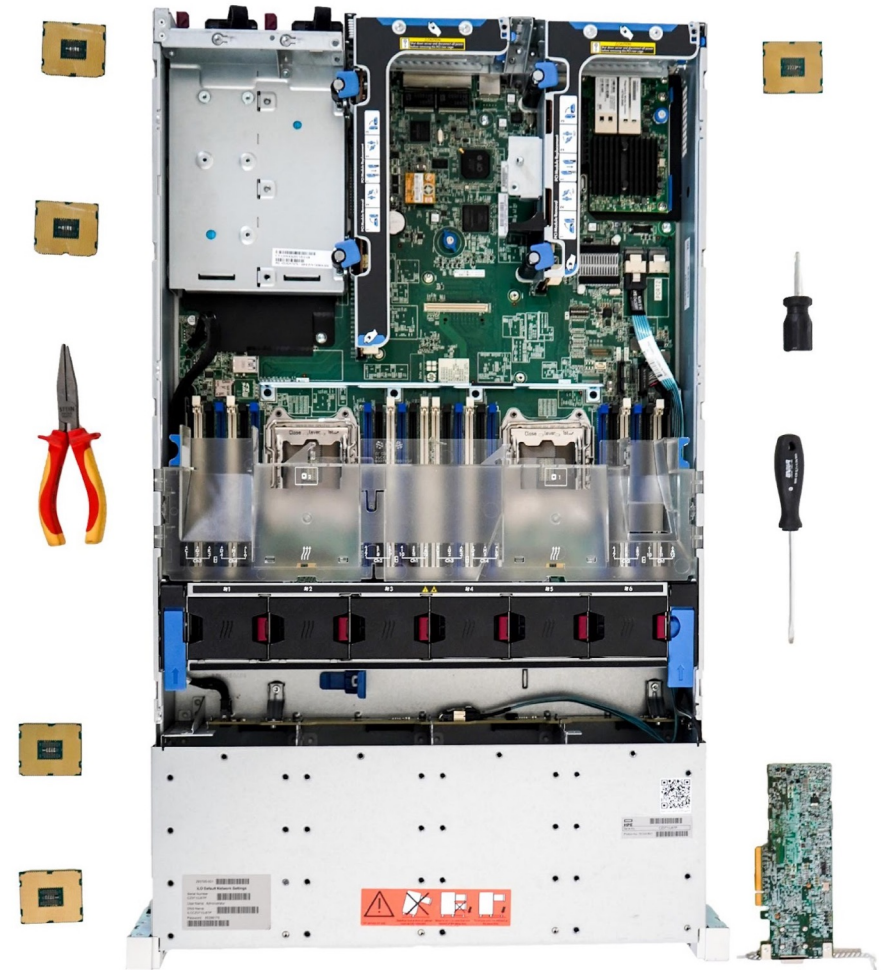


# OBTÉN EL MÁXIMO RENDIMIENTO CON LA REUTILIZACIÓN DE TUS ACTIVOS EOL

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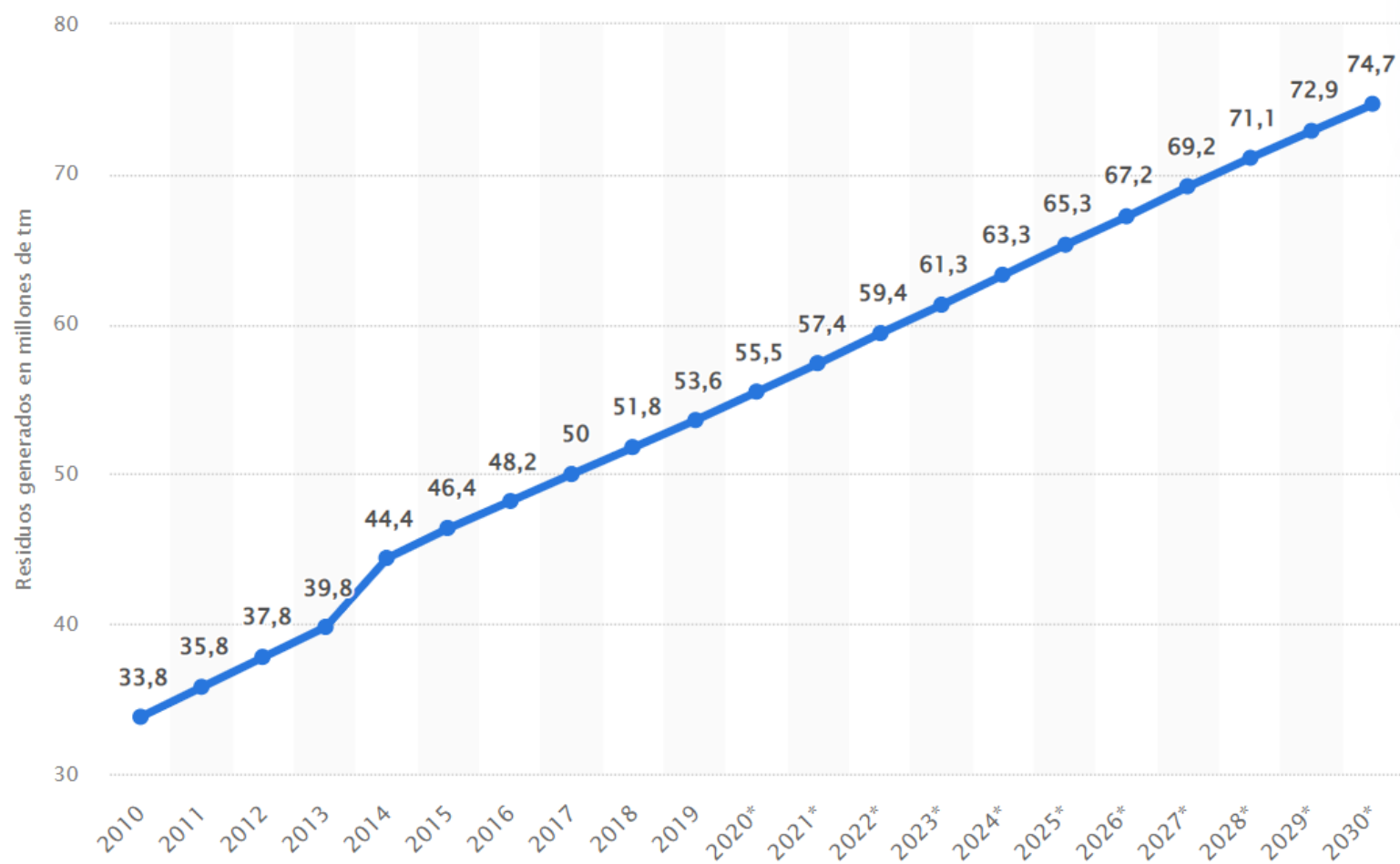


# INTRODUCCIÓN

Concienciación medioambiental  
reutilización equipos



## Evolución de la producción mundial de basura tecnológica 2010-2030 (en millones de toneladas).



### Fuente

<https://es.statista.com/estadisticas/807027/evolucion-de-la-produccion-mundial-de-basura-tecnologica/>

