RACI: THE IVORY TOWER SYNDROME: OPERATORS' REFLECTIONS ON ACADEMIC BGP SECURITY SOLUTIONS

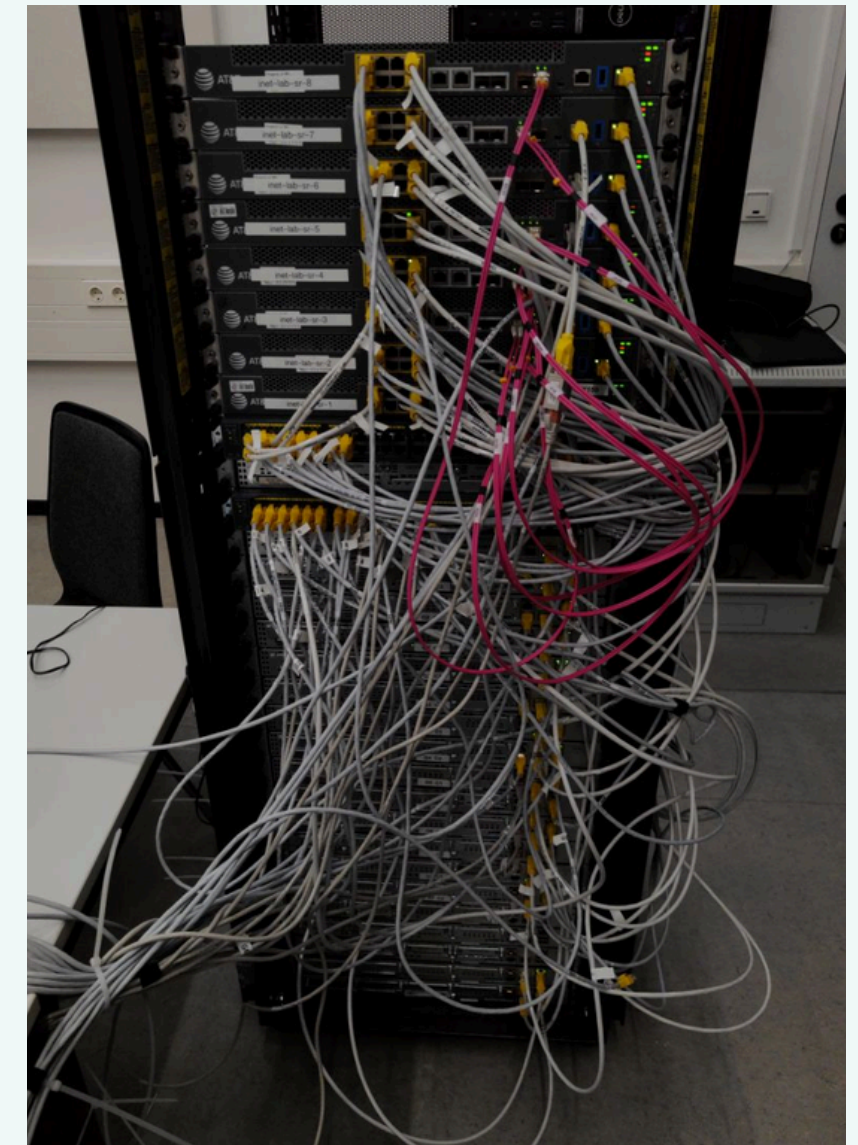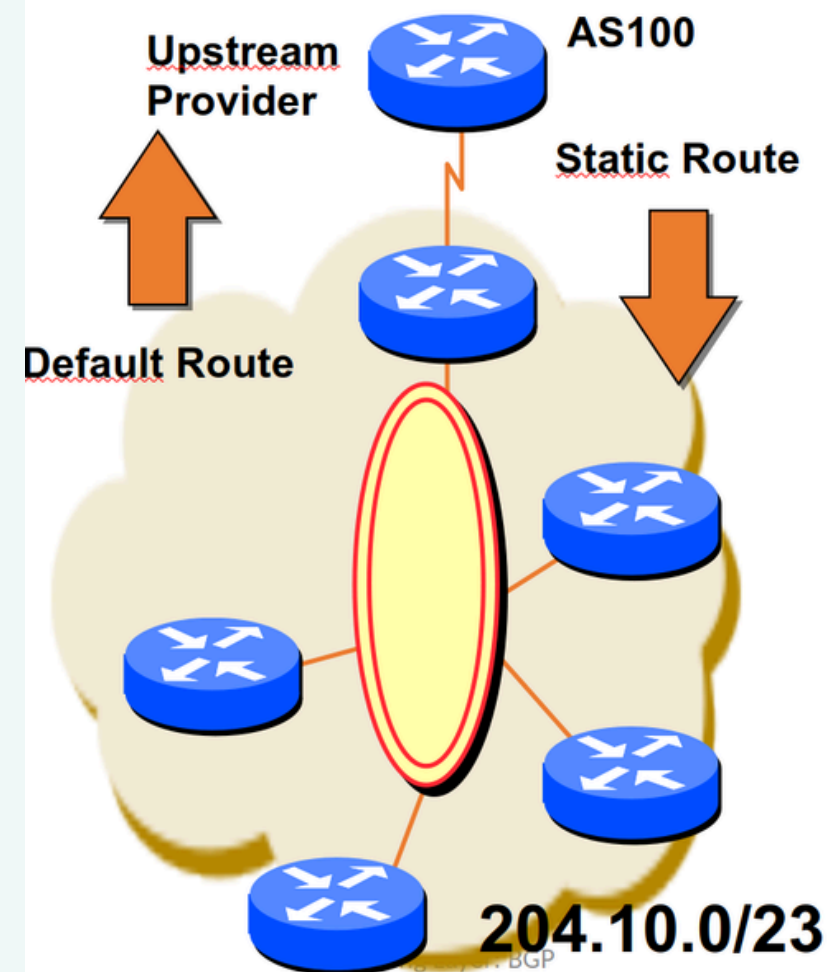Aleeza Suhel Inamdar

