

# MEJORAS DE PERFORMANCE EN 6.4 SNMP

# Sobre MI:

```
root@appliance:~  
[root@appliance ~]# cat /dev/facu  
  
(* ) ZCS / ZCP / ZCT  
  
(* ) MIEMBRO DEL GST  
  
(* ) NETWORKER  
  
(* ) SYSADMIN  
  
(X) MAL PROGRAMADOR  
  
[root@appliance ~]#
```



# Solicitudes SNMP Get-bulk

Una solicitud SNMP *Get-Bulk* puede proporcionar mejor rendimiento y una recolección mas rápida de métricas o descubrimiento de dispositivos SNMP:

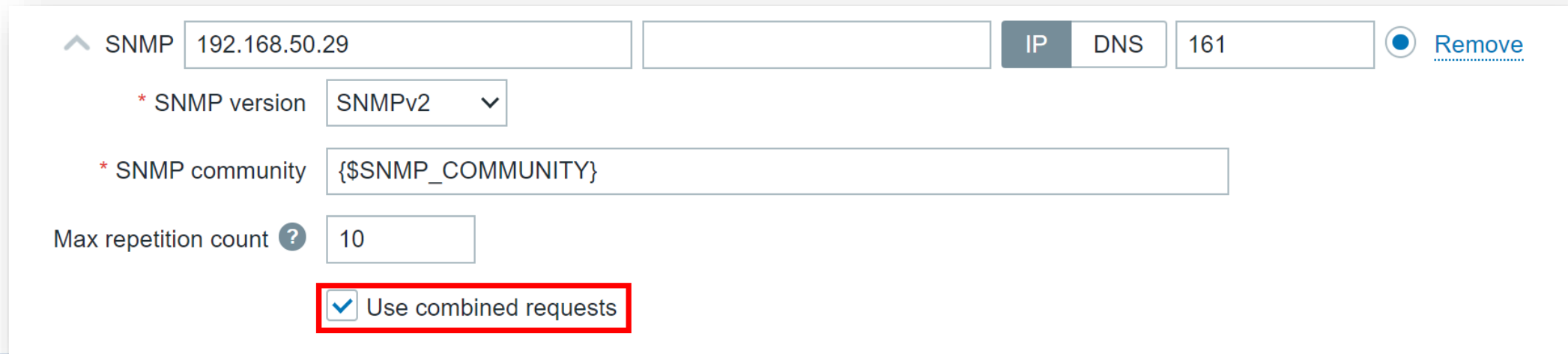
- ✓ Descubra decenas de miles de métricas de una sola vez
- ✓ Sin riesgo de afectar el rendimiento SNMP del dispositivo
- ✓ Las métricas descubiertas se pueden recopilar con intervalos muy rápidos con un impacto insignificante en el rendimiento



# Solicitudes combinadas

Las consultas masivas (*bulk*) presentes en versiones previas a Zabbix 6.4 fueron renombradas a *Combined requests*:

- ✓ Las solicitudes combinadas pueden causar problemas en dispositivos SNMP grandes o antiguos, ya que no utilizan solicitudes *GetNext*
- ✓ Por lo tanto, se ha implementado un método adecuado de recopilación de solicitudes masivas para resolver este problema.



SNMP 192.168.50.29 [ ] IP DNS 161 [ ] [Remove](#)