# EQUIPOS DE RED

## INVENTARIO

- Switch / Router / Firewall / AP / Etc
- Componentes
- Software y licenciamiento

## CHEQUEO SALUD

- Comandos CLI / GUI / SNMP



# EJEMPLO: JUNIPER MX204



```
root> show chassis hardware
```

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			FG530	JNP204 [MX204]
Routing Engine 0		BUILTIN	BUILTIN	RE-S-1600x8
CB 0	REV 43	750-069579	BCCW3586	JNP204 [MX204]
FPC 0		BUILTIN	BUILTIN	MPC
CPU	REV 02	750-066879	CAGC8782	MPC
PIC 0				
PIC 1				
PEM 0	REV 04	740-070749	1F189450209	JPSU-650W-AC-AO
PEM 1	REV 04	740-070749	1GG59510096	JPSU-650W-AC-AO
Fan Tray 0				Fan Tray, Front to Back Airflow - AFO
Fan Tray 1				Fan Tray, Front to Back Airflow - AFO
Fan Tray 2				Fan Tray, Front to Back Airflow - AFO

```
root> show system license
```

```
License usage:
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
scale-subscriber	0	10	0	permanent
scale-l2tp	0	1000	0	permanent

# EJEMPLO: JUNIPER MX204



```
root> show version
Model: mx204
Junos: 20.4R2.7
JUNOS OS Kernel 64-bit [20210220.a5d6a89_builder_stable_11]
JUNOS OS libs [20210220.a5d6a89_builder_stable_11]
JUNOS OS runtime [20210220.a5d6a89_builder_stable_11]
JUNOS OS time zone information [20210218.a5d6a89_builder_stable_11]
JUNOS network stack and utilities [20210414.022657_builder_junos_204_r2]
JUNOS libs [20210414.022657_builder_junos_204_r2]
JUNOS OS libs compat32 [20210220.a5d6a89_builder_stable_11]
JUNOS OS 32-bit compatibility [20210220.a5d6a89_builder_stable_11]
JUNOS libs compat32 [20210414.022657_builder_junos_204_r2]
JUNOS runtime [20210414.022657_builder_junos_204_r2]
Junos vmguest package [20210414.022657_builder_junos_204_r2]
JUNOS sflow mx [20210414.022657_builder_junos_204_r2]
JUNOS py extensions2 [20210414.022657_builder_junos_204_r2]
JUNOS py extensions [20210414.022657_builder_junos_204_r2]
JUNOS py base2 [20210414.022657_builder_junos_204_r2]
JUNOS py base [20210414.022657_builder_junos_204_r2]
JUNOS OS vmguest [20210218.a5d6a89_builder_stable_11]
JUNOS OS crypto [20210218.a5d6a89_builder_stable_11]
JUNOS OS boot-ve files [20210218.a5d6a89_builder_stable_11]
JUNOS na telemetry [20.4R2.7]
JUNOS Security Intelligence [20210414.022657_builder_junos_204_r2]
```

# EJEMPLO: JUNIPER MX204



```
root> show system firmware
Part                Type                Tag Current          Available          Status
                   Type                version           version
CB 0                CB FPGA             0  0.239.0           0.9.0             OK
Routing Engine 0 RE BIOS             7  0.15.1            0.15.01          OK
Routing Engine 0 RE FPGA             2  304.0.0           304.0.00         OK
Routing Engine 0 RE SSD1             3  12050             12028            OK
Routing Engine 0 RE SSD2             4  12050             12028            OK
FPC 0               \x16                3272 2748.3220.57468 0                 INVALID STATE
PEM 0               PSU AC              1  0.6.0             0                OK
PEM 1               PSU AC              1  0.8.0             0                OK
```

Auto Image Upgrade: No DHCP Client in bound state, reset all DHCP clients

Auto Image Upgrade: DHCP INET6 Client State Reset : fxp0.0

Auto Image Upgrade: DHCP INET6 Client State Reset : fxp0.0

```
show system software
jail-runtime-x86-32-20210220.a5d6a89_builder_stable_11 -- jail runtime
jdocs-x86-32-20210414.022657_builder_junos_204_r2 -- jdocs
jfirmware-x86-32-20.4R2.7 -- jfirmware
jinsight-x86-32-20.4R2.7 -- jinsight
jmrt-base-x86-64-20210414.022657_builder_junos_204_r2 -- jmrt base
jpfe-X-x86-32-20210414.022657_builder_junos_204_r2 -- jpfe X
```



# EJEMPLO: JUNIPER MX204



```
root> show chassis environment
```

Class	Item	Status	Measurement
Temp	CB 0 Top Right Inlet Sensor	OK	32 degrees C / 89 degrees F
	CB 0 Top Left Inlet Sensor	OK	29 degrees C / 84 degrees F
	CB 0 Top Right Exhaust Sensor	OK	39 degrees C / 102 degrees F
	CB 0 Top Left Exhaust Sensor	OK	51 degrees C / 123 degrees F
	CB 0 CPU Core-0 Temp	OK	43 degrees C / 109 degrees F
	CB 0 CPU Core-1 Temp	OK	41 degrees C / 105 degrees F
	CB 0 CPU Core-2 Temp	OK	43 degrees C / 109 degrees F
	CB 0 CPU Core-3 Temp	OK	41 degrees C / 105 degrees F
	CB 0 CPU Core-4 Temp	OK	42 degrees C / 107 degrees F
	CB 0 CPU Core-5 Temp	OK	42 degrees C / 107 degrees F
	CB 0 CPU Core-6 Temp	OK	43 degrees C / 109 degrees F
	CB 0 CPU Core-7 Temp	OK	43 degrees C / 109 degrees F
	FPC 0 EA0_HMC0 Logic die	OK	66 degrees C / 150 degrees F
	FPC 0 EA0_HMC0 DRAM botm	OK	63 degrees C / 145 degrees F
	FPC 0 EA0_HMC1 Logic die	OK	73 degrees C / 163 degrees F
	FPC 0 EA0_HMC1 DRAM botm	OK	70 degrees C / 158 degrees F
	FPC 0 EA0 Chip	OK	76 degrees C / 168 degrees F
	FPC 0 EA0-XR0 Chip	OK	52 degrees C / 125 degrees F
	FPC 0 EA0-XR1 Chip	OK	57 degrees C / 134 degrees F
Power	PEM 0	OK	34 degrees C / 93 degrees F
	PEM 1	OK	29 degrees C / 84 degrees F
Fans	Fan Tray 0 Fan 0	OK	Spinning at normal speed
	Fan Tray 0 Fan 1	OK	Spinning at normal speed
	Fan Tray 1 Fan 0	OK	Spinning at normal speed
	Fan Tray 1 Fan 1	OK	Spinning at normal speed
	Fan Tray 2 Fan 0	OK	Spinning at normal speed
	Fan Tray 2 Fan 1	OK	Spinning at normal speed

