
Praktikum Rechnernetze

Protokoll zu Versuch 9 (Netzmanagement und
Netzanalyse) von Gruppe 1

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2021-12-07

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1 Einführung

1.1 Mitwirken

Diese Materialien basieren auf Professor Kiefers “Praktikum Rechnernetze”-Vorlesung der HdM Stuttgart.

Sie haben einen Fehler gefunden oder haben einen Verbesserungsvorschlag? Bitte eröffnen Sie ein Issue auf GitHub (github.com/pojntfx/uni-netpractice-notes):



Abbildung 1: QR-Code zum Quelltext auf GitHub

Wenn Ihnen die Materialien gefallen, würden wir uns über einen GitHub-Stern sehr freuen.

1.2 Lizenz

Dieses Dokument und der enthaltene Quelltext ist freie Kultur bzw. freie Software.



Abbildung 2: Badge der AGPL-3.0-Lizenz

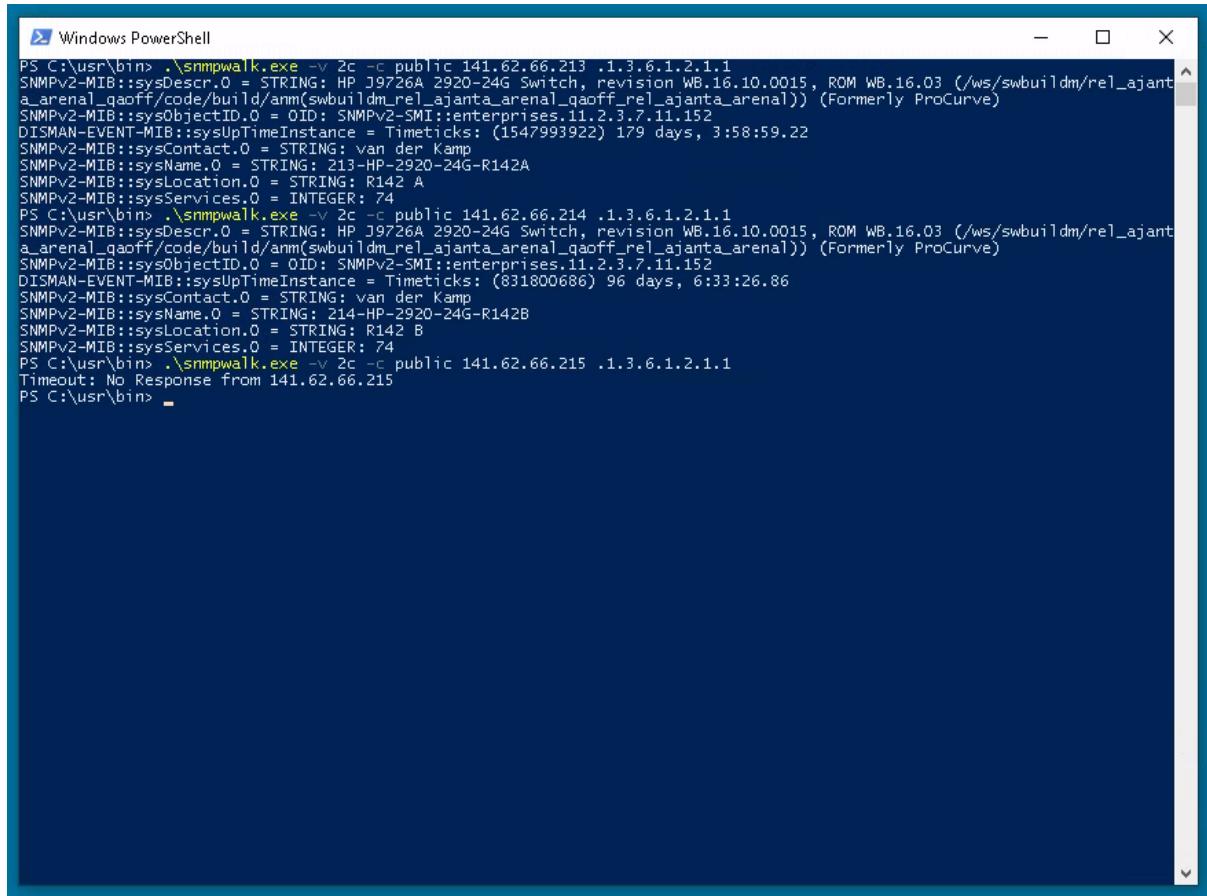
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SPDX-License-Identifier: AGPL-3.0

2 SNMP

Erkennen Sie, wer der Verwalter des Gerätes 141.62.66.213, 141.62.66.214 und 141.62.66.215 ist (sysContact)? Starten Sie eine Anfrage an einen Switch, die die Systeminfos abruft.

141.62.66.215 war wie auf dem Screenshot zu sehen ist zum Zeitpunkt der Versuchsdurchführung nicht erreichbar.



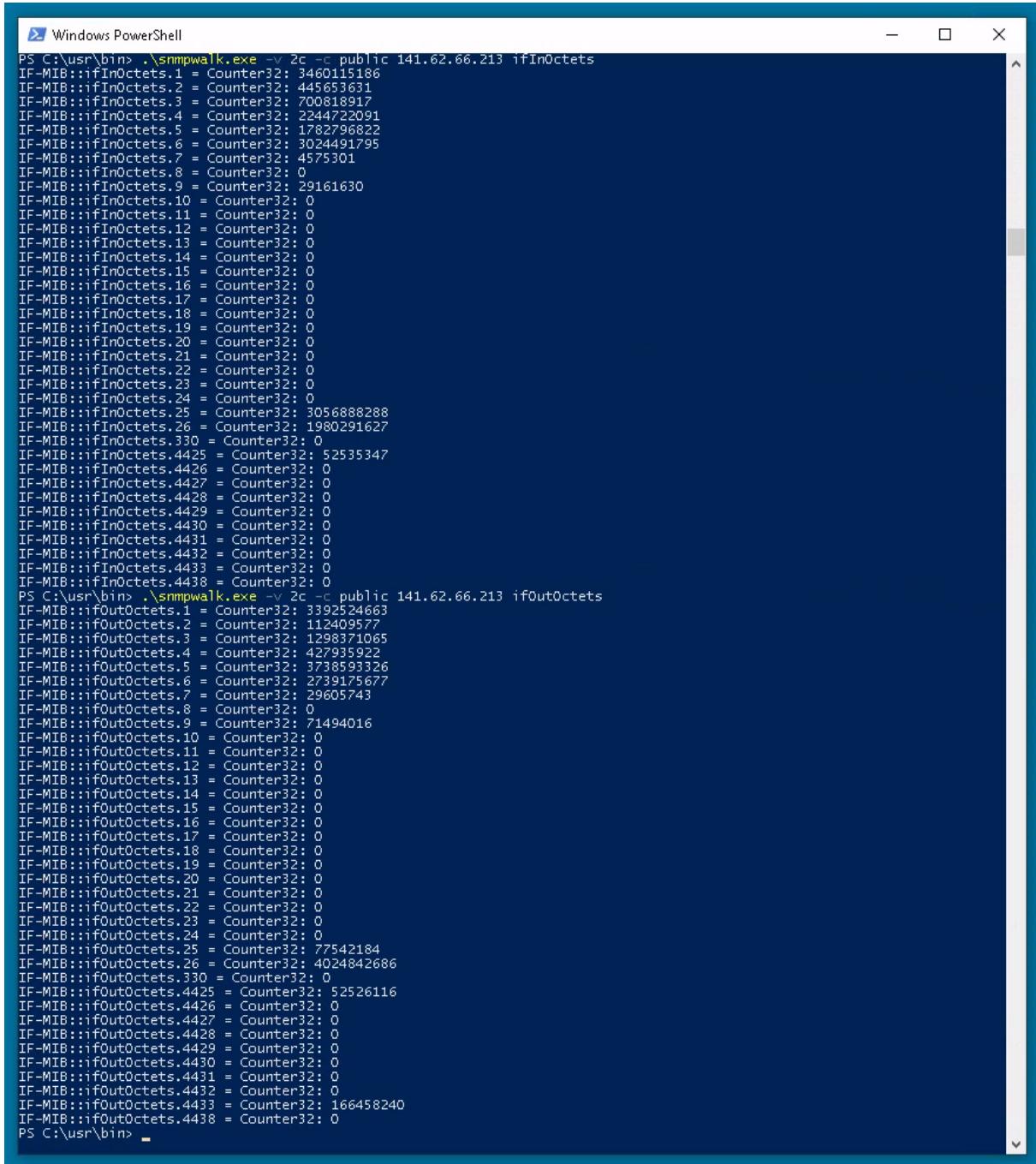
```
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.213 .1.3.6.1.2.1.1
SNMPv2-MIB::sysDescr.0 = STRING: HP J9726A 2920-24G Switch, revision WB.16.10.0015, ROM WB.16.03 (/ws/swbuildm/rel_ajant
a_arenal_qaoff/code/build/ann(cswbuildm_rel_ajanta_arenal_qaoff_rel_ajanta_arenal)) (Formerly ProCurve)
SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises.11.2.3.7.11.152
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (1547993922) 179 days, 3:58:59.22
SNMPv2-MIB::sysContact.0 = STRING: van der Kamp
SNMPv2-MIB::sysName.0 = STRING: 213-HP-2920-24G-R142A
SNMPv2-MIB::sysLocation.0 = STRING: R142 A
SNMPv2-MIB::sysServices.0 = INTEGER: 74
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.214 .1.3.6.1.2.1.1
SNMPv2-MIB::sysDescr.0 = STRING: HP J9726A 2920-24G Switch, revision WB.16.10.0015, ROM WB.16.03 (/ws/swbuildm/rel_ajant
a_arenal_qaoff/code/build/ann(cswbuildm_rel_ajanta_arenal_qaoff_rel_ajanta_arenal)) (Formerly ProCurve)
SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises.11.2.3.7.11.152
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (831800686) 96 days, 6:33:26.86
SNMPv2-MIB::sysContact.0 = STRING: van der Kamp
SNMPv2-MIB::sysName.0 = STRING: 214-HP-2920-24G-R142B
SNMPv2-MIB::sysLocation.0 = STRING: R142 B
SNMPv2-MIB::sysServices.0 = INTEGER: 74
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.215 .1.3.6.1.2.1.1
Timeout: No Response from 141.62.66.215
PS C:\usr\bin>
```

Abbildung 3: Ergebnis der Abfrage (van der Kamp)

Nutzen Sie den Befehl snmpwalk, um zu ergründen auf welchem Switchport (141.62.66.213, 141.62.66.214 oder 141.62.66.215) wie viel los war. Um welche Einheit handelt es sich? Auf welchem Switchport war bisher offensichtlich kein PC angesteckt?

TODO: Add interpretation

141.62.66.215 war zum Zeitpunkt der Versuchsdurchführung nicht erreichbar.



```
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.213 ifInOctets
IF-MIB::ifInOctets.1 = Counter32: 3460115186
IF-MIB::ifInOctets.2 = Counter32: 449653631
IF-MIB::ifInOctets.3 = Counter32: 700818917
IF-MIB::ifInOctets.4 = Counter32: 2244722091
IF-MIB::ifInOctets.5 = Counter32: 1782796822
IF-MIB::ifInOctets.6 = Counter32: 3024491795
IF-MIB::ifInOctets.7 = Counter32: 4575301
IF-MIB::ifInOctets.8 = Counter32: 0
IF-MIB::ifInOctets.9 = Counter32: 29161630
IF-MIB::ifInOctets.10 = Counter32: 0
IF-MIB::ifInOctets.11 = Counter32: 0
IF-MIB::ifInOctets.12 = Counter32: 0
IF-MIB::ifInOctets.13 = Counter32: 0
IF-MIB::ifInOctets.14 = Counter32: 0
IF-MIB::ifInOctets.15 = Counter32: 0
IF-MIB::ifInOctets.16 = Counter32: 0
IF-MIB::ifInOctets.17 = Counter32: 0
IF-MIB::ifInOctets.18 = Counter32: 0
IF-MIB::ifInOctets.19 = Counter32: 0
IF-MIB::ifInOctets.20 = Counter32: 0
IF-MIB::ifInOctets.21 = Counter32: 0
IF-MIB::ifInOctets.22 = Counter32: 0
IF-MIB::ifInOctets.23 = Counter32: 0
IF-MIB::ifInOctets.24 = Counter32: 0
IF-MIB::ifInOctets.25 = Counter32: 3056888288
IF-MIB::ifInOctets.26 = Counter32: 1980291627
IF-MIB::ifInOctets.330 = Counter32: 0
IF-MIB::ifInOctets.4425 = Counter32: 52535347
IF-MIB::ifInOctets.4426 = Counter32: 0
IF-MIB::ifInOctets.4427 = Counter32: 0
IF-MIB::ifInOctets.4428 = Counter32: 0
IF-MIB::ifInOctets.4429 = Counter32: 0
IF-MIB::ifInOctets.4430 = Counter32: 0
IF-MIB::ifInOctets.4431 = Counter32: 0
IF-MIB::ifInOctets.4432 = Counter32: 0
IF-MIB::ifInOctets.4433 = Counter32: 0
IF-MIB::ifInOctets.4438 = Counter32: 0
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.213 ifOutOctets
IF-MIB::ifOutOctets.1 = Counter32: 3392524663
IF-MIB::ifOutOctets.2 = Counter32: 112409577
IF-MIB::ifOutOctets.3 = Counter32: 1298371065
IF-MIB::ifOutOctets.4 = Counter32: 427935922
IF-MIB::ifOutOctets.5 = Counter32: 3738593326
IF-MIB::ifOutOctets.6 = Counter32: 2739175677
IF-MIB::ifOutOctets.7 = Counter32: 29605743
IF-MIB::ifOutOctets.8 = Counter32: 0
IF-MIB::ifOutOctets.9 = Counter32: 71494016
IF-MIB::ifOutOctets.10 = Counter32: 0
IF-MIB::ifOutOctets.11 = Counter32: 0
IF-MIB::ifOutOctets.12 = Counter32: 0
IF-MIB::ifOutOctets.13 = Counter32: 0
IF-MIB::ifOutOctets.14 = Counter32: 0
IF-MIB::ifOutOctets.15 = Counter32: 0
IF-MIB::ifOutOctets.16 = Counter32: 0
IF-MIB::ifOutOctets.17 = Counter32: 0
IF-MIB::ifOutOctets.18 = Counter32: 0
IF-MIB::ifOutOctets.19 = Counter32: 0
IF-MIB::ifOutOctets.20 = Counter32: 0
IF-MIB::ifOutOctets.21 = Counter32: 0
IF-MIB::ifOutOctets.22 = Counter32: 0
IF-MIB::ifOutOctets.23 = Counter32: 0
IF-MIB::ifOutOctets.24 = Counter32: 0
IF-MIB::ifOutOctets.25 = Counter32: 77542184
IF-MIB::ifOutOctets.26 = Counter32: 4024842686
IF-MIB::ifOutOctets.330 = Counter32: 0
IF-MIB::ifOutOctets.4425 = Counter32: 52526116
IF-MIB::ifOutOctets.4426 = Counter32: 0
IF-MIB::ifOutOctets.4427 = Counter32: 0
IF-MIB::ifOutOctets.4428 = Counter32: 0
IF-MIB::ifOutOctets.4429 = Counter32: 0
IF-MIB::ifOutOctets.4430 = Counter32: 0
IF-MIB::ifOutOctets.4431 = Counter32: 0
IF-MIB::ifOutOctets.4432 = Counter32: 0
IF-MIB::ifOutOctets.4433 = Counter32: 166458240
IF-MIB::ifOutOctets.4438 = Counter32: 0
PS C:\usr\bin>
```

