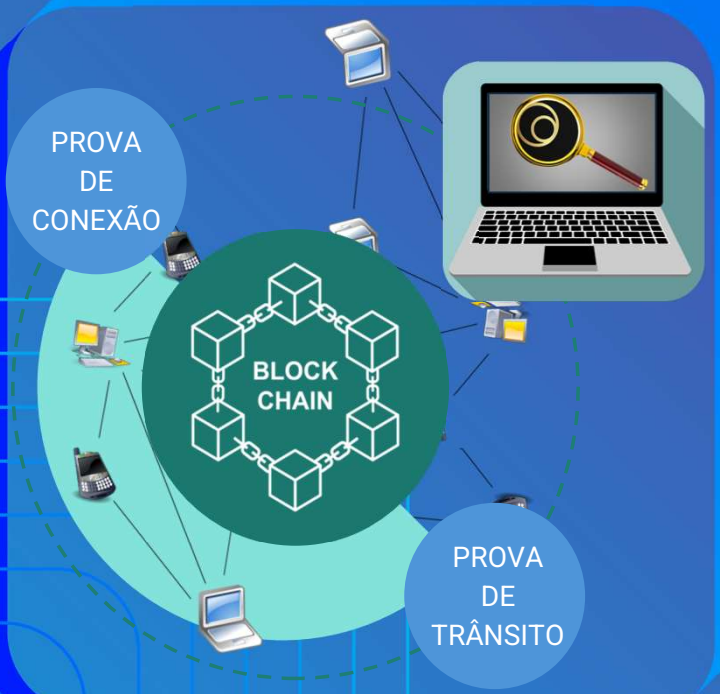
PROJETO ILIADA

Blockchain
em evolução.



GT-Audita

Auditoria Transparente em Redes usando Blockchains

Motivação

- Provedores de acesso precisam atender obrigações regulatórias e estarem em conformidade com políticas de segurança
    - Os registros são frequentemente a única evidência de um ataque bem-sucedido
    - Dados provenientes dos múltiplos sistemas (acesso, autenticação, endereço, etc.)
    - Precisam ser coletados, armazenados e recuperados de modo consistente para garantir análises forenses e facilitar os processos de auditorias internas
    - Estão sujeitos a serem alterados, apagados e eventualmente refutados

- Deve ser mantida sob constante monitoramento e utilização, pois os atacantes sabem que muitas organizações mantêm logs de auditoria por razões de conformidade, mas raramente os analisam

Proposta do Grupo de Trabalho

- Adicionar uma camada de armazenamento de informações para verificação dos registros usando blockchain

- Viabilizar a auditabilidade a partir de hashes criptográficos que serão armazenados na blockchain
  - Logs
  - Caminhos percorridos por pacotes

