Lab Manual

Leveraging SNMP in N-central

N-able™ N-central®

Version 1.1

N-ABLE™

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N-central API Bootcamp

Introduction

This manual is intended to go along with the N-central SNMP Bootcamp given by the Head Nerds team @ N-able.

The lab manual is meant guide you through the exercises, and to leave you with usable examples so you get familiar with SNMP and how to leverage it within N-central.

Doing the labs during the course is not mandatory or required, but it is highly recommended; it will help you learn more efficiently and retain more of the content.

Checklist

In order to use this lab manual and complete the course, you should have the following:

- Access to your N-central server
  - Access to configure custom services on your N-central server
  - Ability to create a test device in N-central, and add services to it
- Ability to install software on your computer

Lab 1: Installing the required software and setting up the environment

Objective: To install the prerequisites for the course.

Estimated time: 10 minutes

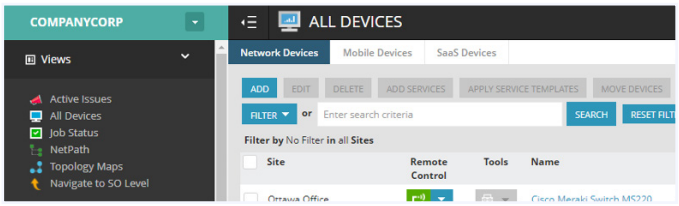
Lab 1.1: Installing iReasoning MIB Browser

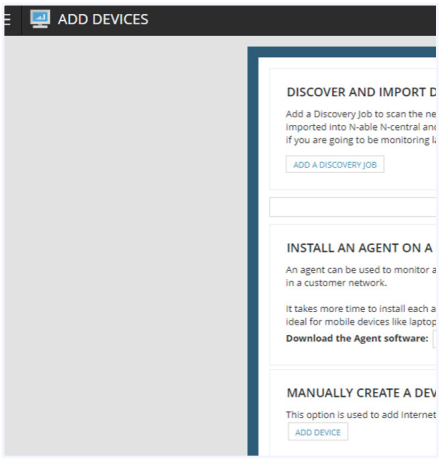
MIB Browser will be used throughout the course and is a great free tool to browse SNMP information.

1. From your favorite web browser, go to https://www.ireasoning.com/mibbrowser.shtml.
2. Click **Download Now**.
3. Select MIB Browser Personal Edition and click **Download**.
4. Accept the End User License Agreement (EULA) and download the setup.exe file.
   Note: There is also a Mac version.
5. Run the installer and leave all default options unless you require any changes.
6. Once installed, launch MIB Browser.
7. The software is installed and ready to use.

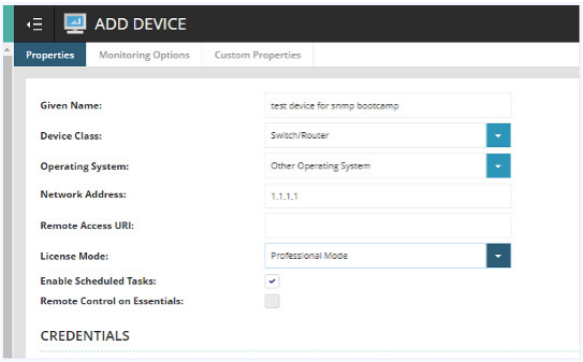
Lab 1.2: Creating a test device in N-central

1. From your N-central dashboard, go to a test client or a client on which you can create a test device temporarily.
2. From the **All Devices** view, click **Add**, then **More Options**; finally, click **Add Device**.