Abbildung 4: Ergebnis der Abfrage auf 141.62.66.213

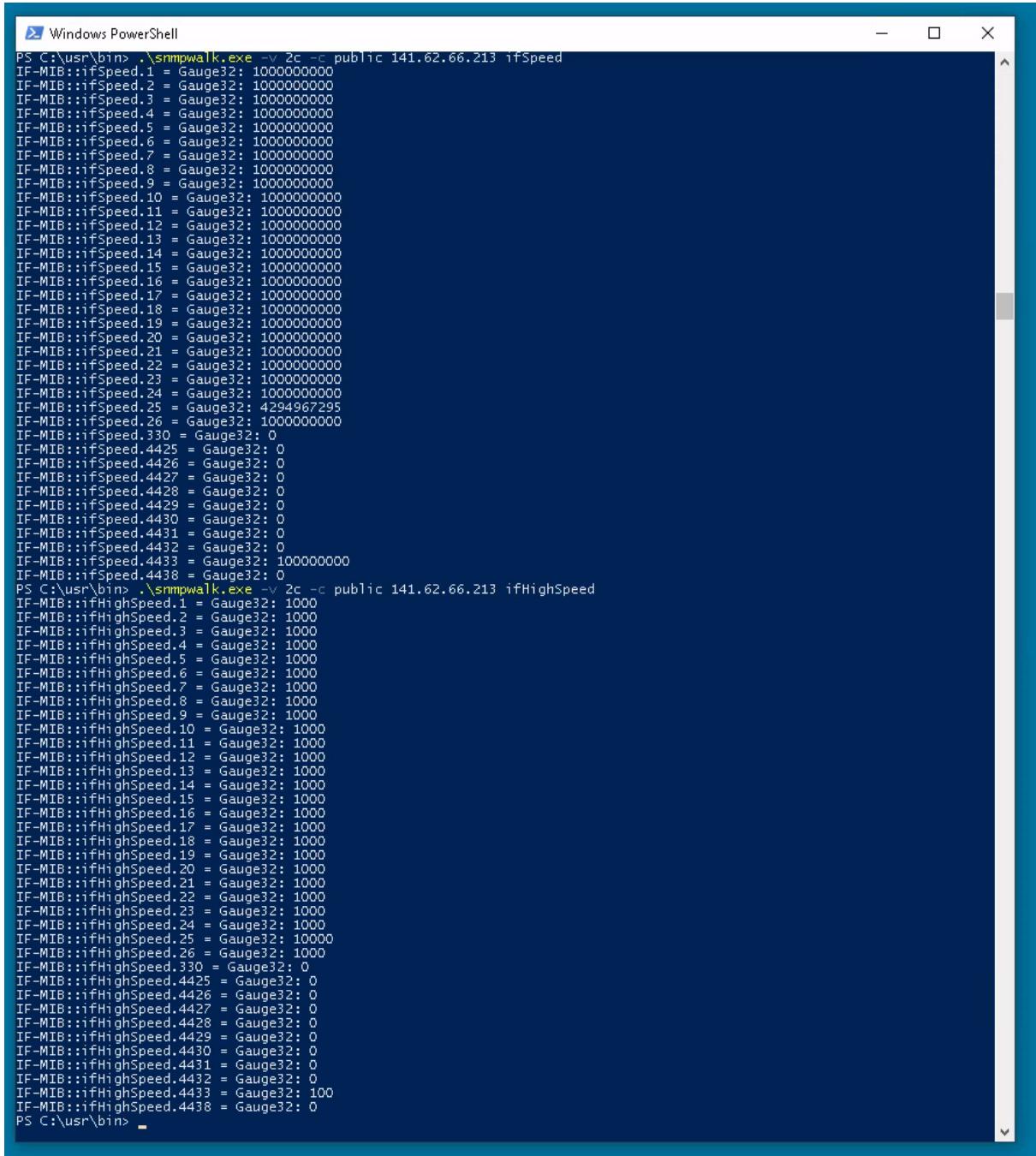
```

Windows PowerShell
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.214 ifInOctets
IF-MIB::ifInOctets.1 = Counter32: 19204783
IF-MIB::ifInOctets.2 = Counter32: 2933211595
IF-MIB::ifInOctets.3 = Counter32: 0
IF-MIB::ifInOctets.4 = Counter32: 1173218484
IF-MIB::ifInOctets.5 = Counter32: 0
IF-MIB::ifInOctets.6 = Counter32: 1805346398
IF-MIB::ifInOctets.7 = Counter32: 0
IF-MIB::ifInOctets.8 = Counter32: 761122113
IF-MIB::ifInOctets.9 = Counter32: 466846
IF-MIB::ifInOctets.10 = Counter32: 1427522648
IF-MIB::ifInOctets.11 = Counter32: 562318
IF-MIB::ifInOctets.12 = Counter32: 3203873898
IF-MIB::ifInOctets.13 = Counter32: 0
IF-MIB::ifInOctets.14 = Counter32: 0
IF-MIB::ifInOctets.15 = Counter32: 0
IF-MIB::ifInOctets.16 = Counter32: 0
IF-MIB::ifInOctets.17 = Counter32: 10968960
IF-MIB::ifInOctets.18 = Counter32: 0
IF-MIB::ifInOctets.19 = Counter32: 3087867
IF-MIB::ifInOctets.20 = Counter32: 0
IF-MIB::ifInOctets.21 = Counter32: 0
IF-MIB::ifInOctets.22 = Counter32: 0
IF-MIB::ifInOctets.23 = Counter32: 0
IF-MIB::ifInOctets.24 = Counter32: 0
IF-MIB::ifInOctets.25 = Counter32: 2357467405
IF-MIB::ifInOctets.26 = Counter32: 429311930
IF-MIB::ifInOctets.330 = Counter32: 0
IF-MIB::ifInOctets.4425 = Counter32: 28191195
IF-MIB::ifInOctets.4426 = Counter32: 0
IF-MIB::ifInOctets.4427 = Counter32: 0
IF-MIB::ifInOctets.4428 = Counter32: 0
IF-MIB::ifInOctets.4429 = Counter32: 0
IF-MIB::ifInOctets.4430 = Counter32: 0
IF-MIB::ifInOctets.4431 = Counter32: 0
IF-MIB::ifInOctets.4432 = Counter32: 0
IF-MIB::ifInOctets.4433 = Counter32: 0
IF-MIB::ifInOctets.4438 = Counter32: 0
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.214 ifOutOctets
IF-MIB::ifOutOctets.1 = Counter32: 125161715
IF-MIB::ifOutOctets.2 = Counter32: 988279594
IF-MIB::ifOutOctets.3 = Counter32: 0
IF-MIB::ifOutOctets.4 = Counter32: 3290705986
IF-MIB::ifOutOctets.5 = Counter32: 0
IF-MIB::ifOutOctets.6 = Counter32: 950556673
IF-MIB::ifOutOctets.7 = Counter32: 0
IF-MIB::ifOutOctets.8 = Counter32: 3129404361
IF-MIB::ifOutOctets.9 = Counter32: 5952445
IF-MIB::ifOutOctets.10 = Counter32: 2876235434
IF-MIB::ifOutOctets.11 = Counter32: 337557
IF-MIB::ifOutOctets.12 = Counter32: 843873624
IF-MIB::ifOutOctets.13 = Counter32: 0
IF-MIB::ifOutOctets.14 = Counter32: 0
IF-MIB::ifOutOctets.15 = Counter32: 0
IF-MIB::ifOutOctets.16 = Counter32: 0
IF-MIB::ifOutOctets.17 = Counter32: 679308169
IF-MIB::ifOutOctets.18 = Counter32: 0
IF-MIB::ifOutOctets.19 = Counter32: 672646993
IF-MIB::ifOutOctets.20 = Counter32: 0
IF-MIB::ifOutOctets.21 = Counter32: 0
IF-MIB::ifOutOctets.22 = Counter32: 0
IF-MIB::ifOutOctets.23 = Counter32: 0
IF-MIB::ifOutOctets.24 = Counter32: 0
IF-MIB::ifOutOctets.25 = Counter32: 1796700246
IF-MIB::ifOutOctets.26 = Counter32: 2489630489
IF-MIB::ifOutOctets.330 = Counter32: 0
IF-MIB::ifOutOctets.4425 = Counter32: 28190856
IF-MIB::ifOutOctets.4426 = Counter32: 0
IF-MIB::ifOutOctets.4427 = Counter32: 0
IF-MIB::ifOutOctets.4428 = Counter32: 0
IF-MIB::ifOutOctets.4429 = Counter32: 0
IF-MIB::ifOutOctets.4430 = Counter32: 0
IF-MIB::ifOutOctets.4431 = Counter32: 0
IF-MIB::ifOutOctets.4432 = Counter32: 0
IF-MIB::ifOutOctets.4433 = Counter32: 89450100
IF-MIB::ifOutOctets.4438 = Counter32: 0
PS C:\usr\bin>

```

Abbildung 5: Ergebnis der Abfrage auf 141.62.66.214

Welche „Geschwindigkeiten“ (10, 100, 1000 Mbit/s) haben die Interfaces derzeit jeweils und warum? Was ist das besondere bei Port 25 auf Switch 141.62.66.215 ? (Hinweis: ifSpeed vs. ifHighSpeed)

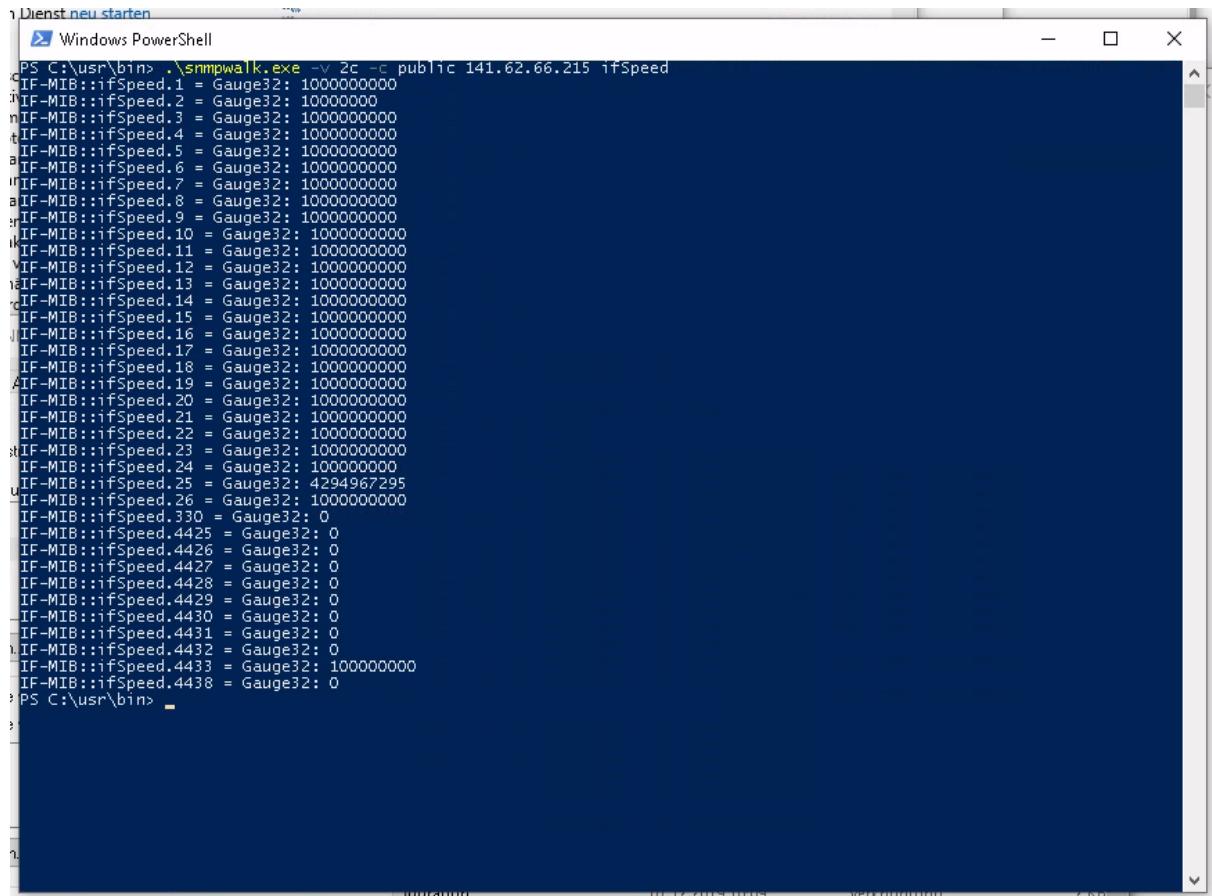


```
Windows PowerShell
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.213 ifSpeed
IF-MIB::ifSpeed.1 = Gauge32: 1000000000
IF-MIB::ifSpeed.2 = Gauge32: 1000000000
IF-MIB::ifSpeed.3 = Gauge32: 1000000000
IF-MIB::ifSpeed.4 = Gauge32: 1000000000
IF-MIB::ifSpeed.5 = Gauge32: 1000000000
IF-MIB::ifSpeed.6 = Gauge32: 1000000000
IF-MIB::ifSpeed.7 = Gauge32: 1000000000
IF-MIB::ifSpeed.8 = Gauge32: 1000000000
IF-MIB::ifSpeed.9 = Gauge32: 1000000000
IF-MIB::ifSpeed.10 = Gauge32: 1000000000
IF-MIB::ifSpeed.11 = Gauge32: 1000000000
IF-MIB::ifSpeed.12 = Gauge32: 1000000000
IF-MIB::ifSpeed.13 = Gauge32: 1000000000
IF-MIB::ifSpeed.14 = Gauge32: 1000000000
IF-MIB::ifSpeed.15 = Gauge32: 1000000000
IF-MIB::ifSpeed.16 = Gauge32: 1000000000
IF-MIB::ifSpeed.17 = Gauge32: 1000000000
IF-MIB::ifSpeed.18 = Gauge32: 1000000000
IF-MIB::ifSpeed.19 = Gauge32: 1000000000
IF-MIB::ifSpeed.20 = Gauge32: 1000000000
IF-MIB::ifSpeed.21 = Gauge32: 1000000000
IF-MIB::ifSpeed.22 = Gauge32: 1000000000
IF-MIB::ifSpeed.23 = Gauge32: 1000000000
IF-MIB::ifSpeed.24 = Gauge32: 1000000000
IF-MIB::ifSpeed.25 = Gauge32: 4294967295
IF-MIB::ifSpeed.26 = Gauge32: 1000000000
IF-MIB::ifSpeed.330 = Gauge32: 0
IF-MIB::ifSpeed.4425 = Gauge32: 0
IF-MIB::ifSpeed.4426 = Gauge32: 0
IF-MIB::ifSpeed.4427 = Gauge32: 0
IF-MIB::ifSpeed.4428 = Gauge32: 0
IF-MIB::ifSpeed.4429 = Gauge32: 0
IF-MIB::ifSpeed.4430 = Gauge32: 0
IF-MIB::ifSpeed.4431 = Gauge32: 0
IF-MIB::ifSpeed.4432 = Gauge32: 0
IF-MIB::ifSpeed.4433 = Gauge32: 1000000000
IF-MIB::ifSpeed.4438 = Gauge32: 0
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.213 ifHighSpeed
IF-MIB::ifHighSpeed.1 = Gauge32: 1000
IF-MIB::ifHighSpeed.2 = Gauge32: 1000
IF-MIB::ifHighSpeed.3 = Gauge32: 1000
IF-MIB::ifHighSpeed.4 = Gauge32: 1000
IF-MIB::ifHighSpeed.5 = Gauge32: 1000
IF-MIB::ifHighSpeed.6 = Gauge32: 1000
IF-MIB::ifHighSpeed.7 = Gauge32: 1000
IF-MIB::ifHighSpeed.8 = Gauge32: 1000
IF-MIB::ifHighSpeed.9 = Gauge32: 1000
IF-MIB::ifHighSpeed.10 = Gauge32: 1000
IF-MIB::ifHighSpeed.11 = Gauge32: 1000
IF-MIB::ifHighSpeed.12 = Gauge32: 1000
IF-MIB::ifHighSpeed.13 = Gauge32: 1000
IF-MIB::ifHighSpeed.14 = Gauge32: 1000
IF-MIB::ifHighSpeed.15 = Gauge32: 1000
IF-MIB::ifHighSpeed.16 = Gauge32: 1000
IF-MIB::ifHighSpeed.17 = Gauge32: 1000
IF-MIB::ifHighSpeed.18 = Gauge32: 1000
IF-MIB::ifHighSpeed.19 = Gauge32: 1000
IF-MIB::ifHighSpeed.20 = Gauge32: 1000
IF-MIB::ifHighSpeed.21 = Gauge32: 1000
IF-MIB::ifHighSpeed.22 = Gauge32: 1000
IF-MIB::ifHighSpeed.23 = Gauge32: 1000
IF-MIB::ifHighSpeed.24 = Gauge32: 1000
IF-MIB::ifHighSpeed.25 = Gauge32: 10000
IF-MIB::ifHighSpeed.26 = Gauge32: 1000
IF-MIB::ifHighSpeed.330 = Gauge32: 0
IF-MIB::ifHighSpeed.4425 = Gauge32: 0
IF-MIB::ifHighSpeed.4426 = Gauge32: 0
IF-MIB::ifHighSpeed.4427 = Gauge32: 0
IF-MIB::ifHighSpeed.4428 = Gauge32: 0
IF-MIB::ifHighSpeed.4429 = Gauge32: 0
IF-MIB::ifHighSpeed.4430 = Gauge32: 0
IF-MIB::ifHighSpeed.4431 = Gauge32: 0
IF-MIB::ifHighSpeed.4432 = Gauge32: 0
IF-MIB::ifHighSpeed.4433 = Gauge32: 100
IF-MIB::ifHighSpeed.4438 = Gauge32: 0
PS C:\usr\bin>
```