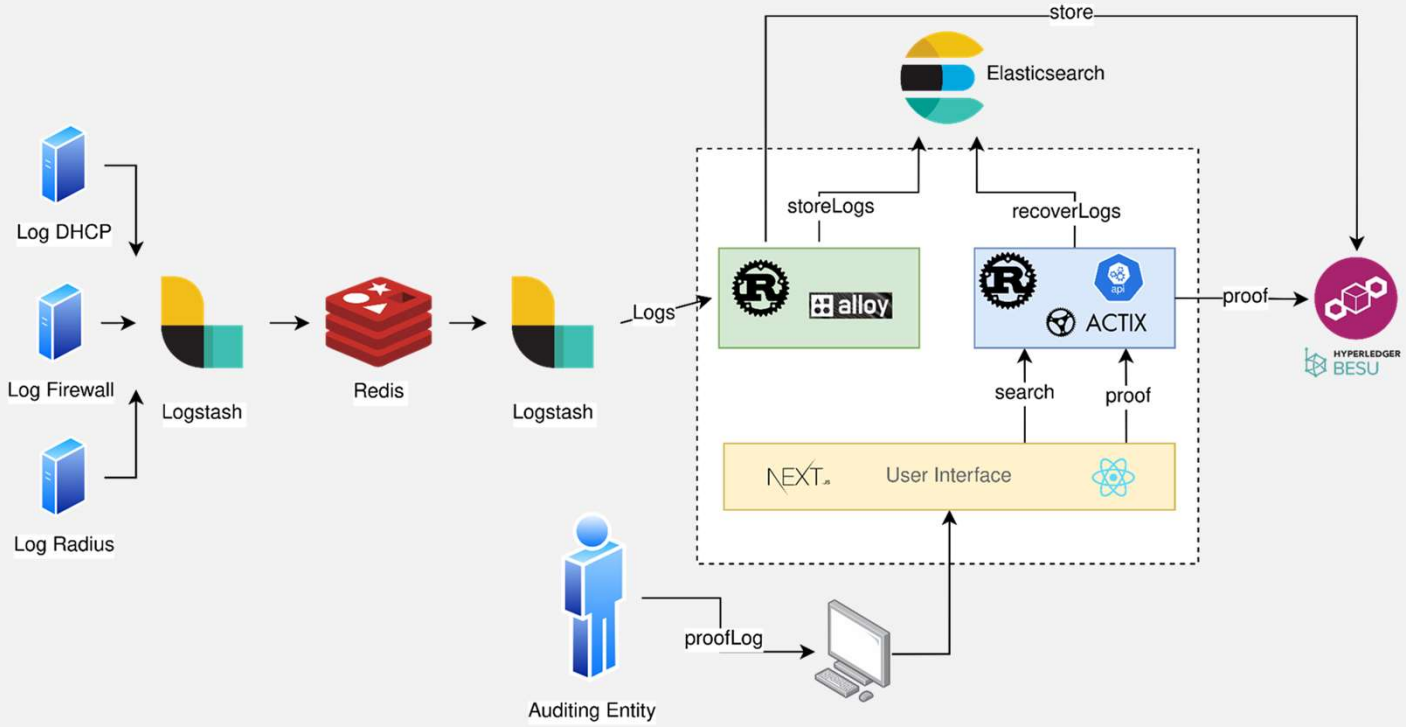
- Garantir transparência e que o acesso pelo ***dispositivo/naquela conta/pelo endereço IP/no tempo Z*** não possa ser refutado

Arquitetura do sistema para armazenamento de Logs

Envio de logs gerados firewall, DHCP, Radius, ...

Processamento dos logs gerando JSON e um hash

Indexação e armazenamento (onchain e offchain)



Caso de uso: Auditoria de incidente de segurança

CAIS envia uma descrição do ataque com :