```
root> show chassis alarms
```

```
2 alarms currently active
Alarm time           Class  Description
2022-09-22 11:56:26 UTC Major  Host 0 fxp0 : Ethernet Link Down
2022-09-22 11:55:26 UTC Major  Management Ethernet Links Down
```

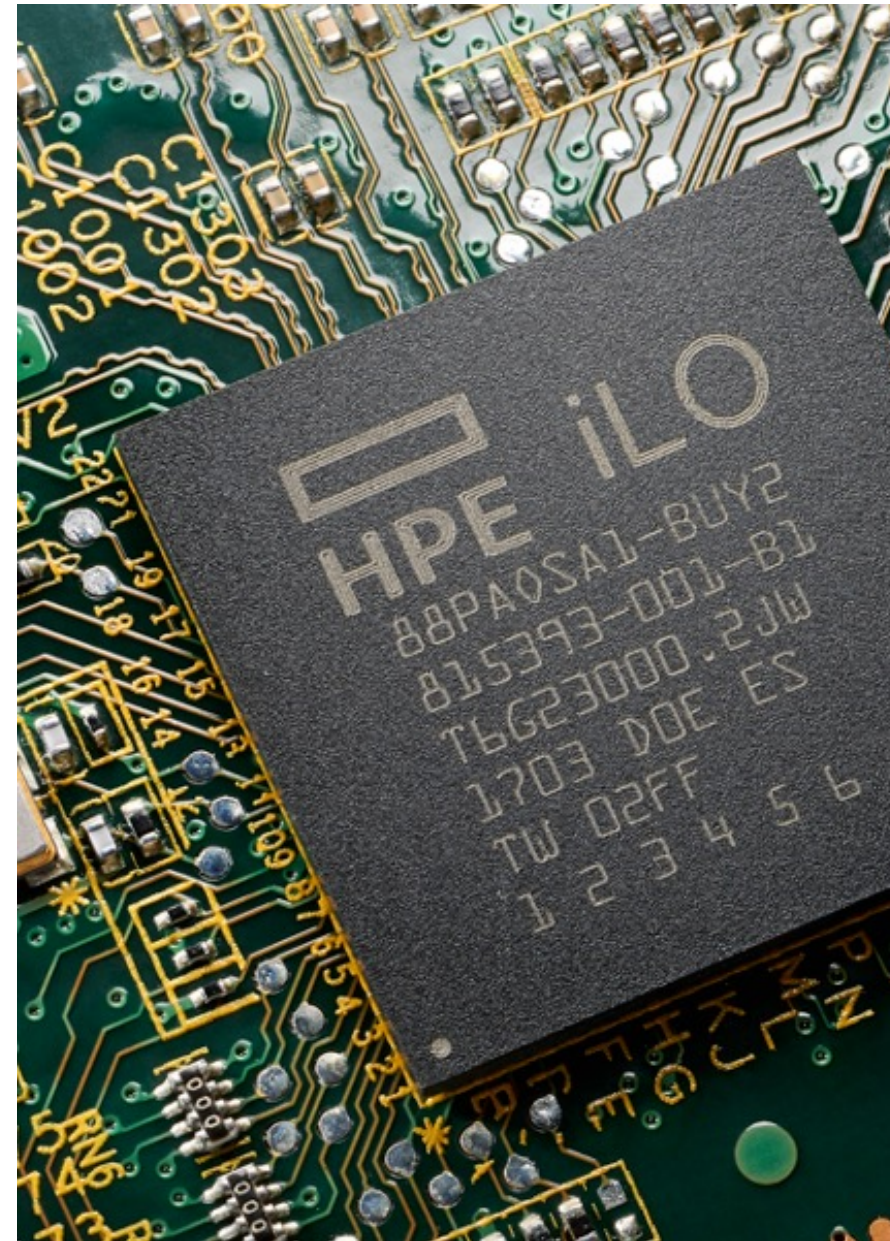
# SERVIDORES

## INVENTARIO

- Servidores formato rack / torre / Blade / multinodo
- Componentes
- Software y licenciamiento

## CHEQUEO SALUD

- Herramientas de administración remota
- Comprobación salud discos. Test SMART



# EJEMPLO: iLO HPE



**Hewlett Packard Enterprise** **iLO 4** ProLiant DL360p Gen8

Expand All **iLO Overview**

- Information
  - Overview**
  - System Information
  - iLO Event Log
  - Integrated Management Log
  - Active Health System Log
  - Diagnostics
  - Location Discovery Services
  - Insight Agent
  - > iLO Federation
  - > Remote Console
  - > Virtual Media
  - > Power Management
  - > Network
  - > Remote Support
- Administration
  - Firmware

### Information

**Server Name**

Product Name	ProLiant DL360p Gen8
UUID	34333637-3038-5A43-3335-3339454C5232
Server Serial Number	
Product ID	763480-B21
System ROM	P71 05/24/2019
System ROM Date	05/24/2019
Backup System ROM	P71 07/01/2015
Integrated Remote Console	<a href="#">HTML5</a> <a href="#">.NET</a> <a href="#">Java Web Start</a>
License Type	iLO Standard
<a href="#">iLO Firmware Version</a>	2.80 Jan 25 2022
IPv4 Address	10.90.1.212
<a href="#">Link-Local IPv6 Address</a>	FE80::3EA8:2AFF:FE11:DA98
iLO Hostname	ILOCZ3539ELR2.

### Active Sessions

User	IP Address
Local User: Administrator	10.71.0.222

### Status

System Health	OK
iLO Health	OK
Server Power	ON
UID Indicator	UID OFF
TPM Status	Present: Disabled
Module Type	TPM 1.2
SD-Card Status	Not Present
iLO Date/Time	Thu Jun 9 01:37:20 2016

### Connection to HPE

Not registered

# EJEMPLO: iLO HPE



**Hewlett Packard Enterprise** **iLO 4** ProLiant DL360p Gen8

Expand All **System Information - Health Summary** Summary Fans Temperatures Power Processors Memory Network Device Inventory Storage Firmware Software

- Information
  - Overview
  - System Information**
  - iLO Event Log
  - Integrated Management Log
  - Active Health System Log
  - Diagnostics
  - Location Discovery Services
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  - > iLO Federation
  - > Remote Console
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  - > Network
  - > Remote Support
- Administration
  - Firmware

### Subsystems and Devices

Subsystems and Devices	Status
Agentless Management Service	ⓘ Not available
BIOS/Hardware Health	✔ OK
Fan Redundancy	✔ Redundant
Fans	✔ OK
Memory	✔ OK
Network	✔ OK
Power Status	✔ Redundant
Power Supplies	✔ OK
Processors	✔ OK
Storage	✔ OK
Temperatures	✔ OK

# EJEMPLO: iLO HPE



**Hewlett Packard Enterprise** **iLO 4** ProLiant DL380p Gen8 Local User  
iLO Hostname:

Expand All **System Information - Fan Information** Summary Fans Temperatures Power Processors Memory Network Device Inventory Storage Firmware Software

- Information
  - Overview
  - System Information**
  - iLO Event Log
  - Integrated Management Log
  - Active Health System Log
  - Diagnostics
  - Location Discovery Services
  - Insight Agent
- iLO Federation
- Remote Console
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- Network
- Remote Support
- Administration
  - Firmware

### Fans

Fan	Location	Status	Speed
Fan Block 1	System	OK	29%
Fan Block 2	System	OK	29%
Fan Block 3	System	OK	29%
Fan Block 4	System	OK	29%
Fan Block 5	System	OK	29%
Fan Block 6	System	OK	29%
Fan Block 7	System	OK	29%
Fan Block 8	System	OK	29%

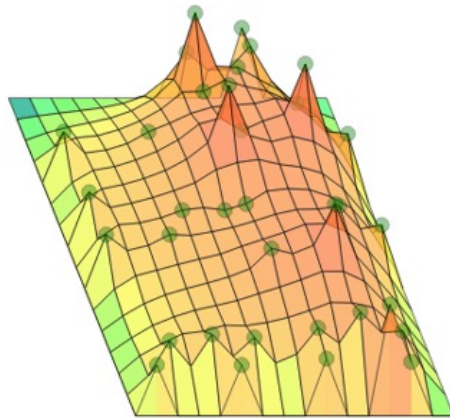


# EJEMPLO: iLO HPE



## Temperature Graph

3D  
 Front View  Back View



Front of server

## Sensor Data ( show missing sensors )

Show values in Fahrenheit

Sensor	Location	X	Y	Status	Reading	Thresholds
01-Inlet Ambient	Ambient	13	0	OK	16C	Caution: 42C; Critical: 46C
02-CPU 1	CPU	11	4	OK	40C	Caution: 70C; Critical: N/A
04-P1 DIMM 1-6	Memory	8	4	OK	26C	Caution: 87C; Critical: N/A
08-P1 Mem Zone	Memory	8	7	OK	20C	Caution: 70C; Critical: 75C
09-P1 Mem Zone	Memory	14	6	OK	20C	Caution: 70C; Critical: 75C
10-P2 Mem Zone	Memory	1	6	OK	17C	Caution: 70C; Critical: 75C
11-P2 Mem Zone	Memory	7	7	OK	18C	Caution: 70C; Critical: 75C
12-HD Max	System	12	0	OK	35C	Caution: 60C; Critical: N/A
13-Chipset 1	System	8	9	OK	44C	Caution: 105C; Critical: N/A
14-Chipset1 Zone	System	9	10	OK	23C	Caution: 70C; Critical: 75C
15-P/S 1 Inlet	Power Supply	1	11	OK	16C	Caution: N/A; Critical: N/A
16-P/S 1 Zone	Power Supply	1	8	OK	17C	Caution: 70C; Critical: 75C
17-P/S 2 Inlet	Power Supply	5	11	OK	16C	Caution: N/A; Critical: N/A
18-P/S 2 Zone	Power Supply	5	7	OK	18C	Caution: 65C; Critical: 70C
20-PCI #2	I/O Board	8	13	OK	40C	Caution: 100C; Critical: N/A
21-VR P1	System	11	1	OK	26C	Caution: 115C; Critical: 120C
22-VR P2	System	4	1	OK	19C	Caution: 115C; Critical: 120C
23-VR P1 Mem	System	9	1	OK	21C	Caution: 115C; Critical: 120C
24-VR P1 Mem	System	13	1	OK	20C	Caution: 115C; Critical: 120C
25-VR P2 Mem	System	2	1	OK	17C	Caution: 115C; Critical: 120C
26-VR P2 Mem	System	6	1	OK	18C	Caution: 115C; Critical: 120C
27-VR P1Mem Zone	System	9	0	OK	18C	Caution: 70C; Critical: 75C
28-VR P1Mem Zone	System	13	0	OK	17C	Caution: 70C; Critical: 75C
29-VR P2Mem Zone	System	1	0	OK	16C	Caution: 70C; Critical: 75C
30-VR P2Mem Zone	System	5	0	OK	16C	Caution: 70C; Critical: 75C
31-HD Controller	System	12	10	OK	44C	Caution: 105C; Critical: N/A