Abbildung 6: Ergebnis der Abfrage auf 141.62.66.213

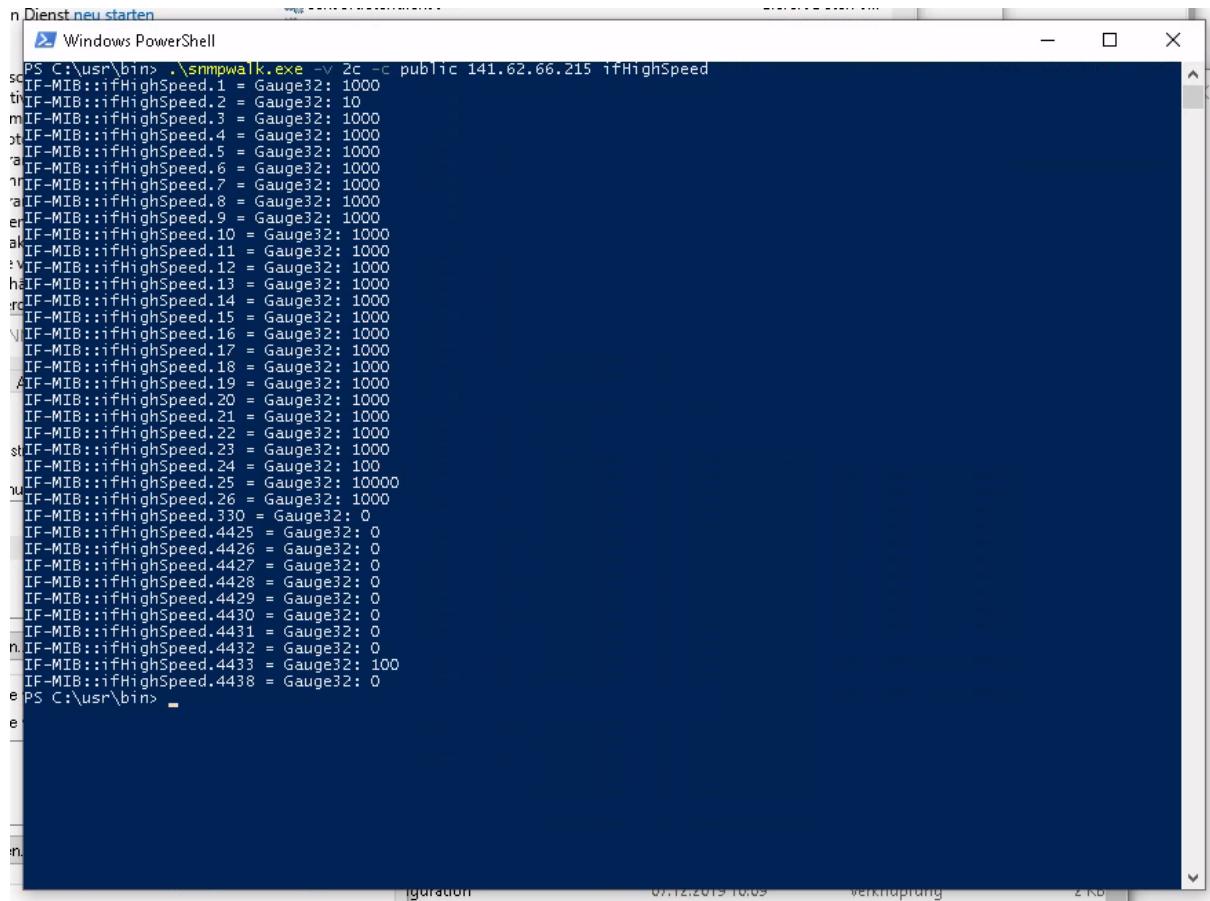
```
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.214 ifSpeed
IF-MIB::ifSpeed.1 = Gauge32: 1000000000
IF-MIB::ifSpeed.2 = Gauge32: 1000000000
IF-MIB::ifSpeed.3 = Gauge32: 1000000000
IF-MIB::ifSpeed.4 = Gauge32: 1000000000
IF-MIB::ifSpeed.5 = Gauge32: 1000000000
IF-MIB::ifSpeed.6 = Gauge32: 1000000000
IF-MIB::ifSpeed.7 = Gauge32: 1000000000
IF-MIB::ifSpeed.8 = Gauge32: 1000000000
IF-MIB::ifSpeed.9 = Gauge32: 1000000000
IF-MIB::ifSpeed.10 = Gauge32: 1000000000
IF-MIB::ifSpeed.11 = Gauge32: 1000000000
IF-MIB::ifSpeed.12 = Gauge32: 1000000000
IF-MIB::ifSpeed.13 = Gauge32: 1000000000
IF-MIB::ifSpeed.14 = Gauge32: 1000000000
IF-MIB::ifSpeed.15 = Gauge32: 1000000000
IF-MIB::ifSpeed.16 = Gauge32: 1000000000
IF-MIB::ifSpeed.17 = Gauge32: 1000000000
IF-MIB::ifSpeed.18 = Gauge32: 1000000000
IF-MIB::ifSpeed.19 = Gauge32: 1000000000
IF-MIB::ifSpeed.20 = Gauge32: 1000000000
IF-MIB::ifSpeed.21 = Gauge32: 1000000000
IF-MIB::ifSpeed.22 = Gauge32: 1000000000
IF-MIB::ifSpeed.23 = Gauge32: 1000000000
IF-MIB::ifSpeed.24 = Gauge32: 1000000000
IF-MIB::ifSpeed.25 = Gauge32: 4294967295
IF-MIB::ifSpeed.26 = Gauge32: 1000000000
IF-MIB::ifSpeed.330 = Gauge32: 0
IF-MIB::ifSpeed.4425 = Gauge32: 0
IF-MIB::ifSpeed.4426 = Gauge32: 0
IF-MIB::ifSpeed.4427 = Gauge32: 0
IF-MIB::ifSpeed.4428 = Gauge32: 0
IF-MIB::ifSpeed.4429 = Gauge32: 0
IF-MIB::ifSpeed.4430 = Gauge32: 0
IF-MIB::ifSpeed.4431 = Gauge32: 0
IF-MIB::ifSpeed.4432 = Gauge32: 0
IF-MIB::ifSpeed.4433 = Gauge32: 100000000
IF-MIB::ifSpeed.4438 = Gauge32: 0
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.214 ifHighSpeed
IF-MIB::ifHighSpeed.1 = Gauge32: 1000
IF-MIB::ifHighSpeed.2 = Gauge32: 1000
IF-MIB::ifHighSpeed.3 = Gauge32: 1000
IF-MIB::ifHighSpeed.4 = Gauge32: 1000
IF-MIB::ifHighSpeed.5 = Gauge32: 1000
IF-MIB::ifHighSpeed.6 = Gauge32: 1000
IF-MIB::ifHighSpeed.7 = Gauge32: 1000
IF-MIB::ifHighSpeed.8 = Gauge32: 1000
IF-MIB::ifHighSpeed.9 = Gauge32: 1000
IF-MIB::ifHighSpeed.10 = Gauge32: 1000
IF-MIB::ifHighSpeed.11 = Gauge32: 1000
IF-MIB::ifHighSpeed.12 = Gauge32: 1000
IF-MIB::ifHighSpeed.13 = Gauge32: 1000
IF-MIB::ifHighSpeed.14 = Gauge32: 1000
IF-MIB::ifHighSpeed.15 = Gauge32: 1000
IF-MIB::ifHighSpeed.16 = Gauge32: 1000
IF-MIB::ifHighSpeed.17 = Gauge32: 1000
IF-MIB::ifHighSpeed.18 = Gauge32: 1000
IF-MIB::ifHighSpeed.19 = Gauge32: 1000
IF-MIB::ifHighSpeed.20 = Gauge32: 1000
IF-MIB::ifHighSpeed.21 = Gauge32: 1000
IF-MIB::ifHighSpeed.22 = Gauge32: 1000
IF-MIB::ifHighSpeed.23 = Gauge32: 1000
IF-MIB::ifHighSpeed.24 = Gauge32: 1000
IF-MIB::ifHighSpeed.25 = Gauge32: 10000
IF-MIB::ifHighSpeed.26 = Gauge32: 1000
IF-MIB::ifHighSpeed.330 = Gauge32: 0
IF-MIB::ifHighSpeed.4425 = Gauge32: 0
IF-MIB::ifHighSpeed.4426 = Gauge32: 0
IF-MIB::ifHighSpeed.4427 = Gauge32: 0
IF-MIB::ifHighSpeed.4428 = Gauge32: 0
IF-MIB::ifHighSpeed.4429 = Gauge32: 0
IF-MIB::ifHighSpeed.4430 = Gauge32: 0
IF-MIB::ifHighSpeed.4431 = Gauge32: 0
IF-MIB::ifHighSpeed.4432 = Gauge32: 0
IF-MIB::ifHighSpeed.4433 = Gauge32: 100
IF-MIB::ifHighSpeed.4438 = Gauge32: 0
PS C:\usr\bin>
```

Abbildung 7: Ergebnis der Abfrage auf 141.62.66.214



```
PS C:\usr\bin> ./snmpwalk.exe -v 2c -c public 141.62.66.215 ifSpeed
IF-MIB::ifSpeed.1 = Gauge32: 1000000000
IF-MIB::ifSpeed.2 = Gauge32: 100000000
IF-MIB::ifSpeed.3 = Gauge32: 1000000000
IF-MIB::ifSpeed.4 = Gauge32: 1000000000
IF-MIB::ifSpeed.5 = Gauge32: 1000000000
IF-MIB::ifSpeed.6 = Gauge32: 1000000000
IF-MIB::ifSpeed.7 = Gauge32: 1000000000
IF-MIB::ifSpeed.8 = Gauge32: 1000000000
IF-MIB::ifSpeed.9 = Gauge32: 1000000000
IF-MIB::ifSpeed.10 = Gauge32: 10000000000
IF-MIB::ifSpeed.11 = Gauge32: 1000000000
IF-MIB::ifSpeed.12 = Gauge32: 1000000000
IF-MIB::ifSpeed.13 = Gauge32: 1000000000
IF-MIB::ifSpeed.14 = Gauge32: 1000000000
IF-MIB::ifSpeed.15 = Gauge32: 1000000000
IF-MIB::ifSpeed.16 = Gauge32: 1000000000
IF-MIB::ifSpeed.17 = Gauge32: 1000000000
IF-MIB::ifSpeed.18 = Gauge32: 1000000000
IF-MIB::ifSpeed.19 = Gauge32: 1000000000
IF-MIB::ifSpeed.20 = Gauge32: 1000000000
IF-MIB::ifSpeed.21 = Gauge32: 1000000000
IF-MIB::ifSpeed.22 = Gauge32: 1000000000
IF-MIB::ifSpeed.23 = Gauge32: 1000000000
IF-MIB::ifSpeed.24 = Gauge32: 1000000000
IF-MIB::ifSpeed.25 = Gauge32: 4294967295
IF-MIB::ifSpeed.26 = Gauge32: 1000000000
IF-MIB::ifSpeed.330 = Gauge32: 0
IF-MIB::ifSpeed.4425 = Gauge32: 0
IF-MIB::ifSpeed.4426 = Gauge32: 0
IF-MIB::ifSpeed.4427 = Gauge32: 0
IF-MIB::ifSpeed.4428 = Gauge32: 0
IF-MIB::ifSpeed.4429 = Gauge32: 0
IF-MIB::ifSpeed.4430 = Gauge32: 0
IF-MIB::ifSpeed.4431 = Gauge32: 0
IF-MIB::ifSpeed.4432 = Gauge32: 0
IF-MIB::ifSpeed.4433 = Gauge32: 100000000
IF-MIB::ifSpeed.4438 = Gauge32: 0
PS C:\usr\bin>
```

Abbildung 8: Ergebnis der `ifspeed` Abfrage auf 141.62.66.215



```
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.215 ifHighSpeed
IF-MIB::ifHighSpeed.1 = Gauge32: 1000
IF-MIB::ifHighSpeed.2 = Gauge32: 1000
IF-MIB::ifHighSpeed.3 = Gauge32: 1000
IF-MIB::ifHighSpeed.4 = Gauge32: 1000
IF-MIB::ifHighSpeed.5 = Gauge32: 1000
IF-MIB::ifHighSpeed.6 = Gauge32: 1000
IF-MIB::ifHighSpeed.7 = Gauge32: 1000
IF-MIB::ifHighSpeed.8 = Gauge32: 1000
IF-MIB::ifHighSpeed.9 = Gauge32: 1000
IF-MIB::ifHighSpeed.10 = Gauge32: 1000
IF-MIB::ifHighSpeed.11 = Gauge32: 1000
IF-MIB::ifHighSpeed.12 = Gauge32: 1000
IF-MIB::ifHighSpeed.13 = Gauge32: 1000
IF-MIB::ifHighSpeed.14 = Gauge32: 1000
IF-MIB::ifHighSpeed.15 = Gauge32: 1000
IF-MIB::ifHighSpeed.16 = Gauge32: 1000
IF-MIB::ifHighSpeed.17 = Gauge32: 1000
IF-MIB::ifHighSpeed.18 = Gauge32: 1000
IF-MIB::ifHighSpeed.19 = Gauge32: 1000
IF-MIB::ifHighSpeed.20 = Gauge32: 1000
IF-MIB::ifHighSpeed.21 = Gauge32: 1000
IF-MIB::ifHighSpeed.22 = Gauge32: 1000
IF-MIB::ifHighSpeed.23 = Gauge32: 1000
IF-MIB::ifHighSpeed.24 = Gauge32: 100
IF-MIB::ifHighSpeed.25 = Gauge32: 10000
IF-MIB::ifHighSpeed.26 = Gauge32: 1000
IF-MIB::ifHighSpeed.330 = Gauge32: 0
IF-MIB::ifHighSpeed.4425 = Gauge32: 0
IF-MIB::ifHighSpeed.4426 = Gauge32: 0
IF-MIB::ifHighSpeed.4427 = Gauge32: 0
IF-MIB::ifHighSpeed.4428 = Gauge32: 0
IF-MIB::ifHighSpeed.4429 = Gauge32: 0
IF-MIB::ifHighSpeed.4430 = Gauge32: 0
IF-MIB::ifHighSpeed.4431 = Gauge32: 0
IF-MIB::ifHighSpeed.4432 = Gauge32: 0
IF-MIB::ifHighSpeed.4433 = Gauge32: 100
IF-MIB::ifHighSpeed.4438 = Gauge32: 0
PS C:\usr\bin>
```

Abbildung 9: Ergebnis der ifHighSpeed Abfrage auf 141.62.66.215

TODO: Add interpretation

Welche Geräte sind auf welchen Ports (141.62.66.213 oder .214, .215) angeschlossen (Hinweis: ifAlias)?

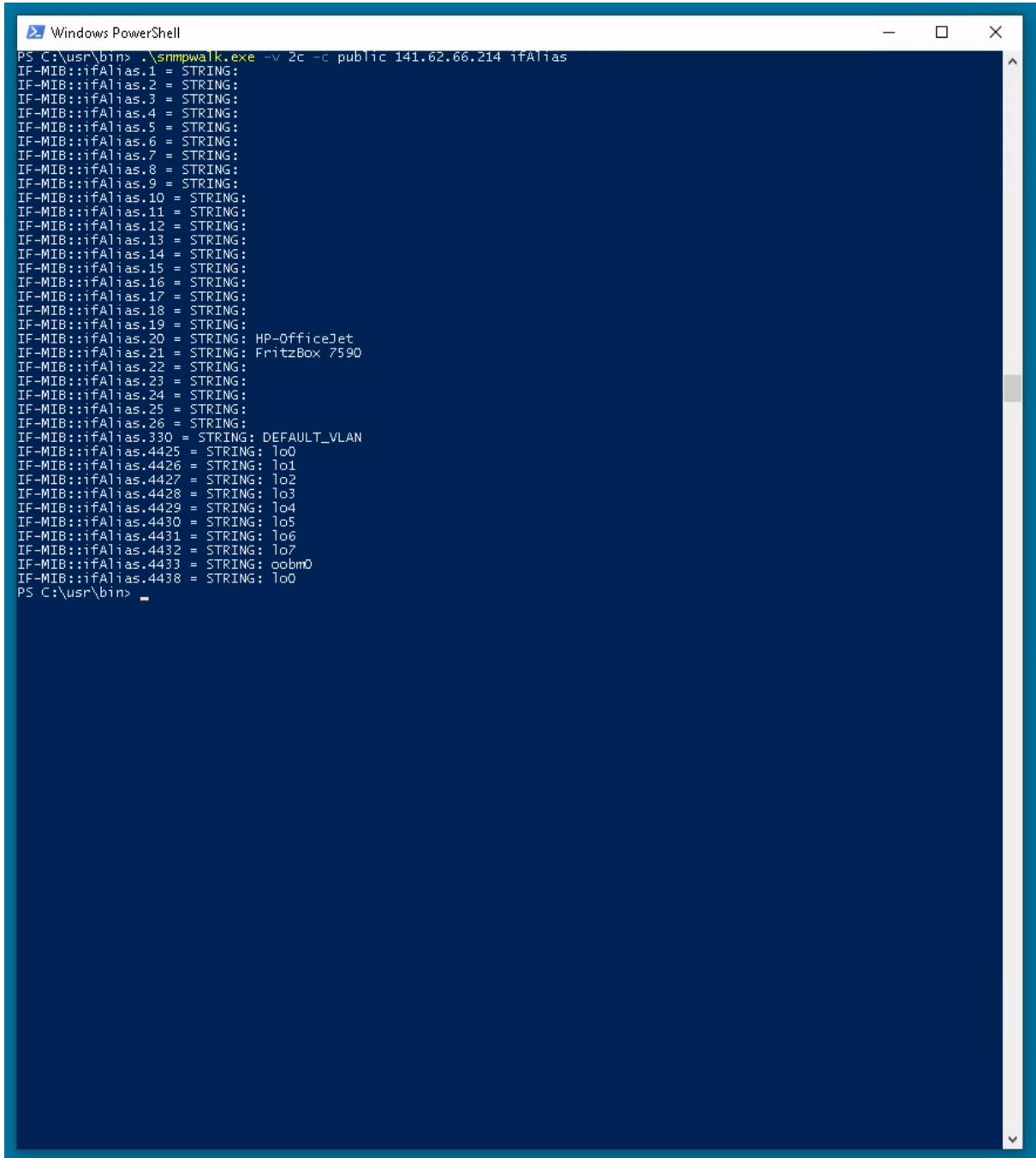
TODO: Add interpretation

141.62.66.215 war zum Zeitpunkt der Versuchsdurchführung nicht erreichbar.