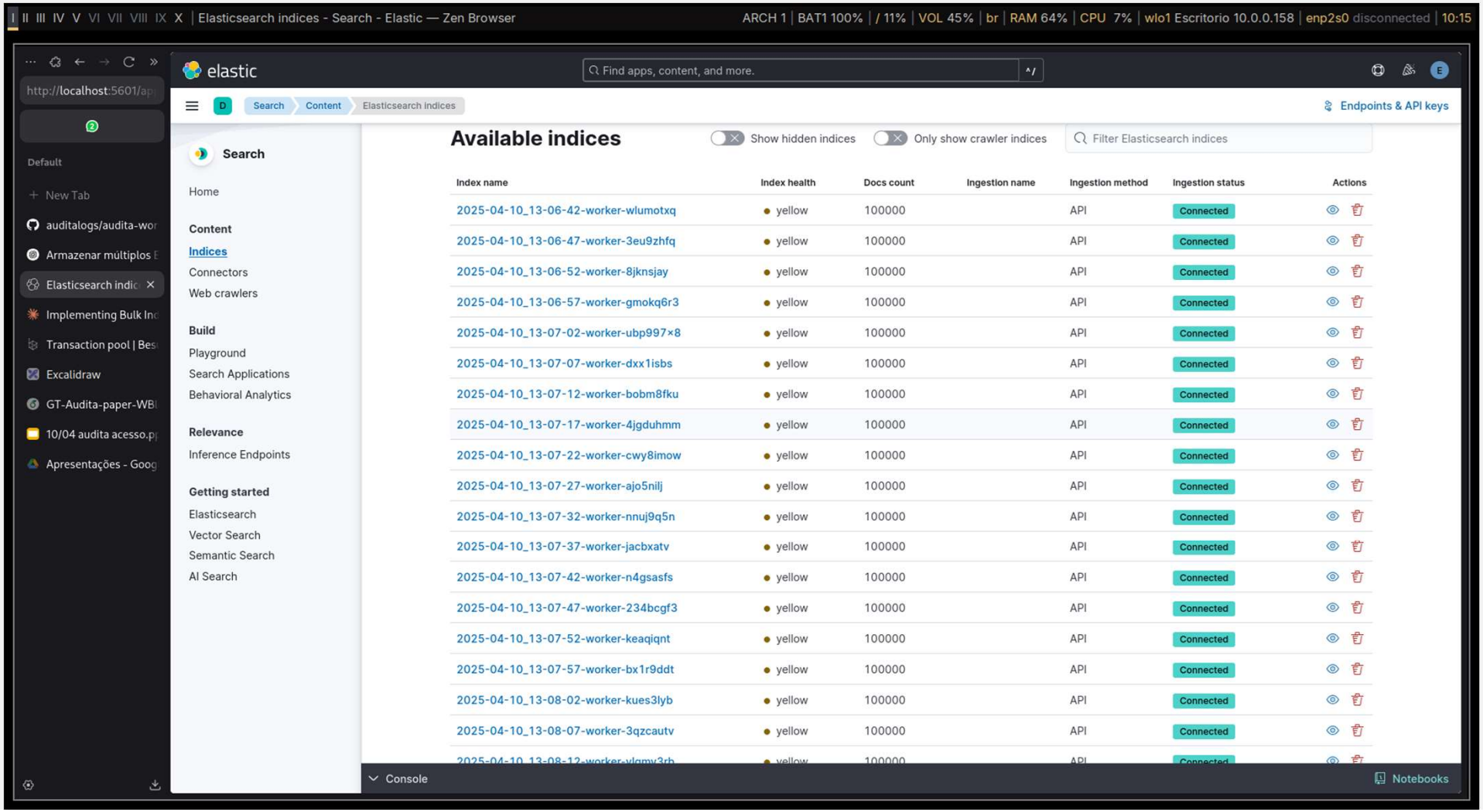
1. Endereço IP público da rede
2. Porta de origem e
3. O horário de acesso

Utiliza-se os logs do firewall para encontrar um Endereço IP interno (NAT) usado no acesso remoto

Com base no IP, verifica-se os logs do DHCP para encontrar o MAC , depois no RADIUs o usuário autenticado

