



Bogotá, 23 de enero de 2024

**Señores**

**Universidad de Antioquia**

**Referencia - INVITACIÓN A COTIZAR 11010003-045 de 2023 – Aclaraciones**

En respuesta a su solicitud de aclaraciones correspondientes al proceso en mención, a continuación, nos permitimos certificar:

1. La configuración de almacenamiento para sitio Principal bajo el modelo Unity XT 480 cuenta con 308.92 TB efectivos en discos SSD SAS 12Gbps, capacidad ofrecida después de RAID, con relación de compresión y deduplicación de 2:1, esta capacidad efectiva se ofrece considerando el tiempo de soporte y garantía de cinco (5) años tal cual lo solicita el proceso. Se adjunta sizer realizado por Dell (ver documento anexo)
2. La configuración de almacenamiento para sitio alternativo bajo el modelo Unity XT 480 cuenta con 169.86 TB efectivos en discos SSD SAS 12Gbps, capacidad ofrecida después de RAID, con relación de compresión y deduplicación de 2:1, esta capacidad efectiva se ofrece considerando el tiempo de soporte y garantía de cinco (5) años tal cual lo solicita el proceso. Se adjunta sizer realizado por Dell (ver documento anexo)
3. Que con respecto a la latencia requerida de 1ms certificamos para cada almacenamiento propuesto:
  - Almacenamiento sitio principal Unity XT 480 con 26 discos (response time 0.9ms)
  - Almacenamiento sitio alternativo Unity XT 480 con 15 discos (response time 1ms)

Cualquier inquietud adicional con gusto será atendida

Cordialmente

A handwritten signature in black ink, appearing to read "A. Gaitán".

Andrés Arturo Gaitán.

Representante Legal Dell Colombia.

## UdeA

## Unity XT 480F

Unity 300TBe PPAL

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## Cabinet 1



## General Information

Model Number	Unity XT 480F
Raw Capacity	181.61 TB
Unit Count	4 U
IOPS	124000
Block Size	8K

Usable Capacity	154.46 TB
Total Drive Count	26
Workload	67% Read - 33% Write
Effective Capacity	308.92 TB
Configuration Type	New Solution

## System Tier Information

Flash	Count	SAS	Count	NL-SAS	Count
7.68TB FLASH 4	26				
<b>Total</b>	<b>26</b>		<b>0</b>		<b>0</b>
<b>Usable Capacity</b>	<b>154.46 TB</b>		<b>0.00 TB</b>		<b>0.00 TB</b>

Usable Capacity



## Pool Configuration

### Pool1

Tier	Form Factor	Drive Type	RAID Type	Spare Policy	Drive Count	Usable Capacity	Effective Capacity	IOPS
FLASH	2.5	7.68TB FLASH 4	RAID 5 (12+1)	1/32	26	154.46 TB	308.92 TB	124000
<b>Total</b>					<b>26</b>	<b>154.46 TB</b>	<b>308.92 TB</b>	<b>124000</b>
<b>Data Reduction</b>		<b>2:1</b>						

## Power Information

Power Summary	
Power Consumption	0.832 kVA
Region	United States
Input Voltage	V~208
Phases	Single Phase
Site Circuit Breaker	30
Peak Inrush Current	55 A

Environmental	
Operating Temp	Below 26C
Heat Dissipation	2575 Btu/Hr
Sound Pressure	57 db
Sound Power	7.4 bels
Weight	512 lbs
Dimensions	24 in Width x 41.33 in Depth x 75 in Height
Clearance	42 in Front x 36 in Rear x 18 in Top

Energy Cost	
Annual Energy Cost	\$ 1983
GHG Emissions	7.426 tonnes/yr
Currency	Dollar \$
PUE	2
Emission Factor	1238.39 lb/MWh
Local Utility Rate	0.15 \$/Kw-hr

## I/O Configuration

Mezz Card	4 x 10GbE BaseT
Additional I/O - Slot 1	4 x 25GbE Opt

## Software Suites

Unity AFA Base Software

- Unisphere Suite
- File, Block, VVols
- Snapshots
- Encryption
- Anti-virus
- Native Replication

## Additional Information

System Drive Tier	Extreme Performance
System Drives Used For Data	Yes
Raw Percentage of Flash	100 %
Operating System Version	Unity 5.2

Date Created	11 Dec 2023
Midrange Sizer Version	8.7.2
Reserved NVMe Slots	No

## Legal Disclaimer

Dell EMC provides Midrange Sizer as a tool to help estimate, size and analyze storage capacity and IOPS requirements for Unity, SC Series and PowerVault array. Midrange Sizer is provided solely for estimating storage sizing. Results are based on ordering requirements and best practices of product capabilities and limitations. Midrange Sizer uses a set of sizing assumptions along with provided inputs which may cause results to vary greatly due to many specific factors such as the environment setup/infrastructure, use-case and workload.