The screenshot shows a Windows PowerShell window with the title 'Windows PowerShell'. The command entered is `PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.213 ifAlias`. The output lists numerous entries under the 'ifAlias' MIB object, each consisting of a numerical index followed by a colon and a string value. The strings include 'STRING:', 'PC-1', 'Server-15', and various interface names like 'lo0', 'lo1', 'lo2', 'lo3', 'lo4', 'lo5', 'lo6', 'lo7', and 'oobm0'. The window has a standard blue header bar and a white body with black text.

Abbildung 10: Ergebnis der Abfrage auf 141.62.66.213



```
Windows PowerShell
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.214 ifAlias
IF-MIB::ifAlias.1 = STRING:
IF-MIB::ifAlias.2 = STRING:
IF-MIB::ifAlias.3 = STRING:
IF-MIB::ifAlias.4 = STRING:
IF-MIB::ifAlias.5 = STRING:
IF-MIB::ifAlias.6 = STRING:
IF-MIB::ifAlias.7 = STRING:
IF-MIB::ifAlias.8 = STRING:
IF-MIB::ifAlias.9 = STRING:
IF-MIB::ifAlias.10 = STRING:
IF-MIB::ifAlias.11 = STRING:
IF-MIB::ifAlias.12 = STRING:
IF-MIB::ifAlias.13 = STRING:
IF-MIB::ifAlias.14 = STRING:
IF-MIB::ifAlias.15 = STRING:
IF-MIB::ifAlias.16 = STRING:
IF-MIB::ifAlias.17 = STRING:
IF-MIB::ifAlias.18 = STRING:
IF-MIB::ifAlias.19 = STRING:
IF-MIB::ifAlias.20 = STRING: HP-OfficeJet
IF-MIB::ifAlias.21 = STRING: FritzBox 7590
IF-MIB::ifAlias.22 = STRING:
IF-MIB::ifAlias.23 = STRING:
IF-MIB::ifAlias.24 = STRING:
IF-MIB::ifAlias.25 = STRING:
IF-MIB::ifAlias.26 = STRING:
IF-MIB::ifAlias.330 = STRING: DEFAULT_VLAN
IF-MIB::ifAlias.4425 = STRING: lo0
IF-MIB::ifAlias.4426 = STRING: lo1
IF-MIB::ifAlias.4427 = STRING: lo2
IF-MIB::ifAlias.4428 = STRING: lo3
IF-MIB::ifAlias.4429 = STRING: lo4
IF-MIB::ifAlias.4430 = STRING: lo5
IF-MIB::ifAlias.4431 = STRING: lo6
IF-MIB::ifAlias.4432 = STRING: lo7
IF-MIB::ifAlias.4433 = STRING: oobm0
IF-MIB::ifAlias.4438 = STRING: lo0
PS C:\usr\bin>
```

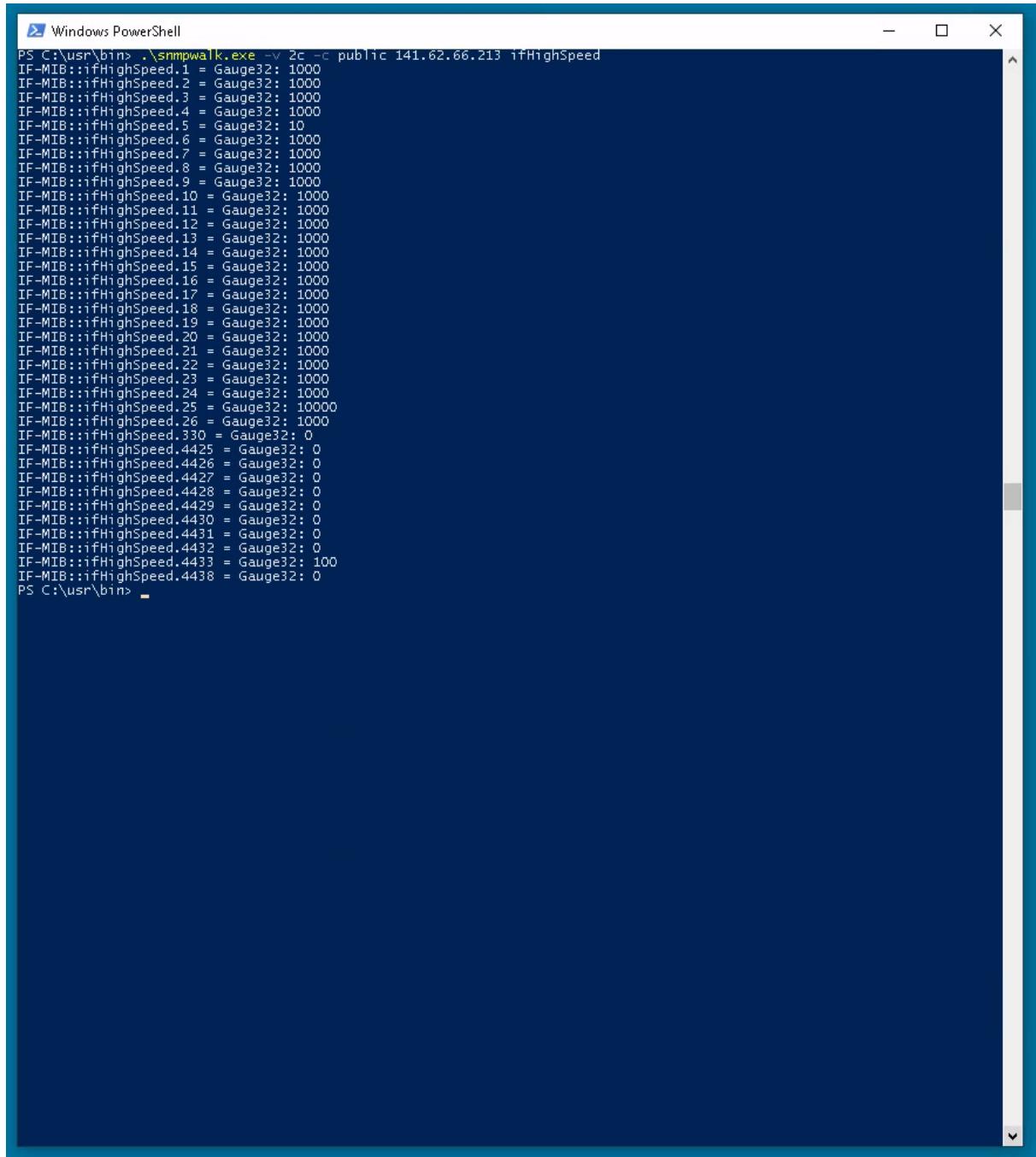
Abbildung 11: Ergebnis der Abfrage auf 141.62.66.214

Gibt es Unterschiede beispielsweise zwischen PCs die angeschaltet sind und solchen, die zwar angeschlossen, aber ausgeschaltet sind (Hinweis: Erkennbar an der Port-Geschwindigkeit) ?

Alle Geräte bei uns sind angeschlossen und deren Ports werden als 1 Gigabit-Port dargestellt; Alias 25

aber wird als 10 Gigabit-Port dargestellt. Alias 4433 wird als 100 MBit-Port dargestellt.

Nachdem der Rechner [rn04](#) ausgeschaltet wurde, findet sich für den Switch mit der IP 141.62.66.214 an Port 5 die Geschwindigkeit 10 Mbit:

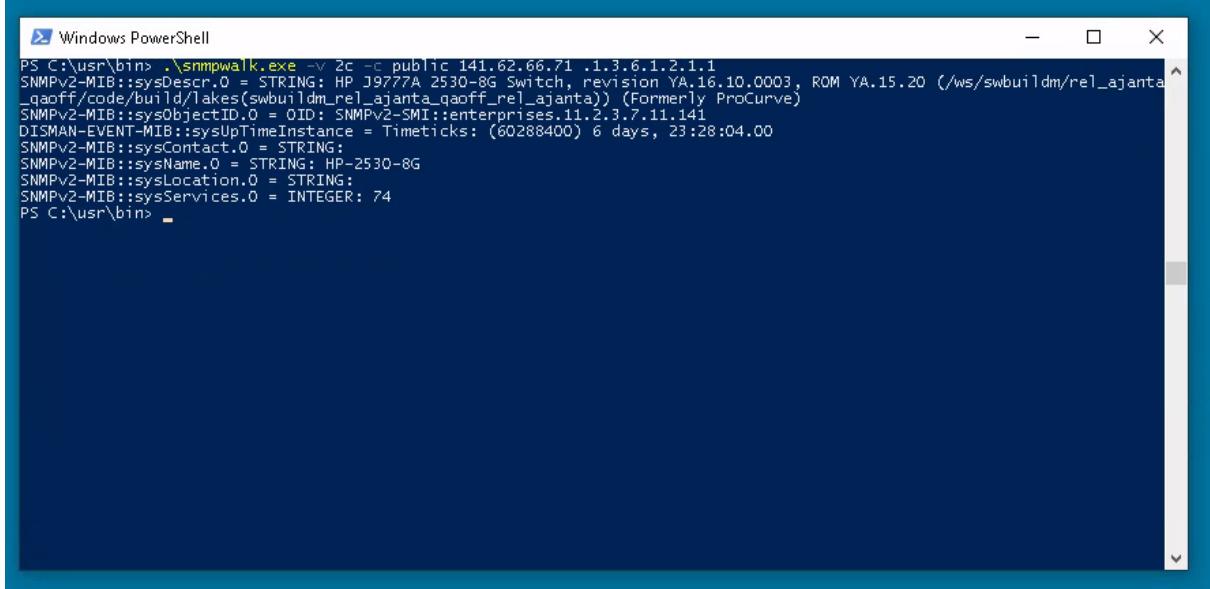


```
Windows PowerShell
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.213 ifHighSpeed
IF-MIB::ifHighSpeed.1 = Gauge32: 1000
IF-MIB::ifHighSpeed.2 = Gauge32: 1000
IF-MIB::ifHighSpeed.3 = Gauge32: 1000
IF-MIB::ifHighSpeed.4 = Gauge32: 1000
IF-MIB::ifHighSpeed.5 = Gauge32: 10
IF-MIB::ifHighSpeed.6 = Gauge32: 1000
IF-MIB::ifHighSpeed.7 = Gauge32: 1000
IF-MIB::ifHighSpeed.8 = Gauge32: 1000
IF-MIB::ifHighSpeed.9 = Gauge32: 1000
IF-MIB::ifHighSpeed.10 = Gauge32: 1000
IF-MIB::ifHighSpeed.11 = Gauge32: 1000
IF-MIB::ifHighSpeed.12 = Gauge32: 1000
IF-MIB::ifHighSpeed.13 = Gauge32: 1000
IF-MIB::ifHighSpeed.14 = Gauge32: 1000
IF-MIB::ifHighSpeed.15 = Gauge32: 1000
IF-MIB::ifHighSpeed.16 = Gauge32: 1000
IF-MIB::ifHighSpeed.17 = Gauge32: 1000
IF-MIB::ifHighSpeed.18 = Gauge32: 1000
IF-MIB::ifHighSpeed.19 = Gauge32: 1000
IF-MIB::ifHighSpeed.20 = Gauge32: 1000
IF-MIB::ifHighSpeed.21 = Gauge32: 1000
IF-MIB::ifHighSpeed.22 = Gauge32: 1000
IF-MIB::ifHighSpeed.23 = Gauge32: 1000
IF-MIB::ifHighSpeed.24 = Gauge32: 1000
IF-MIB::ifHighSpeed.25 = Gauge32: 10000
IF-MIB::ifHighSpeed.26 = Gauge32: 1000
IF-MIB::ifHighSpeed.330 = Gauge32: 0
IF-MIB::ifHighSpeed.4425 = Gauge32: 0
IF-MIB::ifHighSpeed.4426 = Gauge32: 0
IF-MIB::ifHighSpeed.4427 = Gauge32: 0
IF-MIB::ifHighSpeed.4428 = Gauge32: 0
IF-MIB::ifHighSpeed.4429 = Gauge32: 0
IF-MIB::ifHighSpeed.4430 = Gauge32: 0
IF-MIB::ifHighSpeed.4431 = Gauge32: 0
IF-MIB::ifHighSpeed.4432 = Gauge32: 0
IF-MIB::ifHighSpeed.4433 = Gauge32: 100
IF-MIB::ifHighSpeed.4438 = Gauge32: 100
PS C:\usr\bin>
```

Abbildung 12: Ergebnis der Abfrage auf 141.62.66.214

Zu sehen ist also, dass für ausgeschaltete PCs die Port-Geschwindigkeit auf 10 Mbit sinkt.

Wie sieht ein entsprechender snmpwalk bei Ihrem Switch aus (objectID: .1.3.6.1.2.1.1)?



The screenshot shows a Windows PowerShell window titled "Windows PowerShell". The command executed is "PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.71 .1.3.6.1.2.1.1". The output displays various SNMP entries for the switch, including system information like sysName, sysLocation, and sysServices, as well as specific port details. One entry for a port shows a speed of 10Mbit/s.

```
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.71 .1.3.6.1.2.1.1
SNMPv2-MIB::sysDescr.0 = STRING: HP J9777A 2530-8G Switch, revision YA.16.10.0003, ROM YA.15.20 (/ws/swbuildm/rel_ajanta_qaoff/code/build/lakes/swbuildm_rel_ajanta_qaoff_rel_ajanta) (Formerly ProCurve)
SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises.11.2.3.7.11.141
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (60288400) 6 days, 23:28:04.00
SNMPv2-MIB::sysContact.0 = STRING:
SNMPv2-MIB::sysName.0 = STRING: HP-2530-8G
SNMPv2-MIB::sysLocation.0 = STRING:
SNMPv2-MIB::sysServices.0 = INTEGER: 74
PS C:\usr\bin>
```

Abbildung 13: Ergebnis der Abfrage auf 141.62.66.71

Setzen Sie mit snmpset einen Ansprechpartner auf Ihrem Switch. Überprüfen sie Ihre Einstellung!

