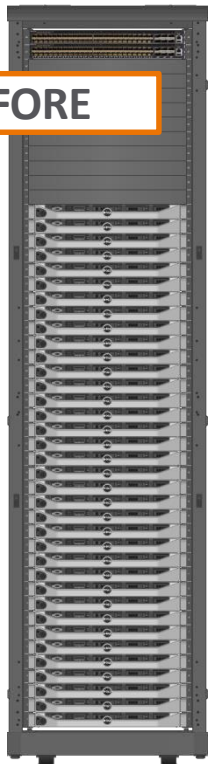
Carrier Grade

통신 및 서비스 제공업체를
위한 NEBS Level 3 충족

1. 시스템 특징점

2. SYMCLOUD 도입 효과

BEFORE



HIGH DENSITY

1U 서버 36대를 2대의
SymKloud MS2910 으
로 대체



SIMPLIFIED WIRING

통합 스위칭으로 케이
블링의 간편화



설비투자 비용절감

10% to 85%
vs. COTS servers &
Carrier-Grade



CONSOLIDATION

Up to 4-to-1 conso
lidation ratio

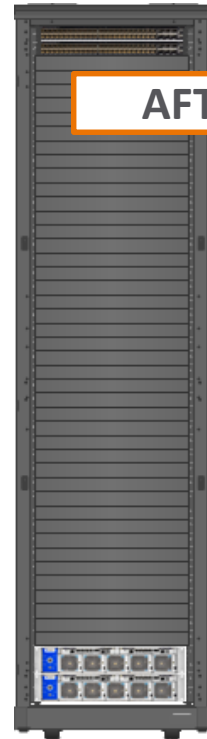


사용료 절감

더 작은 공간 사양으로
인해 유지보수 및 지원
비용 절감



AFTER



1. 시스템 특징점

3. SYMKLOUD MS29XX 특징

- ▶ 전원 이중화 (AC/DC)
+ 백플레인을 통한 전원 분배
- ▶ 5개의 Hot-swappable 쿨링 팬 모듈
- ▶ 스위치 이중화
+ 백플레인을 통한 상호 연결
- ▶ Management (2x Redundant Shelf Managers)
+ 개별노드 BMC 탑재
 - ▶ 모든 구성요소의 관리 및 펌웨어 업그레이드 원스톱 삽

최대 9개의 노드 지원

- ▶ Xeon-D15xx CPU 최대 18개 지원
- ▶ Xeon-E3 CPU(GPU 내장) 최대 18개 지원



SYMKLOUD MS2910 shown (Equipped with MSH8910 HubNodes)

1. 시스템 특징점

3. SYMCLOUD MS29XX FRONT VIEW

2개의 핫스왑 스위치
시스템 모니터

관리 포트 이중화

8x 10GbE SFP+ ports

2x 40GbE QSFP+ ports



5개의 핫스왑 팬 트레이

1. 시스템 특징점

3. SYMCLOUD MS29XX REAR VIEW

- ▶ 2x Rear-uplink modules (optional 40GbE QSFP+)



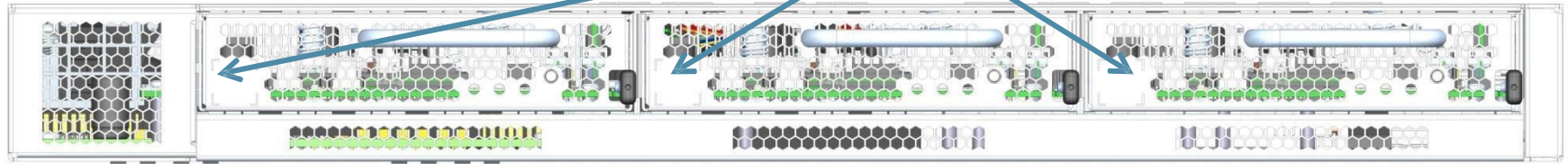
- ▶ Up to 9x CPU Nodes
 - ▶ Single-CPU + 2.5" Storage
 - ▶ Xeon-E3, Xeon-D
 - ▶ Dual-CPU
 - ▶ Xeon-D
 - ▶ Dual (independent) CPUs w/ GPU
 - ▶ Haswell-/Broadwell-/Skylake-H

- ▶ 2x Redundant Power
 - ▶ DC PEM (50A Max)
 - ▶ AC PSU options:
 - ▶ 1100W Max
 - ▶ 1500W Max