Midrange Sizer's output is not a guarantee that a storage array will meet all actual data storage sizing requirements or any expected savings.

Please carefully read all of the terms of this disclaimer. By viewing and utilizing Midrange Sizer, you acknowledge that you have read, understand and agree to this disclaimer.

\* TB/GB label represents capacity in base-2 i.e. 1TB = 1024\*1024\*1024\*1024 bytes

\* True effective capacity and usable capacity are reported which is calculated after all spare space is accounted for.

Sizer Unity XT Principal (300TBe-0.9ms)

System Information

System Model

Unity XT 480F

DPE/DAE Preference

Efficient Mix

System Drives

Part of Pool

FCache disk type

SSD 400G

FCache Count

0

Lock FCache

Pool Information

Pool Name

Pool-1

Pool Capacity (TB)

154.46

Use FAST Cache

System Drives Tier

FLASH

☒ Data Reduction

☒ Advanced Deduplication

Data Reduction

2

:

1

Effective Capacity (TB)

308.92

Tier	Drive Type	RAID Type	Count	RAID Width
FLASH	7.68TB SAS FLASH 4	RAID 5	26	12+1
SAS	600GB 10K SAS	RAID 5	0	-
NL-SAS	4TB NL-SAS	RAID 5	0	-

Tier Cap (GB)	%
158169.23	100.00
0.00	0.00
0.00	0.00

Saturation%	Host IOPS	Drive IOPS
44.1	90000	139203.8
0	0	0
0	0	0

Load Information

Load Name

Load-1

Storage Type

Block

Object Count

20

Threads/Object

32

Load Capacity (GB)

284701

Used%

90

Tier Policy

Auto

Application Workload	Read Size (KB)	Random Read%	Sequential Read%	Read Cache Hit%
OLTP(CX)	8	70	0	25

Skew%	Host IOPS	Write Size (KB)	Random Write%	Sequential Write%	WCache Re-Hit%
90	90000	8	30	0	25

SP Saturation

100

Drive Saturation

100

RT Max

20

Find Best Fit For IOPS

Reset

Misaligned

Sole Load

Compute

Solve ROT

Solve Max

Print Curve

Add Pool

Pool List

No pools added

Additional Drives

Load List

No loads added

Calculation Results

Drive Saturation%

44.1

System Saturation%

66.9

Raw Drive Load (IOPS)

139203.8

Avg. Resp. Time(ms)

0.9

Host B/W (MB/s)

703.1

Implied Threads

77.7

FCache Sat%

0

FCache Effective (GB)

0

FCache Subscribed%

0

FC FE IOPS

0

Buffer Cache Subscribed%

100

Meta IOPS Overhead%

16.2

Meta IOPS

10953.8

System Metrics

FAST Cache

FC Drive Saturation%

FC Capacity Subscribed%

Buffer Cache Subscribed%

Meta IOPS Overhead%

Meta IOPS

Rack Space (Units)

Total Drives

System Throughput

System Saturation%

HS Drives->SSD: SAS: NL-SAS:

Pool Members

	% sat,	IOPS,	GB
FLASH			
SAS			
NL-SAS			

FAST Cache

0 drives

Export XML

More Results

## UdeA

## Unity XT 480F

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## Cabinet 1



## General Information

Model Number	Unity XT 480F
Raw Capacity	104.77 TB
Unit Count	2 U
IOPS	90600
Block Size	8K

Usable Capacity	84.93 TB
Total Drive Count	15
Workload	67% Read - 33% Write
Effective Capacity	169.86 TB
Configuration Type	New Solution

## System Tier Information

Flash	Count	SAS	Count	NL-SAS	Count
7.68TB FLASH 4	15				
<b>Total</b>	<b>15</b>		<b>0</b>		<b>0</b>
<b>Usable Capacity</b>	<b>84.93 TB</b>		<b>0.00 TB</b>		<b>0.00 TB</b>

Usable Capacity





## Pool Configuration

### Pool1

Tier	Form Factor	Drive Type	RAID Type	Spare Policy	Drive Count	Usable Capacity	Effective Capacity	IOPS
FLASH	2.5	7.68TB FLASH 4	RAID 5 (12+1)	1/32	15	84.93 TB	169.86 TB	90452
<b>Total</b>					<b>15</b>	<b>84.93 TB</b>	<b>169.86 TB</b>	<b>90452</b>
<b>Data Reduction</b>		<b>2:1</b>						