Zuerst muss SNMP-Schreibzugriff aktiviert werden:

```
HP-2530-8G          8-Jan-1990  2:30:32 ^A
=====
 CONSOLE - MANAGER MODE =====
 Switch Configuration - SNMP Communities

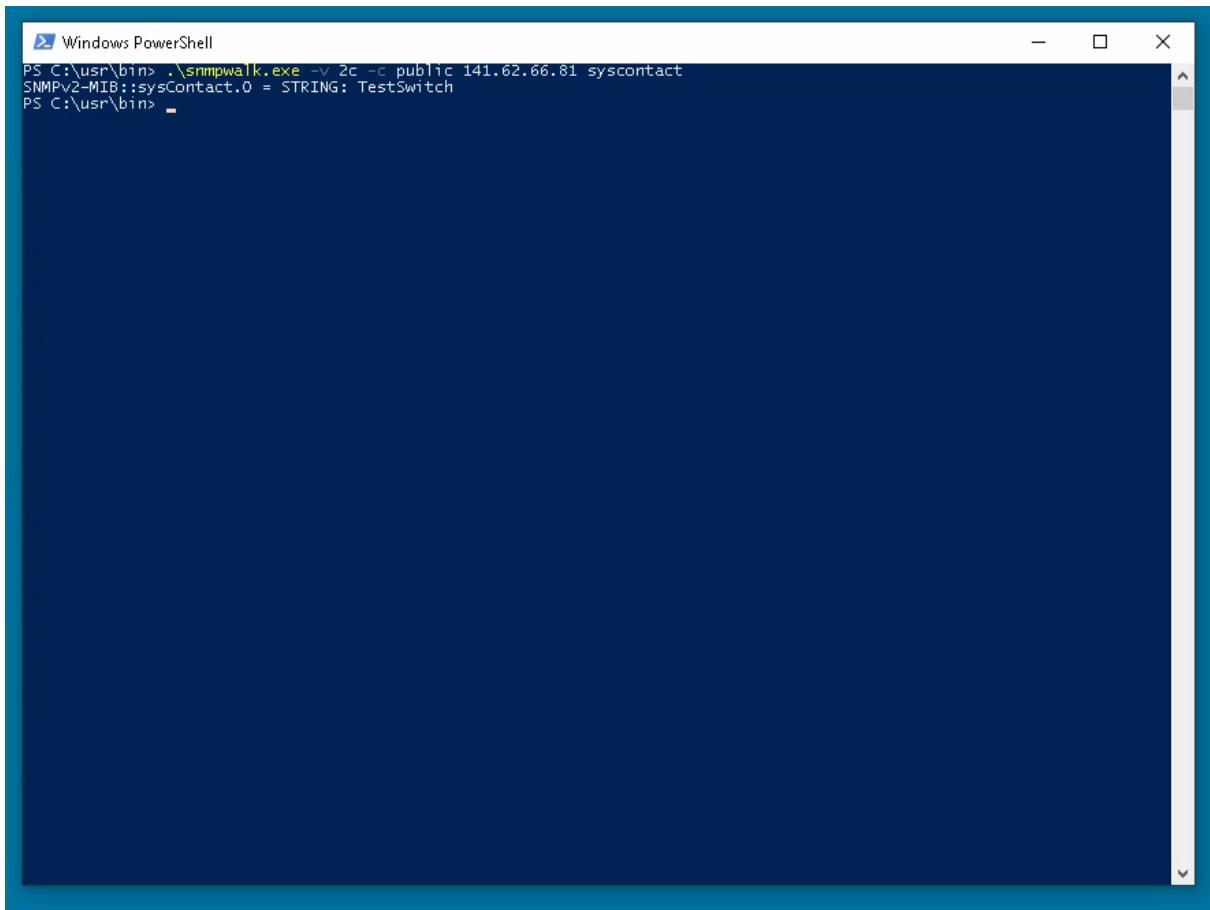
 Community Name      MIB View Write Access
 -----
 public              Manager  Unrestricted

Actions-> Back Add Edit Delete Help
Return to previous screen.

Use up/down arrow keys to change record selection, left/right arrow keys to
change action selection, and <Enter> to execute action.
```

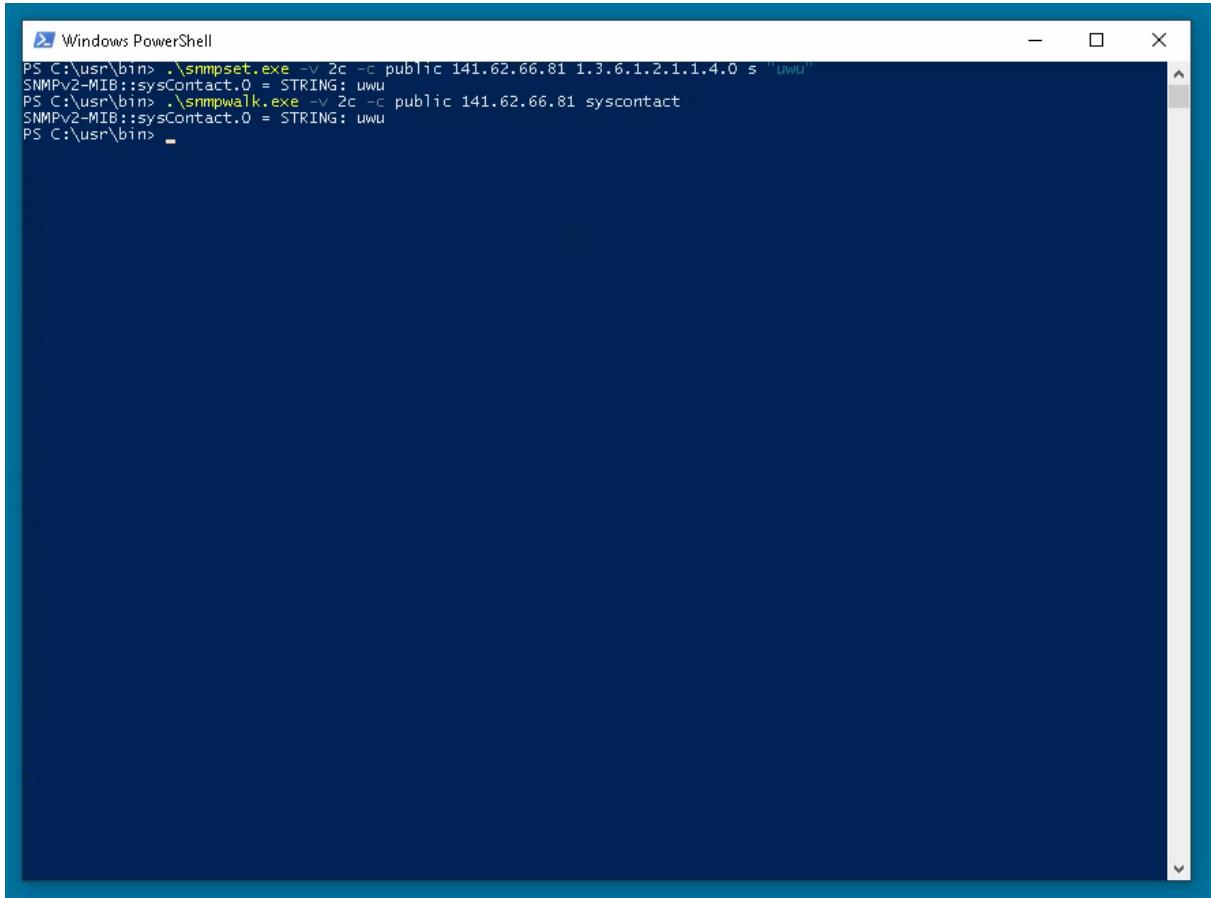
Abbildung 14: Aktivieren von SNMP-Schreibzugriff

Im nachfolgenden wird nun der Switch mit der IP 141.62.66.81 verwendet.



A screenshot of a Windows PowerShell window titled "Windows PowerShell". The command entered is ".\snmpwalk.exe -v 2c -c public 141.62.66.81 syscontact". The output shows one line: "SNMPv2-MIB::sysContact.0 = STRING: TestSwitch". The window has a dark blue background and standard Windows-style borders.

Abbildung 15: Ergebnis der Abfrage auf 141.62.66.81

A screenshot of a Windows PowerShell window titled "Windows PowerShell". The window shows the following command-line session:

```
PS C:\usr\bin> .\snmpset.exe -v 2c -c public 141.62.66.81 1.3.6.1.2.1.1.4.0 s "uwu"
SNMPv2-MIB::sysContact.0 = STRING: uwu
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.81 syscontact
SNMPv2-MIB::sysContact.0 = STRING: uwu
PS C:\usr\bin> -
```

The window has a dark blue background and a light blue header bar.

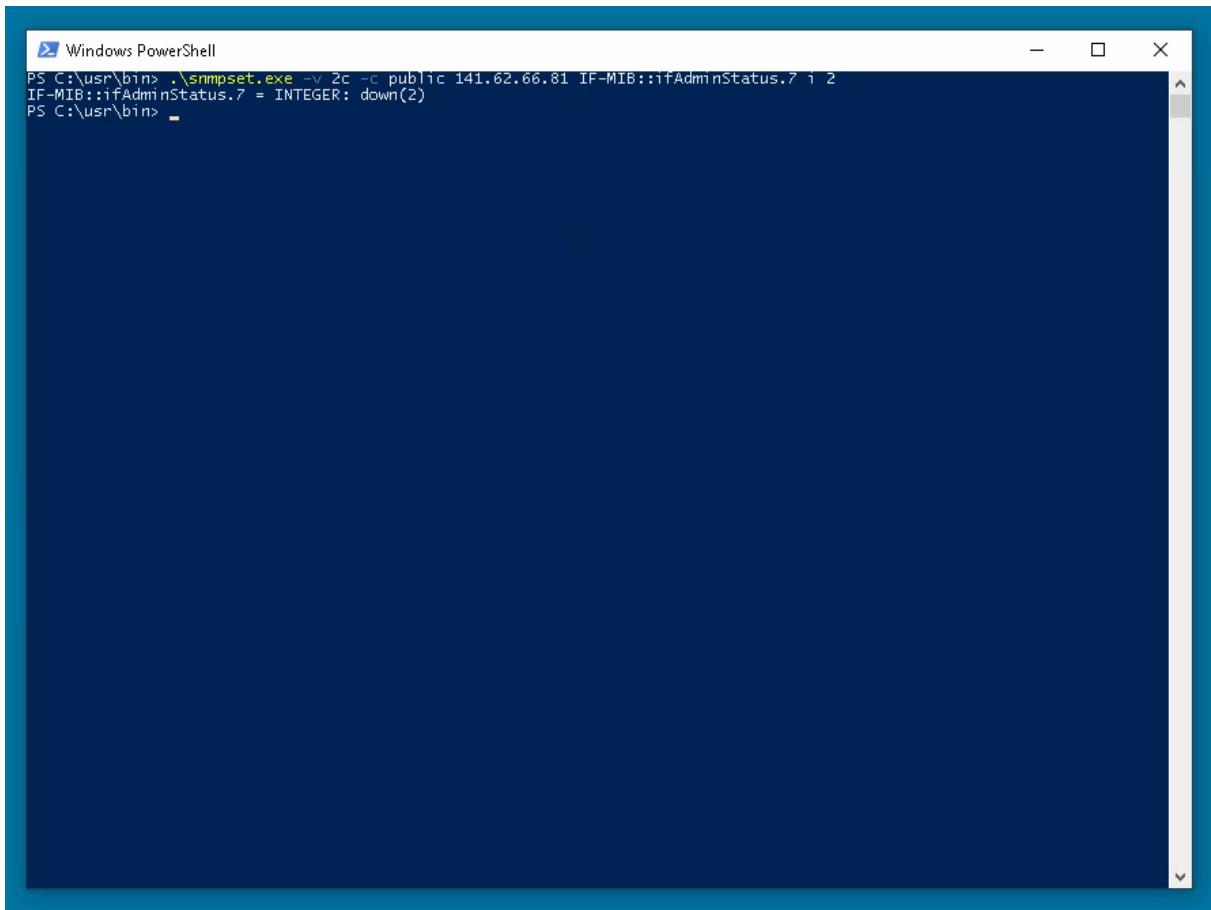
Abbildung 16: Setzen und erneutes Abfragen von `syscontact` auf 141.62.66.81

Verändern Sie mittels `snmpset` die Namen einzelner Switchports.

```
Windows PowerShell
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.81 IF-MIB::ifAlias
IF-MIB::ifAlias.1 = STRING:
IF-MIB::ifAlias.2 = STRING:
IF-MIB::ifAlias.3 = STRING:
IF-MIB::ifAlias.4 = STRING:
IF-MIB::ifAlias.5 = STRING:
IF-MIB::ifAlias.6 = STRING:
IF-MIB::ifAlias.7 = STRING:
IF-MIB::ifAlias.8 = STRING:
IF-MIB::ifAlias.9 = STRING:
IF-MIB::ifAlias.10 = STRING:
IF-MIB::ifAlias.102 = STRING: DEFAULT_VLAN
IF-MIB::ifAlias.4324 = STRING: lo0
IF-MIB::ifAlias.4325 = STRING: lo1
IF-MIB::ifAlias.4326 = STRING: lo2
IF-MIB::ifAlias.4327 = STRING: lo3
IF-MIB::ifAlias.4328 = STRING: lo4
IF-MIB::ifAlias.4329 = STRING: lo5
IF-MIB::ifAlias.4330 = STRING: lo6
IF-MIB::ifAlias.4331 = STRING: lo7
PS C:\usr\bin> .\snmpset.exe -v 2c -c public 141.62.66.81 IF-MIB::ifAlias.1 s "www_port"
IF-MIB::ifAlias.1 = STRING: www_port
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.81 IF-MIB::ifAlias
IF-MIB::ifAlias.1 = STRING: www_port
IF-MIB::ifAlias.2 = STRING:
IF-MIB::ifAlias.3 = STRING:
IF-MIB::ifAlias.4 = STRING:
IF-MIB::ifAlias.5 = STRING:
IF-MIB::ifAlias.6 = STRING:
IF-MIB::ifAlias.7 = STRING:
IF-MIB::ifAlias.8 = STRING:
IF-MIB::ifAlias.9 = STRING:
IF-MIB::ifAlias.10 = STRING:
IF-MIB::ifAlias.102 = STRING: DEFAULT_VLAN
IF-MIB::ifAlias.4324 = STRING: lo0
IF-MIB::ifAlias.4325 = STRING: lo1
IF-MIB::ifAlias.4326 = STRING: lo2
IF-MIB::ifAlias.4327 = STRING: lo3
IF-MIB::ifAlias.4328 = STRING: lo4
IF-MIB::ifAlias.4329 = STRING: lo5
IF-MIB::ifAlias.4330 = STRING: lo6
IF-MIB::ifAlias.4331 = STRING: lo7
PS C:\usr\bin>
```

Abbildung 17: Abfragen und Setzen des Namens des Switch-Ports 1 auf 141.62.66.81

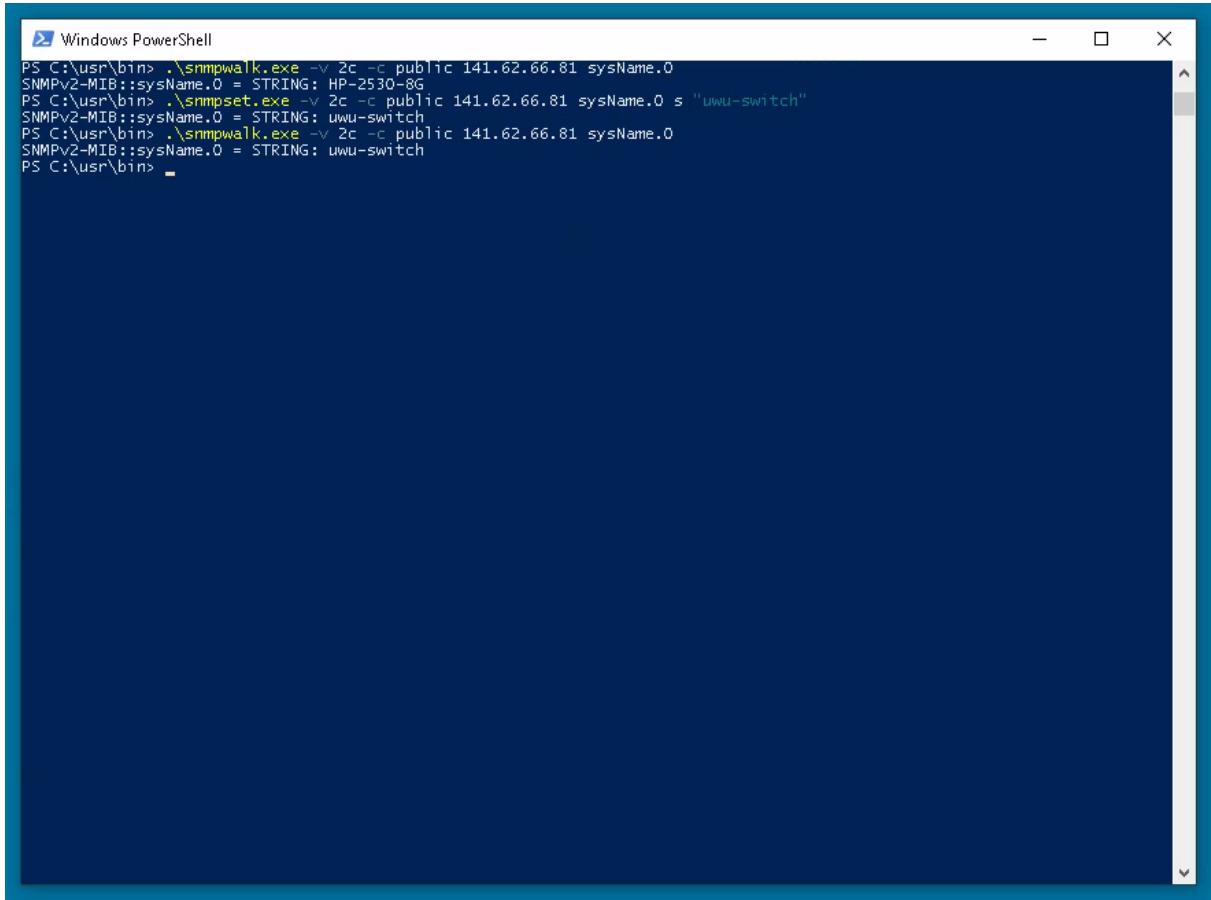
Setzen Sie mit snmpset einen beliebigen Switchport auf disable (Vorsicht: „Schneiden Sie sich nicht den Ast auf dem Sie sitzen ab!“)



```
Windows PowerShell
PS C:\usr\bin> .\snmpset.exe -v 2c -c public 141.62.66.81 IF-MIB::ifAdminStatus.7 i 2
IF-MIB::ifAdminStatus.7 = INTEGER: down(2)
PS C:\usr\bin>
```

Abbildung 18: Deaktivieren eines Switchports auf 141.62.66.81

Wie ändert man den System-Namen des Switches?



```
Windows PowerShell
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.81 sysName.0
SNMPv2-MIB::sysName.0 = STRING: HP-2530-8G
PS C:\usr\bin> .\snmpset.exe -v 2c -c public 141.62.66.81 sysName.0 s "uwu-switch"
SNMPv2-MIB::sysName.0 = STRING: uwu-switch
PS C:\usr\bin> .\snmpwalk.exe -v 2c -c public 141.62.66.81 sysName.0
SNMPv2-MIB::sysName.0 = STRING: uwu-switch
PS C:\usr\bin>
```

Abbildung 19: Abfragen und Setzen des Namens des Switch-Namens 1 auf 141.62.66.81

3 Prometheus und Grafana

Fragen Sie mit Prometheus den sysName ihres Switches ab



The screenshot shows the Prometheus web interface. At the top, there's a navigation bar with links for Prometheus, Alerts, Graph, Status, and Help. Below the navigation bar is a search bar containing the query `sysName(instance!="141.62.66.81")`. To the right of the search bar, it says "Load time: 8ms", "Resolution: 14s", and "Total time series: 1". Below the search bar are two tabs: "Execute" (which is selected) and "- insert metric at cursor -". Underneath these tabs is another set of tabs: "Graph" (selected) and "Console". A table below the tabs displays the results of the query. The table has two columns: "Element" and "Value". The single row in the table shows the element `sysName(display="Switch-81",instance="141.62.66.81",job="snmp",sysName="uwu-switch")` and its value as 1. There are buttons for "Remove Graph" and "Add Graph" at the bottom of the table area.

