

Problem statement of Inter-domain Traffic Redirection Risks

draft-cheng-idr-redirection-risks-ps-01

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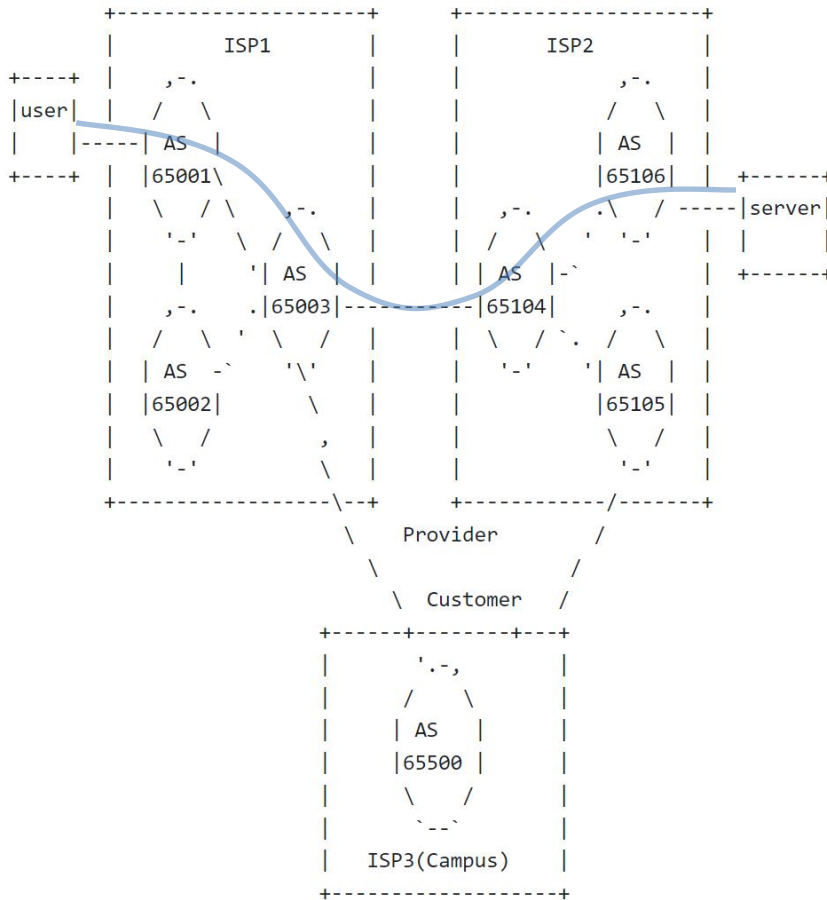
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Background

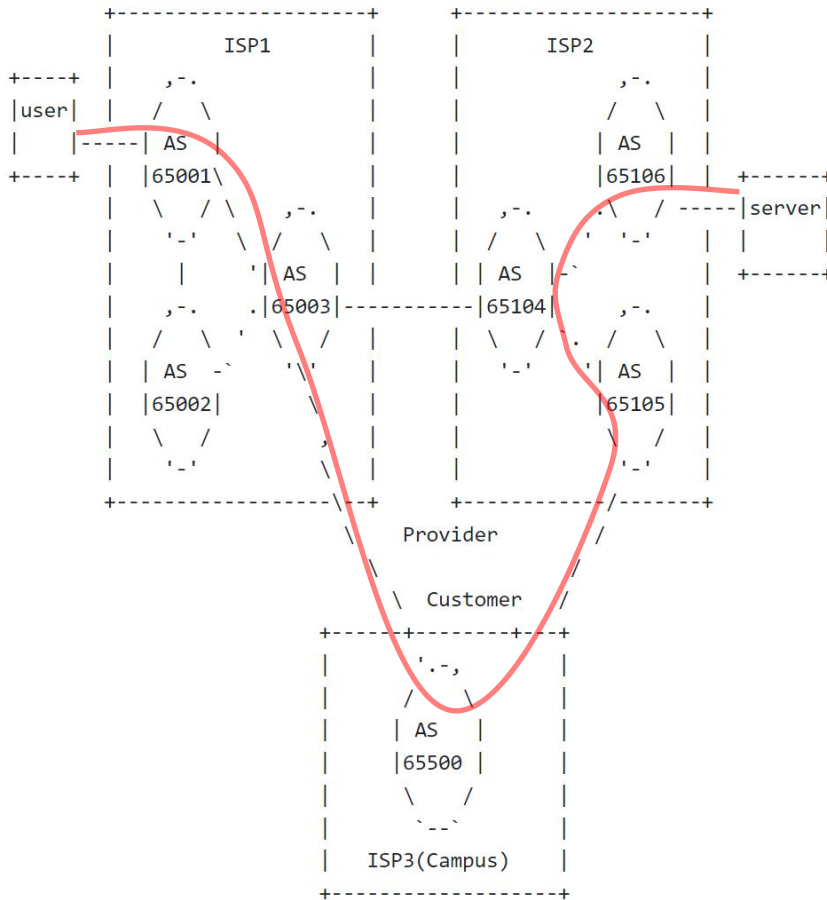
- Currently, operators have deployed the redirection technologies, such as BGP Flowspec, in large scale.
- The draft describes risks of redirection mechanism in operators' network.
- These risks may be caused by
 - Misconfiguration
 - Network adjustment
 - Network failure
 - Others