32-HD Cntrlr Zone	System	12	11	OK	25C	Caution: 65C; Critical: 70C
33-PCI 1 Zone	System	8	12	OK	22C	Caution: 70C; Critical: 75C
34-PCI 1 Zone	System	10	13	OK	23C	Caution: 66C; Critical: 71C
36-PCI 2 Zone	System	14	10	OK	22C	Caution: 65C; Critical: 70C
37-System Board	System	12	6	OK	26C	Caution: 70C; Critical: 75C
38-System Board	System	4	6	OK	17C	Caution: 70C; Critical: 75C
39-Sys Exhaust	System	8	14	OK	21C	Caution: 70C; Critical: 75C
40-Sys Exhaust	System	11	14	OK	23C	Caution: 70C; Critical: 75C
41-Sys Exhaust	System	11	15	OK	22C	Caution: 64C; Critical: 69C
42-SuperCAP Max	System	11	1	OK	14C	Caution: 65C; Critical: N/A

# EJEMPLO: iLO HPE



## System Information - Power Information

Summary Fans Temperatures **Power** Processors Memory Network Device Inventory Storage Firmware Software

### Power Supply Summary

Present Power Reading	67 Watts
Power Management Controller Firmware Version	3.3.0
Power Status	✔ Redundant
HPE Power Discovery Services Status	N/A
High Efficiency Mode	Balanced

### Power Supplies

Bay	Present	Status	PDS	Hotplug	Model	Spare
1	✔ OK	✔ Good, In Use	✔ Yes	✔ Yes	656362-B21	660184-001
2	✔ OK	✔ Good, In Use	✔ Yes	✔ Yes	656362-B21	660184-001

Capacity	Firmware
460 Watts	1.03
460 Watts	1.01

# EJEMPLO: iLO HPE



**Hewlett Packard Enterprise** **iLO 4** ProLiant DL380p Gen8

Expand All System Information - Processor Information

Summary Fans Temperatures Power Processors Memory Network Device Inventory Storage Firmware Software

**Processor 1**

Processor Name	Intel(R) Xeon(R) CPU E5-2680 v2 @ 2.80GHz
Processor Status	OK
Processor Speed	2800 MHz
Execution Technology	10/10 cores; 20 threads
Memory Technology	64-bit Capable
Internal L1 cache	320 KB
Internal L2 cache	2560 KB
Internal L3 cache	25600 KB

- Information
  - Overview
  - System Information**
  - iLO Event Log
  - Integrated Management Log
  - Active Health System Log
  - Diagnostics
  - Location Discovery Services
  - Insight Agent
- iLO Federation
- Remote Console
- Virtual Media
- Power Management
- Network
- Remote Support
- Administration



# EJEMPLO: iLO HPE



## System Information - Memory Information

Summary Fans Temperatures Power Processors **Memory** Network Device Inventory Storage Firmware Software

### Advanced Memory Protection (AMP)

#### AMP Status

AMP Mode Status  
Advanced ECC

Configured AMP Mode  
Advanced ECC

#### Supported AMP Modes

Advanced ECC  
Online Spare (Rank Sparing)

### Memory Summary

Location	Number of Sockets	Total Memory	Operating Frequency	Operating Voltage
Processor 1	12	128 GB	1333 MHz	1.5 V
Processor 2	12	N/A	N/A	N/A

### Memory Details ( show empty sockets )


Memory Location	Socket	Status	HPE Memory	Part Number	Type	Size	Maximum Frequency	Minimum Voltage	Ranks	Technology
Processor 1	1	✔ Good, In Use	HPE SmartMemory	712384-081	DIMM DDR3	32768 MB	1866 MHz	1.5 V	4	LRDIMM
Processor 1	2	✔ Good, In Use	HPE SmartMemory	712384-081	DIMM DDR3	32768 MB	1866 MHz	1.5 V	4	LRDIMM
Processor 1	3	✔ Good, In Use	HPE SmartMemory	712384-081	DIMM DDR3	32768 MB	1866 MHz	1.5 V	4	LRDIMM
Processor 1	4	✔ Good, In Use	HPE SmartMemory	712384-081	DIMM DDR3	32768 MB	1866 MHz	1.5 V	4	LRDIMM

# EJEMPLO: iLO HPE



## System Information - NIC Information

Summary Fans Temperatures Power Processors Memory Network Device Inventory Storage Firmware Software

 iLO did not detect the Agentless Management Service when this page was loaded. To view a full set of data on this page, ensure that AMS is installed and running. [Learn more.](#)

[Collapse All](#)


### Physical Network Adapters

#### ▼ Adapter 1 - iLO

Description Dedicated Network Port  
Location Embedded  
Status  OK

MAC Address	IPv4 Address	IPv6 Address	Port	Status
3c:a8:2a:	10.90.1.212	FE80::3EA8:2AFF:FE11:DA98	dedicated	 OK
3c:a8:2a:	Unknown	Unknown	shared	 Disabled

#### ▼ Adapter 2 - HP Ethernet 1Gb 4-port 331FLR Adapter

Location Embedded  
Firmware N/A  
Status  Unknown

#### Unknown Ports

MAC Address

28:80:23:

28:80:23:

28:80:23:

28:80:23:\_\_\_\_\_

# EJEMPLO: iLO HPE



## System Information - Device Inventory

Summary Fans Temperatures Power Processors Memory Network Device Inventory Storage Firmware Software

### Device Inventory

This table displays the server primary device information such as embedded storage and network controllers. For embedded and third party devices, not all the fields (such as Product Part Number or Serial Number) may be populated. The embedded devices are part of the system board Field Replaceable Unit (FRU).

Location	Product Name	Product Part Number	Assembly Number	Serial Number	Product Version	Firmware Version	Status
Embedded	HP Ethernet 1Gb 4-port 331FLR Adapter	629135-B22	789897-001	5CB4480G98	00	N/A	Unknown
Embedded	Smart Array P420i Controller	N/A	N/A	0014380361B2640	B	8.00	OK
PCI-E Slot 1	Empty	N/A	N/A	N/A	N/A	N/A	Not installed
PCI-E Slot 2	Smart HBA H240	750053-001	N/A	PDNNK0BRH4907Y	B	4.52	OK

# EJEMPLO: iLO HPE



## System Information - Storage Information

Summary Fans Temperatures Power Processors Memory Network Device Inventory **Storage** Firmware Software

### Storage Information

The **Logical view** shows configured logical drives and associated physical drives. It does not show physical drives which are not configured as part of an array, or spare drives.

The **Physical view** does not show configured logical drives.

[Collapse All](#)

#### - Controller on System Board

Logical View  Physical View

