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Themenvorschläge

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mit Schwerpunkten:

- Netzsicherheit
- Measurements / Measurement-Tools
- Routing Security

Quantifying Default Routing on the Internet

Mögliche Form:	Mögliche Sprachen:
BA/MA	Deutsch/Englisch

BGP hijacking is a pressing issue that has not yet been fully resolved. As trust is the basis for a BGP announcement to propagate through the Internet, it is relatively easy for an attacker to announce prefixes belonging to other organizations. Several solutions have been proposed to (partially) solve the problem of BGP hijacking. RPKI is a promising approach that is using Origin-Authentication through certificates to determine whether an entity is allowed to announce a certain prefix or not. We currently perform active measurements on the control-plane (https://rov.rpki.net) as well as on the data-plane (RIPE Atlas) to determine the up-to-date status of Route-Origin-Validation.

If an operator of an Autonomous System on the Internet does not know where packets have to be routed, default routes are used to send these packets to a single upstream provider. This thesis will quantify the error margin introduced by default routing on the Internet which has a severe impact on our data-plane measurements with RIPE Atlas. To identify ASNs that are deploying default routes we will be using data-plane as well as control plane measurements.

Outline of this work:

- Identify methodologies to determine default routing for an autonomous system
- Implement these methodologies and conduct experiments
- Evaluate the results

Prerequisites:

- Good understanding of Internet Routing, in particular BGP
- Knowledgeable in Python
- Familiarity with measurements is a plus
- Previous use of RIPE Atlas is a plus