LIGHTENING TALK: RIPE90 - LISBON
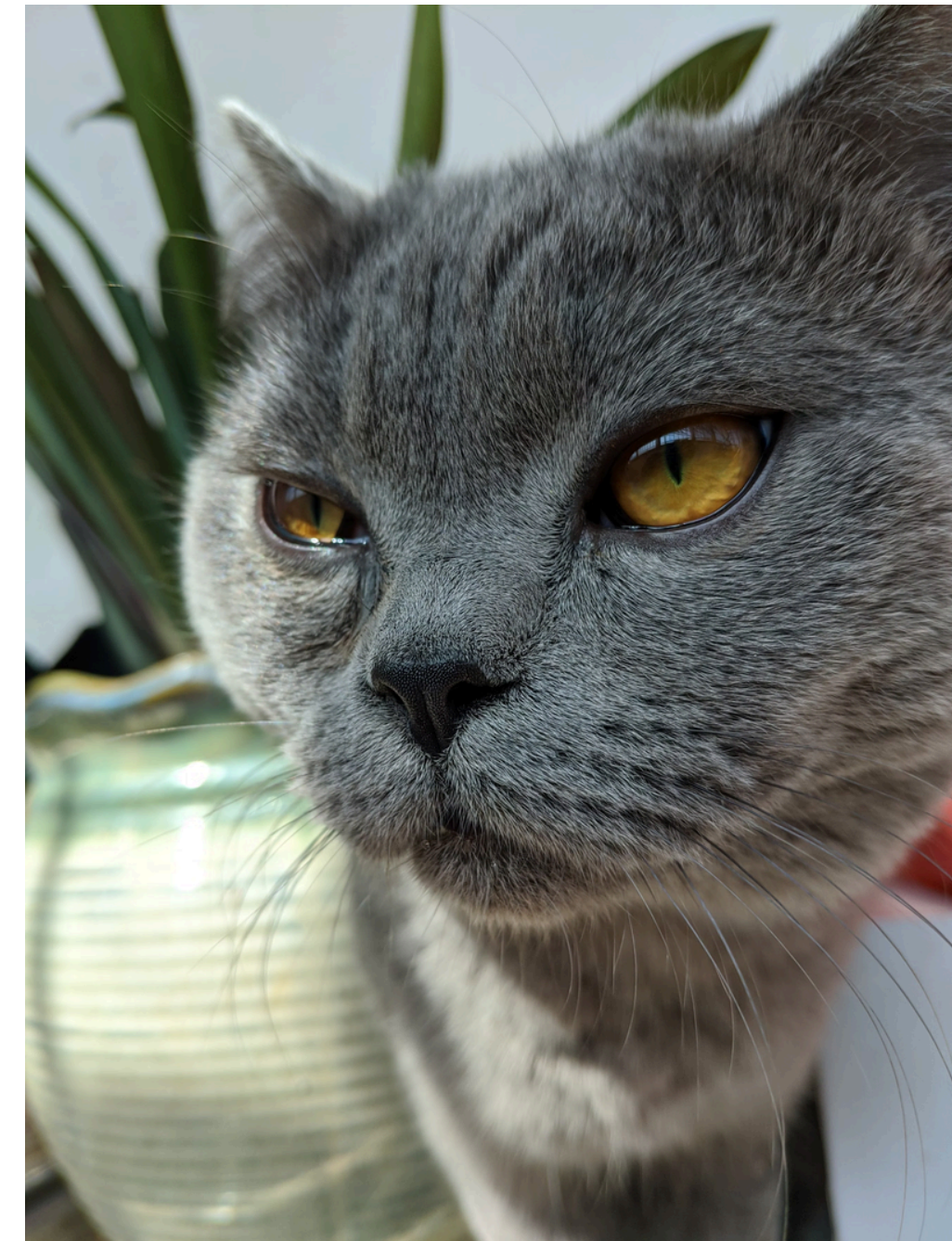
MOTIVATION