## Power Information

Power Summary	
Power Consumption	0.657 kVA
Region	United States
Input Voltage	V~208
Phases	Single Phase
Site Circuit Breaker	30
Peak Inrush Current	25 A

Environmental	
Operating Temp	Below 26C
Heat Dissipation	2067 Btu/Hr
Sound Pressure	57 db
Sound Power	7.4 bels
Weight	486 lbs
Dimensions	24 in Width x 41.33 in Depth x 75 in Height
Clearance	42 in Front x 36 in Rear x 18 in Top

Energy Cost	
Annual Energy Cost	\$ 1592
GHG Emissions	5.962 tonnes/yr
Currency	Dollar \$
PUE	2
Emission Factor	1238.39 lb/MWh
Local Utility Rate	0.15 \$/Kw-hr

## I/O Configuration

Mezz Card	4 x 10GbE Opt
Additional I/O - Slot 1	4 x 25GbE Opt

## Software Suites

Unity AFA Base Software	<ul style="list-style-type: none"> <li>• Unisphere Suite</li> <li>• File, Block, VVols</li> <li>• Snapshots</li> <li>• Encryption</li> <li>• Anti-virus</li> <li>• Native Replication</li> </ul>
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## Additional Information

System Drive Tier	Extreme Performance	Date Created	23 Jan 2024
System Drives Used For Data	Yes	Midrange Sizer Version	8.7.2
Raw Percentage of Flash	100 %	Reserved NVMe Slots	No
Operating System Version	Unity 5.2		

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\* True effective capacity and usable capacity are reported which is calculated after all spare space is accounted for.

Sizer Unity XT Alterno (150TBe-1ms)

System Information

System Model

Unity XT 480F

DPE/DAE Preference

Efficient Mix

System Drives

Part of Pool

FCache disk type

SSD 400G

FCache Count

0

Lock FCache

Pool Information

Pool Name

Pool-1

Pool Capacity (TB)

84.93

Use FAST Cache

System Drives Tier

FLASH

☒ Data Reduction

☒ Advanced Deduplication

Data Reduction

2

:

1

Effective Capacity (TB)

169.87

Tier	Drive Type	RAID Type	Count	RAID Width
FLASH	7.68TB SAS FLASH 4	RAID 5	15	12+1
SAS	600GB 10K SAS	RAID 5	0	-
NL-SAS	4TB NL-SAS	RAID 5	0	-

Tier Cap (GB)	%
86972.31	100.00
0.00	0.00
0.00	0.00

Saturation%	Host IOPS	Drive IOPS
73.9	90000	134480.5
0	0	0
0	0	0

Load Information

Load Name

Load-1

Storage Type

Block

Object Count

20

Threads/Object

32

Load Capacity (GB)

156552

Used%

90

Tier Policy

Auto

Application Workload	Read Size (KB)	Random Read%	Sequential Read%	Read Cache Hit%
OLTP(CX)	8	70	0	25

Skew%	Host IOPS	Write Size (KB)	Random Write%	Sequential Write%	WCache Re-Hit%
90	90000	8	30	0	25

SP Saturation

100

Drive Saturation

100

RT Max

20

Find Best Fit For IOPS

Reset

Misaligned

Sole Load

Compute

Solve ROT

Solve Max

Print Curve

Add Pool

Pool List

No pools added

Additional Drives

Load List

No loads added

Calculation Results

Drive Saturation%

73.9

System Saturation%

64.6

Raw Drive Load (IOPS)

134480.5

Avg. Resp. Time(ms)

1.0

Host B/W (MB/s)

703.1

Implied Threads

91.1

FCache Sat%

0

FCache Effective (GB)

0

FCache Subscribed%

0

FC FE IOPS

0

Buffer Cache Subscribed%

100

Meta IOPS Overhead%

9.2

Meta IOPS

6230.5

System Metrics

FAST Cache

FC Drive Saturation%

FC Capacity Subscribed%

Buffer Cache Subscribed%

Meta IOPS Overhead%

Meta IOPS

Rack Space (Units)

Total Drives

System Throughput

System Saturation%

HS Drives->SSD:

SAS:

NL-SAS:

Pool Members

FLASH	% sat,	IOPS,	GB
SAS	% sat,	IOPS,	GB
NL-SAS	% sat,	IOPS,	GB

FAST Cache

0 drives

Export XML

More Results