Controller Status  OK  
Serial Number 0014380361B2640  
Model Smart Array P420i Controller  
Firmware Version 8.00  
Controller Type HPE Smart Array

#### - Controller on Slot 2

Logical View  Physical View

Controller Status  OK  
Serial Number  
Model Smart HBA H240  
Firmware Version 4.52  
Controller Type HPE Smart Array  
Encryption Status Not Enabled  
Encryption ASIC Status  OK  
Encryption Critical Security Parameter NVRAM Status  OK

#### - Drive Enclosure Port 21 Box 1

Status  OK  
Drive Bays 4

#### - Physical Drive in Port 21 Box 1 Bay 2

Status  OK  
Serial Number Z1W2KQXT0000W4526SLC  
Model MB1000FCWDE  
Media Type HDD  
Capacity 1000 GB  
Location Port 21 Box 1 Bay 2  
Firmware Version HPD5  
Drive Configuration Unconfigured  
Encryption Status Not Encrypted

# EJEMPLO: iLO HPE



## System Information - Firmware Information

Summary Fans Temperatures Power Processors Memory Network Device Inventory Storage Firmware Software

### Firmware Version Info

Firmware Name	Firmware Version	Location
iLO	2.80 Jan 25 2022	System Board
Intelligent Platform Abstraction Data	2.43	System Board
Intelligent Provisioning	1.74.2	System Board
Power Management Controller Firmware	3.3	System Board
Power Management Controller Firmware Bootloader	2.7	System Board
Redundant System ROM	P71 07/01/2015	System Board
SAS Programmable Logic Device	Version 0x0C	System Board
Server Platform Services (SPS) Firmware	2.1.7.E7.4	System Board
Smart Array P420i Controller	8.00	Embedded
Smart HBA H240	4.52	Slot 2
System Programmable Logic Device	Version 0x2F	System Board
System ROM	P71 05/24/2019	System Board
System ROM Bootblock	03/05/2013	System Board

# EJEMPLO: INSIGHT DIAGNOSTICS HPE

Insight Diagnostics System  Hewlett Packard Enterprise

[Survey](#) [Diagnose](#) [Test](#) [Status](#) [Log](#) [Admin](#) [Help](#)

### Test Status [Reload](#) [About](#)

**Quick Test**

Testing Completed! All tests passed

100% [Retest](#)

Current Loop: 1 of 1    Test Time: 0:03:35    Test Complete: 25 of 25

Device - Test	Status	Test Progress	Time
PCI Bus 0 - Read Test	Passed	100%	40 ms
PCI Bus 1 - Read Test	Passed	100%	40 ms
PCI Bus 7 - Read Test	Passed	100%	30 ms
PCI Bus 127 - Read Test	Passed	100%	30 ms
PCI Bus 128 - Read Test	Passed	100%	40 ms
PCI Bus 135 - Read Test	Passed	100%	30 ms
PCI Bus 255 - Read Test	Passed	100%	40 ms
Serial Port 1 - Register Test	Passed	100%	< 1 ms
Processor Package 1 - Floating Point Operations Test	Passed	100%	13 ms
Processor Package 2 - Floating Point Operations Test	Passed	100%	8 ms
Processor Package 1 - 64-bit Operations Test	Passed	100%	6 ms
Processor Package 2 - 64-bit Operations Test	Passed	100%	5 ms
Processor Package 1 - Temperature Check Test	Passed	100%	13 ms
Processor Package 2 - Temperature Check Test	Passed	100%	8 ms
Hard Drive 1, Storage Controller in Slot 0 - Scattered Read Test	Passed	100%	00:00:23
Hard Drive 2, Storage Controller in Slot 0 - Scattered Read Test	Passed	100%	00:00:23
Hard Drive 1, Storage Controller in Slot 0 - S.M.A.R.T. Error Test	Passed	100%	4 ms
Hard Drive 2, Storage Controller in Slot 0 - S.M.A.R.T. Error Test	Passed	100%	4 ms
Serial Port 1 - Internal Loopback Test	Passed	100%	30 ms
Fan Slot 1 - Fan Status Test	Passed	100%	0:00:05
Total memory - Address Test	Passed	100%	0:00:22
Total memory - Read test	Passed	100%	0:00:36
Total memory - March test	Passed	100%	0:01:10
Total memory - Noise test	Passed	100%	0:00:30
Total memory - Walk test	Passed	100%	0:00:21

[Exit Diagnostics](#)



# COMPROBACIÓN SALUD DISCOS

## Test SMART (Self-Monitoring, Analysis, and Reporting Technology)

Algunos de los parámetros más importantes que se pueden analizar en un test SMART:

- Número de sectores reasignados (Reallocated Sector Count)
- Errores de lectura no corregibles (Uncorrectable Sector Count)
- Errores de lectura corregibles (Corrected Sector Count)
- Horas de encendido (Power-On Hours)
- Temperatura del disco (Temperature)
- Porcentaje de resistencia SSD (SSD Percentage Endurance)

# COMPROBACIÓN SALUD DISCOS

Porcentaje de resistencia SSD (SSD Percentage Endurance)



Fuente: <https://www.kingston.com/en/blog/pc-performance/difference-between-slc-mlc-tlc-3d-nand>





# SISTEMAS DE ALMACENAMIENTO

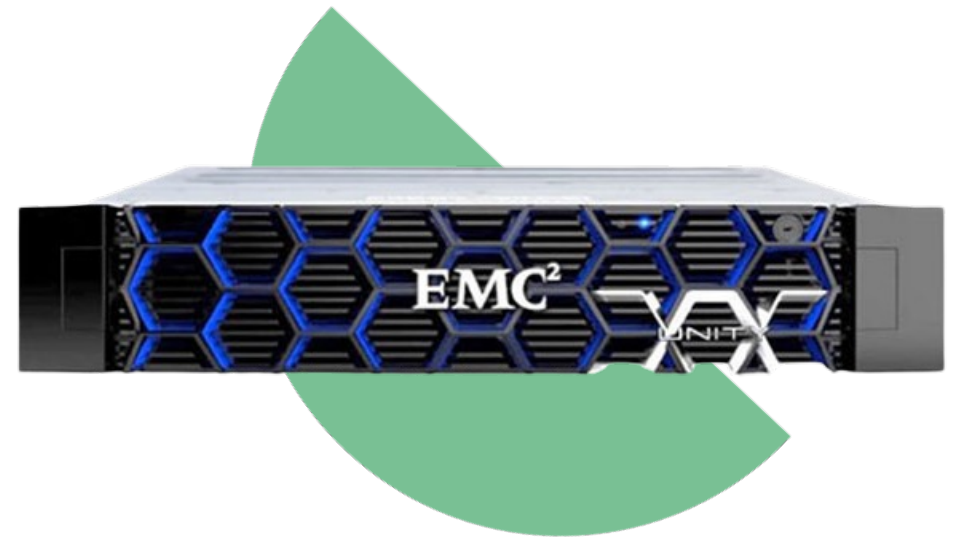
## INVENTARIO

- Sistemas Block vs File
- Bandejas (Shelves)
- Discos (SATA / SAS / SSD / NVMe)
- Licenciamiento

## CHEQUEO SALUD

- Comprobación salud componentes del sistema
- Comprobación salud discos. Test SMART

## BORRADO DE CONFIGURACIONES



# EJEMPLO: DELL UNITY 300



The screenshot shows the Dell Unisphere dashboard for a Unity 300 storage system. The interface includes a navigation sidebar on the left with categories like DASHBOARD, SYSTEM, STORAGE, ACCESS, and PROTECTION & MOBILITY. The main content area is divided into several sections:

- Summary:** Displays system status (green checkmark), enclosure name (Unity 300), power consumption (Average: 445 watts, Present: 442 watts), software version (5.0.7.0.5.008), and system time (10:54 AM UTC +01:00).
- SYSTEM HEALTH ISSUES:** Shows 0 issues with the message "There are no health issues in your storage system".
- FRONT END PORT:** Lists port configurations for Fibre Channel (0 per SP) and Ethernet (4 per SP). The Ethernet section shows 2 available ports, 1 idle, and 1 in use. A warning icon indicates "4 ports are not committed".

