Did you have any trouble using natural language to describe your network intents?

26 responses

- Yes
- No

53.8%

46.2%
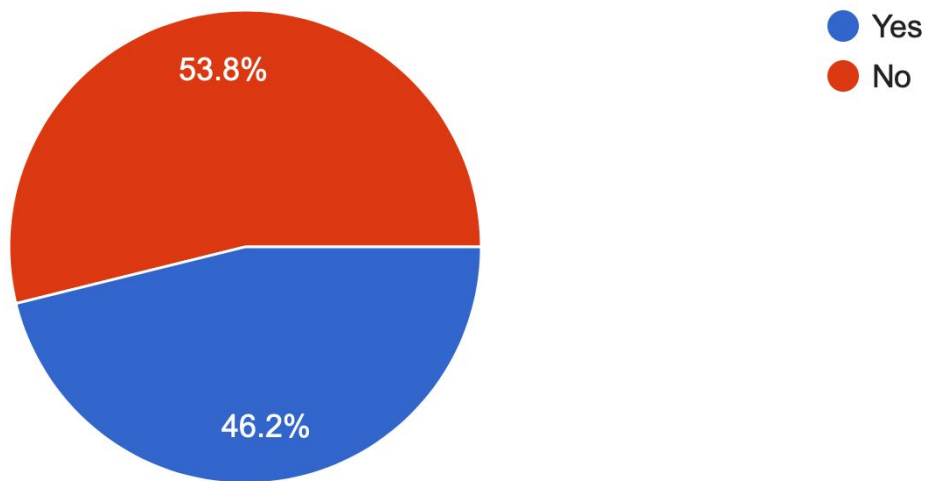
If you had any troubles, could you please describe what happened?

13 responses

- I guess scenarios where EXPERT operators want to do simple configurations or add rules (e.g., an IPtables rule to block port 22 for a range of IPs), they could prefer the command line since it could be faster to create customized rules. Also, sometimes, network operators need to make some configurations and test it in order to create a further script to automate some tasks. In that situation, maybe, the chatbot does not provide any "technical feedback" about what was executed on the network/log files.
- typed month instead of week, forgot "labs"
- In the last task was hard to define the end point in the same sentence
- Sometimes the same sentence I used to configure an intent did not work. Than i writed the same and it works.
- I had some difficulties to specify the time interval.

If you had any troubles, could you please describe what happened? (Cont'd)

13 responses

- In the first few exercises, I tried to write the way I wanted, but, of course, there was no pattern that matched my sentence. The following exercises I understood the sentence structure and continued without problems
- Semantic of the rule
- unxpected json error in the last task after writing "limit servers traffic to 5gbps between 4pm and 7pm
- only one minor problem: having "per week" at the end of a sentence describing data usage limits seemed to be discarded. I had to describe the limit as "10GB/week data" which felt awkward.
- There is a learning curve of which words to use.
- Adaptation only
- even after typing the correct keywords the chatbox did not accepted the command
- Not work for me. Even with the keywords the system returned a error.

Did you have any troubles using Lumi's chatbot interface?

