

Kinetic Survey

[Help](#)

Warning: The hard deadline has passed. You can attempt it, but **you will not get credit for it.** You are welcome to try it as a learning exercise.

Thank you for taking the time to complete this survey! Your answers here will help us make the assignments more interesting/useful/applicable in the future. Your answers and feedback also give us important feedback for improving Pyretic, Kinetic, and other SDN control frameworks. Thank you!

Question 1

What best describes your profession?

- ☐ Other
- ☐ Equipment vendor
- ☐ Software developer
- ☐ Manager / business
- ☐ Network Operator
- ☐ Student

Question 2

Roughly how many years of networking experience do you have?

- ☐ 15-20 years
- ☐ 5-10 years
- ☐
- ☐ 1- 5 years
- ☐ 10-15 years

- ☐ More than 20 years

Question 3

What is the size of the largest network you have experience with, in terms of routers, switches, and firewalls?

- ☐ more than 1,000 devices
- ☐ 100-1,000 devices
- ☐ 1-10 devices
- ☐ 10-100 devices

Question 4

What is the size of the largest network you have experience with, in terms of the number of users it supports?

- ☐ 1-10 users
- ☐ More than 10,000 users
- ☐ 1,000-10,000 users
- ☐ 10-100 users
- ☐ 100-1,000 users

Question 5

What type of networks do you have the most experience and familiarity with? (select the most applicable)

- ☐ enterprise networks
- ☐ I don't have a lot of previous experience configuring/operating networks
- ☐ transit networks
- ☐ campus networks

- ☐ home networks
- ☐ other

Question 6

How often does the configuration of the network you are more familiar with need to be changed?

- ☐ 2-3 times per week
- ☐ about once a week
- ☐ more than once a day
- ☐ more than once a month
- ☐ about once a day
- ☐ about once a month

Question 7

When the network configuration needs to be changed, what are the most common reasons why it needs to be updated?

- ☐ Updates to security policies (e.g., access control)
- ☐ Unplanned failures
- ☐ Planned maintenance or upgrade
- ☐ Arrival or departure of new people or end hosts (e.g., new employees, students, etc.)
- ☐ Provisioning (e.g., adding new capacity or devices)
- ☐ Other

Question 8

When a change is made to the network configuration, how often are you certain that the change is correct (i.e., not going to introduce a new problem)?

- ☐

I generally have no idea whether an unexpected bug will appear, and the only way to know for sure is to deploy the change and see

- ☐ For any change to the configuration, I am never completely certain
- ☐ I am always certain for most changes, but for some changes I am not sure
- ☐ I am always certain that the change will not introduce new problems

Question 9

In your experience, what types of problems do you think are most likely to be introduced by a change to configuration?

- ☐ The new change breaks new functionality (i.e., everything that was working before is generally fine, but the new changes do not work properly)
- ☐ The new change breaks existing functionality (i.e., things that were working before no longer work)
- ☐ Both of the above

Question 10

What are the aspects of configuration that you would most like to see **automated**?

- ☐ Testing correctness properties
- ☐ Quality of service/performance (i.e., ensuring good performance)
- ☐ Reliability (i.e., configuring backup paths)
- ☐ Security (i.e., setting up access control, etc.) s
- ☐ Other

Question 11

What are the aspects of configuration that you would most like to see made verifiable?

- ☐ Security (i.e., access control is incorrect, etc.)
- ☐ Other
- ☐ Reliability (i.e., backup paths don't work as expected)
- ☐ General problems with correctness (e.g., forwarding loops, blackholes)
- ☐ Quality of service/performance (i.e., performance suffers)

Question 12

Did you attempt the Kinetic Gardenwall assignment?

- ☐ No
- ☐ Yes

Question 13

Did you complete the Kinetic Gardenwall assignment?

- ☐ Yes
- ☐ No

Question 14

If you answered "no" to the previous question, why did you not complete it?

Question 15

How long did you spend on the Kinetic gardenwall assignment? (Whether you completed it or not.)

- ☐ 5-10 hours
- ☐ more than 10 hours
- ☐ 3-5 hours
- ☐ I did not attempt the assignment.
- ☐
- ☐ 1-3 hours

Question 16

Did you attempt the POX Gardenwall assignment?

- ☐ No
- ☐ Yes

Question 17

Did you complete the POX Gardenwall assignment?

- ☐ Yes
- ☐ No

Question 18

If you answered "no" to the previous question, why did you not complete it?

Question 19

How long did you spend on the Pox Gardenwall assignment? (Whether you completed it or not.)

- ☐ 3-5 hours
- ☐ more than 10 hours
- ☐ 1-3 hours
- ☐ I did not attempt the assignment.
- ☐
- ☐ 5-10 hours

Question 20

Did you attempt the Pyretic Gardenwall assignment?

- ☐ Yes
- ☐ No

Question 21

Did you complete the Pyretic Gardenwall assignment?

- ☐ Yes
- ☐ No

Question 22

If you answered "no" to the previous question, why did you not complete it?

Question 23

How long did you spend on the Pyretic Gardenwall assignment?

- ☐ 1-3 hours
- ☐
- ☐ more than 10 hours
- ☐ I did not attempt this assignment.
- ☐ 5-10 hours
- ☐ 3-5 hour

Question 24

Please rank the three (Kinetic, Pyretic, Pox) Gardenwall assignments in order of difficulty (1=easiest; 3=hardest). Explain the reason for your ranking.

Question 25

Please rank the three (Kinetic, Pyretic, Pox) Gardenwall assignments in terms of which you liked best (1=best; 3=worst).

Question 26

Explain the reasons for your rankings in the previous two questions.

Question 27

Taking into account the fact that you worked on a simplified example, and compared to implementing a similar policy in conventional networks, how was your experience using Kinetic?

Please rank the following statements according to whether you agree or disagree with them.

- Kinetic could make it easier to **configure** policies in my current network
- Kinetic could make it easier to **verify** policies in my current network

Question 28

What types of policies would you like to see Kinetic verify that it isn't currently capable of verifying?

- ☐ Continuous-time features (e.g., timing)
- ☐ Security policies (e.g., assertions about authorization)
- ☐ Other

Question 29

When you were programming the control application in different frameworks (e.g., Pox, Pyretic, Kinetic), what types of bugs did you encounter in your code? Was any of these frameworks more or less prone to bugs?

Question 30

When you were completing the programming assignment in Pox (or Pyretic), how did you test your controller?

Question 31

When you were completing the programming assignment in Kinetic, did the NuSMV model checker point out any bugs or errors in your controller logic?

Question 32

If you answered “yes” to the previous question, what types of bugs did the model checker reveal?

Question 33

If you answered “no” to the previous question, what types of bugs would you like to see the model checker reveal?

Question 34

If you think that Kinetic could make it easier to configure or verify policies in your current network,

please elaborate on the types of policies where you think it can be most helpful. What other types of policies and functions are difficult to implement in today's networks that you think would be useful to implement (or support) in Pyretic or Kinetic?

Question 35

Please feel free to elaborate on any of the answers above where you'd like to say more (particularly if you checked "other" on anything above).

☐ /.*/

Question 36

Would you be willing to talk more with us in a follow-up discussion (e.g., by email, chat, phone, etc.)

- ☐ Yes (email)
- ☐ Yes (other; e.g., in person)
- ☐ Yes (IM/chat)
- ☐ Yes (phone/skype/hangout)
- ☐ No

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