ACADEMIA

Routing at Stub ASs

REALITY

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IS IT... PRACTICAL?

Are the solutions proposed by academics practically feasible?

▷ There is *a lot* of academic work on BGP security

▷ There is very little of it implemented in practice

▷ Anecdotally, operators tend to be... scpetical

Sidney Ding https://unsplash.com/@imsidney
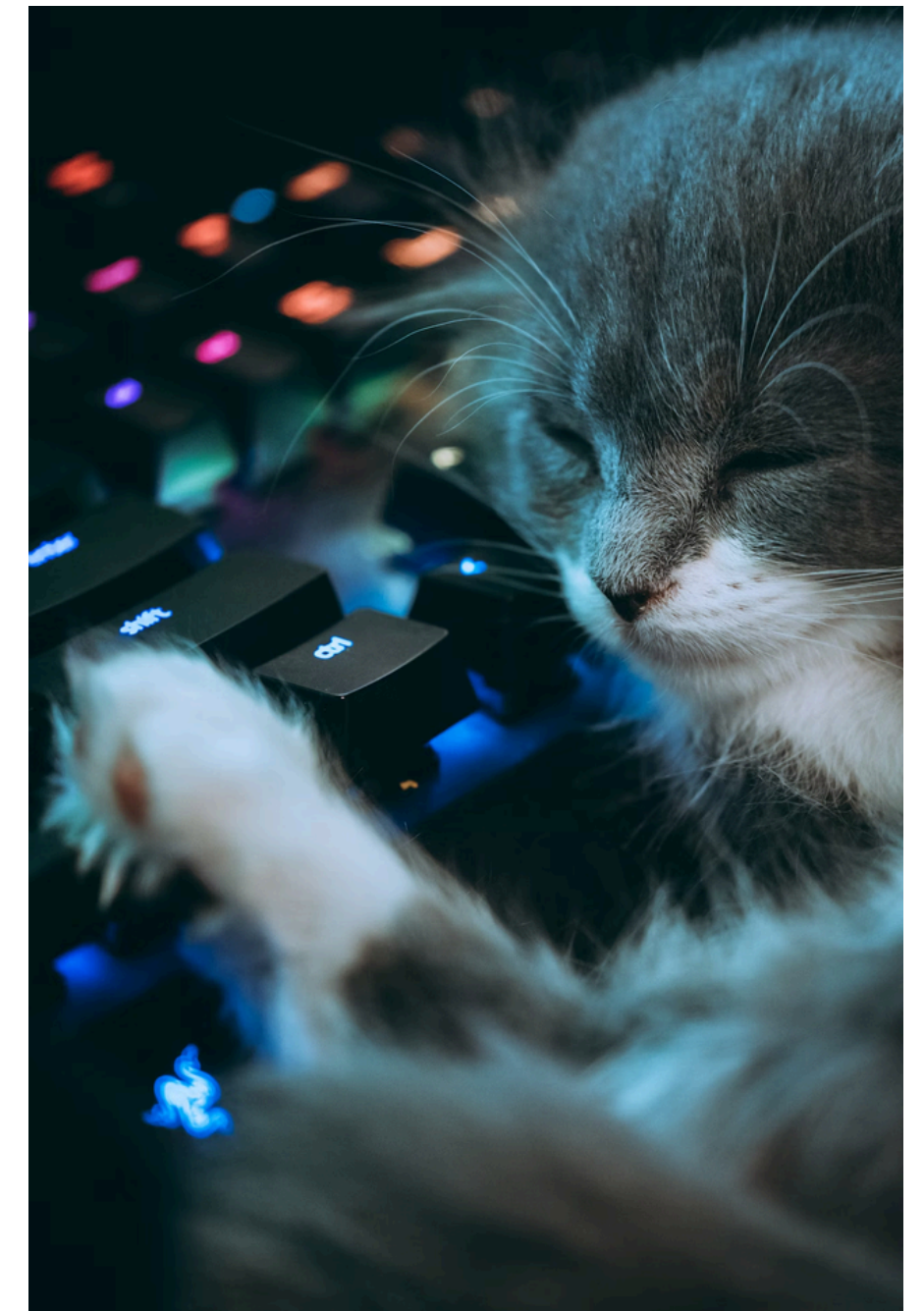
OPERATIONAL REALITIES

