



RIPE NCC

RIPE NETWORK COORDINATION CENTRE

Technology Update

A summary of plans and actions

Kaveh Ranjbar | 18 May 2022 | RIPE 84

RIPE Routing Information Service (RIS)



- Updated RIS website
 - ris.ripe.net
 - ris.ripe.net/docs
- Peering coordination
 - actively seeking for "interesting" peers
- New research
 - [Bias in Internet Measurement Infrastructure](#)
- Data improvement prototypes:
 - [Peer metadata](#)
 - [Per-peer MRT dumps](#)
 - Public Kafka (TBA)

Talk to these people in the halls:



Emile
Aben



Michela
Galante



Florian
Obser



Information Technology

Work done



- Final stage of automation of our server management
 - Fully dynamic comms bus-based
- Centralised failure alerting, internal and external providers
- Email infrastructure revisit:
 - Many fixes and optimisation of the MTA configuration, strengthened incoming mail filtering
 - Removed greylisting
 - Removed dependency from Spamhaus; it now only influences the spam score in SpamAssassin (long-standing external request)

Work ongoing



- Finish automation and migration to Salt-managed servers
- Email infrastructure revisit:
 - Mailman 3 proof-of-concept using containers
 - Proof-of-concept external mirror to run as parallel IMAP server
 - Implement Mailman 3 for internal mailing lists first and then for the rest of the lists
- Start with containerisation of internal applications
- Redesign monitoring and performance graphing system (Prometheus, Grafana)
- Revisit our storage infrastructure looking into current setup and do a proof of concept with modern solutions
- Replace office Dutchtel PABX with Vodafone One Net solution



DNS and Routing

Work done



- **Reduced TTL for NS and DS records**
 - benefits our users who wish to update these types of records
- **Moved from KSK+ZSK to CSK**
 - mostly for internal benefit; announced to dns-wg
- **Upgraded our Zonemaster instance**
 - now supports newer algorithms, as requested by the community
- **Public Kafka Stream (prototype)**
 - faster access to our BGP data
- **Per-peer dump files (prototype)**
 - faster access to MRT files
- **Improved RIS metadata (prototype)**
- **RIS website/documentation updates**
 - better documentation of RIS and its services

Work ongoing



- Lifecycle replacement at two K-root sites
 - we will increase query load-handling capacity at each site
- Pick fourth core AuthDNS location
 - this will increase overall capacity
- Planning for RIS features and prioritisation will start after RIPE 84
 - We'll consult the community for input during the meeting



Research and Development

Research



Research:

- Published various articles about the state of the Internet in Ukraine, Russia and more
- Latest in the Internet Country Report series: Bulgaria, Moldova and Romania
- For more information, see RIPE Labs
- Prototyping Internet outage visualisations based on RIPE Atlas data using Observable

RIPE Atlas



- Testing the next generation of hardware probes
- Work on the revamped UI is ongoing
- Revamped sponsorship opportunities
- Adding more use cases and looking at the pros/cons of hosting RIPE Atlas data in Google BigQuery
- Evaluating hosting all RIPE Atlas results in the cloud instead of on-prem (Hadoop)

RIP Estat



- Working on “feature parity” between the new and old UI
 - Looking at longer-term future of the old UI
 - The popular BGPlay tool also got a facelift in the process
- Working on increasing the data quality for the Data API
- Blocklist API calls have been reworked
- Service quality improvements are in the making, perhaps with the involvement of cloud-based services