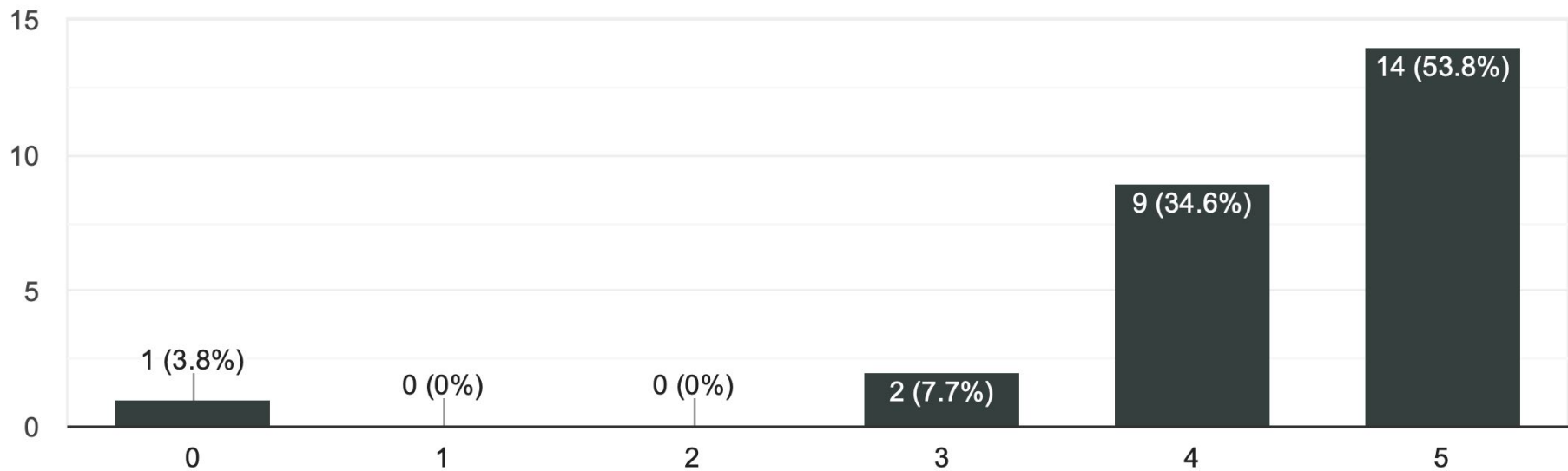26 responses

- Yes
- No

73.1%

26.9%
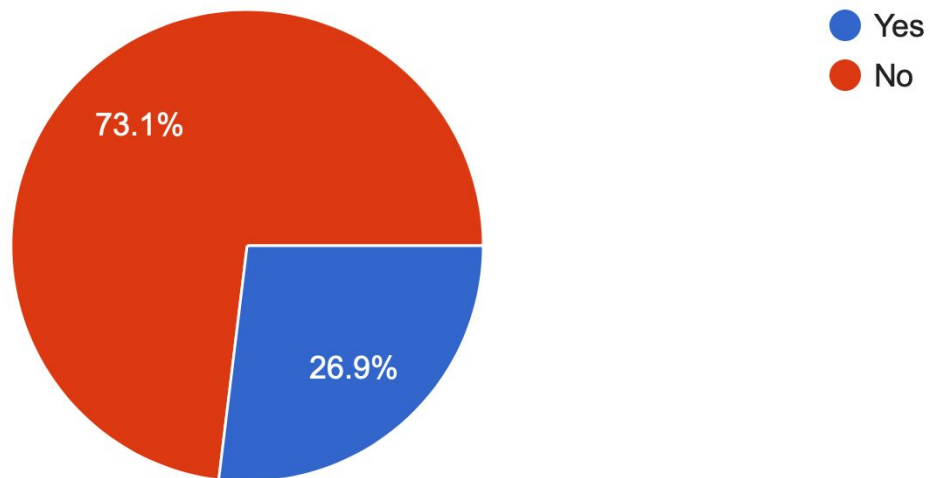
If you had any trouble, could you describe what happened?

6 responses

- In the last task (Task 5), I tried to request bandwidth throttling for everyday in the specified hours, but it only read the hours as a time definition (and 'everyday' was understood as 'protocol'). I could not fix it through Lumi's interface, either (no alternative for 'time', and when tried another one, namely 'group', it returned an error).
- During the tests, I tried to cancel an operation by typing "cancel" as suggested, but Lumi seemed to get stuck with my requests (happened 2 times)
- When asked "What type of entity is 'servers'?" some options appears partially hidden
- I had trouble understanding what "Nile intent" and "define intent buildIntent" means when I my first attempt was unsuccessful. Basically, I had trouble understanding Lumi's statement when asking "Is this what to want?". I.e., I was not sure if that's what I want because I couldn't understand its way of describing an intent.
- not being able to go back to the previous page to retake the test
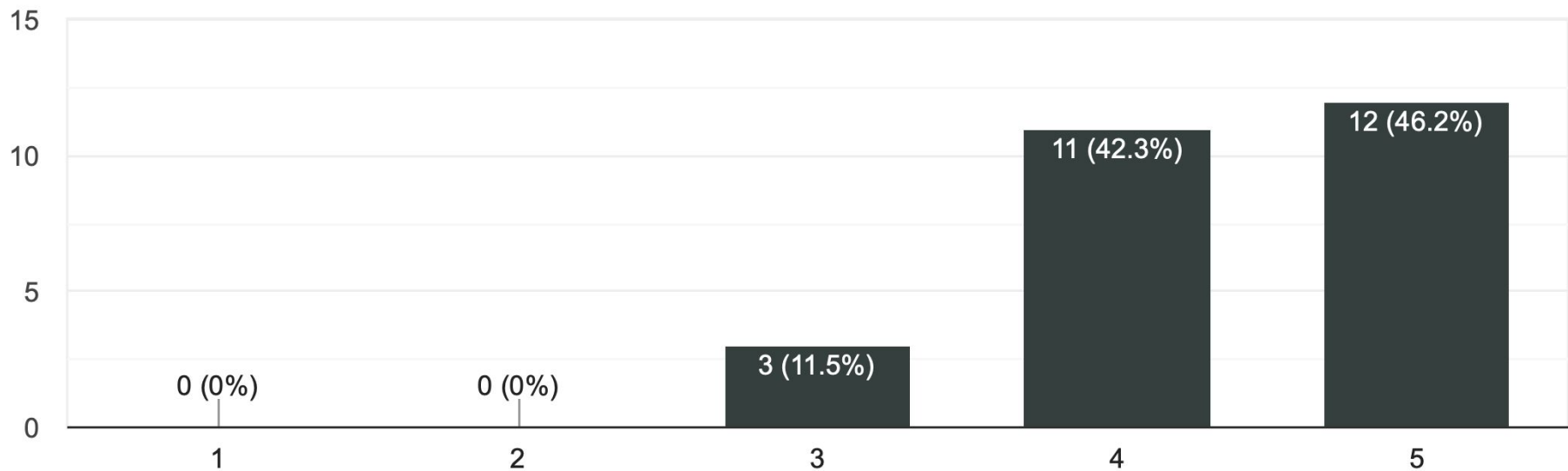- Even with the keywords the system returned a error.