Topology



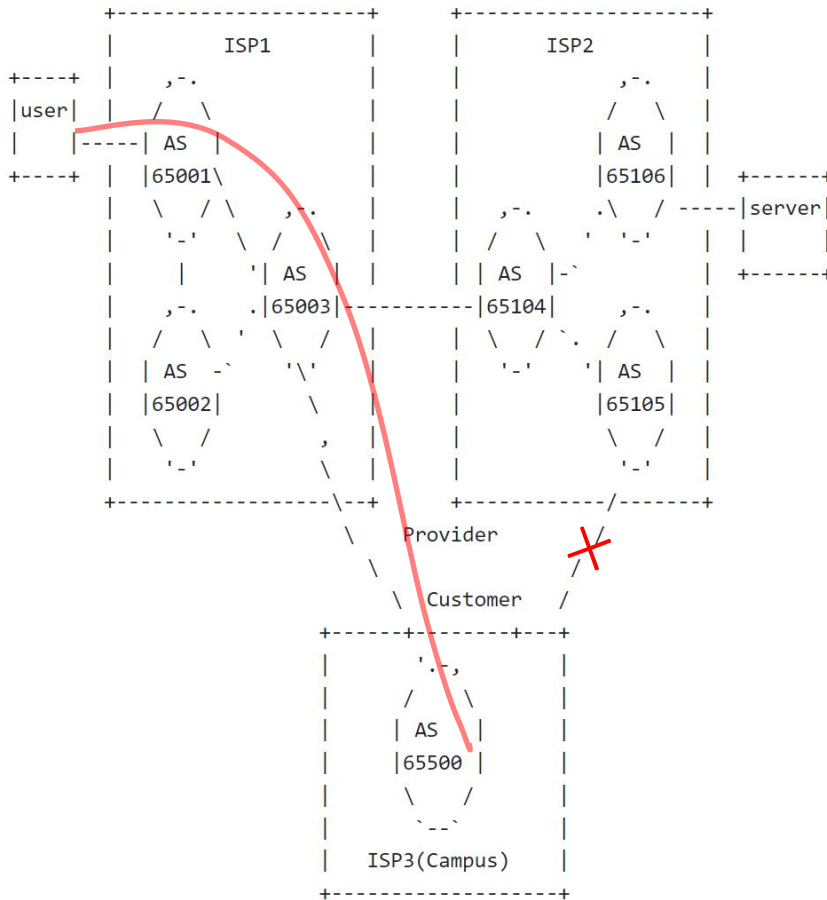
- AS 65003 and AS 65500, AS 65105 and AS 65500 form a **provider-customer adjacency relationship**
- The traffic is transmitted through the path [**User -- AS65001 -- AS65003 -- AS65104 -- AS65106 -- Server**]

Risk 1: Traffic detour and exposure



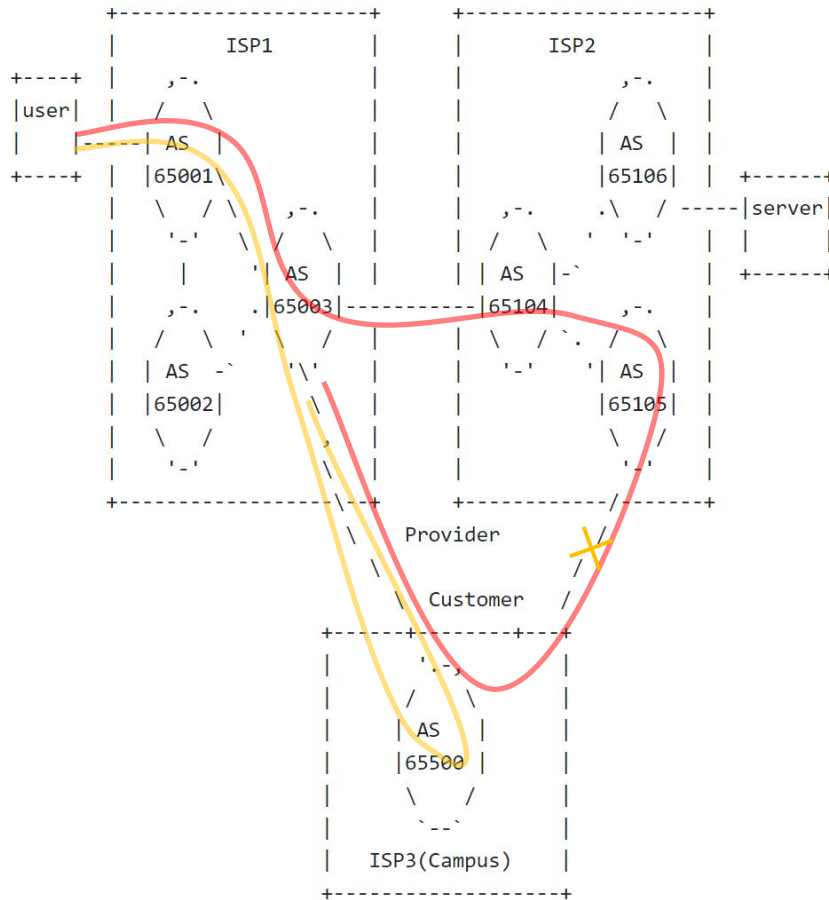
- Due to afore mentioned risks, assume ISP1 **AS 65003** redirects traffic from **AS 65104** to **AS 65500**.
- In this case, **valley-free principle is violated** as AS 65003 and AS 65500 form a provider-customer adjacency relationship. **Traffic passes through the AS 65500 and exposes itself to the campus network.**