Finding good people is hard...

Younger professionals migrate to more sensational fields like AI

Cost cutting -> Loss of senior engineers -> Juniors are responsible for full blown networks

BGP is sometimes outsourced due to limited in-house capabilities

...keeping them is harder.

Jake Weirick https://unsplash.com/@weirick

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RESEARCH: IMPRACTICAL?

Examples

▷ Simplified assumptions on acceptable performance overhead

▷ Not accounting for organizational coordination overhead

▷ No vendor implementation (to expect) & no I-D in sight

▷ Based on old models of the Internet (Uniform Routing Policies, RFC1930)

Lack of practical impact in academic research

Challenges in deployment, scaling of academic solutions

Research papers don't provide adequate solutions to operational problems

RESEARCH: SELF-SERVING?

Examples

▷ Pay-walled papers (not 'Open Access')

▷ A lot of text-overhead around the 'important' bits of technology & recommendations

▷ 'This is the last paper I need to publish for my PhD'

▷ Abandoned when everyone moved on after graduating

There exists access barriers to research papers

Research papers may not have the best format

Academic papers are sometimes written just for the sake of it

IVORY TOWER SYNDROME

P07: "Research papers are written by researchers for other researchers"

P04: "I've seen MANY solutions in search of a problem."

P04: "In theory, practice follows theory. In practice, theory is wrong."

P03: "my feeling is that industriy [sic] and academia are too disconnected - this feels to me as being two different worlds and people crossing the lines are the minority"

WHY THO?

Barriers to Practical Implementation

Accessibility:
An Obstacle

Funding Influence on Research Integrity

WE HAVE A SITUATION...

Researchers

- Are willing to invest a lot of time to understand the world and make meaningful contributions
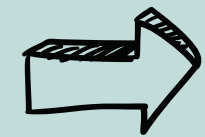- Lack practical experience and real-world guidance

Research-Dog proposing Super-Duper BGP to Operator Cat

Anastacia Dvi https://unsplash.com/@vasilechak

Operators

- Want to run a reliable network and deal with all_their_tasks
- Appreciate *useful* input on their work

WHAT CAN BE DONE?

Improved communication and collaboration between researchers and practitioners

Propose modular/incremental solutions that are practically feasible

Enhance presentation of findings to increase likelihood of adoption

Ensure transparency in funding and avoid potential conflicts of interests

Integrate real-world practices into the academic curriculum

We need more long-term engagement with practice to make *actually* useful contributions

Academia, as is, makes these recommendations difficult

P04: "In theory, practice follows theory. In practice, theory is wrong."

Fewer new engineers are entering networking and experienced engineers retire in the next 10-20 years --> notable gap in knowledge distribution between generations

EVERYONE: BURN THE IVORY TOWER

Lukas K https://unsplash.com/@lucniner

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