The screenshot shows the "Settings" page in Dell Unisphere, specifically the "Software and Licenses" section. The left sidebar lists various configuration categories, and the main area displays "License Management" information.

**License Management Table:**

License	Version	Issued Date	Expire Date
Antivirus Server Integration	1	1/4/2023	Permanent
CIFS/SMB Support	1	1/4/2023	Permanent
Data Reduction	1.0	1/4/2023	Permanent
EMC Proactive Assist	1	1/4/2023	Permanent
EMC Storage Analytics (ESA)	1	1/4/2023	Permanent
FAST Cache	1	1/4/2023	Permanent
FAST VP	1	1/4/2023	Permanent
Fibre Channel (FC)	1	1/4/2023	Permanent

Below the table, there is a "License Description" section with buttons for "Install License" and "Get License Online".

# EJEMPLO: DELL UNITY 300



The screenshot shows the Dell EMC Unisphere interface for enclosure DPE. The enclosure is shown in a front view. Below the image, the status is 'OK' with a green checkmark. The text reads: 'The component is operating normally. No action is required.' Below this, there are four green checkmarks indicating that SP A UNC Port 4, SP A UNC Port 5, SP B UNC Port 4, and SP B UNC Port 5 are all operational. A 'Commit IO Ports' button is visible. Technical specifications are listed below:

Product ID / SN:	100-542-924-09
Temperature:	80° F (27° C)
Power (Present):	296 watts
Part Number:	100-542-924-09
Avg Temperature:	80° F (27° C)
Power (Rolling Average):	296 watts

The screenshot shows the Dell EMC Unisphere interface for enclosure DAE 0 1. The enclosure is shown in a front view. Below the image, the status is 'OK' with a green checkmark. The text reads: 'The component is operating normally. No action is required.' Below this, technical specifications are listed:

Bus ID:	0	Enclosure Number:	1
Product ID / SN:		Part Number:	100-900-000-08
Temperature:	82° F (28° C)	Avg Temperature:	82° F (28° C)
Power (Present):	146 watts	Power (Rolling Average):	150 watts

# METODOS DE DESTRUCCIÓN DE INFORMACIÓN



- Sobreescritura de datos
- Borrado físico
- Criptografía
- Destrucción física

PROS Y CONTRAS



# BORRADO CERTIFICADO



## Estándares de borrado certificado más utilizados:

- NIST 800-88. Estándar emitido por el Instituto Nacional de Estándares y Tecnología (NIST) de los Estados Unidos.
- DoD 5220.22-M. Estándar del Departamento de Defensa de los Estados Unidos.
- En Europa tenemos la norma UNE-EN 15713:2010.

Los métodos de borrado certificado más efectivos suelen implicar múltiples pasadas de sobrescritura utilizando algoritmos de borrado seguro. Algunos de los métodos más efectivos:

- DoD 5220.22-M (ECE)
- Método de Peter Gutmann

# BORRADO CERTIFICADO



<b>NIST 800-88</b>	El cabezal de escritura pasa sobre cada sector tres veces. La primera vez con ceros (0x00), la segunda vez con 0xFF y la tercera vez con caracteres aleatorios.
<b>US DoD 5220.22-M</b>	El cabezal de escritura pasa sobre cada sector tres veces. La primera vez con ceros (0x00), la segunda vez con 0xFF y la tercera vez con caracteres aleatorios. Hay un pase final para verificar caracteres aleatorios mediante la lectura.
<b>US DoD 5220.22-M (ECE)</b>	El cabezal de escritura pasa sobre cada sector siete veces. La primera vez con ceros (0x00), la segunda vez con 0xFF y la tercera vez con caracteres aleatorios, la cuarta vez con 0x96, y luego las tres primeras pasadas repetidas nuevamente. Hay un pase final para verificar caracteres aleatorios mediante la lectura.
<b>German VSITR</b>	El cabezal de escritura pasa sobre cada sector siete veces, cada paso escribe los siguientes caracteres: 0x00, 0xFF, 0x00, 0xFF, 0x00, 0xFF, 0xAA.
<b>Russian GOST p50739-95</b>	El cabezal de escritura pasa sobre cada sector dos veces, el primer paso son ceros (0x00), el segundo paso son caracteres aleatorios.
<b>Canadian OPS-II</b>	El cabezal de escritura pasa sobre cada sector siete veces, cada paso escribe los siguientes caracteres: 0x00, 0xFF, 0x00, 0xFF, 0x00, 0xFF, Aleatorio.
<b>HMG IS5 Baseline</b>	El cabezal de escritura pasa sobre cada sector una vez, escribiendo ceros (0x00).
<b>HMG IS5 Enhanced</b>	El cabezal de escritura pasa sobre cada sector tres veces, escribiendo ceros (0x00), luego 0xFF y finalmente caracteres aleatorios.
<b>US Army AR380-19</b>	El cabezal de escritura pasa sobre cada sector tres veces, primero pasa escribiendo caracteres aleatorios, luego ceros (0x00) y finalmente 0xFF.
<b>US Air Force 5020</b>	El cabezal de escritura pasa sobre cada sector tres veces, primero pasa escribiendo 0xFF, luego ceros (0x00) y finalmente caracteres aleatorios.
<b>Navso P-5329-26 RL</b>	El cabezal de escritura pasa sobre cada sector tres veces, primero pasa escribiendo 0x01, luego 0x27FFFFFF y finalmente caracteres aleatorios.
<b>Navso P-5329-26 MFM</b>	El cabezal de escritura pasa sobre cada sector tres veces, primero pasa escribiendo 0x01, luego 0x7FFFFFFF y finalmente caracteres aleatorios.
<b>NCSC-TG-025</b>	El cabezal de escritura pasa sobre cada sector tres veces, primero pasa escribiendo ceros 0x00, luego 0xFF y finalmente caracteres aleatorios.
<b>Bruce Schneier</b>	El cabezal de escritura pasa sobre cada sector siete veces, cada pasada escribe los siguientes caracteres: 0xFF, ceros (0x00), luego cinco pasadas con caracteres aleatorios.
<b>Gutmann</b>	El cabezal de escritura pasa sobre cada sector 35 veces.

Fuente: <https://www.killdisk.com/manual/index.html#erase-methods.html>

# TIPS & TRICKS



nWipe – Software libre para el borrado certificado de datos