Buscar os logs no banco, calcular o hash e verificar na blockchain

Implementação atual



Implementação atual

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```

Envio para a blockchain em lote

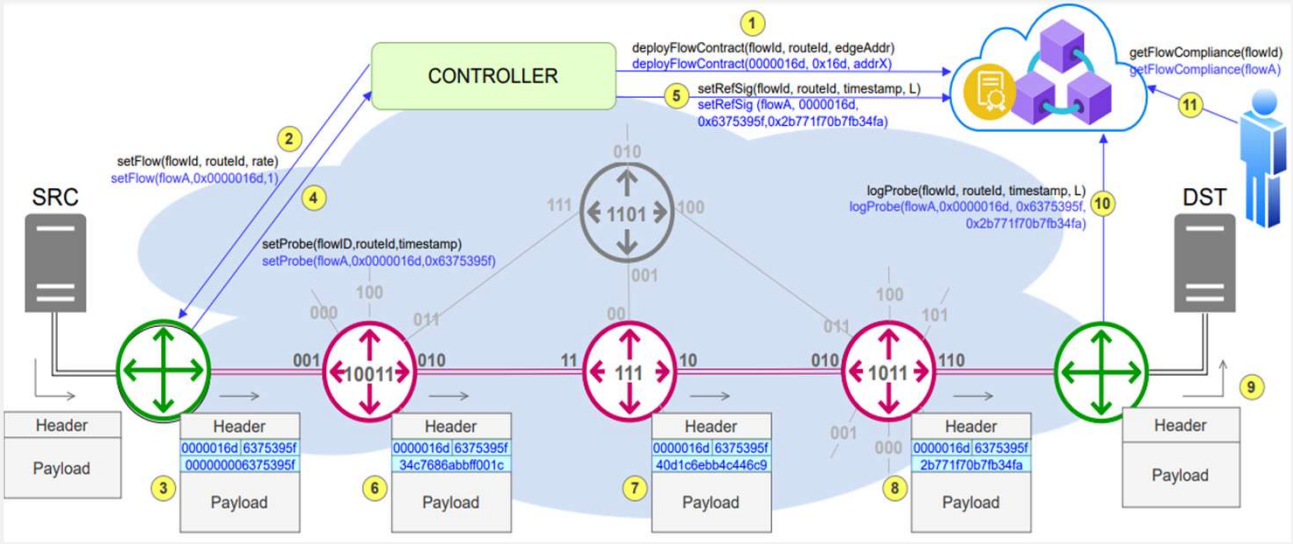
10 Milhões de logs processados

Batch Size de 100 mil -> 100 hashes para a blockchain

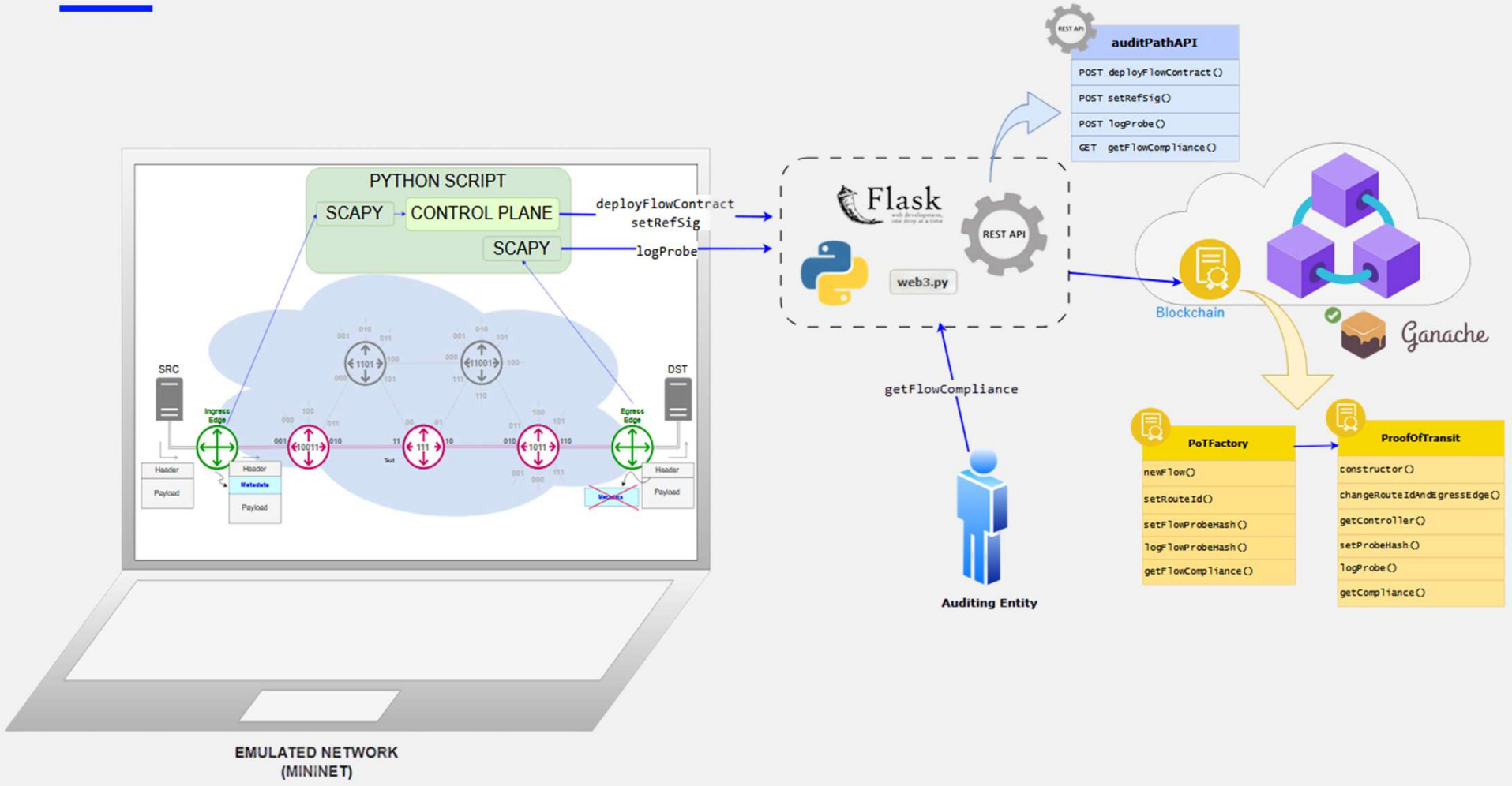
Blockchain em evolução.