Abbildung 20: Ergebnis der sysname-Abfrage für 141.62.66.81

Wie lange läuft Ihr Switch bereits?



Abbildung 21: Ergebnis der uptime-Abfrage für 141.62.66.81‘

TODO: Add interpretation

Sind alle Switchports „UP“?

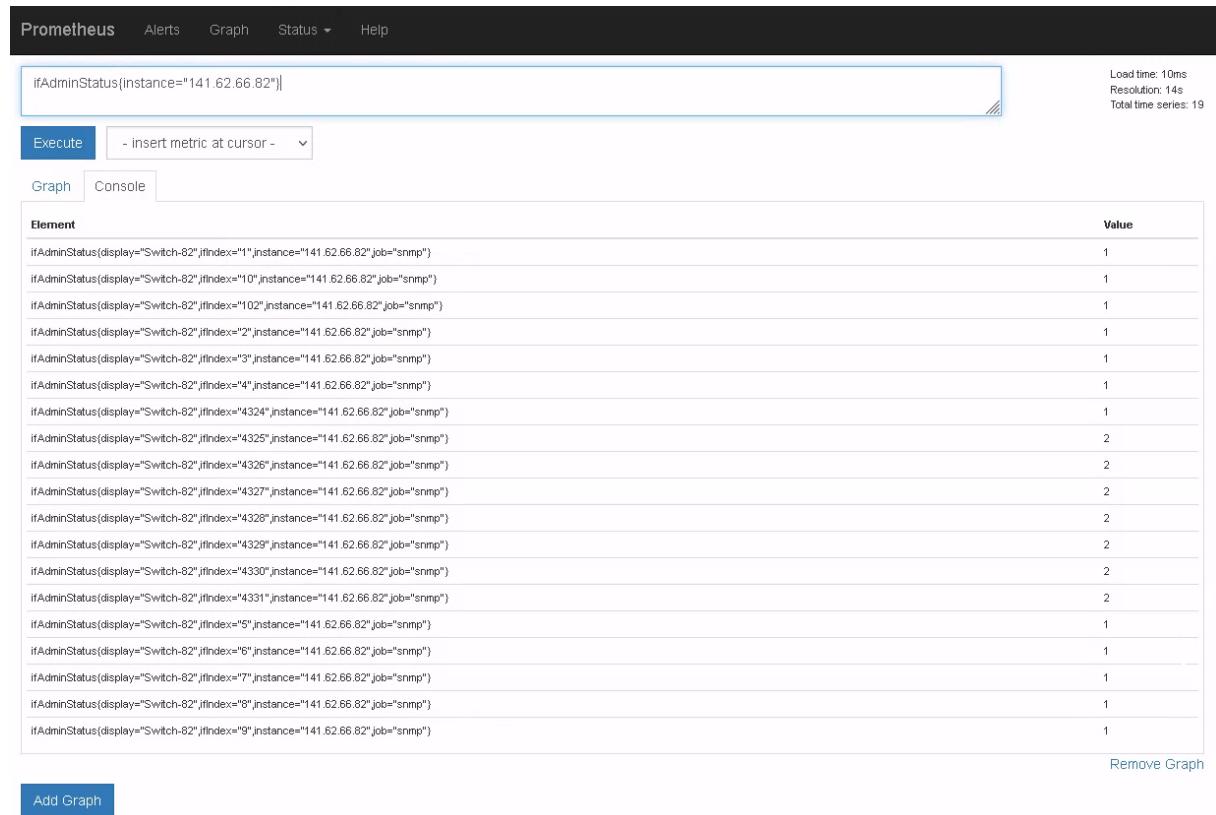


Abbildung 22: Ergebnis der Switchport-Status-Abfrage für 141.62.66.81‘

TODO: Add interpretation

Mit welchem Speed laufen ihre Switchports

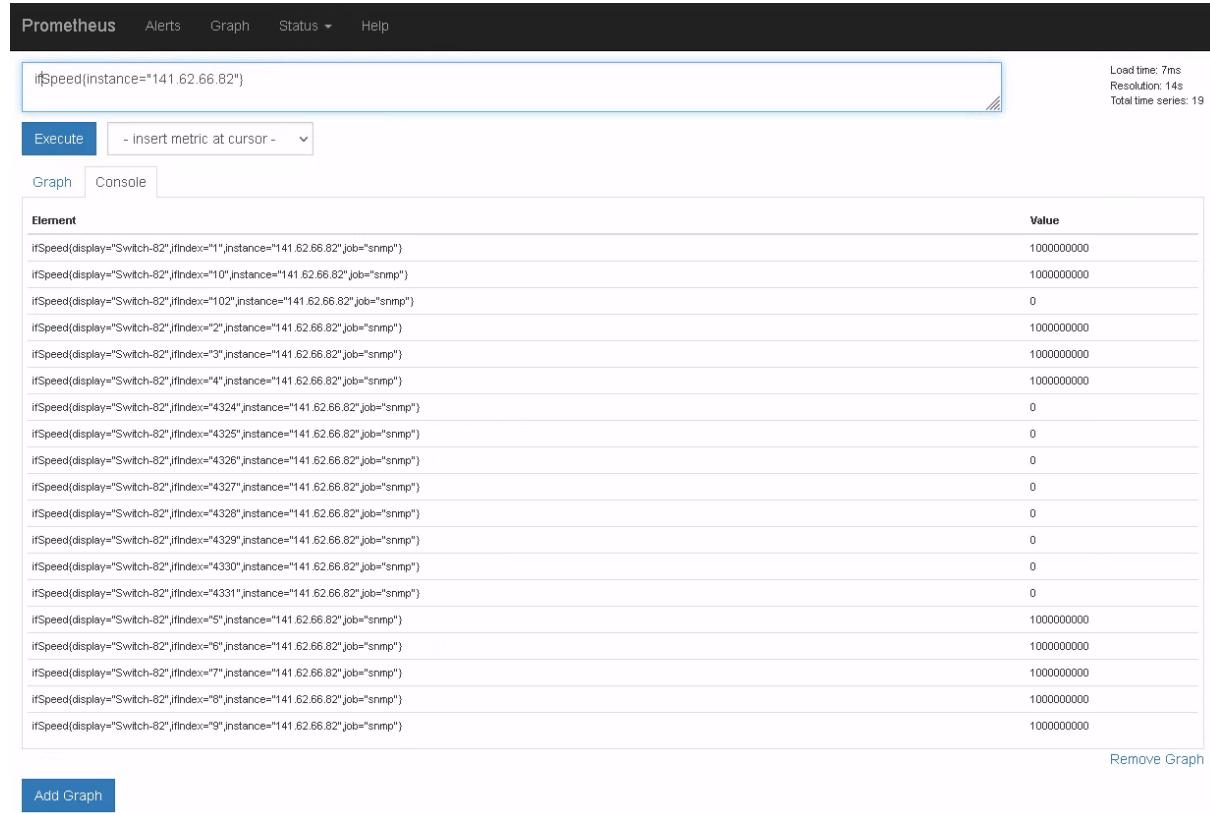
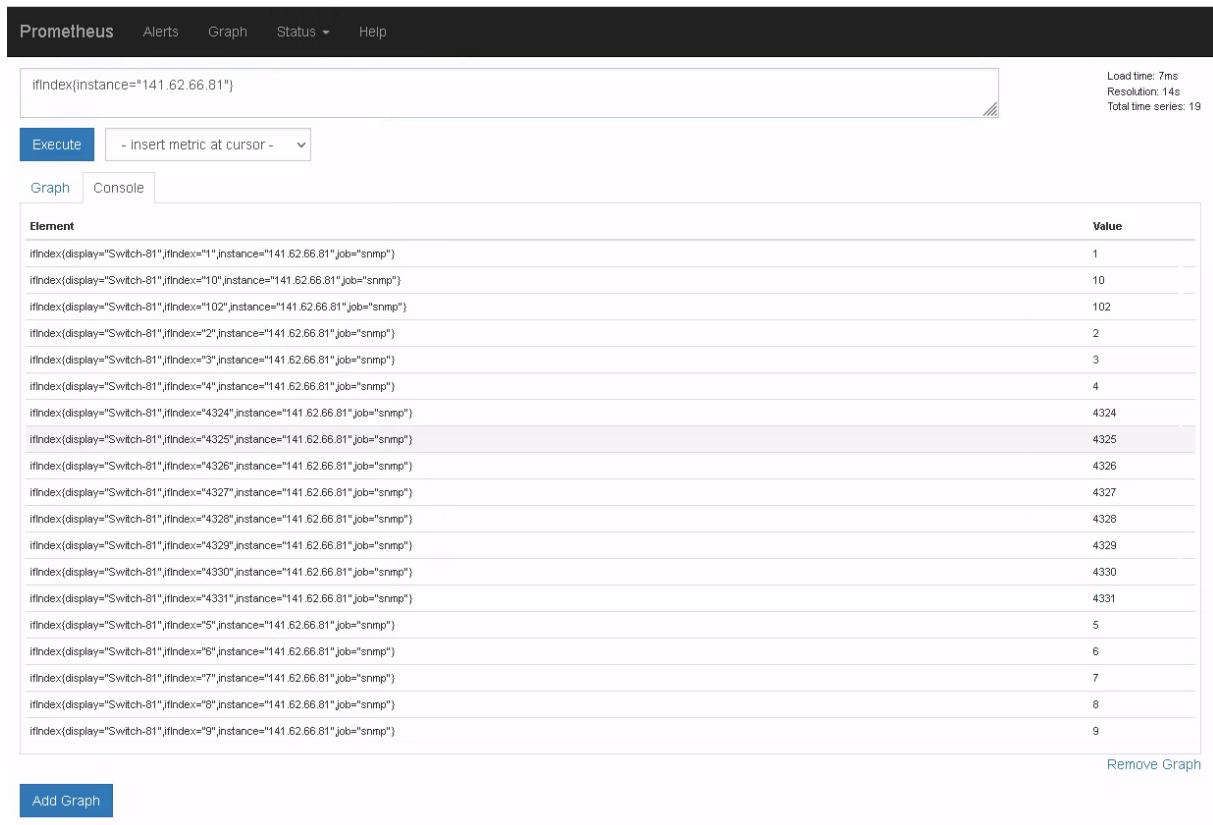


Abbildung 23: Ergebnis der `ifspeed`-Abfrage für 141.62.66.81¹

TODO: Add interpretation

Über wie viele Ethernet-Interfaces verfügt ihr Switch?

**Abbildung 24:** Ergebnis der `ifIndex`-Abfrage für 141.62.66.81⁴

TODO: Add interpretation

Legen Sie sich zunächst ein eigenes Dashboard (entsprechend ihrem Switch-Namen) an, damit Sie niemandem in die Quere kommen.

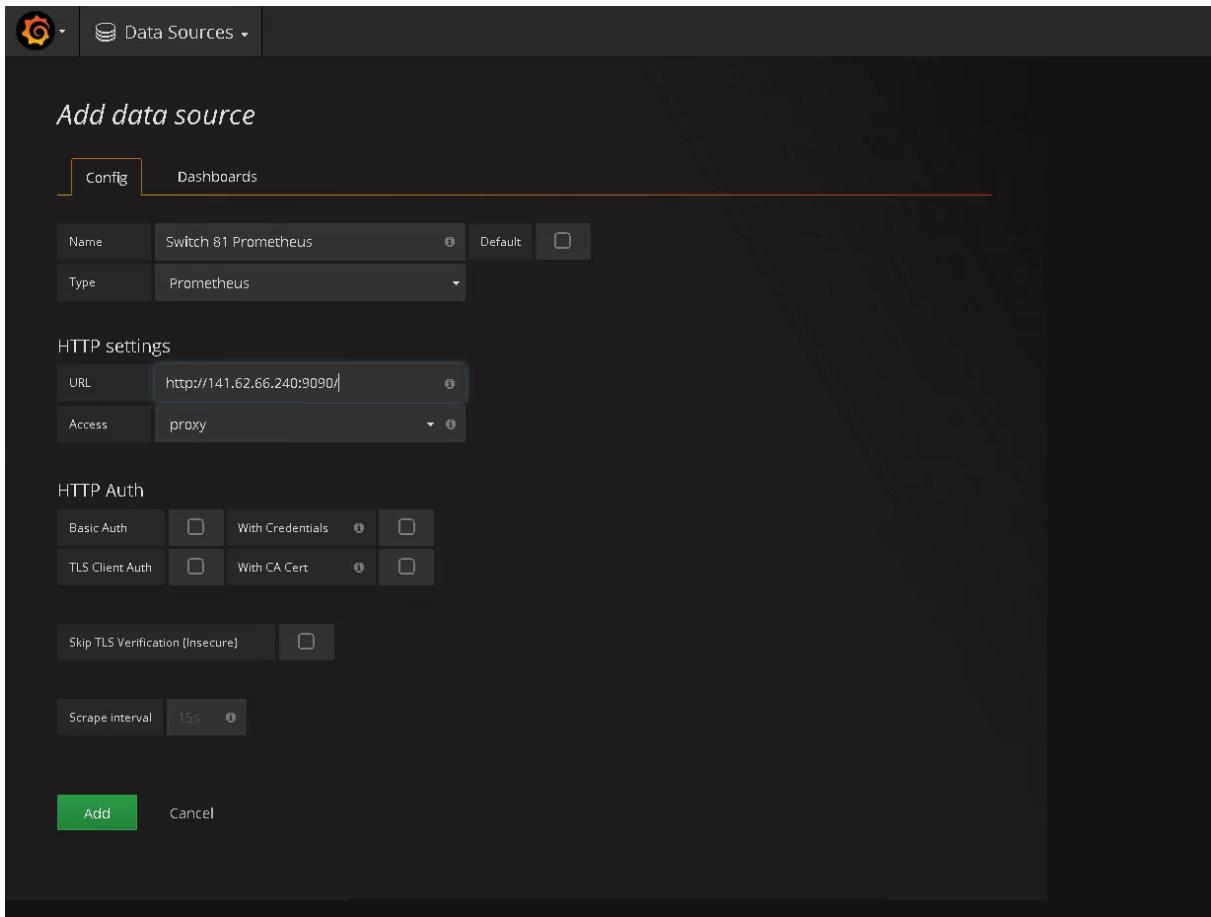
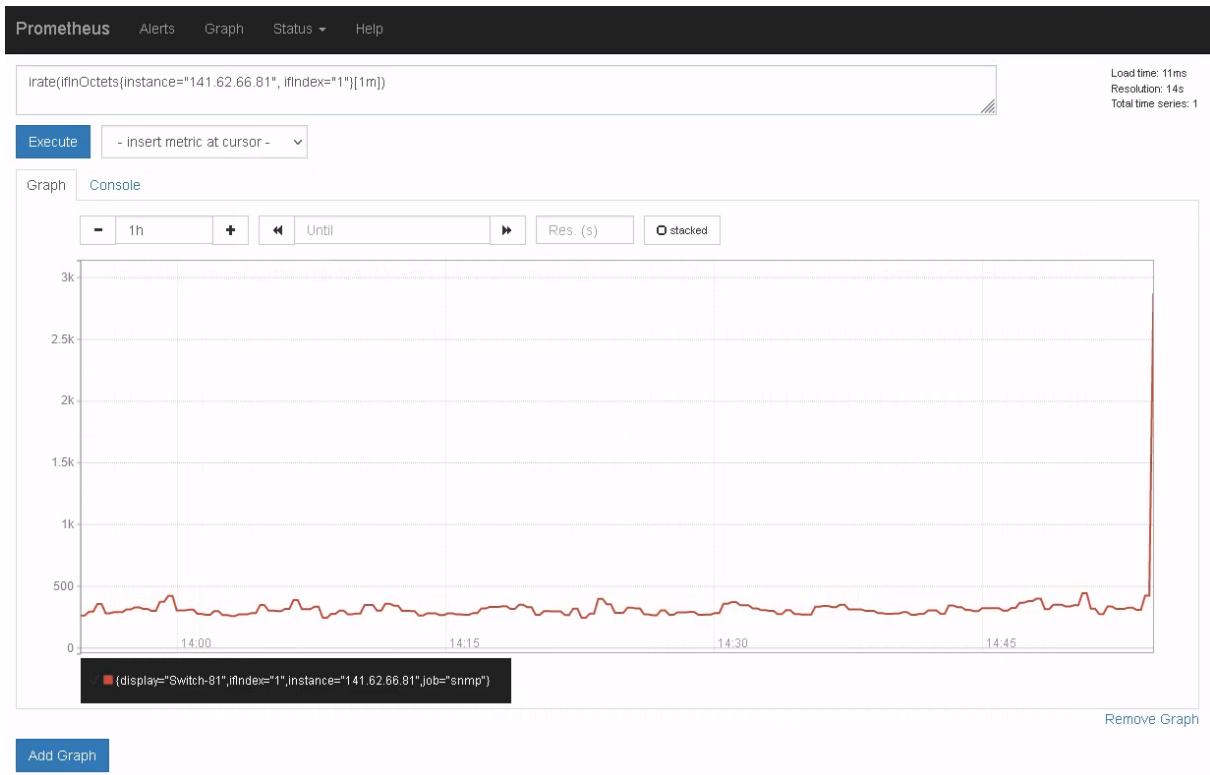