```
nwipe 0.29.006
Options                               Statistics
Entropy: Linux Kernel (urandom)       Runtime:
PRNG: Merseme Twister (mt19937ar-cok) Remaining:
Method: DoD Short                     Load Averages:
Verify: Last Pass                    Throughput:
Rounds: 1 (plus blanking pass)        Errors:

Disks and Partitions
+ [wipe] 1. /dev/sda  ATA ( 74 GB) WDC WD740GD-00FL/WD-WMAKE2378069
[wipe] 2. /dev/sdb  ATA (160 GB) WDC WD1600AAJS-2/WD-WMAU2FS49552
[wipe] 3. /dev/sdc  ATA ( 20 GB) IC35L020AVER07-0/SUPTULQ7742
[wipe] 4. /dev/sdd  USB ( 80 GB) WDC WD80 0JB-00CRA1/WD-WCABE4861394
[wipe] 5. /dev/sdf  USB ( 81 GB) Maxtor 6 Y080P0
[wipe] 6. /dev/sgd  USB (  3 GB) FUJITSU MPC3032AT/01222348

Wipe Method
Zero Fill                               syslinux.cfg: nuke="nwipe --method dodshor
RCMP TSSIT OPS-II                     Security Level: Medium (3 passes)
+ DoD Short
DoD 5220.22-M
Gutmann Wipe
PRNG Stream
Verify Blank
HMG ISS Enhanced

The American Department of Defense 5220.22-M short wipe.
This method is composed of passes 1, 2 & 7 from the standard wipe.

nwipe 0.29.006
Options                               Statistics
Entropy: Linux Kernel (urandom)       Runtime: 00:00:03
PRNG: Merseme Twister (mt19937ar-cok) Remaining:
Method: Zero Fill                     Load Averages: 1.76 3.16 3.78
Verify: Last Pass                    Throughput: 318 MB/s
Rounds: 1 (plus blanking pass)        Errors: 0

/dev/sda  ATA ( 74 GB) WDC WD740GD-00FL/WD-WMAKE2378069
[ 0.07%, round 1 of 1, pass 1 of 1] [ writing ] [ 78 MB/s] /
/dev/sdb  ATA (160 GB) WDC WD1600AAJS-2/WD-WMAU2FS49552
[ 0.05%, round 1 of 1, pass 1 of 1] [ writing ] [110 MB/s] -
/dev/sdc  ATA ( 20 GB) IC35L020AVER07-0/SUPTULQ7742
[ 0.14%, round 1 of 1, pass 1 of 1] [ writing ] [ 41 MB/s] -
/dev/sdd  USB ( 80 GB) WDC WD80 0JB-00CRA1/WD-WCABE4861394
[ 0.04%, round 1 of 1, pass 1 of 1] [ writing ] [ 44 MB/s] -
/dev/sdf  USB ( 81 GB) Maxtor 6 Y080P0
[ 0.02%, round 1 of 1, pass 1 of 1] [ writing ] [ 27 MB/s] -

More ↓

S=Start M=Method P=PRNG U=Verify R=Rounds B=Blanking Space=Select Ctrl-C=Quit
J=Down K=Up Space=Select Backspace=Cancel Ctrl-C=Quit
```

Fuente: <https://github.com/martijnvanbrummelen/nwipe>

# TIPS & TRICKS



## HDSentinel Linux Version – Software gratuito para el análisis de discos

```
root@localhost:~/Desktop/hdsentinel
File Edit View Search Terminal Help

HDD Device 3: /dev/sdd
HDD Model ID : M11 SD 004GB 140929s8 SD
HDD Serial No: 0000013B
HDD Revision : 1.05
HDD Size : 15791 MB
Interface : SCSI
Temperature : Unknown °C
Highest Temp.: Unknown °C
Health : 100 %
Performance : 100 %
Power on time:
Est. lifetime:
Total written: 72.80 GB
The status of the solid state disk is PERFECT. Problematic or weak sectors not found.
The health is determined by SSD specific S.M.A.R.T. attribute(s): Percentage of remaining spare blocks (worst interleave unit), Percentage of remaining blocks (all interleave units)
No actions needed.