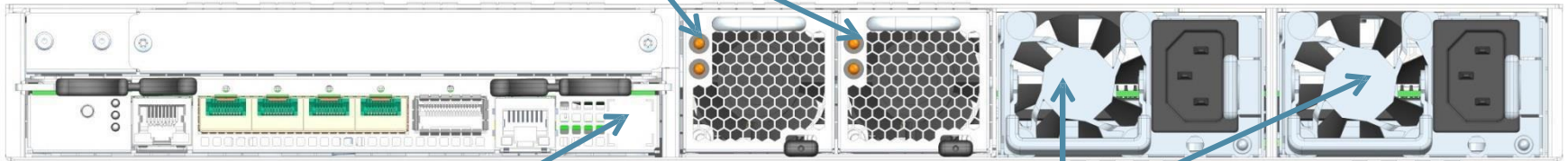
I. 시스템 특징점

4. SYMCLOUD MS13XX 특징

FRONT VIEW

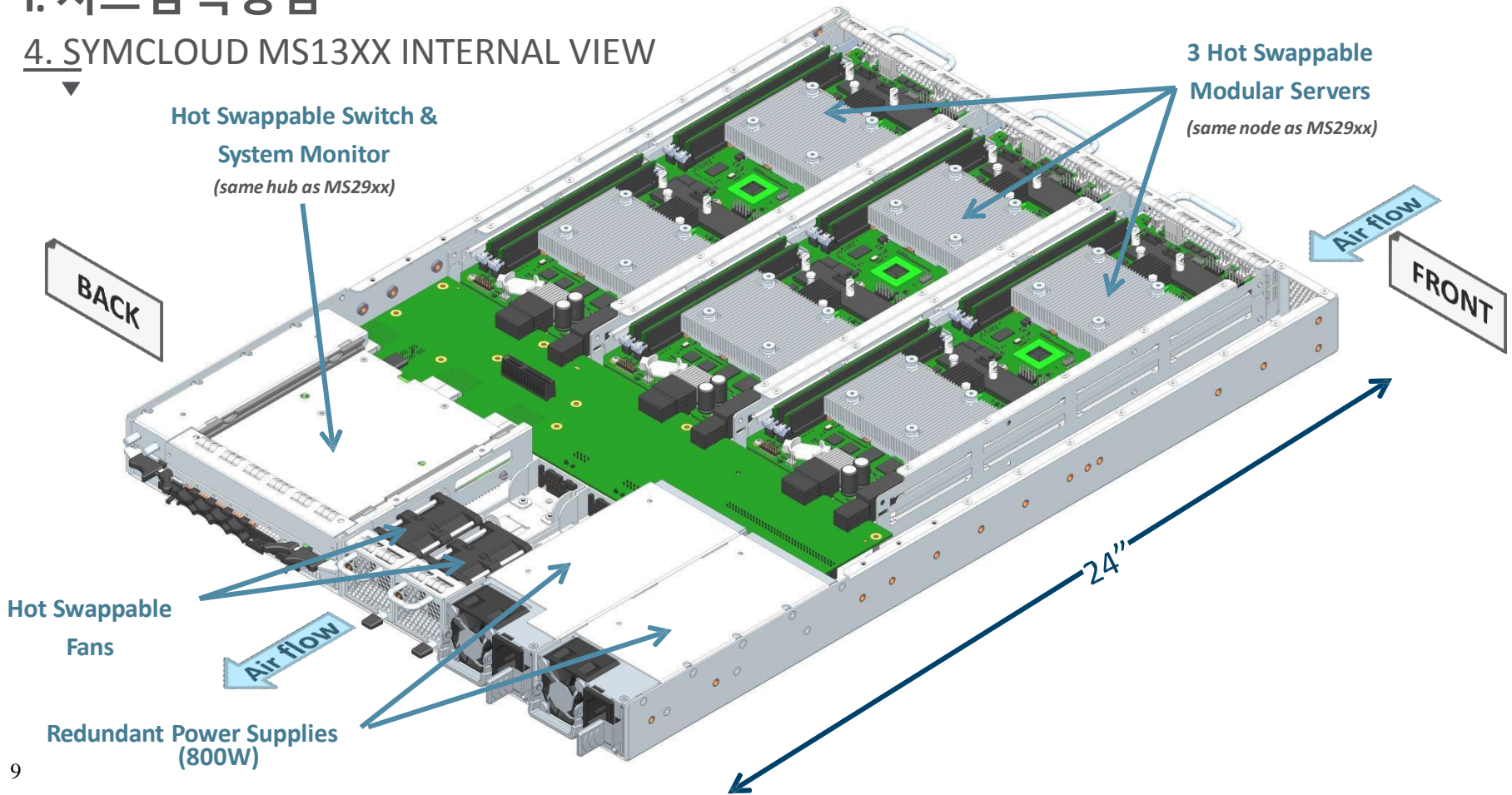


REAR VIEW



I. 시스템 특징점

4. SYMCLOUD MS13XX INTERNAL VIEW



1. 시스템 특징점

5. 다양한 서버 모듈



MSP804x (Single Server)
Intel Xeon-D15xx up to 16cores
PCIe slot or 2x HDD onboard
Data Services



MSP806x (Dual Server)
Intel Xeon-D15xx up to 16 Cores
M.2 storage up to 512GB
Data Services



MSP802x
Dual Intel CPU+GPU i7-4860EQ, E3-1278Lv4
HD Media Transcoding



MSP805x
Intel CPU+GPU E3-1578Lv5
HD & 4K Media Transcoding

DATA

VIDEO

1. 시스템 특징점

5. 다양한 서버 모듈



MSP8022



MSP8050



MSP804x



MSP806x

	MSP8022	MSP8050	MSP804x	MSP806x
Workloads	Transcoding	Transcoding	Virtualisation	Virtualisation
Servers/MS (Modular Server)	2	2	1	2
CPU	Broadwell E3-1278Lv4 (4C, 6M Cache, 2-3.3GHz)	Skylake E3-1578Lv5 (4C, 8M Cache, 2.00GHz)	Xeon-D D-1527 (4C, 6M Cache, 2.20 GHz) D-1548 (8C, 12M Cache, 2.00 GHz) D-1559 (12C, 18M Cache, 1.50 Ghz) D-1577 (16C, 24M Cache, 1.30 GHz)	Xeon-D D-1527 (4C, 6M Cache, 2.20 GHz) D-1548 (8C, 12M Cache, 2.00 GHz) D-1559 (12C, 18M Cache, 1.50 Ghz) D-1577 (16C, 24M Cache, 1.30 GHz)
GPU	Intel® Iris™ Pro Graphics P6300 800 MHz 32 GB 48EU	Intel® Iris™ Pro Graphics P580 700 MHz 64 GB 72EU	N/A	N/A
Memory Per CPU	Max 32G 2x 16G DDR3	Max 32G 2x 16G DDR3	Max 128G 4x 32G DDR4	Max 128G 4x 32G DDR4
Storage Per CPU	480GB (M.2 SSD)	480GB (M.2 SSD)	240GB (M.2 SSD) + 4 TB (2.5" 2x HDD or 4x SDD)	240GB (M.2 SSD)
Networking Per Module	2x 1G (Data) 2x 1G (Ctr)	4x 10G (Data) 2x 1G (Ctr)	2x 10G (Data) 2x 1G (Ctr)	8x 10G (Data) 2x 1G (Ctr)
vCores/RU	48	48	144	288
GB Mem/Core	2	2	8+	8+
GPU Exe. Units/RU	288	432	0	0

1. 시스템 특징점

6. 다양한 스위치 모듈



MSH8900



MSH8910



MSH8911

8920
MS
ation/SDN

Workloads	Transcoding	Transcoding/Virtualisation		Virtualis
Switch	Microsemi (SMBStaX)	Broadcom (Fastpath)		(PicOS) Broadco
Data Uplinks	1x 10G (SFP+) 4x GbE (RJ45)	1x 40G (QSFP+) 4x 10G (SFP+)		3x 100G (QSFP28)
Management Uplinks	1x GbE	1x GbE		1x GbE
Rear-Uplinks (optional)	1x 10G (SFP+)	1x 40G (QSFP+)		N/A
Backplane Data-plane Ports	9x GbE	9x 10G	18x 10G (4 per Node)	60x 10G (up to 8 per Node)
Backplane Control-plane Ports	9x GbE	9x GbE	9x GbE	9x GbE
Serial Console port	1x RJ45	1x RJ45	1x RJ45	1x RJ45
Available Bandwidth	63 Gbps	320 Gbps	480 Gbps	1280 Gbps

II. 최적 활용 분야

1. 파트너 솔루션 업체 리스트

PARTNER ORCHESTRATION LAYER



PARTNER VNF/APP LAYER



CONTROL LAYER



CLOUD AND NFV INFRASTRUCTURE LAYER



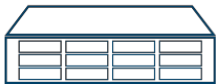
CARRIER CLOUD, PRIVATE/PUBLIC CLOUD, SERVICE PROVIDER NETWORKS

CUSTOMER PREMISE, vCPE



CONVERGED INFRASTRUCTURE PLATFORMS - 2U / 1U

- ▶ MS1300
- ▶ MS2910
- ▶ MS2920



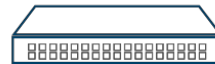
CLOUD COMPUTING - STORAGE



CARRIER-GRADE SERVERS



NAS FILE STORAGE



100G/25G SWITCHES - 1U



NETWORK APPLIANCES - 1U



VCPE - S/M/L

II. 최적 활용 분야

2. 클라우드 & 오픈스택

SymCloud 2U

Throughput:

- 1G Switch : 36 Gbps
- 10G Switch: 198 Gbps
- 20G Switch: 378 Gbps
- 100G Switch : 618 Gbps



High-Perf

Single/Dual Xeon-D CPUs
Up to 144/288 concurrent VNFs**
Service Perf up to 240G
Flexible Memory and storage options

SymCloud 1U

Throughput:

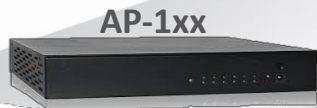
- 1G Switch : 12 Gbps
- 10G Switch: 66 Gbps
- 20G Switch: 126 Gbps
- 100G Switch : 246 Gbps



Mid-Perf

Single/Dual Xeon-D CPU
Up to 96 concurrent VNFs**
Service Perf up to 120G
Flexible Memory and storage options

vCPE Whiteboxes



Entry-Level

Denverton to Xeon-D
Up to 16 VNFs
Service Perf from 1G to 20G
Flexible Memory and storage options