\* SNMP version

\* SNMP community

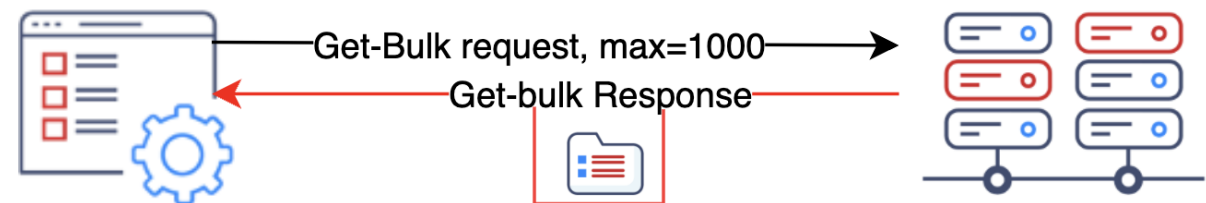
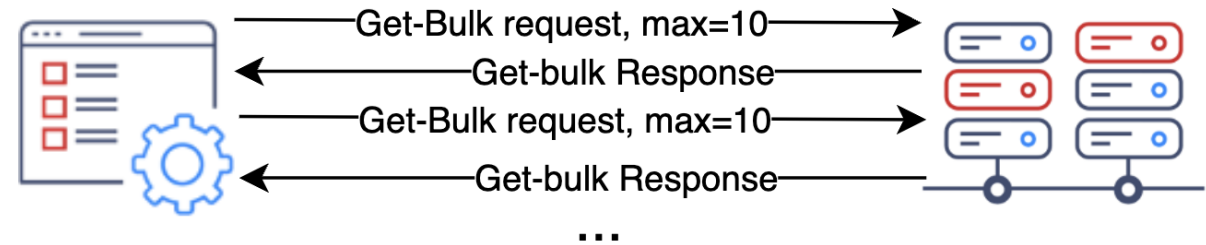
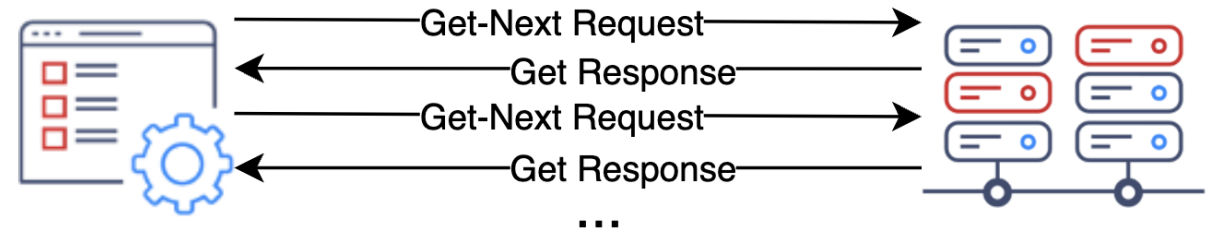
Max repetition count

Use combined requests

# Solicitudes SNMP Flow

Diferencias entre Get-Next y Get-Bulk:

- ✔ GETNEXT devuelve el valor del siguiente OID
- ✔ Puede ser usado para recorrer el árbol MIB
- ✔ Usado por snmpget
- ✔ Menos eficiente
  
- ✔ GETBULK devuelve una lista de objetos en una sola consulta.
- ✔ Grandes cantidades de información
- ✔ Mas eficiente



# Zabbix SNMP Discovery

Discovery list:

Discovery rules

All hosts / cisco 3560 Disabled SNMP Items 533 Triggers 360 Graphs 59 Discovery rules 8 Web scenarios

<input type="checkbox"/>	Host	Name ▲	Items	Triggers	Graphs
<input type="checkbox"/>	cisco 3560	<a href="#">Cisco Catalyst 3750V2-24FS by SNMP: CPU discovery</a>	Item prototypes 1	Trigger prototypes 1	Graph prototypes 1
<input type="checkbox"/>	cisco 3560	<a href="#">Cisco Catalyst 3750V2-24FS by SNMP: Entity Serial Numbers discovery</a>	Item prototypes 1	Trigger prototypes 1	Graph prototypes
<input type="checkbox"/>	cisco 3560	<a href="#">Cisco Catalyst 3750V2-24FS by SNMP: EtherLike discovery</a>	Item prototypes 1	Trigger prototypes 1	Graph prototypes
<input type="checkbox"/>	cisco 3560	<a href="#">Cisco Catalyst 3750V2-24FS by SNMP: FAN discovery</a>	Item prototypes 1	Trigger prototypes 2	Graph prototypes
<input type="checkbox"/>	cisco 3560	<a href="#">Cisco Catalyst 3750V2-24FS by SNMP: Memory discovery</a>	Item prototypes 3	Trigger prototypes 1	Graph prototypes 1
<input type="checkbox"/>	cisco 3560	<a href="#">Cisco Catalyst 3750V2-24FS by SNMP: Network interfaces discovery</a>	Item prototypes 9	Trigger prototypes 6	Graph prototypes 1
<input type="checkbox"/>	cisco 3560	<a href="#">Cisco Catalyst 3750V2-24FS by SNMP: PSU discovery</a>	Item prototypes 1	Trigger prototypes 2	Graph prototypes
<input type="checkbox"/>	cisco 3560	<a href="#">Cisco Catalyst 3750V2-24FS by SNMP: Temperature discovery</a>	Item prototypes 2	Trigger prototypes 5	Graph prototypes

