

# SNMP Old but Gold

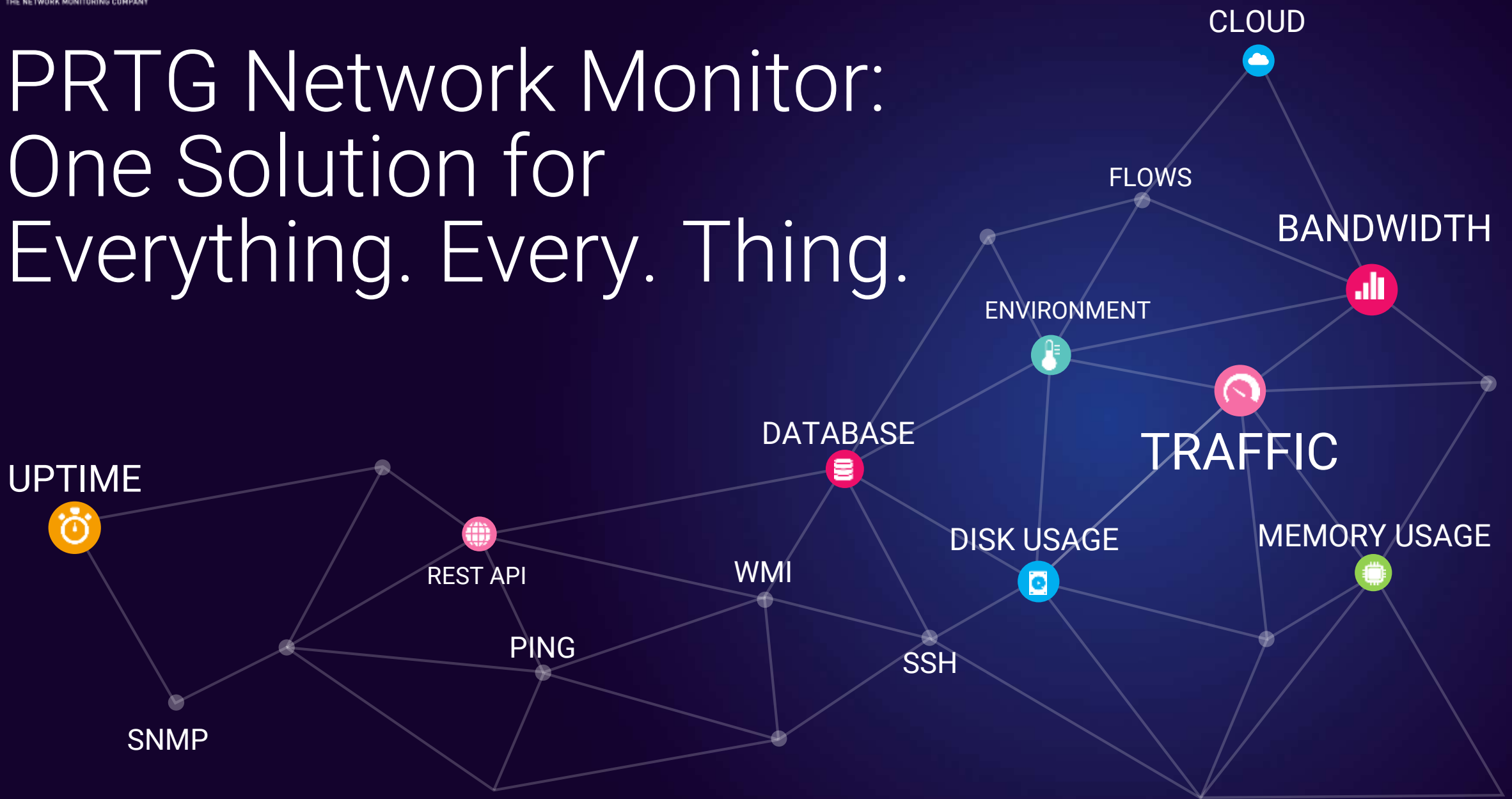
Monitoring einfach gemacht mit SNMP - Birk Guttmann

