VPP Modular Middlebox: update

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measurement and architecture for a middleboxed internet

measurement architecture experimentation

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Reminder

MMB plugin built in **VPP** (**FD.io**) environment to simulate middleboxes behavior

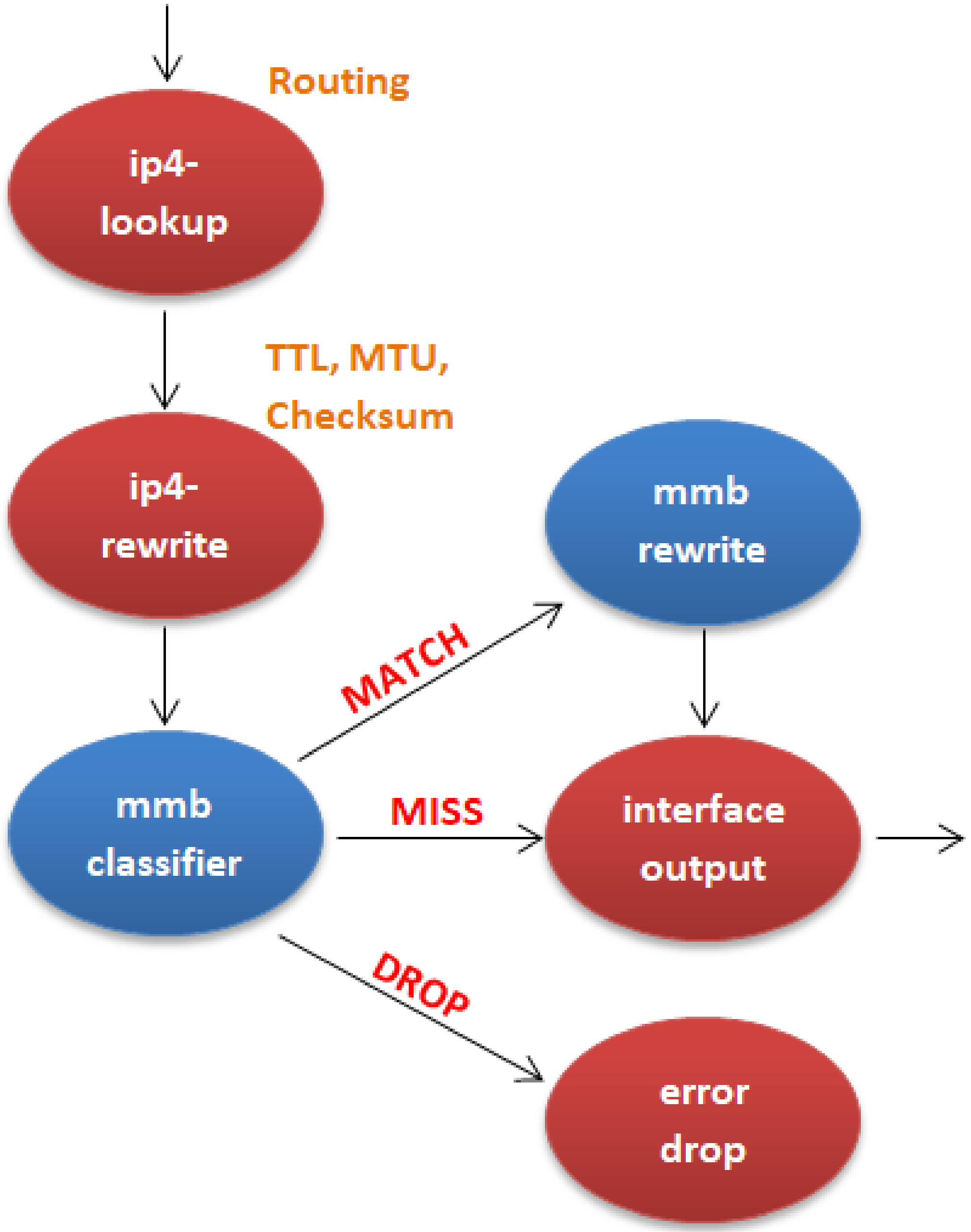
Easy to deploy or use (physical/virtual)

Light and fast

Grammar defined for rules:

mmb add <match> [<match> …]

<target> [<target> …]



Mask-based approach

- 3 logical paths:
  - Fast path: **==** constraints, no options
  - Slow path 1: complex constraints (**!=**, **<**, **>**, **<=**, **>=**), no options
  - Slow path 2: options