1

# Zabbix SNMP Discovery

Key Discovery[OID]

2

Discovery rule **Preprocessing** LLD macros Filters 12 Overrides

Parent discovery rules **Cisco Catalyst 3750V2-24FS by SNMP**

\* Name

Type

\* Key

\* Host interface

\* SNMP OID

\* Update interval

Custom intervals

Type	Interval	Period	Action
<input type="text" value="Flexible"/> <input type="text" value="Scheduling"/>	<input type="text" value="50s"/>	<input type="text" value="1-7,00:00-24:00"/>	<a href="#">Remove</a>

[Add](#)

\* Keep lost resources period

Description

Enabled

# Solicitudes SNMP Get

Get-Request:

3

All hosts / cisco 3560 Disabled SNMP Items 533 Triggers 360 Graphs 59 Discovery rules 8 Web scenarios

<input type="checkbox"/>	Name ▲	Triggers	Key	Interval	History	Trends	Type
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/1(): Bits received	Triggers 1	net.if.in[10101]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/1(): Bits sent	Triggers 1	net.if.out[10101]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/1(): Inbound packets discarded		net.if.in.discards[10101]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/1(): Inbound packets with errors	Triggers 1	net.if.in.errors[10101]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/1(): Interface type	Triggers 1	net.if.type[10101]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/1(): Operational status	Triggers 2	net.if.status[10101]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/1(): Outbound packets discarded		net.if.out.discards[10101]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/1(): Outbound packets with errors	Triggers 1	net.if.out.errors[10101]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/1(): Speed	Triggers 3	net.if.speed[10101]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/2(): Bits received	Triggers 1	net.if.in[10102]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/2(): Bits sent	Triggers 1	net.if.out[10102]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/2(): Inbound packets discarded		net.if.in.discards[10102]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/2(): Inbound packets with errors	Triggers 1	net.if.in.errors[10102]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/2(): Interface type	Triggers 1	net.if.type[10102]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/2(): Operational status	Triggers 2	net.if.status[10102]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/2(): Outbound packets discarded		net.if.out.discards[10102]	1m	7d	365d	SNMP agent
<input type="checkbox"/>	... Network interfaces discovery: Interface Gi0/2(): Outbound packets with errors	Triggers 1	net.if.out.errors[10102]	1m	7d	365d	SNMP agent



# Solicitudes SNMP Get

4

Item Tags 3 Preprocessing 2

Discovered by [Network interfaces discovery](#)

\* Name

Type

\* Key

Type of information

\* Host interface

\* SNMP OID

Units

\* Update interval

Custom intervals

Type	Interval	Period
<input checked="" type="checkbox"/> Flexible	<input type="text" value="50s"/>	<input type="text" value="1-7,00:00-24:00"/>
<input type="checkbox"/> Scheduling		

\* History storage period   Storage period

\* Trend storage period   Storage period

Value mapping

Description

Enabled

Latest data



# Solicitudes SNMP Get

Get-Request:

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	172.17.0.1	172.17.0.2	SNMP	100	get-request 1.3.6.1.2.1.2.2.1.8.1
2	0.018128	172.17.0.2	172.17.0.1	SNMP	101	get-response 1.3.6.1.2.1.2.2.1.8.1

```
> Frame 2: 101 bytes on wire (808 bits), 101 bytes captured (808 bits)
> Ethernet II, Src: 02:42:ac:11:00:02 (02:42:ac:11:00:02), Dst: 02:42:b2:9e:34:d8 (02:42:b2:9e:34:d8)
> Internet Protocol Version 4, Src: 172.17.0.2, Dst: 172.17.0.1
> User Datagram Protocol, Src Port: 161, Dst Port: 58254
v Simple Network Management Protocol
  version: v2c (1)
  community: cisco/catalyst-3560
  v data: get-response (2)
    v get-response
      request-id: 1909748690
      error-status: noError (0)
      error-index: 0
      v variable-bindings: 1 item
        > 1.3.6.1.2.1.2.2.1.8.1: 2
[Response To: 1]
[Time: 0.018128000 seconds]
```

# Nuevo ítem *walk*

Se ha introducido un nuevo ítem *walk[OID1,OID2,...]*.

- ✓ Consulta índices SNMP de forma masiva usando *GetBulk*.
- ✓ Performance altamente superior en dispositivos grandes.
- ✓ Este ítem actuara como ítem maestro/padre.

## Ejemplo:

```
walk[1.3.6.1.2.1.2.2.1.2]
```

## Resultado:

```
1.3.6.1.2.1.2.2.1.2.1 = STRING: eth1  
1.3.6.1.2.1.2.2.1.2.2 = STRING: eth2  
1.3.6.1.2.1.2.2.1.2.3 = STRING: eth3
```



# Nuevo item *walk*

Información de múltiples OIDs también puede ser recolectada.

## Ejemplo:

```
walk[.1.3.6.1.2.1.2.2.1.2, .1.3.6.1.2.1.2.2.1.10]
```

## Resultado:

```
.1.3.6.1.2.1.2.2.1.2.1 = STRING: eth1  
.1.3.6.1.2.1.2.2.1.2.2 = STRING: eth2  
.1.3.6.1.2.1.2.2.1.2.3 = STRING: eth3  
.1.3.6.1.2.1.2.2.1.10.1 = Counter32: 45312  
.1.3.6.1.2.1.2.2.1.10.2 = Counter32 : 63319  
.1.3.6.1.2.1.2.2.1.10.3 = Counter32 : 90132
```



# Nuevo item *walk*

## Propiedades:

All templates / Mikrotik by SNMP Items 25 Triggers 10 Graphs 1 Dashboards 1 Discovery rules 8 Web scenarios

Item Tags 1 Preprocessing

\* Name Mikrotik: SNMP walk network interfaces

Type SNMP agent

\* Key net.if.walk [Select](#)

Type of information Text

\* SNMP OID walk[1.3.6.1.2.1.2.2.1.8,1.3.6.1.2.1.2.2.1.7,1.3.6.1.2.1.31.1.1.1.18,1.3.6.1.2.1.31.1.]

\* Update interval 1m

Custom intervals

Type	Interval	Period	Action
<input checked="" type="checkbox"/> Flexible	<input type="checkbox"/> Scheduling	50s	1-7,00:00-24:00 <a href="#">Remove</a>

[Add](#)

\* History storage period  Do not keep history  Storage period

Populates host inventory field -None-

Description Discovering interfaces from IF-MIB.

Enabled

## Items:

Mikrotik: SNMP walk CPU temperature sensors

Mikrotik: SNMP walk mounted filesystems

Mikrotik: SNMP walk network interfaces

Mikrotik: SNMP walk system CPUs

Mikrotik: SNMP walk temperature sensors

Mikrotik: SNMP walk wireless interfaces



# Nuevo item *walk*

Reglas de descubrimiento dependientes:

## Discovery rules

All templates / Mikrotik by SNMP Items 25 Triggers 10 Graphs 1 Dashboards 1 **Discovery rules 8** Web scenarios