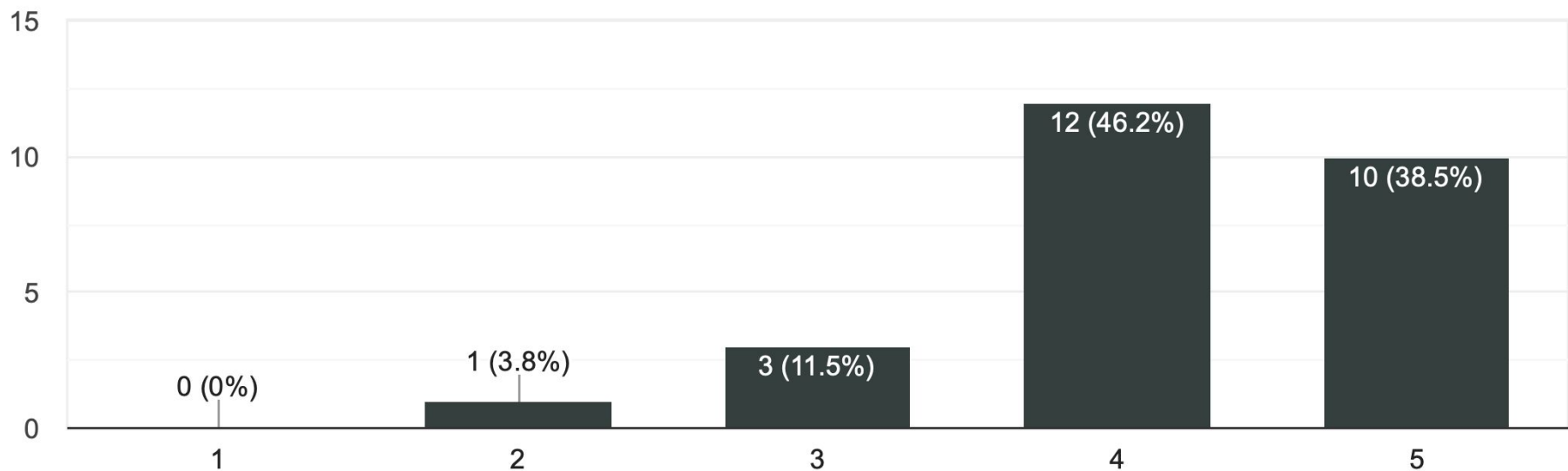## How many of the given tasks did you succeed in completing?

26 responses

How easy was it to use Lumi to configure the network?

26 responses

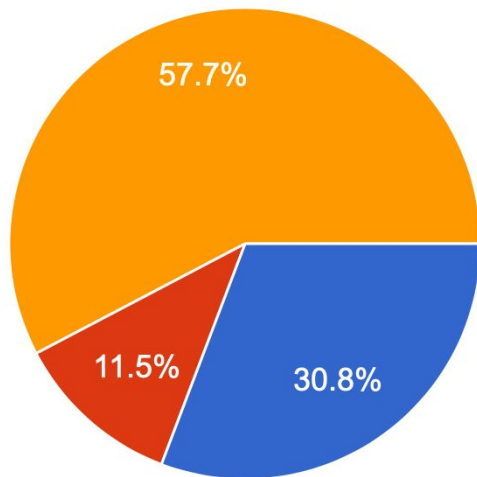## Compared to the traditional way of configuring networks, how would you rank using Lumi instead of configuration commands or languages?