Report file saved as: sdcards.html

[root@localhost hdsentinel]#
```

### Physical Disk Information - Disk: #0: HGST HKCF0600S5xeN015

#### Hard Disk Summary

Hard Disk Number : 0  
Hard Disk Device : /dev/sg52  
Interface : SCSI  
Hard Disk Model ID : HGST HKCF0600S5xeN015  
Firmware Revision : 3P04  
Hard Disk Serial Number : 0XJKZX3P  
Total Size : 572325 MB  
Current Temperature : 49 °C (120 °F)  
Maximum Temperature (during Entire Lifespan) : 49 °C (120 °F)  
Power On Time : 1624 days, 10 hours, 50 minutes (estimated)  
Estimated Remaining Lifetime : 138 days  
Lifetime Writes : 32.49 TB  
Health : 83 % (Good)  
Performance : 100 % (Excellent)

The hard disk reports the following problems:  
Total uncorrected read errors = 6  
Total uncorrected verify errors = 12  
It is recommended to continuously monitor the hard disk status.

#### Properties

Vendor Information : Copyright (C) HGST, a Western Digital Company.  
Status : OK  
Version : 6  
Device Type : Disk  
ASC : 0  
ASCC : 0  
Bytes Per Sector : 512  
Total Sectors : 1,172,123,567  
Unformatted Capacity : 600,127,266,304

#### S.M.A.R.T.

Attribute	Threshold	Value
Write errors corrected without substantial delay	0	0
Write errors corrected with possible delays	1	1
Total write errors	0	0
Total write errors corrected	1	1
Total write errors corrected by algorithm	8,817,628	8,817,628
Total bytes written	35,724,344,665,760	35,724,344,665,760
Total uncorrected write errors	0	0
Read errors corrected by ECC hardware method	0	0
Read errors corrected with possible delays	116	116
Total read errors	0	0
Total read errors corrected	116	116
Total read errors corrected by algorithm	10,098,057	10,098,057
Total bytes read	54,156,937,508,112	54,156,937,508,112
Total uncorrected read errors	6	6
Verify errors corrected without substantial delay	0	0
Verify errors corrected with possible delays	45	45
Total verify errors	0	0
Total verify errors corrected	45	45
Total verify errors corrected by algorithm	620,609	620,609
Total bytes verified	137,486,288,316,000	137,486,288,316,000
Total uncorrected verify errors	12	12
Non medium errors	0	0
Temperature	49	49
Reference temperature	85	85
Manufacture date (year/week)	2016/20	2016/20
Accounting date	2016/20	2016/20
Specified cycle count over device lifetime	50,000	50,000
Accumulated start-stop cycles	29	29
Specified load-unload count over device lifetime	600,000	600,000
Accumulated load-unload cycles	1,172	1,172

Fuente:  
[https://www.hdsentinel.com/hard\\_disk\\_sentinel\\_linux.php](https://www.hdsentinel.com/hard_disk_sentinel_linux.php)





# TIPS & TRICKS



## HDSentinel Linux Version – Ejemplo SSD Endurance

Physical Disk Information - Disk: #0: SanDisk DOPE1920S5xnNMRI

### Hard Disk Summary

Hard Disk Number	:	0
Hard Disk Device	:	/dev/sg80
Interface	:	SCSI
Hard Disk Model ID	:	SanDisk DOPE1920S5xnNMRI
Firmware Revision	:	3P0B
Hard Disk Serial Number	:	000567F33P0B3P0B6A40
Total Size	:	1831420 MB
Current Temperature	:	36 °C (97 °F)
Maximum Temperature (during Entire Lifespan)	:	36 °C (97 °F)
Power On Time	:	2066 days, 18 hours, 1 minutes (estimated)
Estimated Remaining Lifetime	:	92 days
Lifetime Writes	:	3.22 GB
Health	:	 ◆ 92 % (Excellent)
Performance	:	 ◆ 100 % (Excellent)

The status of the solid state disk is PERFECT. Problematic or weak sectors were not found.  
The health is determined by SSD specific S.M.A.R.T. attribute(s): Percentage used endurance indicator

**No actions needed.**

### Properties

Vendor Information	:	Copyright (c) 2013 SMART Storage Systems
Status	:	OK
Version	:	6
Device Type	:	Disk
ASC	:	0
ASCQ	:	0
Bytes Per Sector	:	512
Total Sectors	:	3,750,748,847
Unformatted Capacity	:	1,920,383,409,664

# TIPS & TRICKS



## HDSentinel Linux Version – Ejemplo SSD Endurance

S.M.A.R.T.

Attribute	Threshold	Value
Write errors corrected without substantial delay		0
Write errors corrected with possible delays		0
Total write errors		0
Total write errors corrected		0
Total write errors corrected by algorithm		0
Total bytes written		3,458,169,856
Total uncorrected write errors		0
Read errors corrected by ECC hardware method		0
Read errors corrected with possible delays		0
Total read errors		0
Total read errors corrected		0
Total read errors corrected by algorithm		0
Total bytes read		3,134,103,552
Total uncorrected read errors		0
Verify errors corrected without substantial delay		0
Verify errors corrected with possible delays		0
Total verify errors		0
Total verify errors corrected		0
Total verify errors corrected by algorithm		0
Total bytes verified		0
Total uncorrected verify errors		0
Non medium errors		395
Self test results log	#13: \$00000000000000000000000000000000	00000000
<a href="#">Percentage used endurance indicator</a>		8
Power on time		2,976,121
SC15_0001	\$00000000000000000000000000000000	0000000000
SC17_0000		0
SC17_0001		0

# TIPS & TRICKS



## SG3\_UTILS. Herramientas para el tratamiento de discos

### Borrado discos de almacenamiento

- `sg_dd if=/dev/zero of=$harddisk bs=$bs`
- `sg_dd if=/dev/urandom of=$harddisk bs=$bs`
- `sg_dd if=/dev/zero of=$harddisk bs=$bs | tr "000" "377"`

### Truco conversión blocksize 520 <-> 512

- `sg_format -v --format --size=512 $harddisk`
- `sg_format -v --format --size=520 $harddisk`

# MercadoIT

Rethink | Reimagine | Retech

Expertos en servicios y hardware EOL/EOS

## ¡Muchas gracias!

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