Armazenamento de informações para auditoria de caminhos

- Provedores de acesso precisam atestar que um determinado fluxo de pacotes transitou por um caminho (switches/roteadores) previamente planejado
- Os requisitos específicos para *auditabiliddae de caminho* podem variar conforme o ambiente regulatório, o tipo de rede e os serviços oferecidos
  - Exemplos: Trânsito de um fluxo (ataque) na rede do ISP, precisa ter registros suficientes para **confirmar a trajetória** dos pacotes.

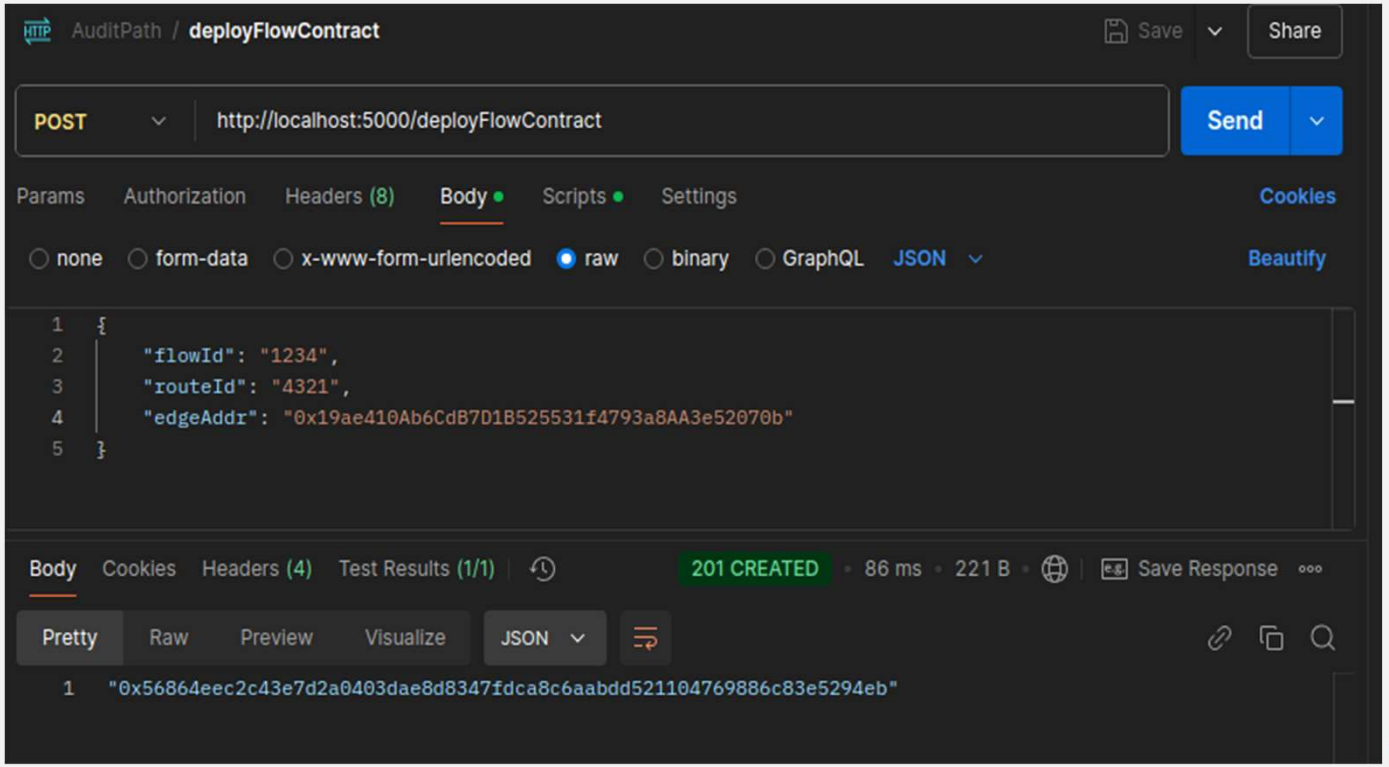


Armazenamento de informações para auditoria de caminhos