<input type="checkbox"/>	Template	Name ▲	Items	Triggers	Graphs
<input type="checkbox"/>	Mikrotik by SNMP	<a href="#">Mikrotik: SNMP walk wireless interfaces: AP channel discovery</a>	Item prototypes 5	Trigger prototypes	Graph prototypes
<input type="checkbox"/>	Mikrotik by SNMP	<a href="#">Mikrotik: SNMP walk wireless interfaces: CAPsMAN AP channel discovery</a>	Item prototypes 4	Trigger prototypes 1	Graph prototypes
<input type="checkbox"/>	Mikrotik by SNMP	<a href="#">Mikrotik: SNMP walk system CPUs: CPU discovery</a>	Item prototypes 1	Trigger prototypes 1	Graph prototypes 1
<input type="checkbox"/>	Mikrotik by SNMP	<a href="#">Mikrotik: SNMP walk wireless interfaces: LTE modem discovery</a>	Item prototypes 4	Trigger prototypes 4	Graph prototypes 1
<input type="checkbox"/>	Mikrotik by SNMP	<a href="#">Mikrotik: SNMP walk network interfaces: Network interfaces discovery</a>	Item prototypes 9	Trigger prototypes 4	Graph prototypes 1
<input type="checkbox"/>	Mikrotik by SNMP	<a href="#">Mikrotik: SNMP walk mounted filesystems: Storage discovery</a>	Item prototypes 3	Trigger prototypes 2	Graph prototypes 1
<input type="checkbox"/>	Mikrotik by SNMP	<a href="#">Mikrotik: SNMP walk CPU temperature sensors: Temperature CPU discovery</a>	Item prototypes 1	Trigger prototypes 3	Graph prototypes
<input type="checkbox"/>	Mikrotik by SNMP	<a href="#">Mikrotik: SNMP walk temperature sensors: Temperature sensor discovery</a>	Item prototypes 1	Trigger prototypes 3	Graph prototypes

# Nuevo item *walk*

Reglas de descubrimiento dependientes, pre-procesos:

## Discovery rules

All templates / Mikrotik by SNMP / Discovery list / Network interfaces discovery / Item prototypes 9 / Trigger prototypes 4 / Graph prototypes 1 / Host prototypes

Discovery rule / Preprocessing 2 / LLD macros / Filters 12 / Overrides

Preprocessing steps

Name	Parameters																												
1: SNMP walk to JSON	<table border="1"><thead><tr><th>Field name</th><th>OID prefix</th><th>Format</th><th>Action</th></tr></thead><tbody><tr><td>{#IFOPERSTATU:</td><td>1.3.6.1.2.1.2.2.1.8</td><td>Unchanged</td><td><a href="#">Remove</a></td></tr><tr><td>{#IFADMINSTATL</td><td>1.3.6.1.2.1.2.2.1.7</td><td>Unchanged</td><td><a href="#">Remove</a></td></tr><tr><td>{#IFALIAS}</td><td>1.3.6.1.2.1.31.1.1</td><td>Unchanged</td><td><a href="#">Remove</a></td></tr><tr><td>{#IFNAME}</td><td>1.3.6.1.2.1.31.1.1</td><td>Unchanged</td><td><a href="#">Remove</a></td></tr><tr><td>{#IFDESCR}</td><td>1.3.6.1.2.1.2.2.1.2</td><td>Unchanged</td><td><a href="#">Remove</a></td></tr><tr><td>{#IFTYPE}</td><td>1.3.6.1.2.1.2.2.1.3</td><td>Unchanged</td><td><a href="#">Remove</a></td></tr></tbody></table> <a href="#">Add</a>	Field name	OID prefix	Format	Action	{#IFOPERSTATU:	1.3.6.1.2.1.2.2.1.8	Unchanged	<a href="#">Remove</a>	{#IFADMINSTATL	1.3.6.1.2.1.2.2.1.7	Unchanged	<a href="#">Remove</a>	{#IFALIAS}	1.3.6.1.2.1.31.1.1	Unchanged	<a href="#">Remove</a>	{#IFNAME}	1.3.6.1.2.1.31.1.1	Unchanged	<a href="#">Remove</a>	{#IFDESCR}	1.3.6.1.2.1.2.2.1.2	Unchanged	<a href="#">Remove</a>	{#IFTYPE}	1.3.6.1.2.1.2.2.1.3	Unchanged	<a href="#">Remove</a>
Field name	OID prefix	Format	Action																										
{#IFOPERSTATU:	1.3.6.1.2.1.2.2.1.8	Unchanged	<a href="#">Remove</a>																										
{#IFADMINSTATL	1.3.6.1.2.1.2.2.1.7	Unchanged	<a href="#">Remove</a>																										
{#IFALIAS}	1.3.6.1.2.1.31.1.1	Unchanged	<a href="#">Remove</a>																										
{#IFNAME}	1.3.6.1.2.1.31.1.1	Unchanged	<a href="#">Remove</a>																										
{#IFDESCR}	1.3.6.1.2.1.2.2.1.2	Unchanged	<a href="#">Remove</a>																										
{#IFTYPE}	1.3.6.1.2.1.2.2.1.3	Unchanged	<a href="#">Remove</a>																										
2: Discard unchanged with heartbeat	1h																												