26 responses

Would you rather use a chatbot like Lumi or configuration commands to alter network behavior?

26 responses

- I would rather use Lumi
- I prefer network commands
- I think both are useful for distinct tasks

57.7%

11.5%

30.8%

If you marked "I think both are useful for distinct tasks", please elaborate on your answer.

14 responses

- I guess scenarios where expert operators want to do simple configurations or add rules (e.g., an IPtables rule to block port 22 for a range of IPs), they could prefer the command line since it could be faster to create customized rules. Also, sometimes, network operators need to make some configurations and test it in order to create a further script to automate some tasks. In that situation, maybe, the chatbot does not provide any "technical feedback" about what was executed on the network/log files.
- automation, scripting, advanced configuration
- I am no expert, but I feel Lumi is great for defining (and maybe understanding) the overall behavior of the network, while some (lower level) command/configuration might be best for fine-tuning specific network equipment (maybe it would be a bit tiresome to alter a lot of configuration parameters using Lumi's interface, and the familiarity to doing it manually could be a desired feature).
- Maybe for fine grained tuning, such as defining precise firewall rules, it would be easier to simply type the rules in the command lime. But that something Lumi can easily accomplish, I guess.

If you marked "I think both are useful for distinct tasks", please elaborate on your answer. (Cont'd)

14 responses

- Depend on the complexity of the task. I'm not so comfortable doing complex configuration using tools like Lumi or other kind of configuration.

- Im working with programmability and I think that low-level commands are more reliable to define to define new behaviors. But I think that lumi can help me a lot to manage services and applications.

- Although Lumi is really helpful to create the intents and to perform simple tasks, I prefer to use the command line to configure sensitive applications and tasks related to servers, for example.

- I guess natural language will be more useful for requests from people that are not network operators, e.g., professors that are not used to manage the network but need specialized setups in the labs. Network operators will stick to command lines and graphical interfaces since they are made for specialized professionals.

- At begin it's difficult say correctly the command to Lumi understands

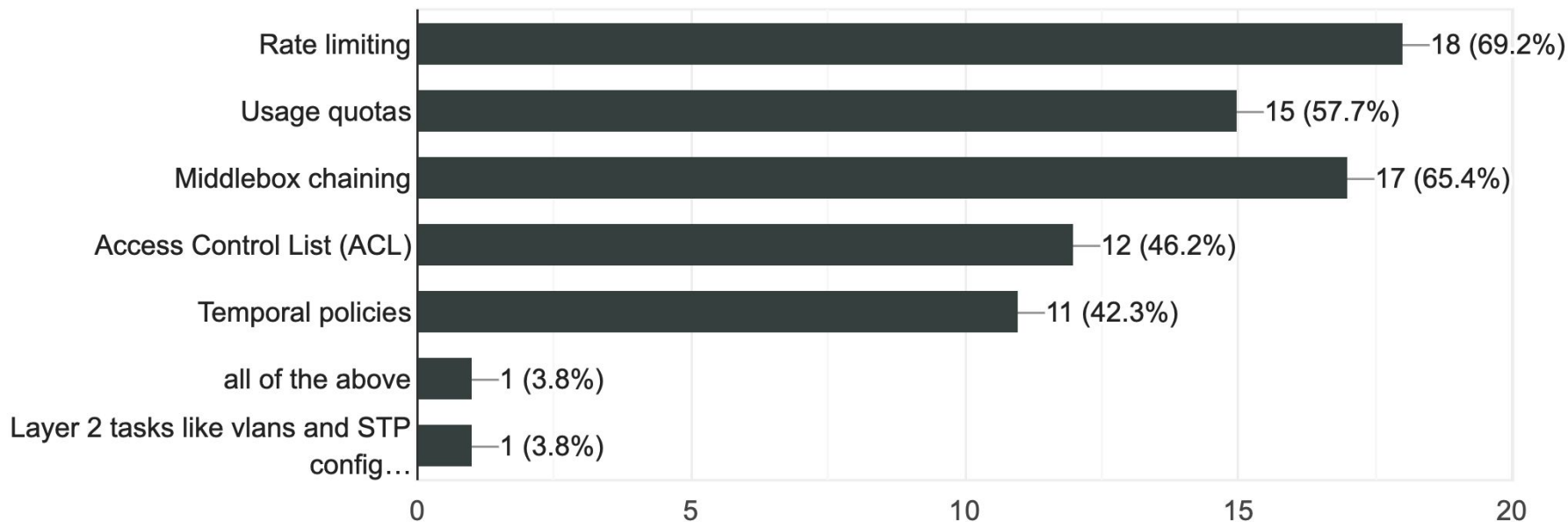- In some cases CLI commands will be more precisely.