II. 최적 활용 분야

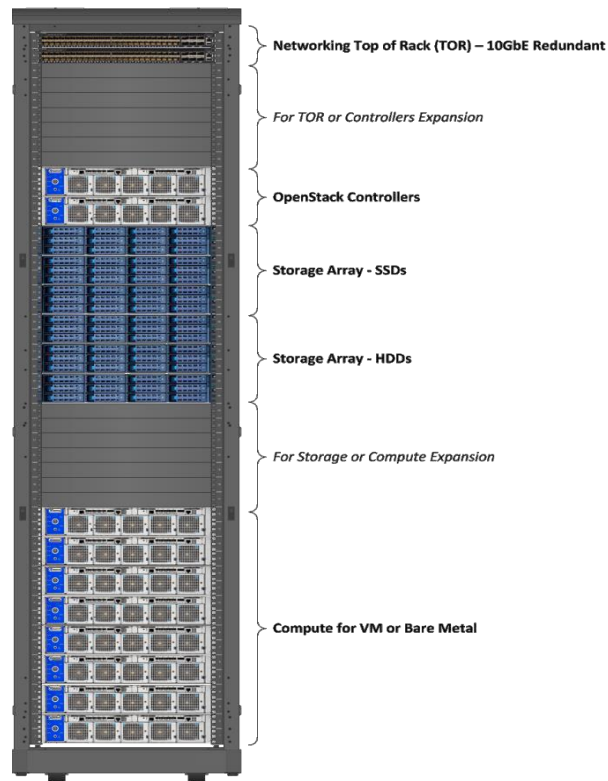
2. 클라우드 & 오픈스택

단일 랙에서 완벽한 클라우드 인프라 구축

- 이중화된 ToR 스위치
- 최소 랙 공간으로 오픈스택 관리
- 다중계층 스토리지 구성을 위한 HDD, SSD 혼합 구성
- 컴퓨팅을 위한 고밀도 코어 수

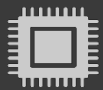
SymKloud의 고밀도 코어 기능과 낮은 관리 오버헤드로 인해 서비스 (네트워크, 스토리지, 관리, 컴퓨팅)를 매우 효율적으로 사용 가능