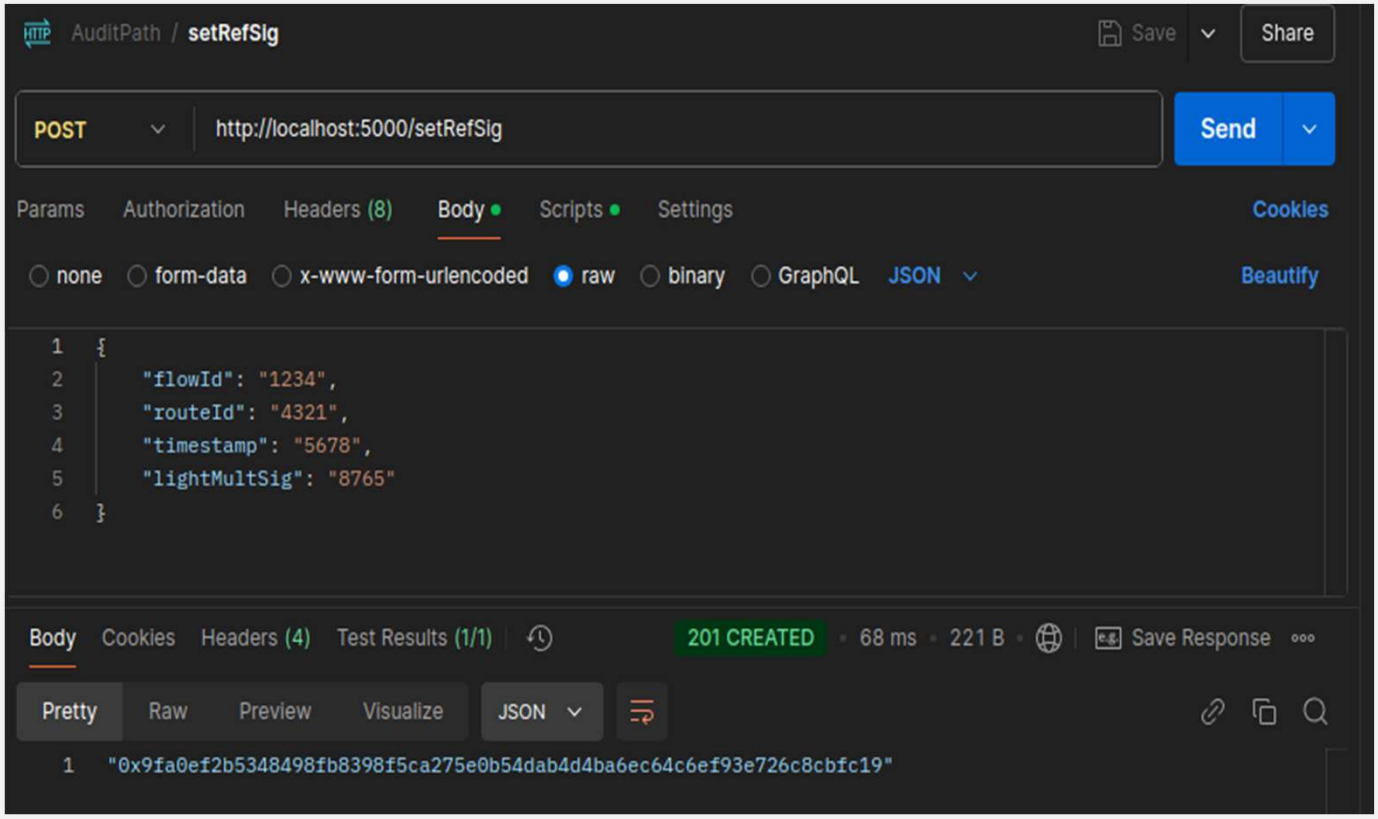
API Rest - Smart Contract

- POST deployFlowContract
- Iniciando um fluxo
- Deploy do contrato



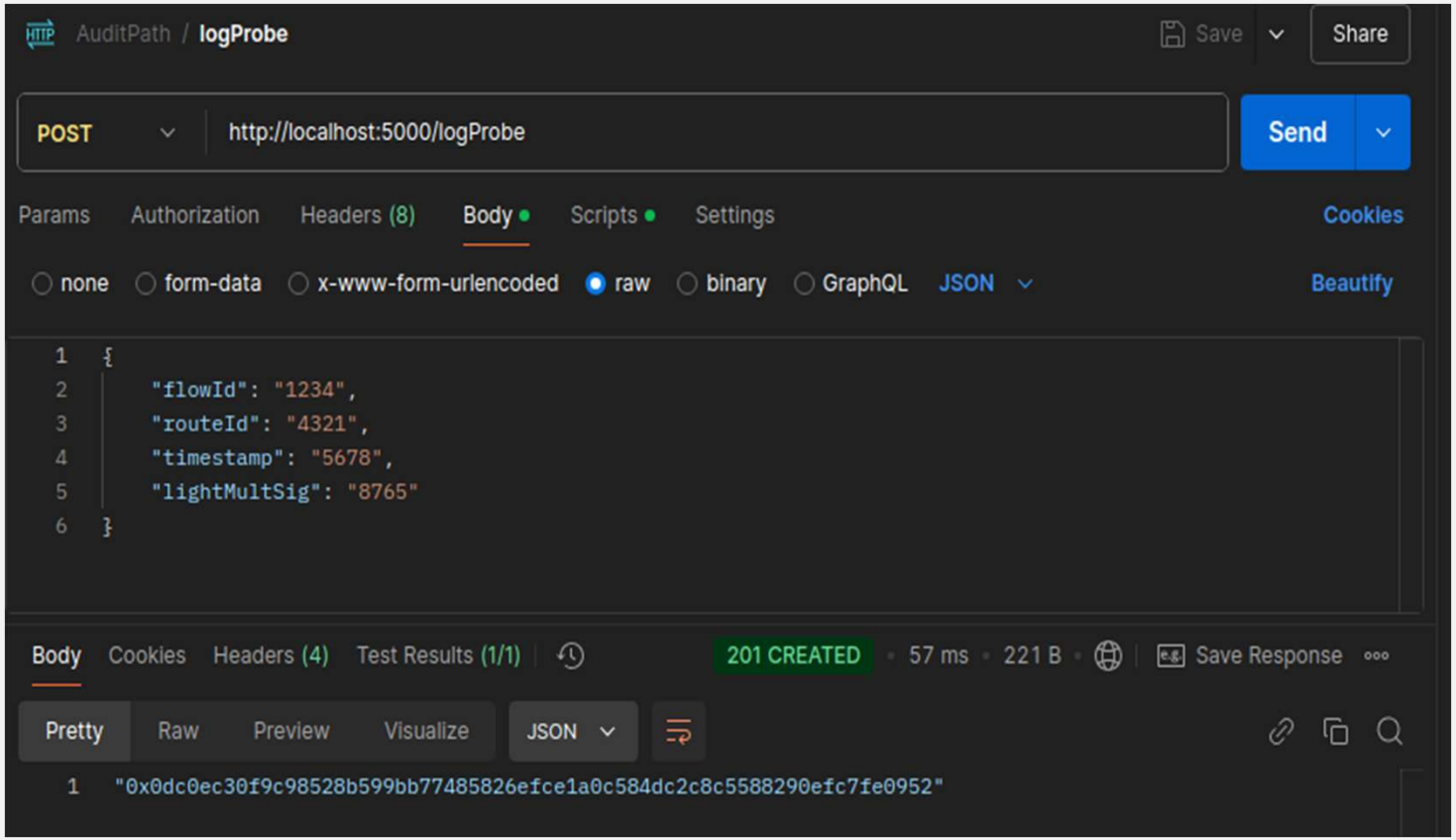
API Rest - Smart Contract

- POST setRefSig
- Definindo assinatura de referência para um determinado RouteId