Fast path

- **==** constraints, no options
- Complexity:
  - **M** = #Masks, **K** = max(#Keys)
  - find_key(mask, packet): O(log **K**)
  - classify(packet): O(**M** log **K**)
- Examples:
  - 100 rules on 5-tuples (**M**=1, **K**=100): O(1 log 100)
  - 50 rules on 5-tuples and 50 on 3-tuples (**M**=2, **K**=50): O(2 log 50)

Slow path 1

- “Complex” constraints (**!=**, **<**, **>**, **<=**, **>=**), no options
- No logarithmic time find_key()
- One check per individual complex sub-constraint

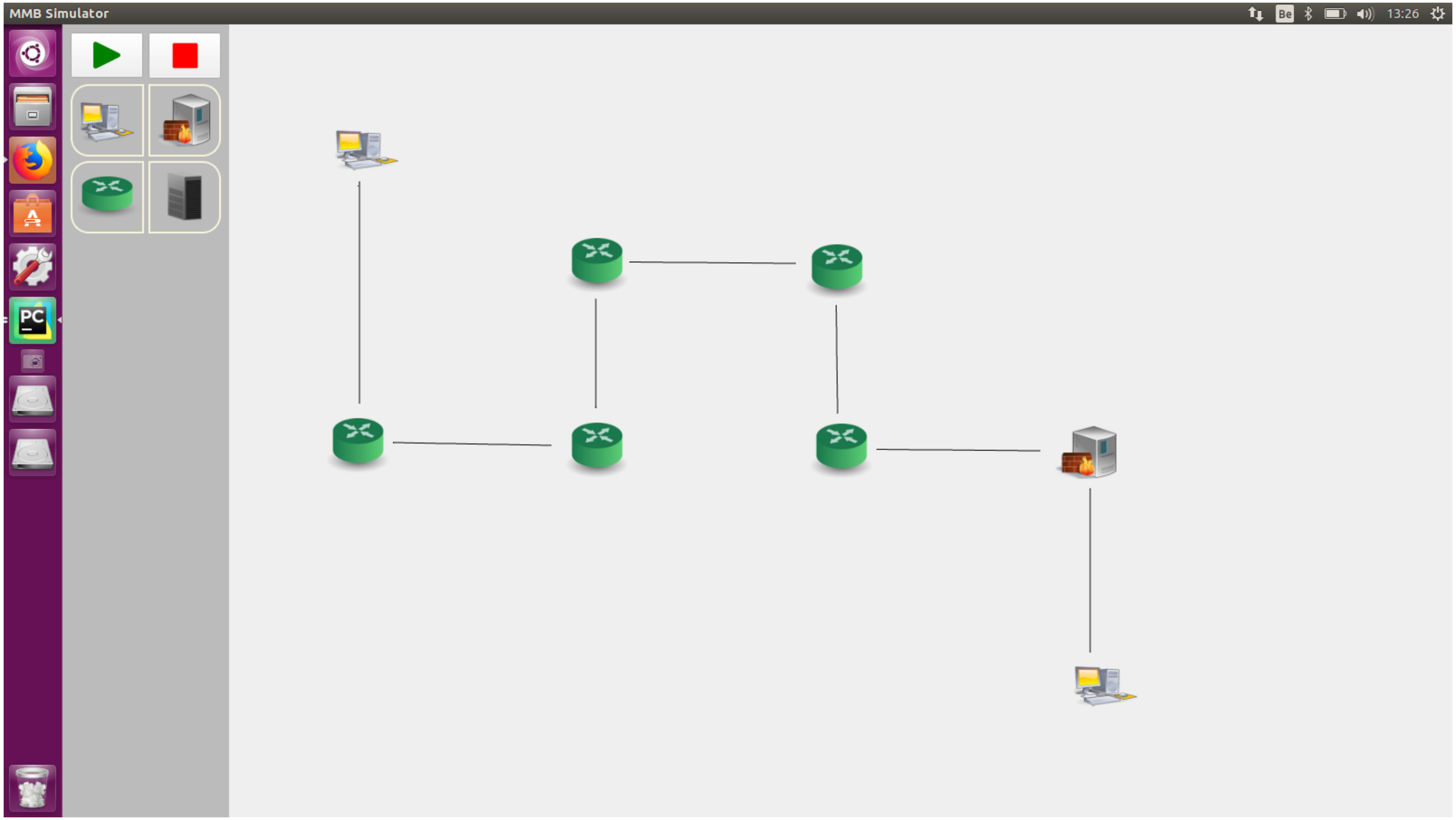
Slow path 2

- TCP Options
- Extra steps to find options offsets
- Rewrite operation also heavier

GUI

- Graphical User Interface for virtual network creation
- Users can add nodes (router, switch, middlebox, endpoint)
- Users can configure the routing and configure middlebox behavior.

GUI



Next steps

- Complete performance evaluation
- GUI