Typical 48U
OpenStack Rack



Rackmount
Unit Used

34



Threads

2304

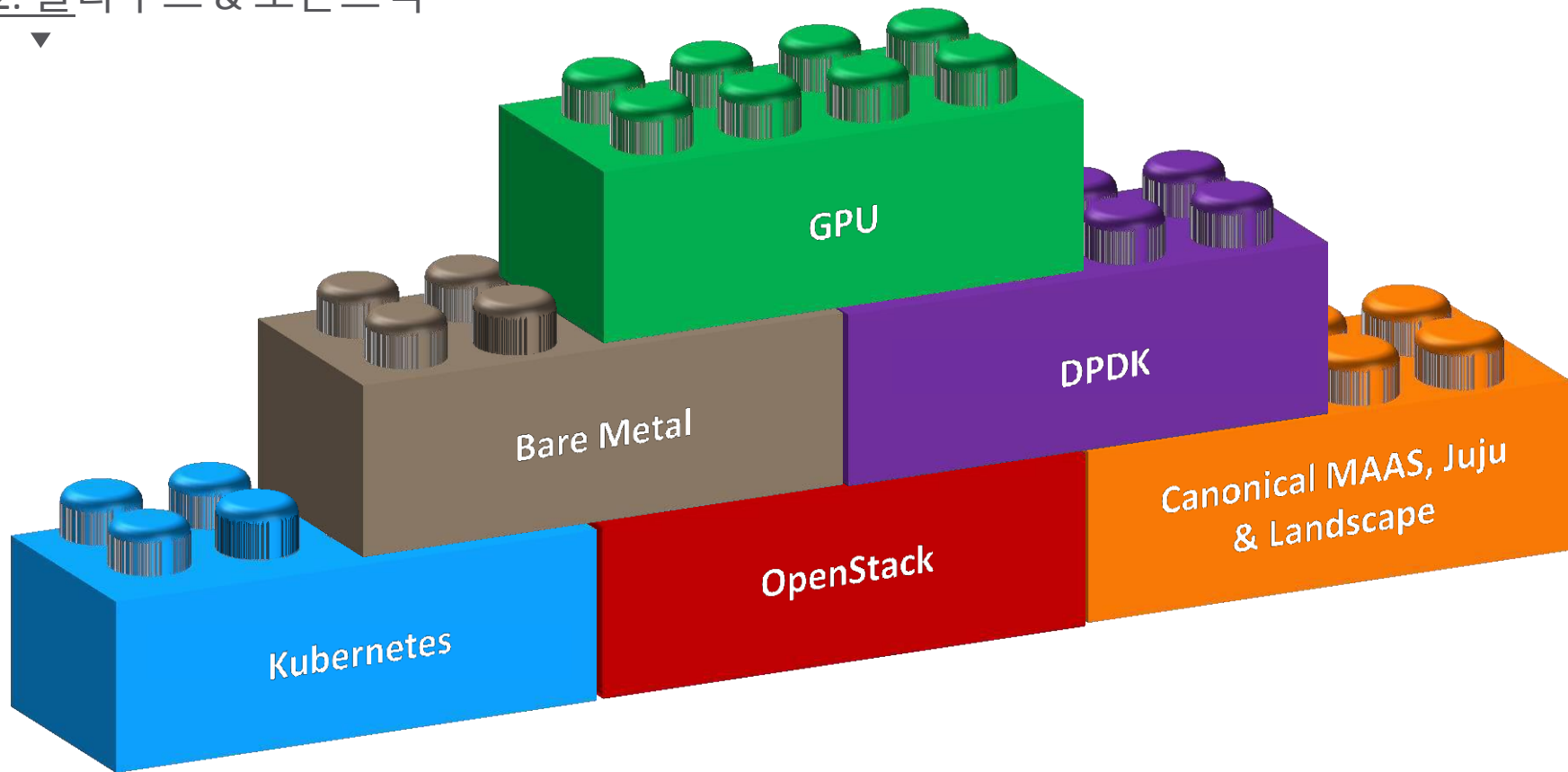


RAM

9.2TB

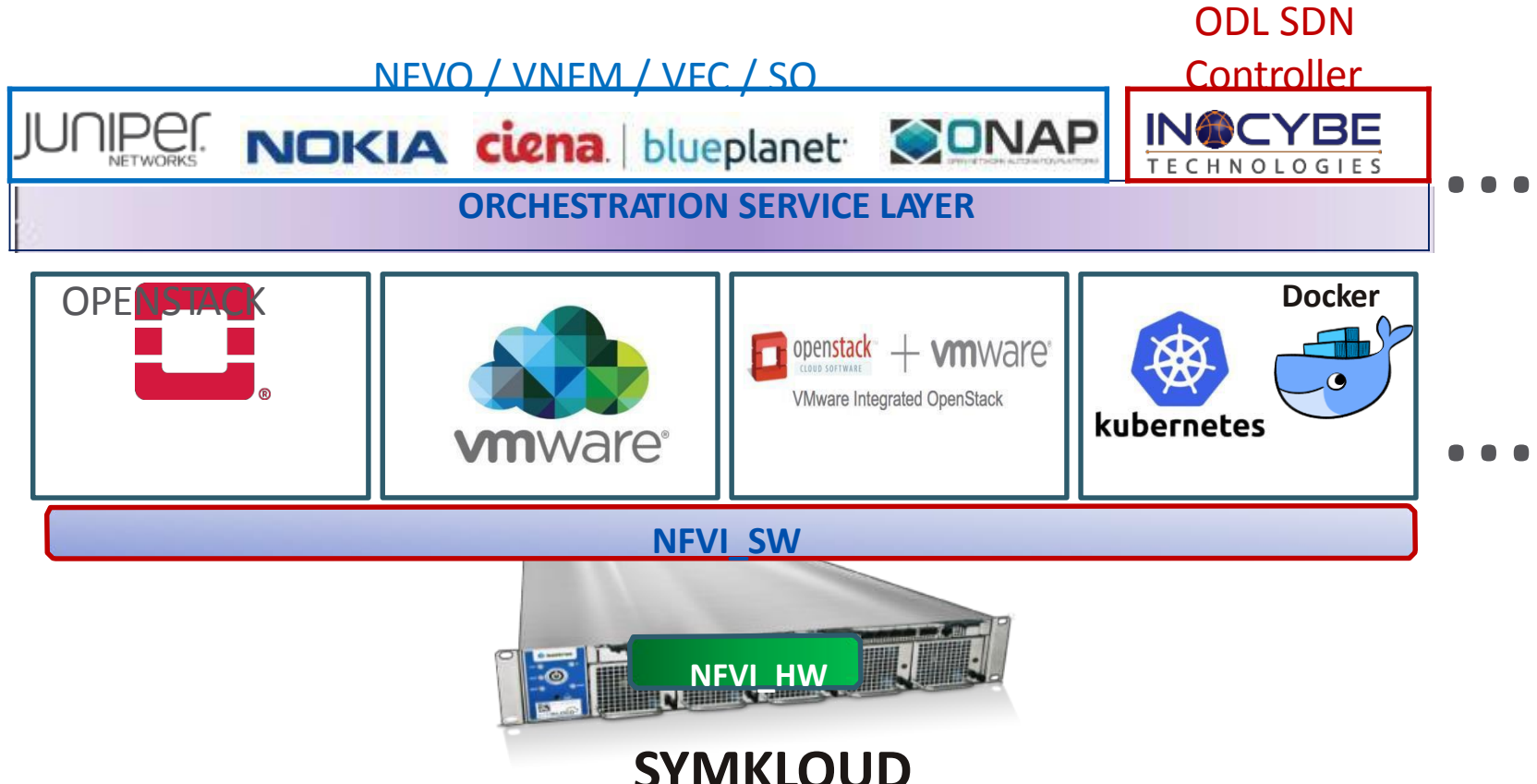
II. 최적 활용 분야

2. 클라우드 & 오픈스택



II. 최적 활용 분야

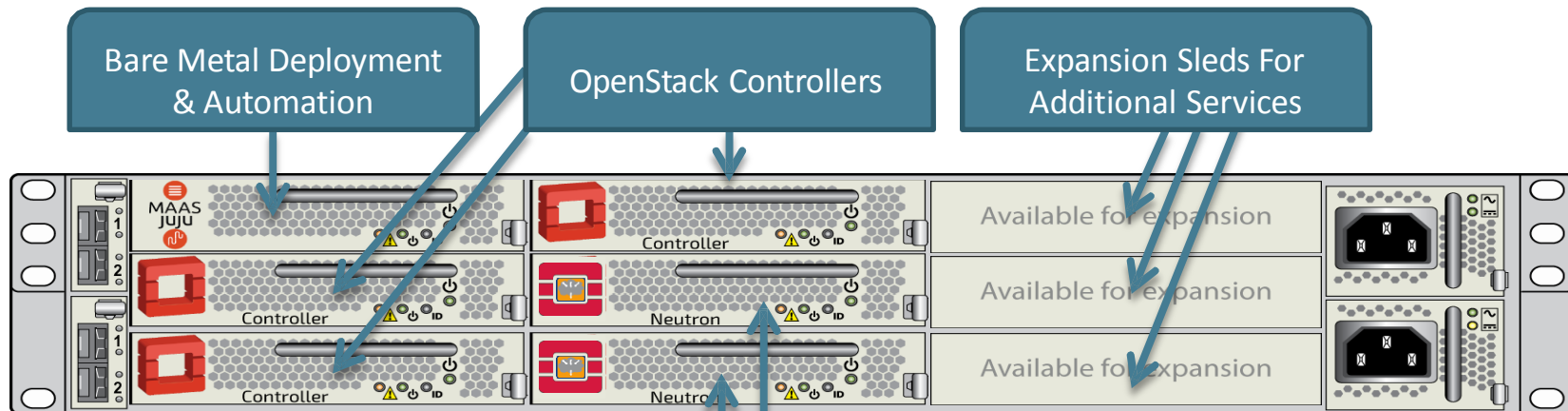
2. 클라우드 & 오픈스택



II. 최적 활용 분야

2. 클라우드 & 오픈스택

KONTRON OPENSTACK CONTROLLER SYSTEM



Sled Type	# of Sled
Deployer	1
OpenStack Controller	3
OpenStack Neutron	2

288 Threads & 2.3TB RAM in 2U



II. 최적 활용 분야

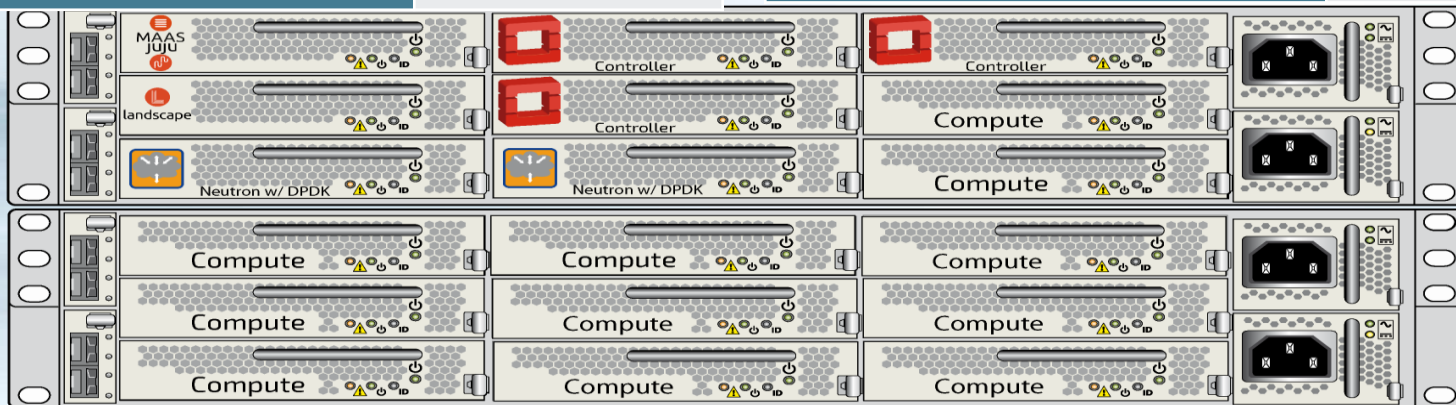
2. 클라우드 & 오픈스택



EXPANDING YOUR OPENSTACK SETUP

4U – 1 CONTROLLER & 1 COMPUTE

SymCloud Chassis	2	OpenStack Controller	3
MAAS/Juju Sled	1	OpenStack Neutron Node	2/4
Landscape Sled	1	Compute Sleds Available	11
6WIND VA	Integrates in Neutron	DPDK Maximum Throughput	120/240Gbps