Abbildung 25: Erstellen der Datenquelle für Prometheus

Stellen Sie Ingress und Egress eines Switchports mit einem sinnvollen Graphen dar

**Abbildung 26:** Query in Prometheus

```
(rate(ifInOctets{instance="141.62.66.81", ifIndex="1"}[1m]))
```

**Abbildung 27:** Graph in Grafana



Abbildung 28: Eingestellte Metrics in Grafana

4 Munin

Wie platziert man sämtliche Nodes/Switche in der Web-Ansicht unter einer neuen Gruppe „Labor“ ? (Hinweis: Die gewählt Gruppenbezeichnung ist jedem Node voranzustellen.) Sprechen Sie sich innerhalb der Gruppe beim Editieren der /etc/munin/munin.conf ab, Sie arbeiten an EINER Datei!

```

1 $ ssh-copy-id root@141.62.66.91
2 $ ssh root@141.62.66.91
3 # 83 ist im Versuch nicht erreichbar gewesen
4 for node in 81 82 84 85; do
5   munin-node-configure --shell --snmp 141.62.66.${node} --snmpcommunity
      public | bash
6   tee /etc/munin/munin-conf.d/141.62.66.${node}.conf <<EOT
7   [Labor;141.62.66.${node}]
8     address 127.0.0.1
9     use_node_name no
10 EOT
11 done
12 # systemctl restart munin-node
13 # munin-check

```



Abbildung 29: Output der Web-GUI (Switch 216 in der Gruppe “Switches” war zuvor schon konfiguriert)

Vergleichen Sie die beiden Tools Prometheus/grafana und munin. Welche Vor und Nachteile sehen sie jeweils?

TODO: Add answer

5 LibreNMS

Richten Sie ihren Windows-Client für den SNMP-Dienst her und fügen ihn als Device in LibreNMS hinzu. Konfigurieren Sie sinnvolle Einträge für „sysContact“ und „Location“. Wie interpretieren Sie die Anzahl und die Bezeichnungen der Ethernet-Ports für Ihre Windows-Maschine?

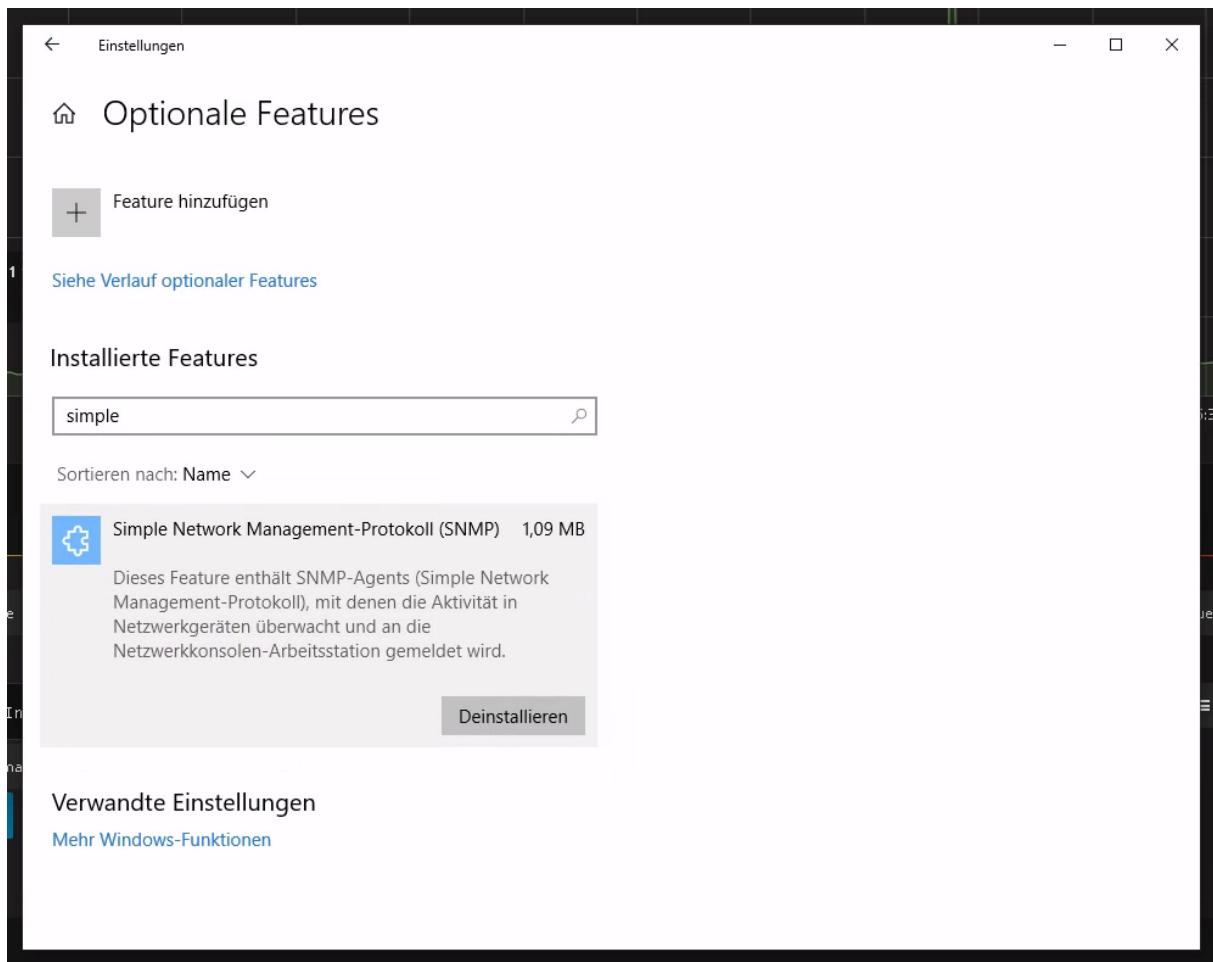


Abbildung 30: Aktivierung von SNMP auf Windows

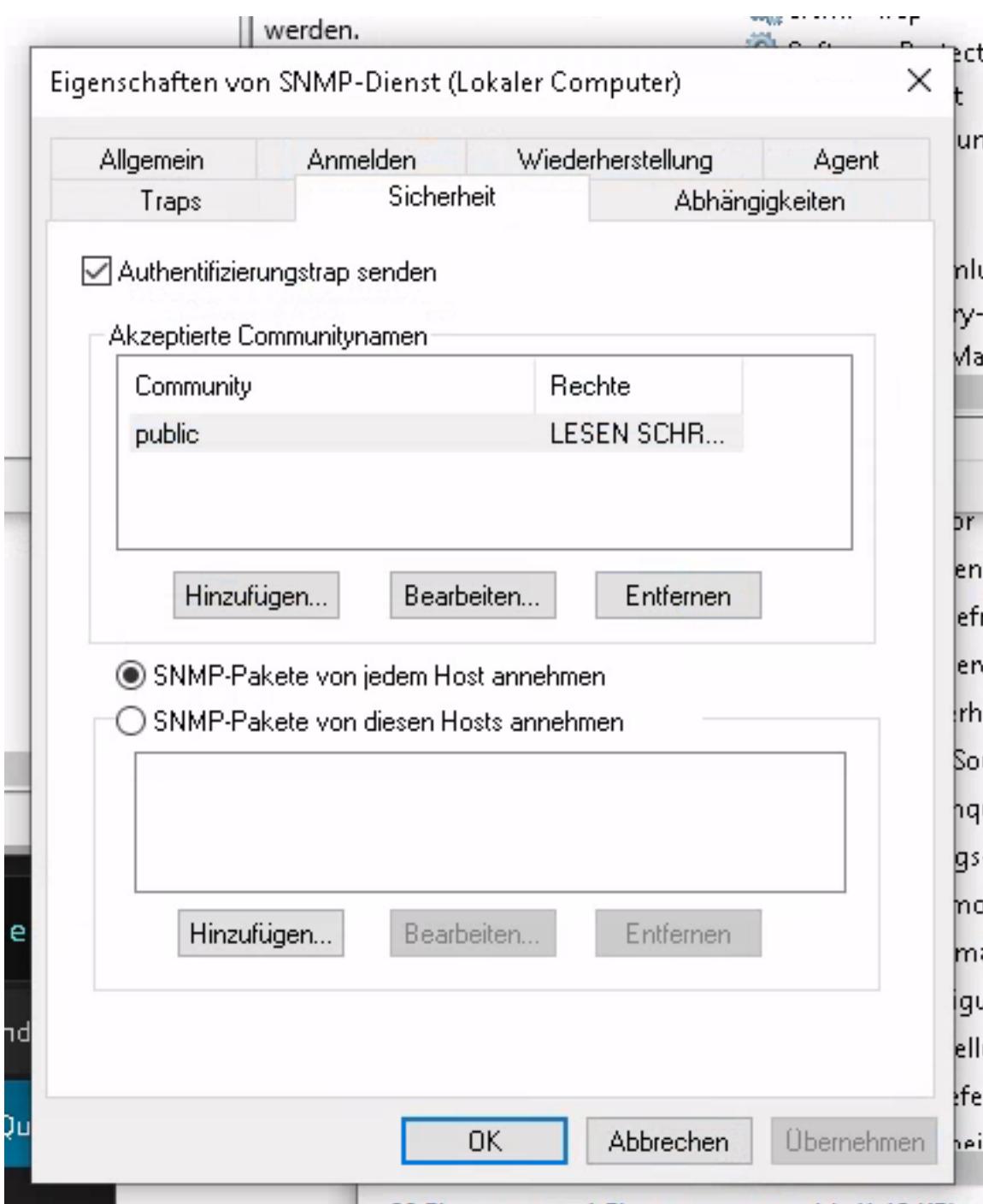


Abbildung 31: Aktivierung von Remotezugriff bei SNMP auf Windows

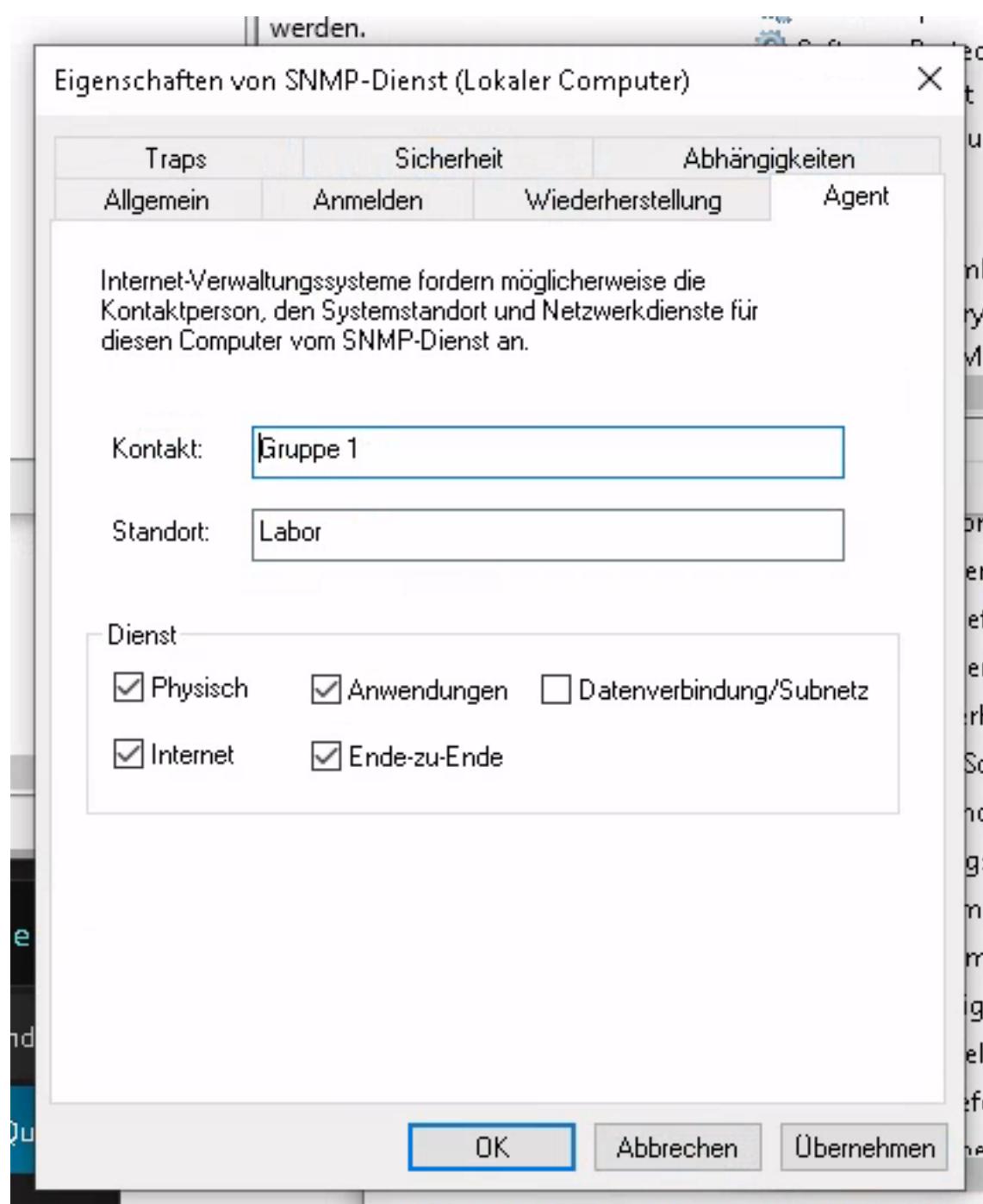


Abbildung 32: Setzen der SNMP-Einstellungen auf Windows

```
1 $ snmpwalk -v 2c -c public 141.62.66.1
2 SNMPv2-MIB::sysDescr.0 = STRING: Hardware: Intel64 Family 6 Model 158
   Stepping 9 AT/AT COMPATIBLE - Software: Windows Version 6.3 (Build
```

```
19043 Multiprocessor Free)
3 SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises.311.1.1.3.1.1
4 DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (103835) 0:17:18.35
5 SNMPv2-MIB::sysContact.0 = STRING: Gruppe 1
6 SNMPv2-MIB::sysName.0 = STRING: rn01
7 SNMPv2-MIB::sysLocation.0 = STRING: Labor
8 SNMPv2-MIB::sysServices.0 = INTEGER: 77
```

Add Device

Devices will be checked for Ping/SNMP reachability before being probed.