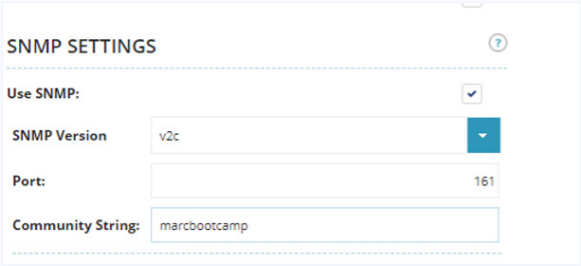




3. Enter the following information:
   A. **Given Name:** Test SNMP device for bootcamp
   B. **Device Class:** Servers - Linux
   C. **IP address:** use the IP provided by the instructor in the course
   D. **License:** Professional modeClick Monitoring Options.



4. Click **Monitoring Options**.
5. Under **Monitoring Options**, enable SNMP by checking the box, then:
   A. Select "v2c"
   B. Enter community "marcbootcamp"

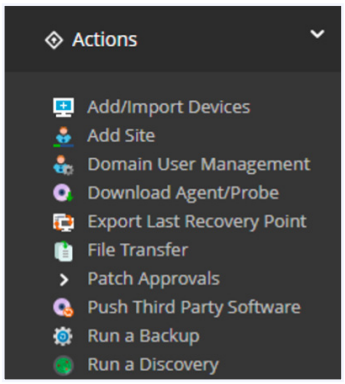


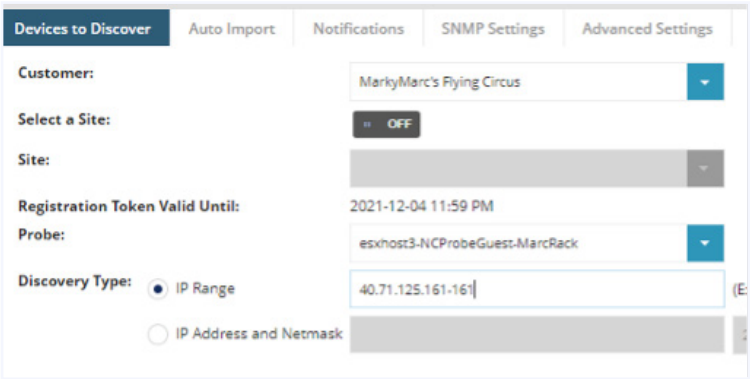
6. Click **Save**.
7. The device is created and ready for use.

Lab 1.3: Create a discovery job with SNMP in N-central

This part is optional but recommended, so you can do the other labs as designed.

1. From the desired test customer/site, click **Actions**, then **Run a Discovery**.
2. Pick a probe that is online so the discovery can run.
3. In the IP Range, enter the IP given by the instructor.

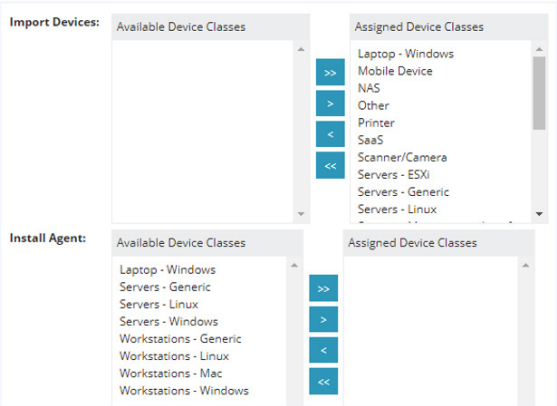




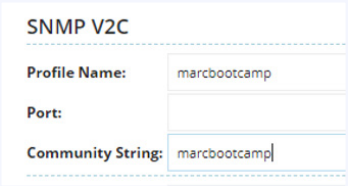
4. Click **Auto Import**.

5. Set it to Auto Import all classes, but to not install any agent. Since we're doing this against one device only, importing the device will not cause any issues.

6. Click **SNMP Settings**.



7. Click Add **SNMP Credentials**.
   A. Select V2C
   B. Enter a profile name, and for the community name, enter "marcbootcamp"
   C. Click **OK**



8. Disable the default profile.

9. Click **Finish**.

The discovery job will take 5–15 minutes to run and should auto import a Linux server device. Depending on your default settings, it may or may not have some monitoring.