[Add](#)

[Update](#) [Clone](#) [Test](#) [Delete](#) [Cancel](#)

# Nuevo item *walk*

Reglas de descubrimiento dependientes, Items Dependientes:

## Item prototypes

All templates / Mikrotik by SNMP			Discovery list / Network interfaces discovery		Item prototypes 9	Trigger prototypes 4	Graph prototypes 1	Host prototypes
<input type="checkbox"/>	Name ▲							Key
<input type="checkbox"/>	...	<a href="#">Mikrotik: SNMP walk network interfaces: Interface {#IFNAME}{#IFALIAS}: Bits received</a>						net.if.in[ifHCInOctets.{#SNMPINDEX}]
<input type="checkbox"/>	...	<a href="#">Mikrotik: SNMP walk network interfaces: Interface {#IFNAME}{#IFALIAS}: Bits sent</a>						net.if.out[ifHCOutOctets.{#SNMPINDEX}]
<input type="checkbox"/>	...	<a href="#">Mikrotik: SNMP walk network interfaces: Interface {#IFNAME}{#IFALIAS}: Inbound packets discarded</a>						net.if.in.discards[ifInDiscards.{#SNMPINDEX}]
<input type="checkbox"/>	...	<a href="#">Mikrotik: SNMP walk network interfaces: Interface {#IFNAME}{#IFALIAS}: Inbound packets with errors</a>						net.if.in.errors[ifInErrors.{#SNMPINDEX}]
<input type="checkbox"/>	...	<a href="#">Mikrotik: SNMP walk network interfaces: Interface {#IFNAME}{#IFALIAS}: Interface type</a>						net.if.type[ifType.{#SNMPINDEX}]
<input type="checkbox"/>	...	<a href="#">Mikrotik: SNMP walk network interfaces: Interface {#IFNAME}{#IFALIAS}: Operational status</a>						net.if.status[ifOperStatus.{#SNMPINDEX}]
<input type="checkbox"/>	...	<a href="#">Mikrotik: SNMP walk network interfaces: Interface {#IFNAME}{#IFALIAS}: Outbound packets discarded</a>						net.if.out.discards[ifOutDiscards.{#SNMPINDEX}]
<input type="checkbox"/>	...	<a href="#">Mikrotik: SNMP walk network interfaces: Interface {#IFNAME}{#IFALIAS}: Outbound packets with errors</a>						net.if.out.errors[ifOutErrors.{#SNMPINDEX}]
<input type="checkbox"/>	...	<a href="#">Mikrotik: SNMP walk network interfaces: Interface {#IFNAME}{#IFALIAS}: Speed</a>						net.if.speed[ifHighSpeed.{#SNMPINDEX}]



# Nuevo item *walk*

Reglas de descubrimiento dependientes, Items Dependientes:

## Item prototypes

All templates / Mikrotik by SNMP Discovery list / Network interfaces discovery **Item prototypes 9** Trigger prototypes 4 Graph prototypes 1 Host prototypes