12 Cores Compute Sled: 264 vCPU (threads), 396GHz, 1.4TB RAM

16 Cores Compute Sled: 352 vCPU (threads), 457GHz, 1.4TB RAM

II. 최적 활용 분야

2. 클라우드 & 오픈스택

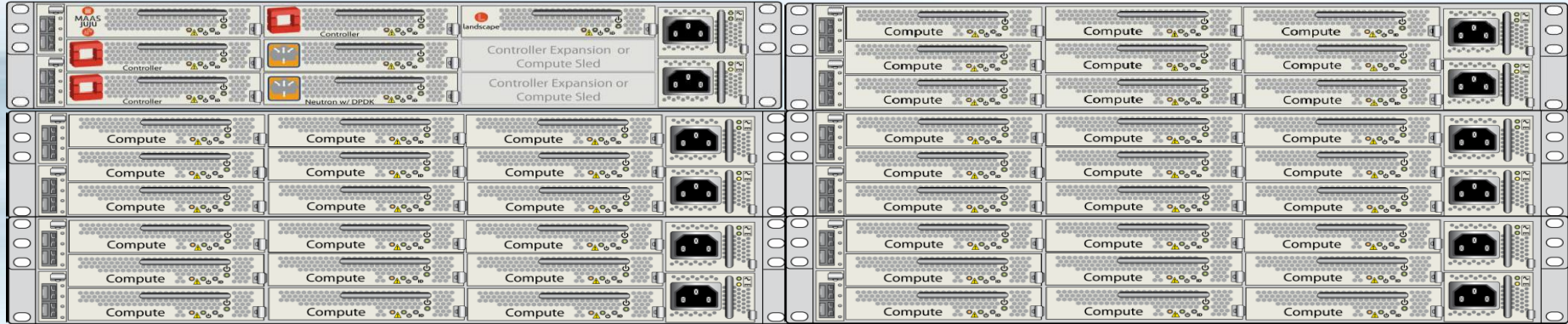


EXPANDING YOUR OPENSTACK SETUP

12U – 1 CONTROLLER & 5 COMPUTE

SymCloud Chassis	6
MAAS/Juju Sled	1
Landscape Sled	1
6WIND VA	Integrates in Neutron

OpenStack Controller	3
OpenStack Neutron Node	2/4
Compute Sleds Available	45
DPDK Maximum Throughput	120/240Gbps



12 Cores Compute Sled: **1080 vCPU (threads), 1620GHz, 5.7TB RAM**
 16 Cores Compute Sled: **1440 vCPU (threads), 1872GHz, 5.7TB RAM**

II. 최적 활용 분야

3. 미디어 & CDN

SymKloud 2U



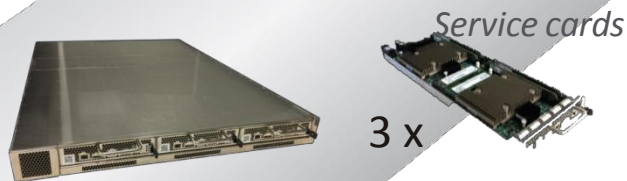
High-Perf

Up to 270 1080p streams @30fps

Up to 36 4K streams @24fps U

p to 18 4K streams @60fps

SymKloud 1U



Mid-Perf

Up to 90 1080p@30fps streams

Up to 12 4K streams @24fps U

p to 6 4K streams @60fps

AP-1430 Series



Entry-Level

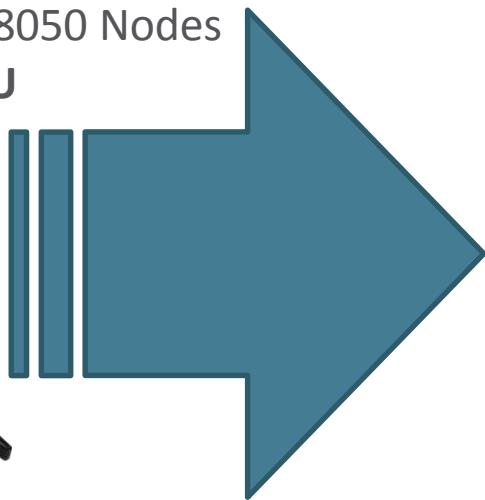
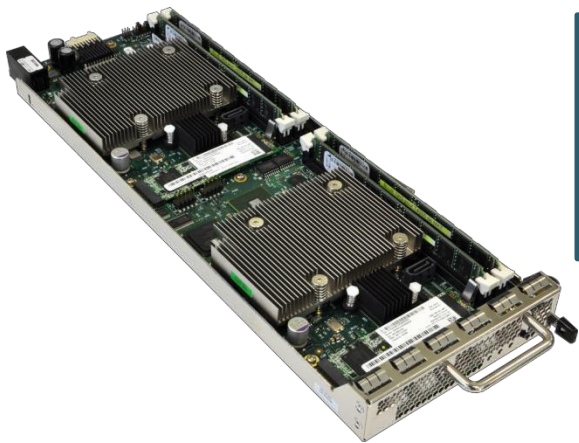
Up to 10 1080p@30fps streams

II. 최적 활용 분야

3. 미디어 & CDN



- ▶ Symcloud MSP8022 or MSP8050 Nodes
- ▶ **18x Server + 18x GPU per 2U**



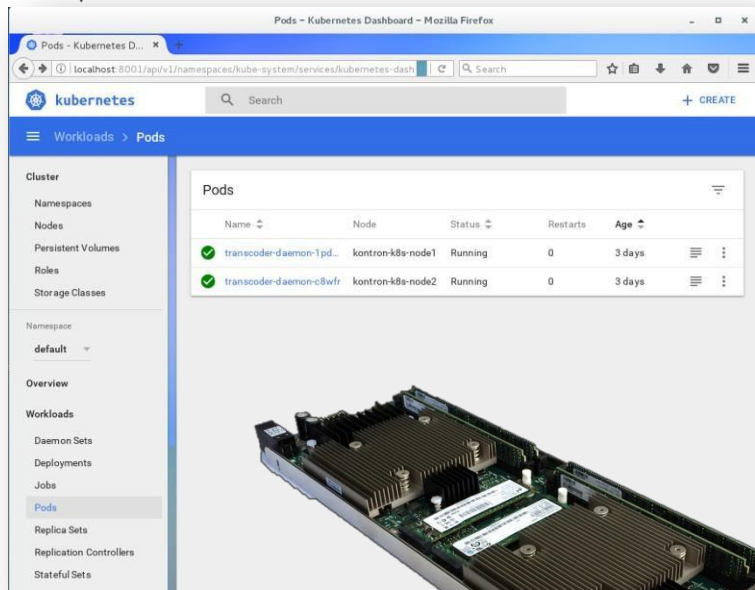
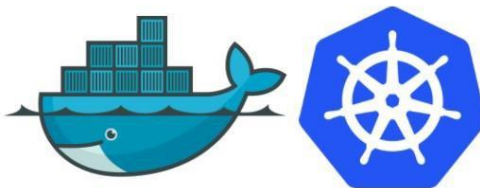
- ▶ 10x MS2900 Chassis
- ▶ 20U Rackspace
- ▶ **180x CPU/GPUs**

II. 최적 활용 분야

3. 미디어 & CDN

FILE TRANSCODING USING INTEL MEDIA SERVER STUDIO IN KUBERNETES

GPU ACCELERATIONS IN CONTAINERS



Up to 18 servers
in 2U

```
ubuntu@kontron-k8s-node1: ~  
File Edit View Search Terminal Help  
ubuntu@kontron-k8s-node1:~$ lspci  
00:00.0 Host bridge: Intel Corporation Sky Lake Host Bridge/DRAM Registers (rev 0a)  
00:01.0 PCI bridge: Intel Corporation Sky Lake PCIe Controller (x16) (rev 0a)  
00:02.0 VGA compatible controller: Intel Corporation Device 193d (rev 09)  
00:14.0 USB controller: Intel Corporation Sunrise Point-H USB 3.0 xHCI Controller (rev 31)  
00:14.2 Signal processing controller: Intel Corporation Sunrise Point-H Thermal subsystem (rev 31)  
00:16.0 Communication controller: Intel Corporation Sunrise Point-H CSME HECI #1 (rev 31)  
00:17.0 SATA controller: Intel Corporation Sunrise Point-H SATA controller [AHCI mode] (rev 31)  
00:1c.0 PCI bridge: Intel Corporation Sunrise Point-H PCI Express Root Port #1 (rev f1)  
00:1c.5 PCI bridge: Intel Corporation Sunrise Point-H PCI Express Root Port #6 (rev f1)  
00:1f.0 ISA bridge: Intel Corporation Sunrise Point-H LPC Controller (rev 31)  
00:1f.2 Memory controller: Intel Corporation Sunrise Point-H PMC (rev 31)  
00:1f.4 SMBus: Intel Corporation Sunrise Point-H SMBus (rev 31)  
01:00.0 Ethernet controller: Intel Corporation 82599 10 Gigabit Dual Port Backplane Connection (rev 01)  
01:00.1 Ethernet controller: Intel Corporation 82599 10 Gigabit Dual Port Backplane Connection (rev 01)  
04:00.0 Ethernet controller: Intel Corporation I210 Gigabit Backplane Connection (rev 03)  
ubuntu@kontron-k8s-node1:~$ cp jellyfish-120-mbps-4k-uhd.h264 /opt/media/mpeg2/  
ubuntu@kontron-k8s-node1:~$ ls -l /opt/media/mpeg2/  
total 478776  
-rw-rw-r-- 1 ubuntu ubuntu 452278108 Sep 11 15:53 jellyfish-120-mbps-4k-uhd.h264  
-rw-r--r-- 1 root root 37986304 Sep 11 15:53 jellyfish-120-mbps-4k-uhd.mpeg2  
ubuntu@kontron-k8s-node1:~$ !
```