If you marked "I think both are useful for distinct tasks", please elaborate on your answer. (Cont'd)

14 responses

- Lumi is like a black box hiding all the details of user groups and topology. I think that Lumi still needs to be pre-configured by the experts to define the terminology and solutions. Also I would imagine that there can be bugs, optimization-sensitive requests and specific functions that still need operators to use commands. Commands are useful when operators know clearly what they want to accomplish.

- 1. Many network management tasks are about monitoring something or figuring out what's happening, not just installing a new policy. I didn't see any such tasks when using Lumi in this experiment. (e.g., "Can these two endpoints communicate right now?", "are there any packet drops between these two endpoints?") 2. Firewall rules get complex, and I doubt Lumi would be necessarily easier to perform those tasks (e.g., block all incoming traffic, except for http traffic coming, traffic coming from internet2 sources, ssh traffic, ...etc, and so on).

- I believe that seeing the practical effects of settings can help confidence when using Lumi

- it is necessary to know correctly the language used by CHATBOT, so that the commands are used correctly. In the future it can become a good tool for network managers.

Which type of intents do you think Lumi helped the most when configuring the network?

26 responses

Rate limiting	18 (69.2%)
Usage quotas	15 (57.7%)
Middlebox chaining	17 (65.4%)
Access Control List (ACL)	12 (46.2%)
Temporal policies	11 (42.3%)
all of the above	1 (3.8%)
Layer 2 tasks like vlans and STP config…	1 (3.8%)

Axis: 0, 5, 10, 15, 20

Please share your thoughts on Lumi below. Your feedback is very appreciated. What do you think worked and what do you think could be improved?

12 responses

- I really liked the system/tool. I didn't read any tutorial/instruction and just started to write my intents according to the figure, and Lumi was able to map correctly everything that I wrote. Congratulations for the work! Can the Lumi provide an interface for expert users where they can see the "command line" that was generated by interacting with a chatbot? Maybe such information can be useful for operators to create their own scripts/knows what is really happening in the network, thus providing more flexibility and transparency for expert users while simplifying and hiding complexities for the non-technical users. P.S: That will be very nice if you make available an API of Lumi to allow the integration of Lumi with different management tools that are available or being developed by third-parties. I would like, for example, to make a call to Lumi in order to receive the command to create a specific rule on a Firewall being deployed.
- I think for the most part Lumi worked great, interpreting requests properly even when some variations for the terms were used. However, as described previously, it seems that a term was misinterpreted in the last task, and the feedback process was not useful in this case.

Please share your thoughts on Lumi below. Your feedback is very appreciated. What do you think worked and what do you think could be improved? (Cont'd)

12 responses

- The interface looks great! Clean, easy to use, and very intuitive. One improvement I suggest is to keep the historic of commands sent (as in a command line interface).
- Could be possible to set a Gbps limit per week using 'Gbps per week' instead of 'gb/wk'
- I appreciate a lot. I only missed some details of what I was doing wrong when my intent was not compiling
- More visibility into how Lumi requests are accomplished would help operators understand the network better. Also, what would happen if conflicting requests are made through Lumi? How do you verify that the network functions as desired after a bunch of requests?
- I think any management task which can apply to a parent restricting their home network is an excellent fit for lumi. Blocking video traffic past 10pm, limiting torrenting, etc.
- nice!

Please share your thoughts on Lumi below. Your feedback is very appreciated. What do you think worked and what do you think could be improved? (Cont'd)

12 responses

- 1. As I mentioned, I think Lumi should have some tasks for monitoring the network and troubleshooting network issues. 2. I think Lumi will be good for performing quick and simple network tasks. For more complex network policies (traffic steering, rate limiting, etc), I have a feeling that operators might feel uncomfortable relying a chatbot to do the right work.
- Great tool. You may want to add some examples before the task starts
- I believe that seeing the practical effects of settings can help confidence when using Lumi
- I think this is a awesome idea. Can be useful for NOCs and Internet Services Providers. This can be useful for Level 1 support team and commercial teams. The tool can be used by commercial team realize somes basics operations to consumers.