# Über Paessler

- Hauptsitz in Nürnberg
- 1997 gegründet
- 300 Angestellte aus 25 Ländern
- Zu 100 % in Besitz von Gründern und Angestellten
- Mehr als 200.000 Installationen weltweit



# PRTG Network Monitor: One Solution for Everything. Every. Thing.



# SNMP (Simple Network Management Protocol)

- Von IETF entwickelt
- Standards: RFC 1157, RFC 3410 (SNMP v3)
- Verwendet UDP Ports 161 und 162
- Überwachung (Get Requests)
- Fehlerbenachrichtigung (Traps)
- Fernkonfiguration (Set Requests)
- Offenes Protokoll, d.h. jedes Device kann es benutzen

# SNMP Begrifflichkeiten

- MIB – Management Information Base
- OID – Object Identifier ist eine Nummer zur Identifizierung eines Wertes. Dieser ist wie eine Art Datenpfad aufgebaut:  
1(iso).3(org).6(dod).1(internet).4(private).1(enterprise).Hersteller...

# SNMP Traps

- Einfaches Event, das an Agenten gesendet wird
- **Vorteile:** Wenig Netzwerklast, einfach zu konfigurieren
- **Nachteile:** Events können verloren gehen, keine regelmäßigen Informationen

# SNMP Get

- Anfrage an das Zielgerät
- **Vorteile:** Regelmäßige Abfragen möglich
- **Nachteile:** Etwas komplizierter zu konfigurieren, da Informationen (z.B. OIDs) benötigt werden



# SNMP MIB Files

```

memAvailSwap OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Available Swap Space."
    ::= { memory 4 }

memTotalReal OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Total Real/Physical Memory Size."
    ::= { memory 5 }

memAvailReal OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Available Real/Physical Memory Space."
    ::= { memory 6 }

memTotalSwapTXT OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Total VM used by text."
    ::= { memory 7 }
    
```

The screenshot shows the Paessler MIB Importer interface. On the left, a tree view shows the hierarchy of MIB objects under 'Basic Linux Library (UCD-SNMP-MIB)'. The 'Memory' folder is expanded, and 'Available Swap Space' is selected. On the right, the configuration panel is visible, showing the following settings:

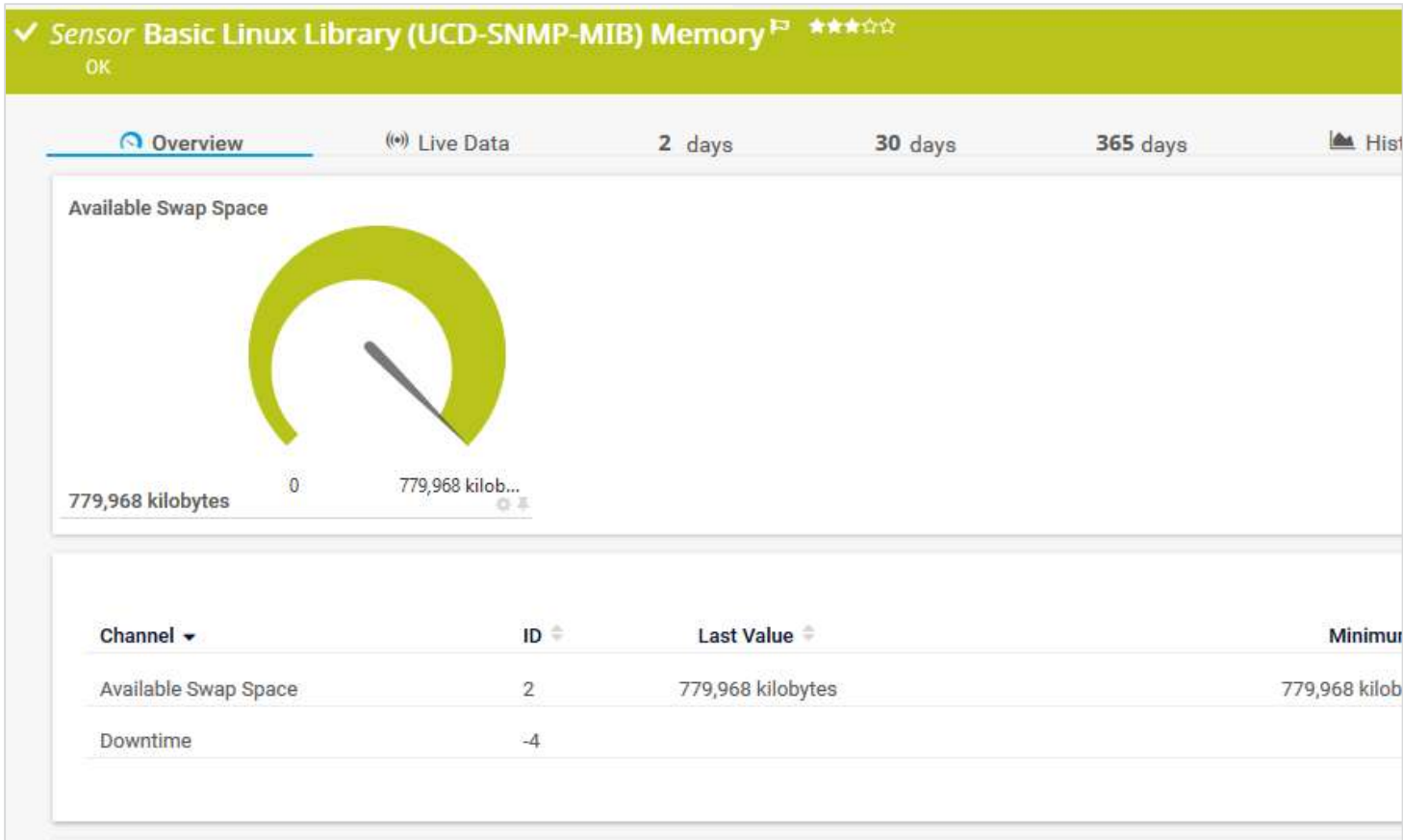
- Identification:** Agent: Basic Linux Library (UCD-SNMP-MIB), Group: Memory, Name: Available Swap Space
- Source:** Kind: Single, OID: 1.3.6.1.4.1.2021.4.4.0, Type: Gauge,  unsigned,  64bit,  float
- Value:** Unit: Custom (kilobytes), Indicator: Available Swap Space, Scale: 1 (Divide)
- Description:** Available Swap Space on the host.
- Lookup:** (Empty)

Buttons for 'Apply' and 'Cancel' are located at the bottom right of the configuration panel.

# SNMP MIB Files

<input type="checkbox"/> MIB Module	Category	Name
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	CPU Load	CPU Load (15 minute average)
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	CPU Load	CPU Load (5 minute average)
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	CPU Load	CPU Load (1 minute average)
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	Memory	Memory Swap Error Flag
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	Memory	Memory Cached
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	Memory	Memory Buffered
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	Memory	Memory Shared
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	Memory	Memory Total Free
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	Memory	Available Real/Physical Memory
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	Memory	Memory Total Real
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	Memory	Available Swap Space
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	Memory	Memory Total Swap
<input type="checkbox"/> Basic Linux Library (UCD-SNMP-MIB)	Processes: 1	Processes Error Flag