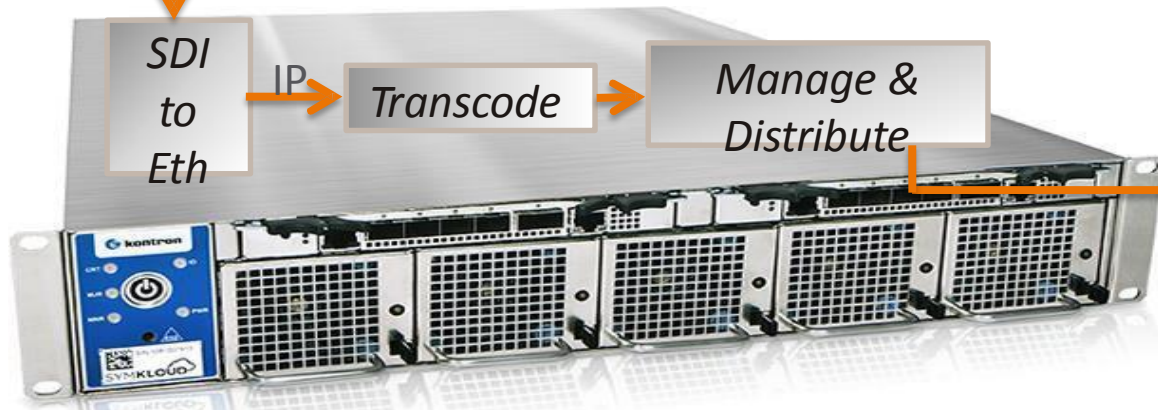


II. 최적 활용 분야

3. 미디어 & CDN

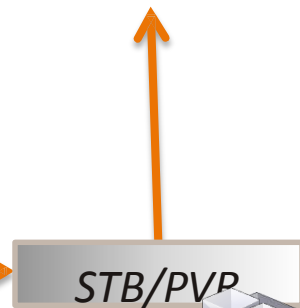


Video/Sources



KONTRON ENABLES VIDEO CONVERGED SOLUTIONS

SDI ACQUISITION + HEVC 4K TRANSCODING CONVERGENCE

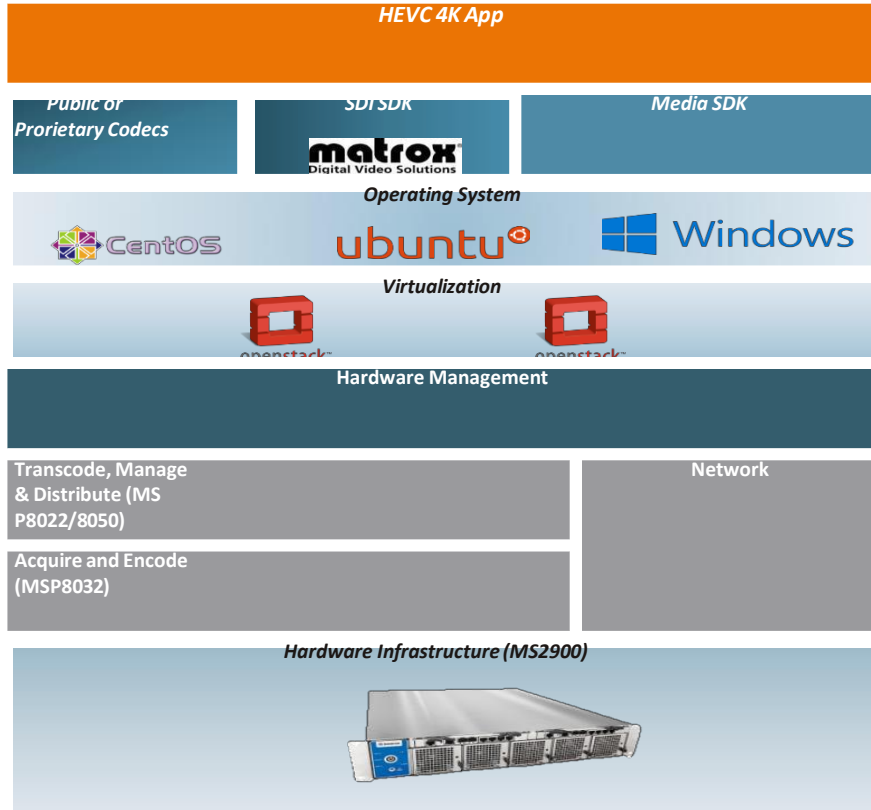


Kontron's Network Appliance

II. 최적 활용 분야

3. 미디어 & CDN

SDI ACQUISITION - HEVC 4K TRANSCODING SOLUTION STACK

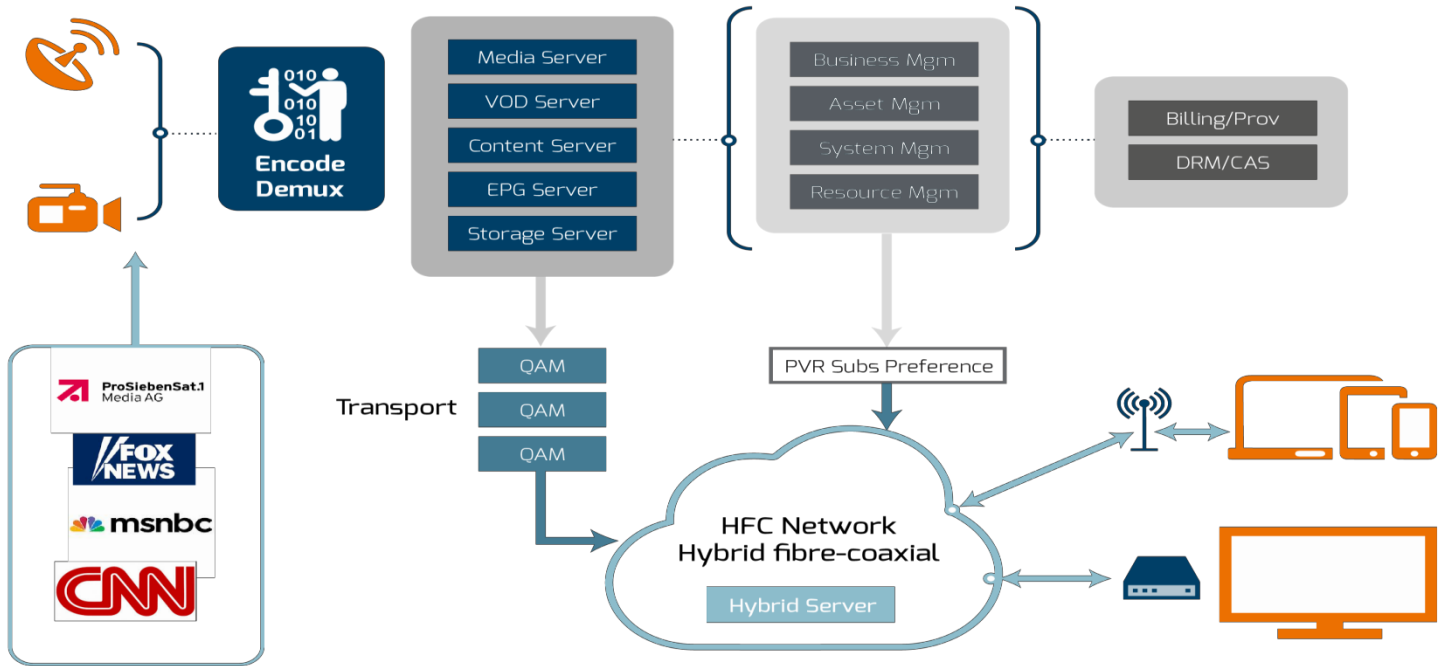


- From Acquisition to Broadcast quality live and VoD 4K streams
- Industry needs to improve workflow densities, bitrate compression, and overall capex/opex infrastructure costs
- Goal for operators is to ultimately reduce the cost per view
- SYMKLOUD solution provides:
 - OpenStack for cloud provisioning of video workflow with scalability, flexibility and automation
 - Unprecedented flexibility with Mix and Match functions
 - Highest channel density

II. 최적 활용 분야

3. 미디어 & CDN

VIDEO OTT DELIVERY INFRASTRUCTURE ANY MEDIA CAPABLE : WIRED OR WIRELESS

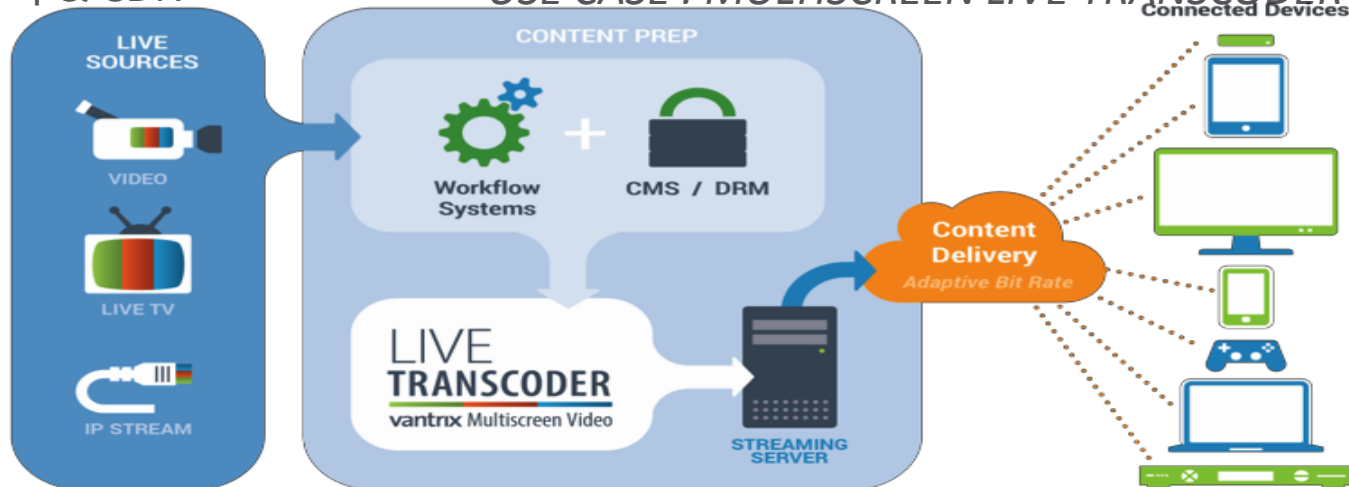


II. 최적 활용 분야

3. 미디어 & CDN

HIGHEST DENSITY LIVE SOLUTION ON THE MARKET

USE CASE : MULTISCREEN LIVE TRANSCODER



Performance & Processing Speed	
HD 1080p @ 30 fps /Per Appliance	288 Concurrent Streams
4K UHD @ 24 fps/Per Appliance	36 Concurrent Streams
4k UHD @ 60 fps/Per Appliance	18 Concurrent Streams
Power Draw	
Power per HD Stream	4.5 Watts

Kontron 2RU
SYMKLOUD



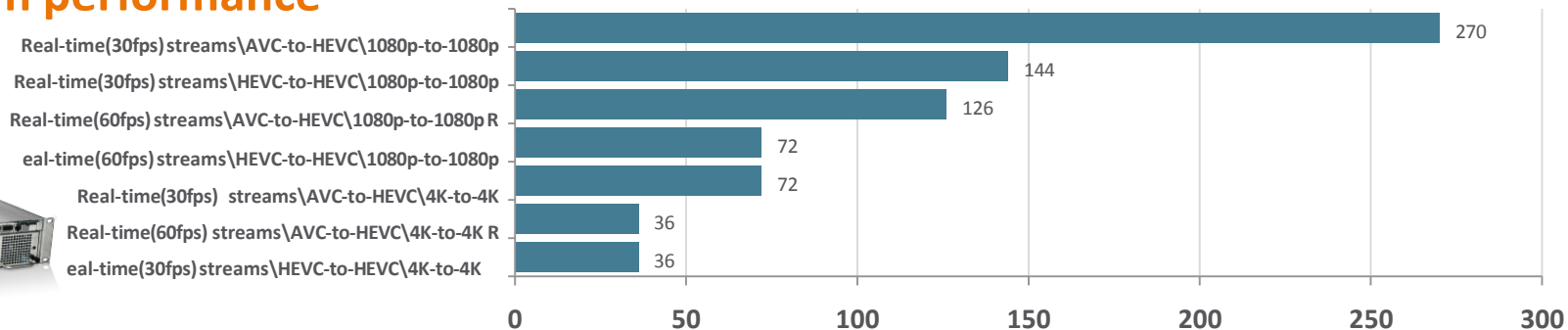
HEVC
H.265 - HIGH EFFICIENCY VIDEO CODEC