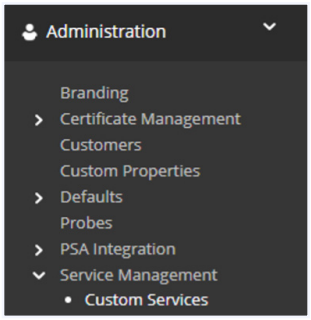
Lab 2: Importing a custom service

Objective: To import a premade custom service to N-central and use it on a device.

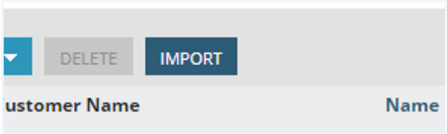
Estimated time: 10 minutes

Lab 2.1: Uploading the service

1. Download the XML file found at this link: https://files.n-able.com/NRCNable/media/Cookbook/SNMP+BootCamp+Lab2.xml
2. Go to your N-central server at the SO level.
3. Go to Administration/Service management/ Custom Services.

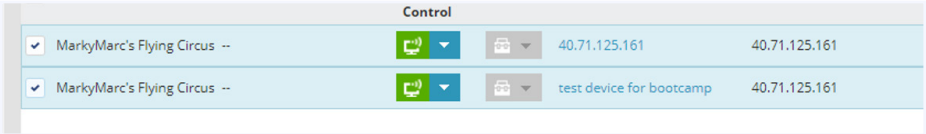


4. Click **Import**.
5. Click **Browser** and browse to your downloaded XML file.
6. Then click **Import Custom Service** to get the service in.

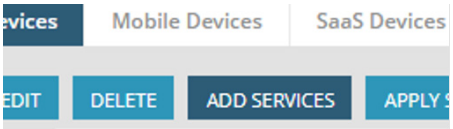


Lab 2.2: Using the service

1. Go to the All Devices view and find the device created and the one imported in lab 1.
2. From the All Devices view, check the box beside the name for both devices at once.



3. At the top, click **Add Services**.
4. Pick the desired probe from the dropdown (the probe must be online in order to test the service).



5. Look for the service "SNMP Bootcamp Lab2," and put a "1" beside it.
6. Click Apply, at the bottom of the page.
7. It will add the monitoring automatically. Click on either of the devices and go to the Monitoring tab. The new service will be there and will be grey for now as it will take a few minutes to poll the data.

Optional steps: If you want, you can try to create a service template and add the service so you can reuse it through a template in the future.

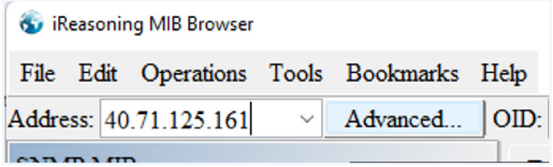
Lab 3: Creating your own custom service

Objective: To introduce the process of creating custom SNMP services.

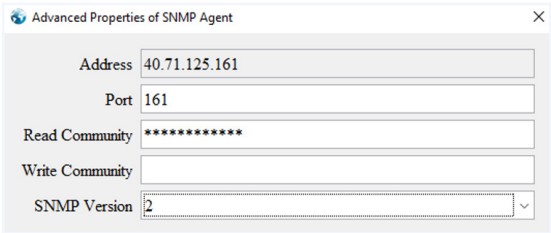
Estimated time: 15 minutes

Lab

1. Open MIB Browser (close and reopen if you already had it opened and had data displayed, to reset the view).
2. Run a discovery of the lab device (the IP and SNMP community will be provided by the instructor)



   A. To run the discovery, enter the IP address at the top lqwwweft, then click **Advanced**, right beside the IP field



   B. In Advanced, leave port 161, select version 2, and enter the read community as provided by the instructor

   C. Click **OK** to save

3. In the Operations field on the top right, select Walk
4. The walk will immediately pull a lot of information based on what the device is returning
5. We will pull two data points to show how to pull a string and a number