# SNMP MIB Files



# SNMP Walk/Table

```
30-1-2018 9:57:19 (65073 ms) : ifXTable(64bit)
30-1-2018 9:57:19 (65080 ms) : walk 1.3.6.1.2.1.31.1.1.1.1
30-1-2018 9:57:19 (65190 ms) : 1.3.6.1.2.1.31.1.1.1.1.1
30-1-2018 9:57:19 (65299 ms) : 1.3.6.1.2.1.31.1.1.1.1.1.1
30-1-2018 9:57:19 (65408 ms) : 1.3.6.1.2.1.31.1.1.1.1.1.1.1
30-1-2018 9:57:19 (65517 ms) : 1.3.6.1.2.1.31.1.1.1.1.1.1.1.1
30-1-2018 9:57:20 (65626 ms) : 1.3.6.1.2.1.31.1.1.1.1.1.1.1.1.1
30-1-2018 9:57:20 (65736 ms) : 1.3.6.1.2.1.31.1.1.1.1.1.1.1.1.1.1
30-1-2018 9:57:22 (68169 ms) : 1.3.6.1.2.1.31.1.1.1.1.2
30-1-2018 9:57:22 (68278 ms) : 1.3.6.1.2.1.31.1.1.1.1.2.1
30-1-2018 9:57:22 (68388 ms) : 1.3.6.1.2.1.31.1.1.1.1.2.1.1
30-1-2018 9:57:22 (68497 ms) : 1.3.6.1.2.1.31.1.1.1.1.2.1.1.1
30-1-2018 9:57:23 (68606 ms) : 1.3.6.1.2.1.31.1.1.1.1.2.1.1.1.1
30-1-2018 9:57:23 (68715 ms) : 1.3.6.1.2.1.31.1.1.1.1.2.1.1.1.1.1
30-1-2018 9:57:25 (71164 ms) : 1.3.6.1.2.1.31.1.1.1.1.3
30-1-2018 9:57:25 (71274 ms) : 1.3.6.1.2.1.31.1.1.1.1.3.1
30-1-2018 9:57:25 (71383 ms) : 1.3.6.1.2.1.31.1.1.1.1.3.1.1
30-1-2018 9:57:25 (71492 ms) : 1.3.6.1.2.1.31.1.1.1.1.3.1.1.1
30-1-2018 9:57:26 (71601 ms) : 1.3.6.1.2.1.31.1.1.1.1.3.1.1.1.1
30-1-2018 9:57:26 (71710 ms) : 1.3.6.1.2.1.31.1.1.1.1.3.1.1.1.1.1
30-1-2018 9:57:28 (74160 ms) : 1.3.6.1.2.1.31.1.1.1.1.4
30-1-2018 9:57:28 (74269 ms) : 1.3.6.1.2.1.31.1.1.1.1.4.1
30-1-2018 9:57:28 (74378 ms) : 1.3.6.1.2.1.31.1.1.1.1.4.1.1
30-1-2018 9:57:28 (74487 ms) : 1.3.6.1.2.1.31.1.1.1.1.4.1.1.1
30-1-2018 9:57:29 (74596 ms) : 1.3.6.1.2.1.31.1.1.1.1.4.1.1.1.1
30-1-2018 9:57:29 (74706 ms) : 1.3.6.1.2.1.31.1.1.1.1.4.1.1.1.1.1
30-1-2018 9:57:31 (77170 ms) : 1.3.6.1.2.1.31.1.1.1.1.5
30-1-2018 9:57:31 (77280 ms) : 1.3.6.1.2.1.31.1.1.1.1.5.1
30-1-2018 9:57:31 (77389 ms) : 1.3.6.1.2.1.31.1.1.1.1.5.1.1
30-1-2018 9:57:31 (77498 ms) : 1.3.6.1.2.1.31.1.1.1.1.5.1.1.1 = "0" [ASN_COUNTER]
30-1-2018 9:57:32 (77607 ms) : 1.3.6.1.2.1.31.1.1.1.1.5.1.1.1.1 = "0" [ASN_COUNTER]
30-1-2018 9:57:32 (77732 ms) : 1.3.6.1.2.1.31.1.1.1.1.5.1.1.1.1.1 = "0" [ASN_COUNTER]
30-1-2018 9:57:34 (80166 ms) : 1.3.6.1.2.1.31.1.1.1.1.6.2 = "303146852" [ASN_APP_COUNTER64]
30-1-2018 9:57:34 (80275 ms) : 1.3.6.1.2.1.31.1.1.1.1.6.3 = "7506230117763" [ASN_APP_COUNTER64]
30-1-2018 9:57:34 (80384 ms) : 1.3.6.1.2.1.31.1.1.1.1.6.4 = "1177946483914" [ASN_APP_COUNTER64]
30-1-2018 9:57:34 (80493 ms) : 1.3.6.1.2.1.31.1.1.1.1.6.5 = "144108361604" [ASN_APP_COUNTER64]
30-1-2018 9:57:35 (80602 ms) : 1.3.6.1.2.1.31.1.1.1.1.6.6 = "460162141385" [ASN_APP_COUNTER64]
30-1-2018 9:57:35 (80712 ms) : 1.3.6.1.2.1.31.1.1.1.1.6.7 = "7949415110016" [ASN_APP_COUNTER64]
```