Risk 2: Traffic black hole



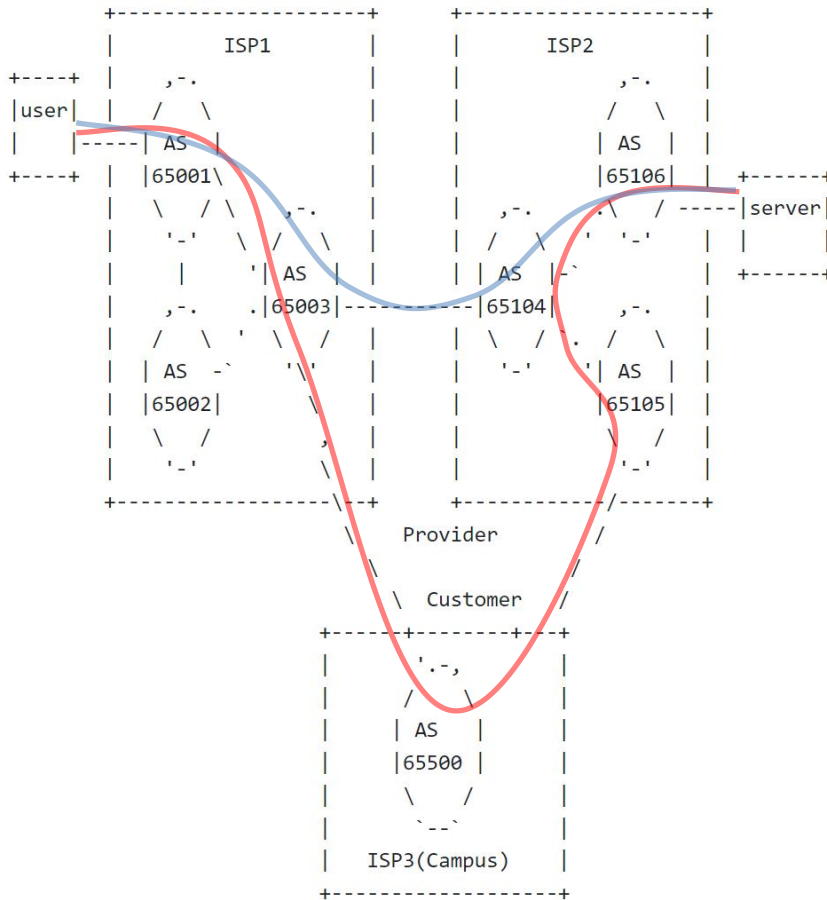
- Due to afore mentioned risks, assume ISP1 **AS 65003** redirects traffic from **AS 65104** to **AS 65500**.
 - AS 65500 may **not have a route to the destination server**.
 - AS65500 learns the route to server from AS65105. If the link between AS 65500 and AS 65105 fails, as a result, **the route is lost**.
- In two case above, the traffic is discarded, resulting in a **traffic black hole**.

Risk 3: Traffic loop



- Due to afore mentioned risks, assume that traffic is **redirected from AS 65104 to AS 65105**.
- In AS 65105, the traffic is transmitted to AS 65500, or the traffic is redirected to AS 65500. In this case, if the traffic on AS 65500 is transmitted to AS 65003, then **traffic loop occurs**.
- Assume traffic is **redirected from AS 65003 to AS 65500**, and AS 65500 learns the route to server from AS 65105.
- If **the link between AS65500 and AS65105 fails**, AS 65500 learns that the next hop of the route to the server is AS65003 through routing protocols. AS 65500 will send packets back to AS65003, then **traffic loop occurs**.

Risk 4: O&M risks



- The traffic owner expects traffic to be transmitted along the AS path carried in the route, but **the actual transmission path is different from the AS path.**
- If the network O&M control system does not obtain traffic redirection information on the network, unpredictable risks may occur during traffic optimization, for example, network congestion.

Next Steps

- Any questions or comments are welcomed
- Request further review and feedback