   A. The first one will be the system location, and the second will be the number of services

Result Table

Name/OID	Value
sysDescr.0	Linux LinuxSNMP 5.11.0-1020-azure #21~20.04.1-Ubuntu SM
sysObjectID.0	.1.3.6.1.4.1.8072.3.2.10
sysUpTime.0	69 hours 47 minutes 8.7 seconds (25122870)
sysContact.0	Me <me@example.org>
sysName.0	LinuxSNMP
sysLocation.0	Sitting on the Dock of the Bay
sysServices.0	72

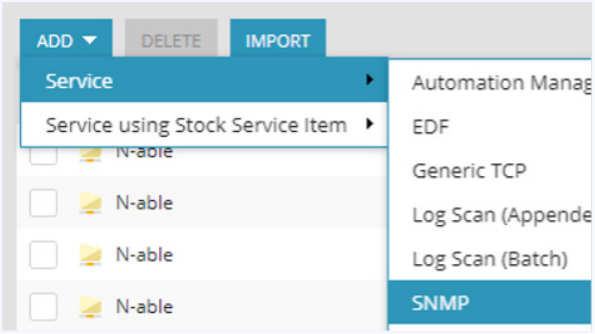
   B. Double-click **sysLocation.0.** MIB Browser will display the OID at the bottom left since it is known in the pre-imported MIB files.

Name	sysLocation
OID	.1.3.6.1.2.1.1.6
MIB	RFC1213-MIB
Syntax	DisplayString (OCTET STRING) (SIZE (0..255))

   C. The OID that we need is 1.3.6.1.2.1.1.6 (note that the 0 in the result table is the index)

   D. Repeat for **sysServices** and get the OID. You should see 1.3.6.1.2.1.1.7

6. Go to N-central
7. From the SO level, go to Administration/Service Management/Custom Services
8. Click **Add/SNMP**



A. Enter a name for your service. We recommend something clear like "SNMP Bootcamp Lab 3"

B. Then we need to add a query. On the Queries tab, click Add

i. Enter name ''data'' since we only have one

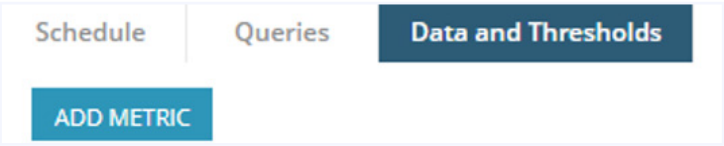
ii. The service pre-creates a query, so double-click (or click on the pencil beside it) on VAR1 and rename it ''location.'' Press ENTER to confirm

iii. The second field is the OID. Double-click on the OID and replace it with 1.3.6.1.2.1.1.6

iv. NOTE: we do not include any spaces, and no dot (''.'') at the beginning

v. Click on ADD OID, another VAR1 will appear, rename that "services" then double-click on the OID and replace it with 1.3.6.1.2.1.1.7

C. You then need to add metrics for the queries. On the Data and Thresholds Tab, click **Add Metric**



i. Enter Location as the name of the Metric

ii. Select $location from the dropdown in Variable to Use

iii. Set the Data Type to String, then click Save

iv. Again, click on Add Metric

v. Enter Number of Services as the name of the Metric

vi. Select $services from the dropdown in Variable to Use

vii. Set the Data Type to 16-bit Unsigned Integer, then click Save

viii. Click Save again to complete the custom service

D. Once you have the custom service saved, apply it to your lab devices as outlined previously in Lab 2.2

Lab 4: Creating a custom service for auto-discovery of instances

Objective: To go through how to create and use a custom service that can be auto-discovered in N-central

Estimated time: 10 minutes

Lab

OID	Name	Sample Value	Type
1.3.6.1.2.1.2.2.1.1	ifIndex.1	1	Integer
1.3.6.1.2.1.2.2.1.2	ifDescr.1	lo	OctetString
1.3.6.1.2.1.2.2.1.3	ifType.1	softwareLoopback (24)	Integer
1.3.6.1.2.1.2.2.1.4	ifMtu.1	65536	Integer