4K
ULTRA HD

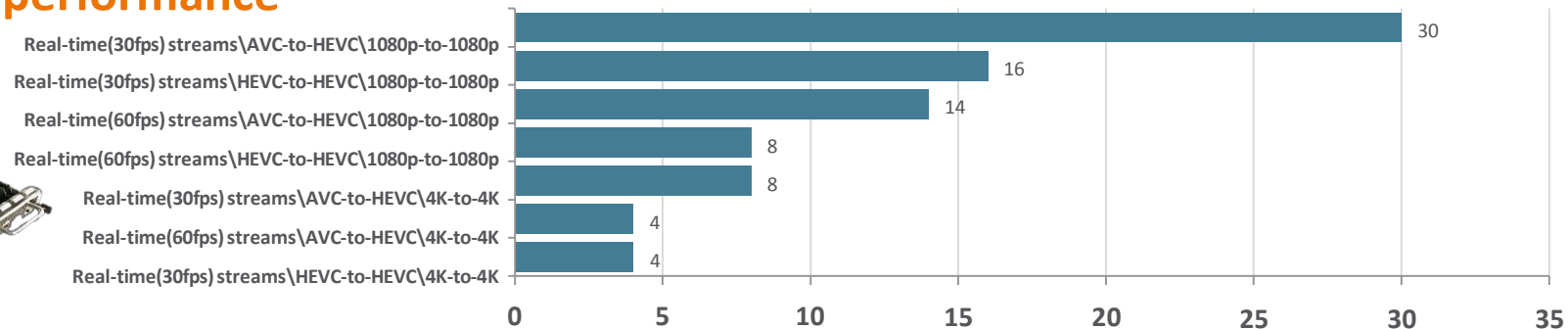
II. 최적 활용 분야

3. 미디어 & CDN

2RU System performance



One node performance



MSP8050 STREAMS DENSITY FOR POPULAR FORMAT

II. 최적 활용 분야

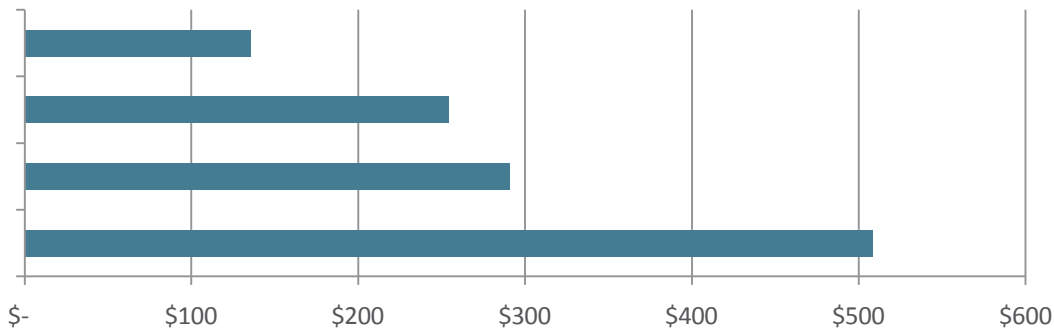
3. 미디어 & CDN

HD STREAMS

Full HD
1080

- Real-time(30fps) streams\AVC-to-HEVC\1080p-to-1080p
- Real-time(30fps) streams\HEVC-to-HEVC\1080p-to-1080p
- Real-time(60fps) streams\AVC-to-HEVC\1080p-to-1080p R
- Real-time(60fps) streams\HEVC-to-HEVC\1080p-to-1080p

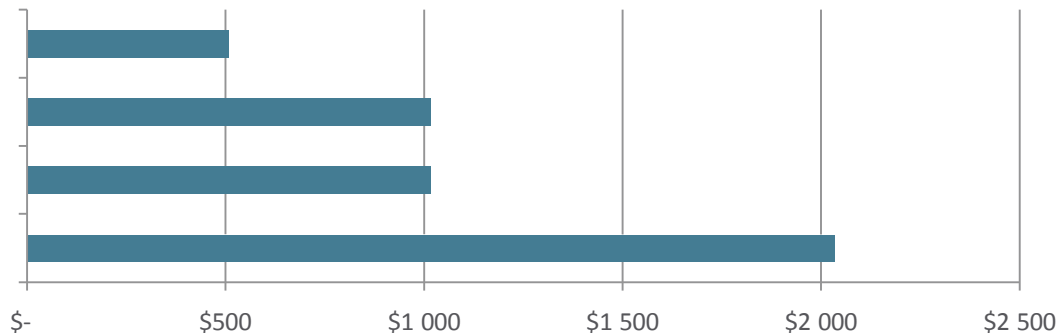
MSP8050 COST PER STREAM FOR POPULAR FORMAT



4K STREAMS

Ultra HD
4K

- Real-time(30fps) streams\AVC-to-HEVC\4K-to-4K
- Real-time(60fps) streams\AVC-to-HEVC\4K-to-4K
- Real-time(30fps) streams\HEVC-to-HEVC\4K-to-4K
- Real-time(60fps) streams\HEVC-to-HEVC\4K-to-4K



Based on Intel benchmark published at <https://software.intel.com/en-us/intel-media-server-studio>. Kontron system is MS2900 with redundant 1100W AC PSU, 4x 10GbE SFP+ and 8x GbE RJ45U pl

inks, Uplink fillers, SFP+ Modules not included (PN:1056-3604) equipped with 9x MSP8050 Dual E3-1578L v5 GT4e nodes with 32GB per CPU total memory and 1x128GB M.2 SSD per CPU

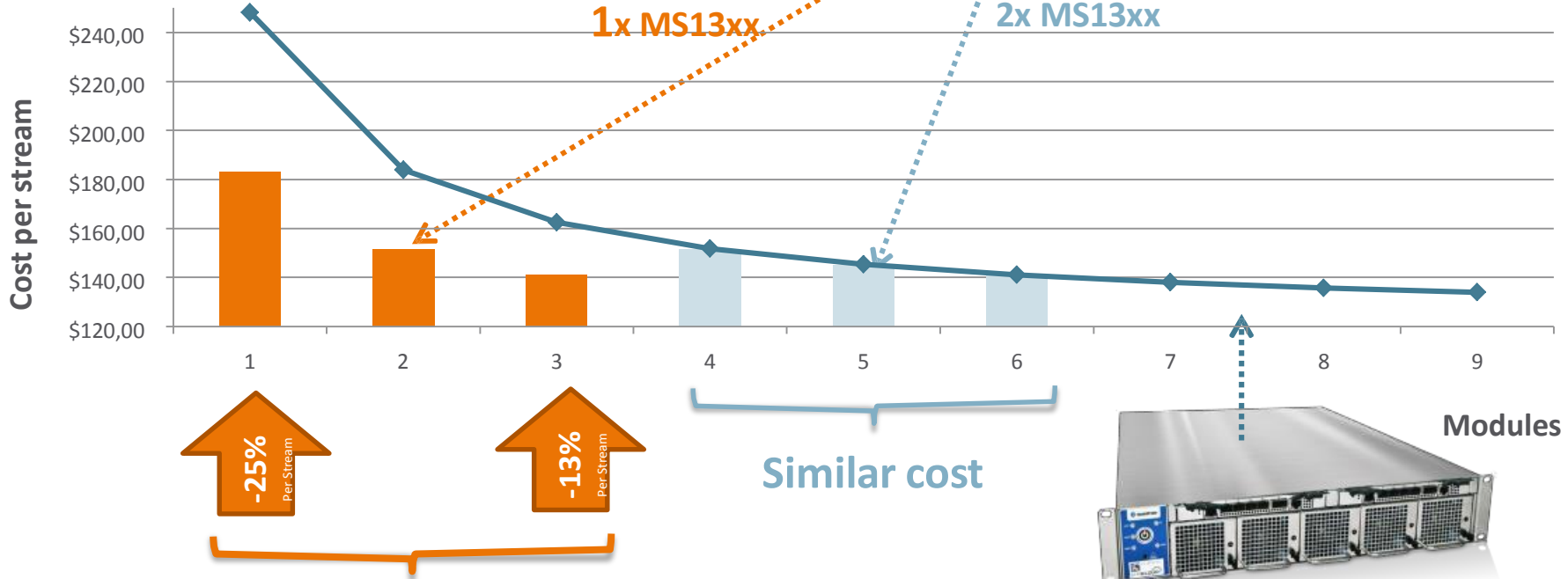
(PN:1050-106). Hardware cost estimation is based on September 2016 list, quantity 2-24 for chassis and quantity 25 to 99 for MSP8050.

II. 최적 활용 분야

3. 미디어 & CDN

MS13XX VS MS29XX

COST PER STREAM ESTIMATION



Save up to 2K\$ per server



Estimations based on Intel benchmark published at <https://software.intel.com/en-us/intel-media-server-studio> for Real-time(30fps) streams(AVC-to-HEVC)1080p-to-1080p Kontron system is MS1300 with redundant AC PSU (PN:TBD) equipped with MSP8050 Dual E3-1578L v5 GT4e nodes with 32GB per CPU total memory and 1x12 8GB M.2 SSD per CPU (PN:1060-2356).