Service Criticality

Follow-up on cloud
discussion

Overview



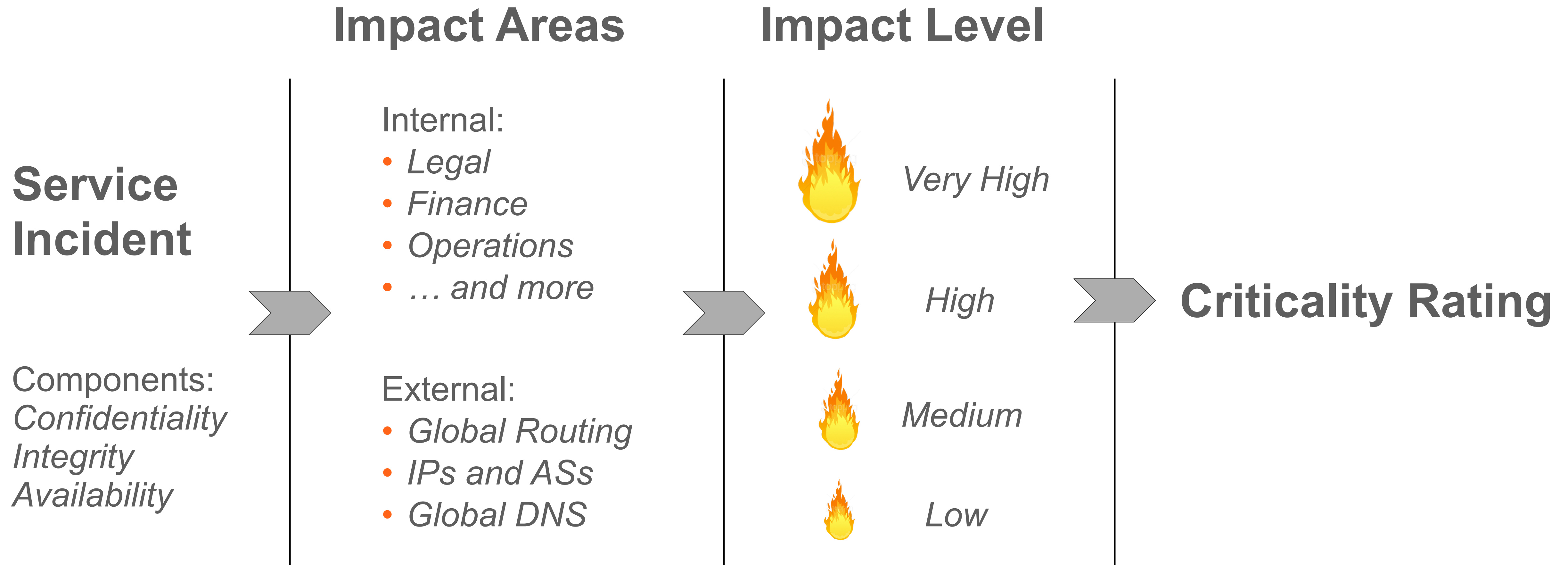
- This project emerged from the discussions we had with the community about our cloud strategy
- We shared a first draft of the criticality framework on RIPE Labs and in a presentation at RIPE 83
- The feedback received from the community was largely positive. However, there was room for improvement:
 - The old framework was complex and confusing
 - Only considered availability (outages) in the criticality rating
- The new framework offers larger applicability outside of cloud usage: SLOs, monitoring and alerting, security controls, etc.

Service Criticality Framework



- The framework proposes a model for determining the **criticality rating** of a service, measured on a four-point scale from **Low** to **Very High** with three components: service availability (outages), data confidentiality (leaks) and integrity (hacking).
- For each service, we consider how severe of an **impact** a worst-case scenario would have in terms of service availability, data confidentiality or integrity.
- The **highest impact severity level** for any type of incident (availability, confidentiality, or integrity-related) yields the criticality rating of the service.

Overview



Availability, confidentiality and integrity-related incidents weigh equally and the highest impact severity level for any type of incident yields the criticality rating of the service.

The process (1/4)



- We solicit input on RIPE NCC services that are important for the operation of the global Internet, or that directly affect the operations of our members or the RIPE community - these are the services we chose, as they traditionally have been deemed important enough to require 24/7 support (we are open to suggestions for including more services)

RIPE Database	Database WG
Email (MX servers)	NCC Services WG
K-root/DNS	DNS WG
LIR (Member) Portal	NCC Services WG
RIPE NCC Access	NCC Services WG
Reverse DNS	DNS WG
Resource Certification (RPKI)	Routing WG
www.ripe.net	NCC Services WG

The process (2/4)



- We determine the maximum impact any type of incident can have on certain **external areas** (Global Routing, IP addresses and AS Numbers, and DNS) by answering the following three questions:
 - **Data Confidentiality:** *what is the highest possible impact of a data confidentiality-related incident (data leak)?*
 - **Data Integrity:** *what is the highest possible impact of a data integrity-related incident (hacking)?*
 - **Service Availability:** *what is the highest possible impact of a service availability-related incident (outage) of up to 22 hours in a quarter? (All our services are designed with at least 99% availability.)*

The process (3/4)



- The results are quantified based on the following table:

Impact area	Incident Severity			
	Low	Medium	High	Very High
Global routing	No / negligible impact	Limited reachability issues	Widespread reachability issues	Widespread and persistent reachability issues
IP addresses and AS numbers	No / negligible impact	Local disruptions (registration information not being available for some localised entities)	Regional disruptions (registration information not being available for the RIPE NCC region)	Global disruptions (lack of registration information for all AS Numbers and IP addresses)
DNS	No / negligible impact	Local DNS issues	Widespread DNS issues	Widespread and persistent DNS issues

The process (4/4)



- The criticality rating obtained in this stage is the **bare minimum** criticality level for that service.
- The criticality rating can be increased by a further analysis that looks at the maximum impact any type of incident could have on the RIPE NCC in certain internal areas, such as legal, financial, or operational.
- The highest potential impact level on any area, internal or external, of any type of incident, will give the criticality rating of that service and will be published on our website.

Applicability to the cloud



- The three individual service criticality components (availability, confidentiality and integrity) will be used in defining specific service architecture requirements:
 - The **confidentiality** and **integrity** components are used as input for the Security Controls Framework for Cloud Services to help determine the requirements for security controls: access control, audit & compliance, backups, encryption & key management.
 - The **availability** component is used in the Cloud Strategy Framework to help determine the cloud architecture: resilience, accessibility, minimisation of vendor lock-in.

Participate!



- We will be addressing the topic in each of the working groups listed previously. If you would like to contribute, please make sure you are subscribed to the mailing list of the relevant working group: <https://www.ripe.net/participate/ripe/wg>
- Please talk to us if you have feedback on the list of services included.



Questions



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