1. The table above will be used for this lab. First, go to N-central; from the SO level, go to Administration/Service Management/Custom Services
2. Click **Add/SNMP**
3. For "Name," enter "SNMP Bootcamp Lab 4"
4. Under "Queries," click **Add** and enter name "discoveryquery" (name is not important here since we only have one)
   A. Click **Add OID** twice to have three total OID in the query. Note that it will provide an error
   B. Double-click **VAR1** and rename it ''ifdesc"
   C. Double-click **VAR2** and rename it ''iftype"
   D. Double-click **VAR3** and rename it ''ifmtu"
   E. For the IFDESC OID, enter 1.3.6.1.2.1.2.2.1.2
   F. For the IFTYPE OID, enter 1.3.6.1.2.1.2.2.1.3 (Be careful as the order may automatically change to alphabetical)
   G. For the IFMTU OID, enter 1.3.6.1.2.1.2.2.1.4

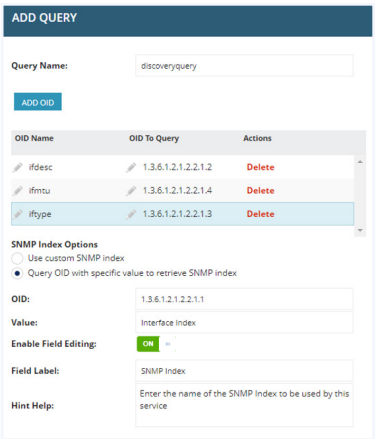
H. Under SNMP INDEX OPTIONS

   i. Click **Query OID**

   ii. In the OID, enter the index from above, 1.3.6.1.2.1.2.2.1.1

   iii. Turn “Enable Field Editing” to ON

D. Click **Save**



5. On the main screen again, click **Identifier Options**, select SNMP VALUE, and check the box ''add to discovery jobs''

6. Go to the DATA AND THRESHOLDS tab

   A. Click **Add Metric**

   B. Enter metric as “Description”

   C. Select ifdesc as the variable

   D. Select Data Type “String”

   E. Click **Save**

   F. Click **Add Metric**

   G. Enter metric as “Interface Type”

   H. Select iftype as the variable

   I. Select Data Type “16-bit unsigned integer” (if you are unsure when creating your own service, select 32-bit signed integer)

   J. Click **Save**

   K. Click **Add Metric**

   L. Enter metric as “MTU”

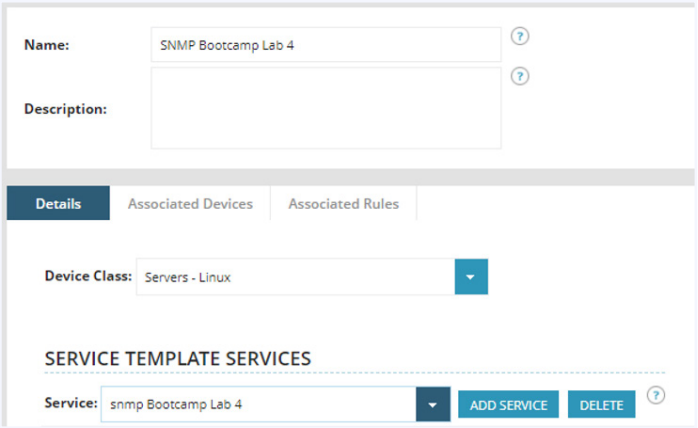
   M. Select ifMTU as the variable

   N. Select Data Type “32-bit unsigned integer” (if you are unsure when creating your own service, select 32-bit signed integer)