Item prototype Tags 3 Preprocessing 3

Preprocessing steps	Name	Parameters
1:	SNMP walk value	1.3.6.1.2.1.31.1.1.1.6.{{SNMPINDE}} Unchanged
2:	Change per second	
3:	Custom multiplier	8

[Add](#)

Type of information Numeric (unsigned)

Update

Clone

Test

Delete

Cancel

# Solicitudes SNMP Getbulk

## Get-Bulk:

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	172.17.0.1	172.17.0.2	SNMP	99	getBulkRequest 1.3.6.1.2.1.2.2.1.8
2	0.026402	172.17.0.2	172.17.0.1	SNMP	264	get-response 1.3.6.1.2.1.2.2.1.8.1 1.3.6.1.2.1.2.2.1.8.2 1.3.6.1.2.1.2.2.1.8.3 1.3.6.1.2.1.2.2.1.8.99
3	0.028137	172.17.0.1	172.17.0.2	SNMP	101	getBulkRequest 1.3.6.1.2.1.2.2.1.8.10106
4	0.032780	172.17.0.2	172.17.0.1	SNMP	267	get-response 1.3.6.1.2.1.2.2.1.8.10107 1.3.6.1.2.1.2.2.1.8.10108 1.3.6.1.2.1.2.2.1.8.10109 1.3.6.1.2.1.2.2.1.8.10110
5	0.033970	172.17.0.1	172.17.0.2	SNMP	101	getBulkRequest 1.3.6.1.2.1.2.2.1.8.10116

```
> Frame 2: 264 bytes on wire (2112 bits), 264 bytes captured (2112 bits) on interface eth0
> Ethernet II, Src: 02:42:ac:11:00:02 (02:42:ac:11:00:02), Dst: 02:42:b2:9e:34:d8 (02:42:b2:9e:34:d8)
> Internet Protocol Version 4, Src: 172.17.0.2, Dst: 172.17.0.1
> User Datagram Protocol, Src Port: 161, Dst Port: 37607
```

```
> Simple Network Management Protocol
  version: v2c (1)
  community: cisco/catalyst-3560
  data: get-response (2)
    get-response
      request-id: 772498167
      error-status: noError (0)
      error-index: 0
```

```
> variable-bindings: 10 items
  > 1.3.6.1.2.1.2.2.1.8.1: 2
  > 1.3.6.1.2.1.2.2.1.8.2: 1
  > 1.3.6.1.2.1.2.2.1.8.3: 1
  > 1.3.6.1.2.1.2.2.1.8.999: 2
  > 1.3.6.1.2.1.2.2.1.8.10101: 2
  > 1.3.6.1.2.1.2.2.1.8.10102: 2
  > 1.3.6.1.2.1.2.2.1.8.10103: 2
  > 1.3.6.1.2.1.2.2.1.8.10104: 2
  > 1.3.6.1.2.1.2.2.1.8.10105: 2
  > 1.3.6.1.2.1.2.2.1.8.10106: 2
```

[Response To: 1]

[Time: 0.026402000 seconds]

```
0000 02 42 b2 9e 34 d8 02 42
0010 00 fa 2b c3 40 00 40 11
0020 00 01 00 a1 92 e7 00 e6
0030 04 13 63 69 73 63 6f 2f
0040 2d 33 35 36 30 a2 81 c0
0050 00 02 01 00 30 81 b1 30
0060 02 02 01 08 01 02 01 02
0070 01 02 02 01 08 02 02 01
0080 02 01 02 02 01 08 03 02
0090 01 02 01 02 02 01 08 87
00a0 2b 06 01 02 01 02 02 01
00b0 06 0b 2b 06 01 02 01 02
00c0 30 10 06 0b 2b 06 01 02
00d0 01 02 30 10 06 0b 2b 06
00e0 78 02 01 02 30 10 06 0b
00f0 08 ce 79 02 01 02 30 10
0100 02 01 08 ce 7a 02 01 02
```

# Preguntas?

Gracias!