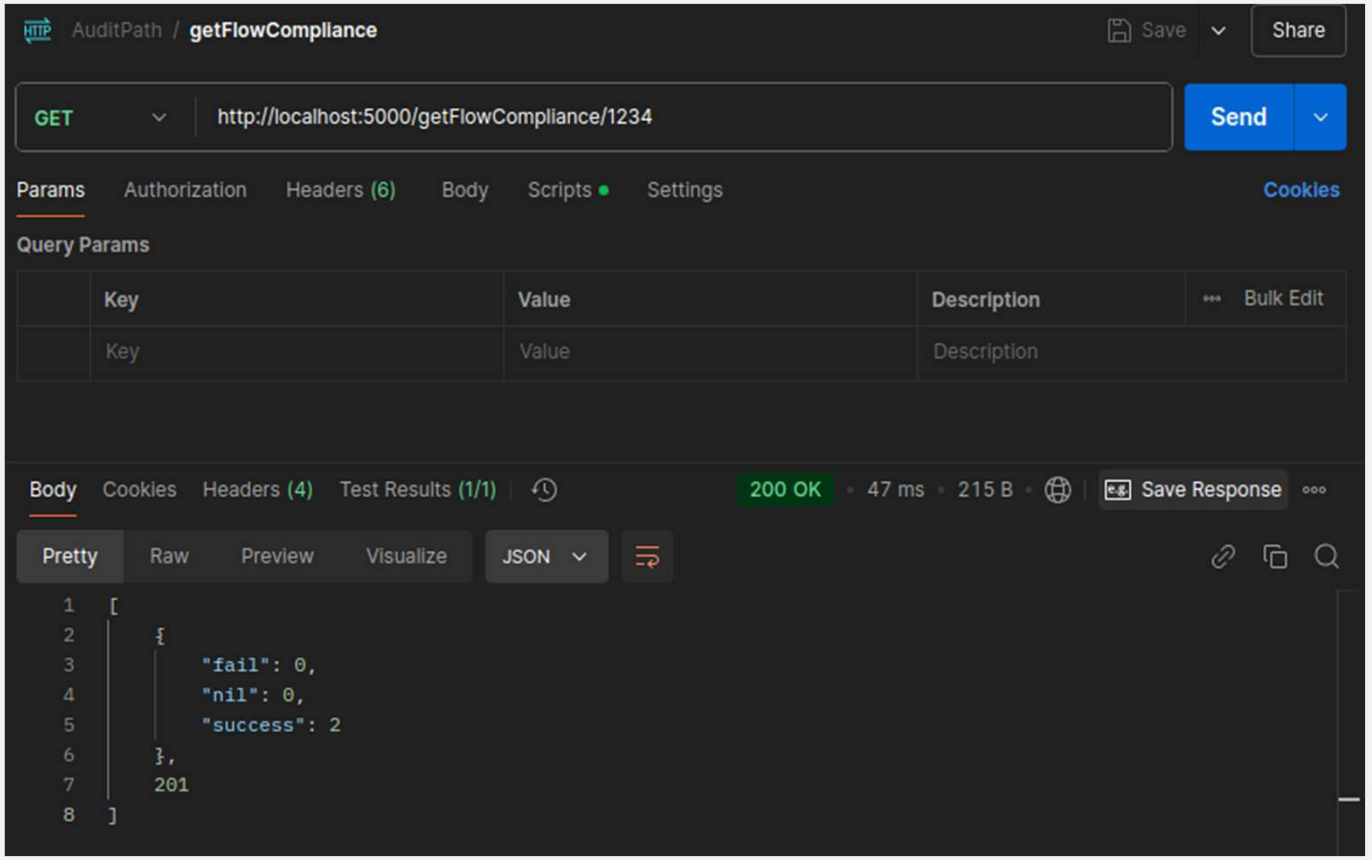
API Rest - Smart Contract

- POST logProbe
- Registrando pelo nó de saída a assinatura gerada na sonda.



API Rest - Smart Contract

- GET getFlowCompliance
- Obtendo os resultados contabilizados



Obrigado

PROJETO ILIADA

CPQD

RNP

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GOVERNO FEDERAL BRASIL UNIÃO E RECONSTRUÇÃO