Hostname or IP

SNMP

SNMP Version

Port Association Mode

SNMPv1/2c Configuration

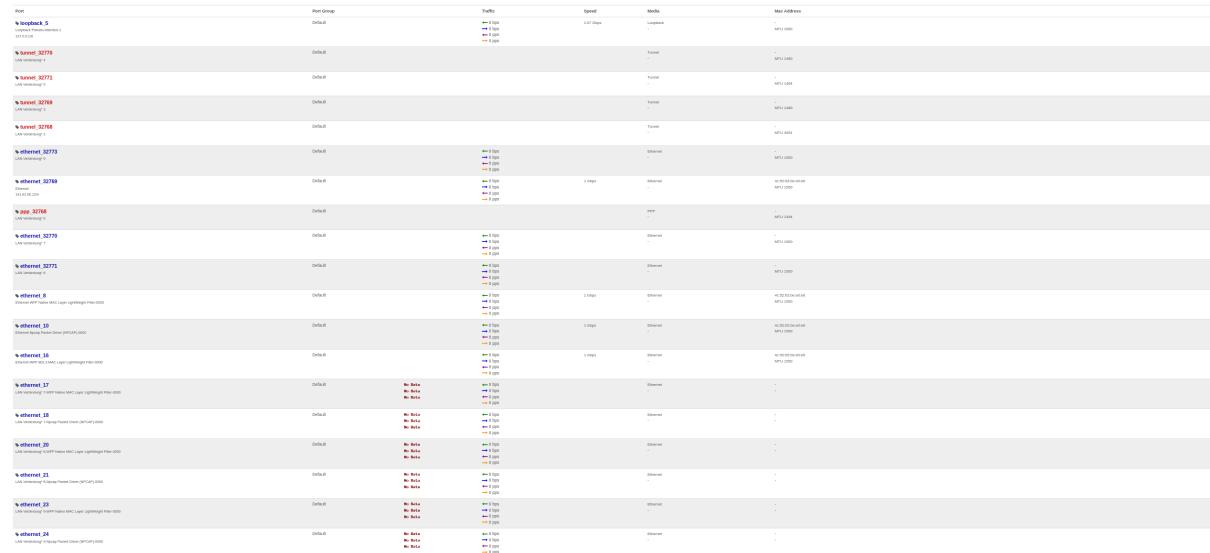
Community

Force add (No ICMP or SNMP checks performed)

Add Device

Abbildung 33: Hinzufügen des Windows-Hosts in LibreNMS

```
[pojntfx@felicias-xps13 ~]$ snmpwalk -v 2c -c public 141.62.66.1 ifAlias
IF-MIB::ifAlias.1 = STRING: Loopback Pseudo-Interface 1
IF-MIB::ifAlias.2 = STRING: LAN-Verbindung: 4
IF-MIB::ifAlias.3 = STRING: 6to4 Adapter
IF-MIB::ifAlias.4 = STRING: LAN-Verbindung: 1
IF-MIB::ifAlias.5 = STRING: Microsoft IP-HTTPS Platform Interface
IF-MIB::ifAlias.6 = STRING: LAN-Verbindung: 5
IF-MIB::ifAlias.7 = STRING: VirtualBox Host-Only Network #3
IF-MIB::ifAlias.8 = STRING: LAN-Verbindung: 3
IF-MIB::ifAlias.9 = STRING: LAN-Verbindung: 2
IF-MIB::ifAlias.10 = STRING: LAN-Verbindung: 1
IF-MIB::ifAlias.11 = STRING: Teredo Tunneling Pseudo-Interface
IF-MIB::ifAlias.12 = STRING: Ethernet
IF-MIB::ifAlias.13 = STRING: LAN-Verbindung: 6
IF-MIB::ifAlias.14 = STRING: LAN-Verbindung: 7
IF-MIB::ifAlias.15 = STRING: LAN-Verbindung: 8
IF-MIB::ifAlias.16 = STRING: VirtualBox Host-Only Network #3-WFP Native MAC Layer LightWeight
IF-MIB::ifAlias.17 = STRING: VirtualBox Host-Only Network #3-Npcap Packet Driver (NPCAP)-0000
IF-MIB::ifAlias.18 = STRING: VirtualBox Host-Only Network #3-QoS Packet Scheduler-0000
IF-MIB::ifAlias.19 = STRING: VirtualBox Host-Only Network #3-WFP 802.3 MAC Layer LightWeight
IF-MIB::ifAlias.20 = STRING: Ethernet-WFP Native MAC Layer LightWeight Filter-0000
IF-MIB::ifAlias.21 = STRING: Ethernet-Npcap Packet Driver (NPCAP)-0000
IF-MIB::ifAlias.22 = STRING: Ethernet-VirtualBox NDIS Light-Weight Filter-0000
IF-MIB::ifAlias.23 = STRING: Ethernet-QoS Packet Scheduler-0000
IF-MIB::ifAlias.24 = STRING: Ethernet-WFP 802.3 MAC Layer LightWeight Filter-0000
IF-MIB::ifAlias.25 = STRING: LAN-Verbindung: 7-WFP Native MAC Layer LightWeight Filter-0000
IF-MIB::ifAlias.26 = STRING: LAN-Verbindung: 7-Npcap Packet Driver (NPCAP)-0000
IF-MIB::ifAlias.27 = STRING: LAN-Verbindung: 7-QoS Packet Scheduler-0000
IF-MIB::ifAlias.28 = STRING: LAN-Verbindung: 8-WFP Native MAC Layer LightWeight Filter-0000
IF-MIB::ifAlias.29 = STRING: LAN-Verbindung: 8-Npcap Packet Driver (NPCAP)-0000
IF-MIB::ifAlias.30 = STRING: LAN-Verbindung: 8-QoS Packet Scheduler-0000
IF-MIB::ifAlias.31 = STRING: LAN-Verbindung: 9-WFP Native MAC Layer LightWeight Filter-0000
IF-MIB::ifAlias.32 = STRING: LAN-Verbindung: 9-Npcap Packet Driver (NPCAP)-0000
IF-MIB::ifAlias.33 = STRING: LAN-Verbindung: 9-QoS Packet Scheduler-0000
[pojntfx@felicias-xps13 ~]$
```

Abbildung 34: Abfrage der Netzwerkinterfaces des Windows-Host über `snmpwalk`**Abbildung 35:** Abfrage der Netzwerkinterfaces des Windows-Host über LibreNMS

TODO: Add interpretation of network interface names

Welche Erkenntnisse ziehen Sie aus den Angaben zu STP und Neighbours bzgl. Ihres HP 2530-

Switch, nachdem Sie ihn hinzugefügt haben?

```

1 $ snmpwalk -v 2c -c public 141.62.66.81
2 SNMPv2-MIB::sysDescr.0 = STRING: HP J9777A 2530-8G Switch, revision YA
   .16.06.0006, ROM YA.15.20 (/ws/swbuildm/rel_washington_qaoff/code/
   build/lakes(swbuildm_rel_washington_qaoff_rel_washington)) (Formerly
   ProCurve)
3 SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises
   .11.2.3.7.11.141
4 DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (9263269) 1 day,
   1:43:52.69
5 SNMPv2-MIB::sysContact.0 = STRING: uwu
6 SNMPv2-MIB::sysName.0 = STRING: uwu-switch
7 SNMPv2-MIB::sysLocation.0 = STRING:
8 SNMPv2-MIB::sysServices.0 = INTEGER: 74

```

Add Device

Devices will be checked for Ping/SNMP reachability before being probed.

Hostname or IP	141.62.66.81		
SNMP	<input checked="" type="button"/> ON		
SNMP Version	v2c	port	udp
Port Association Mode	ifIndex		

SNMPv1/2c Configuration

Community	public
Force add (No ICMP or SNMP checks performed)	<input type="button"/> OFF

Add Device

Abbildung 36: Hinzufügen des Switch in LibreNMS

**Abbildung 37:** Graph zu Neighbours in LibreNMS

The screenshot shows the LibreNMS interface with the 'STP' tab selected and the 'Basic' sub-tab selected. A table lists various Spanning Tree Protocol configuration parameters:

Root bridge	No
Bridge address (MAC)	38:21:c7:8b:c4:50 (Aruba, a Hewlett Packard Enterprise Company)
Protocol specification	ieee8021d
Priority (0-61440)	32768
Time since topology change	6 hours 30 minutes 15 seconds
Topology changes	5
Designated root (MAC)	04:09:73:aa:8a:c0 (Hewlett Packard Enterprise)
Root cost	20020
Root port	1
Max age (s)	20
Hello time (s)	2
Hold time (s)	6
Forward delay (s)	15
Bridge max age (s)	20
Bridge hello time (s)	2
Bridge forward delay (s)	15

Abbildung 38: STP-Basics LibreNMS

STP » Basic | Ports

↻ 10 ▾

Port	Priority	State	Enable	Path cost	Designated root	Designated cost	Designated bridge	Designated port	Forward transitions
10 10	128	disabled	disabled	1	141.62.66.81 38:21:c7:8b:c4:50	0		0	0
9 9	128	disabled	disabled	1	141.62.66.81 38:21:c7:8b:c4:50	0		0	0
8 8	128	disabled	disabled	1	141.62.66.81 38:21:c7:8b:c4:50	0		0	0
7 7	128	disabled	disabled	1	141.62.66.81 38:21:c7:8b:c4:50	0		0	0
6 6	128	disabled	disabled	1	141.62.66.81 38:21:c7:8b:c4:50	0		0	0
5 5	128	disabled	disabled	1	141.62.66.81 38:21:c7:8b:c4:50	0		0	0
4 4	128	disabled	disabled	1	141.62.66.81 38:21:c7:8b:c4:50	0		0	0
3 3	128	disabled	disabled	1	141.62.66.81 38:21:c7:8b:c4:50	0		0	0
2 2	128	disabled	disabled	20000	141.62.66.81 38:21:c7:8b:c4:50	0		0	1
1 uwu_port	128	forwarding	enabled	20000	Hewlett Packard Enterprise 04:09:73:aa:8a:c0	20	Hewlett Packard 44:31:92:50:6c:61	15	4

« < 1 > »

Showing 1 to 10 of 10 entries

Abbildung 39: Ports zu STP LibreNMS

TODO: Add interpretation on STP and neigbors

Fügen Sie den Switch 141.62.66.215 zu LibreNMS hinzu. Kontrollieren Sie den Port 25 (A1) auf Switch 141.62.66.215. Wie ist die Angabe des „Speed“ im Vergleich zur Feststellung aus Aufgabe 1 c?

```

1 $ snmpwalk -v 2c -c public 141.62.66.215
2 SNMPv2-MIB::sysDescr.0 = STRING: HP J9726A 2920-24G Switch, revision WB
   .16.10.0015, ROM WB.16.03 (/ws/swbuildm/rel_ajanta_arenal_qaoff/code
   /build/anm(swbuildm_rel_ajanta_arenal_qaoff_rel_ajanta_arenal)) (
   Formerly ProCurve)
3 SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises
   .11.2.3.7.11.152
4 DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (1790824277) 207 days,
   6:30:42.77
5 SNMPv2-MIB::sysContact.0 = STRING: van der Kamp
6 SNMPv2-MIB::sysName.0 = STRING: 215-HP-2920-24G-R141
7 SNMPv2-MIB::sysLocation.0 = STRING: R141
8 SNMPv2-MIB::sysServices.0 = INTEGER: 74

```

Add Device

Devices will be checked for Ping/SNMP reachability before being probed.

Hostname or IP	141.62.66.215		
SNMP	ON		
SNMP Version	v2c	port	udp
Port Association Mode	ifIndex		
SNMPv1/2c Configuration			
Community	public		
Force add (No ICMP or SNMP checks performed)	OFF		
Add Device			

Abbildung 40: Hinzufügen des Switch in LibreNMS

A1	Default	10 GbE M0Index VLAN 1	Ethernet	10GbE 00:00:00:29:97 MTU 1500	DEFAULT_Vlan
----	---------	-----------------------------	----------	----------------------------------	--------------

Abbildung 41: Speed an Port A1

TODO: Add interpretation (10 Gigabit)

Fügen Sie Device 141.62.66.241 hinzu. Wozu dient das Device?

```
1 $ snmpwalk -v 2c -c public 141.62.66.241
```

```
2 SNMPv2-MIB::sysDescr.0 = STRING: ws_brs
3 SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises.40595
4 DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (189474772) 21 days,
   22:19:07.72
5 SNMPv2-MIB::sysContact.0 = STRING: RNLab Admin
6 SNMPv2-MIB::sysName.0 = STRING: BrennenstuhlPDU
7 SNMPv2-MIB::sysLocation.0 = STRING: R142A
8 SNMPv2-MIB::sysServices.0 = INTEGER: 72
9 IF-MIB::ifNumber.0 = INTEGER: 1
10 IF-MIB::ifIndex.1 = INTEGER: 1
11 IF-MIB::ifDescr.1 = STRING: ti
12 IF-MIB::ifType.1 = INTEGER: ethernetCsmacd(6)
13 IF-MIB::ifMtu.1 = INTEGER: 1500
14 IF-MIB::ifSpeed.1 = Gauge32: 1000000
15 IF-MIB::ifPhysAddress.1 = STRING: 20:4c:6d:0:32:b
16 IF-MIB::ifAdminStatus.1 = INTEGER: up(1)
17 IF-MIB::ifOperStatus.1 = INTEGER: up(1)
18 IF-MIB::ifLastChange.1 = Timeticks: (0) 0:00:00.00
19 IF-MIB::ifInOctets.1 = Counter32: 0
20 IF-MIB::ifInUcastPkts.1 = Counter32: 0
21 IF-MIB::ifInNUcastPkts.1 = Counter32: 0
22 IF-MIB::ifInDiscards.1 = Counter32: 0
23 IF-MIB::ifInErrors.1 = Counter32: 0
24 IF-MIB::ifInUnknownProtos.1 = Counter32: 24726828
25 IF-MIB::ifOutOctets.1 = Counter32: 0
26 IF-MIB::ifOutUcastPkts.1 = Counter32: 0
27 IF-MIB::ifOutNUcastPkts.1 = Counter32: 0
28 IF-MIB::ifOutDiscards.1 = Counter32: 0
29 IF-MIB::ifOutErrors.1 = Counter32: 0
30 IF-MIB::ifOutQLen.1 = Gauge32: 0
31 IF-MIB::ifSpecific.1 = OID: SNMPv2-SMI::zeroDotZero
```

Add Device

Devices will be checked for Ping/SNMP reachability before being probed.

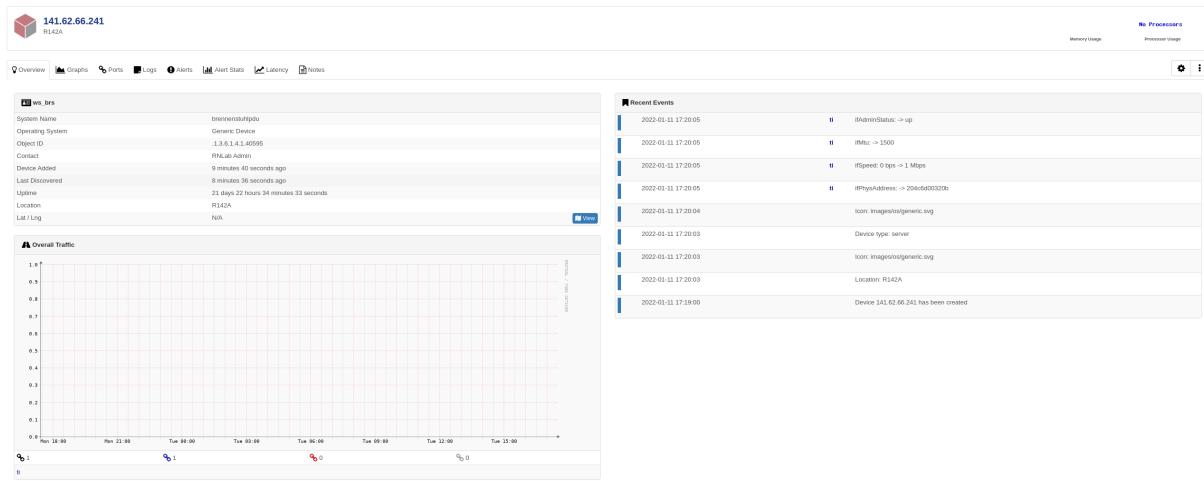
Hostname or IP	141.62.66.241		
SNMP	ON	<input type="checkbox"/>	
SNMP Version	v2c	port	udp
Port Association Mode	ifIndex		

SNMPv1/2c Configuration

Community	public		
Force add (No ICMP or SNMP checks performed)	OFF	<input type="checkbox"/>	

Add Device

Abbildung 42: Hinzufügen des Geräts in LibreNMS

**Abbildung 43:** Device info in LibreNMS

TODO: Add interpretation (socket strip)