Working... X

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## SNMP Table

Table OID ⓘ

1.3.6.1.2.1.31.1.1.1.1

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# SNMP Walk/Table

## Table Specific

Table

Search...

<input type="checkbox"/>	ifName	ifInMulticastPkts	ifInBroadcastPkts	ifOutMulticastPkts	ifOutBroadcastPkts	ifHCInOctets	ifHCInUcastPkts	ifHCInMulticastPkts	ifHCInBroadcastPkts	ifHCOctets	ifHCOUcastPkts	ifHCOUMulticastPkts	ifHCOUBroadcastPkts	ifLinkUpDownTrapEnable	ifHighSpeed
<input type="checkbox"/>	mgmt	0	0	0	0	303146852	2309054	0	200427	290291112	2308500	6	12	1	1000
<input type="checkbox"/>	inside	0	0	0	0	7506230117763	13458704547	2475437	19067	15419859215930	14635463454	2475553	11	1	1000
<input type="checkbox"/>	web	0	0	0	0	1177946483914	5844653212	0	2584735	8193412					
<input type="checkbox"/>	SRV	0	0	0	0	144108361604	265671921	0	669827	1097084					
<input type="checkbox"/>	DMZ1	0	0	0	0	460162141385	419941367	0	91449	2721826					
<input type="checkbox"/>	DMZ2	0	0	0	0	7949415110016	7550681520	0	561512	1120620					

Identification Column ⓘ ifName

Sensor Channel #1 Name ⓘ Incoming Bytes

Sensor Channel #1 Column ⓘ ifHCInOctets


- Sensor Channel #1 Value Type ⓘ
- Absolute (unsigned integer, for example "10", "120")
  - Absolute (signed integer, for example "-12", "120")
  - Absolute (float, for example "-5.80", "8.23")
  - Delta (Counter)

# SNMP Walk/Table

Last Scan: 1 s	Last Up: 1 s	Last Down:	Uptime: 100,000%	Downtime: 0,000%	Coverage: 100%	Sensor Type: SNMP Custom Table	Dependency: Parent	Interval: 60 s	ID: #128613
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State



Up

Bytes IN	Bytes OUT	Speed
1 kbit/s	13 kbit/s	100.000.000 #

**Lookup**

- up(1)
- down(2)
- testing(3)
- unknown(4)
- dormant(5)
- notPresent(6)
- lowerLayerDown(7)

Channel	ID	Last Value (volume)	Last Value (speed)	Minimum	Maximum
Downtime	-4				
Bytes IN	3	10 KByte	1 kbit/s	1 kbit/s	1 kbit/s
Bytes OUT	4	13 KByte	13 kbit/s	13 kbit/s	13 kbit/s

# Vielen Dank

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