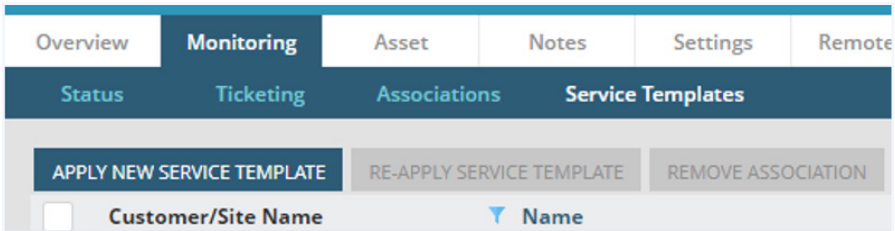
   O. Click **Save**

   P. For both the type and MTU, the default thresholds are OK so nothing is required. Click **Save** to save the custom service

7. Now we can use the service as is. If you add it to the nondiscovered device, it will let you select the index manually
8. The preferred way will be to discover the discovered device again to add this service, and then apply through a template
   A. Start by going to configuration/asset discovery/discovery jobs (if you have lots of jobs and customers, you can go to the customer or site level to make the process easier)
   B. From there, find the job that you created in the previous lab, and click on its name. Then add any character to the description of the job, which will enable the OK button. Click OK and the job will rerun. If you set it to discover only one device, the job will take 5–15 minutes.
9. While the job runs, go back to the SO level, then go to configuration/monitoring/service templates
10. Click **Add**
11. Enter a name like "SNMP Bootcamp Lab 4"
12. Under "Device Class," select the same class as the discovered device. It should be "Servers – Linux"
    A. From the service drop-down, select your service created during this lab
    B. Click **Add Service**
    C. Leave everything default and click **Save** twice



13. Finally, once the discovery job is completed (this may have to be after the lab time is done), under the Monitoring tab, go to Service Templates, and click **Apply New Service Template**. Pick the template from the list, and click **OK** to save it. It should apply twice



14. If you go back to the Status tab under Monitoring, you should see the service on the device, being polled (it will be grey for a few minutes)

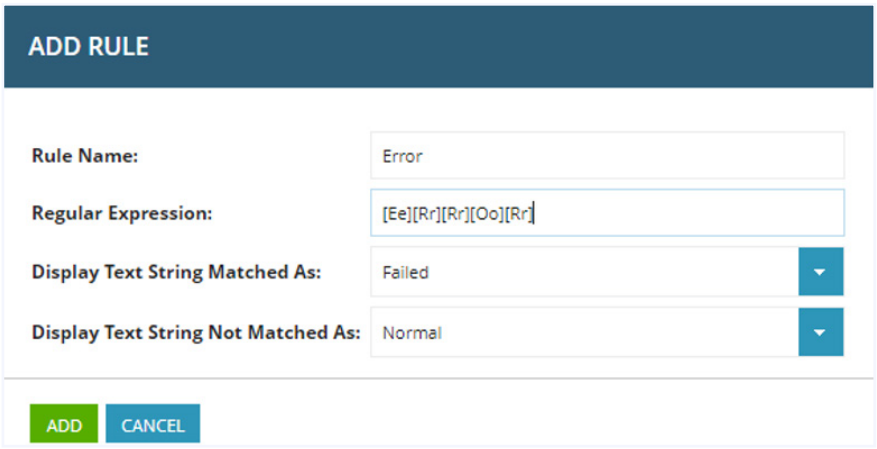
Lab 5: Creating a custom service using SNMP traps

Objective: To create a simple traps-based service using SNMP

Estimated time: 10 minutes

Lab

1. From the SO level in N-central, go to administration/service management/custom services
2. Click **Add/service/SYSLOG**
3. Enter name "SNMP Bootcamp Lab 5 – Trap"
4. From there, click **Add Rule**
5. For the rule name, enter "error'"
6. For the regular expression, use this simple expression "[Ee][Rr][Rr][Oo][Rr]"
7. Change **Matched** as "failed" and **Not Matched** as "normal"



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