Engineering Report

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Agenda

- Services the Engineering Department supports

- Statistics

- Software releases and improvements

- Challenges and what's next

Services ARIN Engineering supports

Core Services

- ARIN Online
  - Restful provisioning API
  - Email templates
- Resource Public Key Infrastructure (RPKI)
- Internet Routing Registry (IRR)
- Domain Name System (DNS)

- Directory services
  - Whois
  - Whois-RWS
  - Registration Data Access Protocol (RDAP)
- Email
  - Hostmaster
  - Billing

Services ARIN Engineering supports

Other Services

- Email lists
- ARIN website
  - ARIN Online
  - The Vault
- Operational Test and Evaluation Environment
- FTP

Internal Support

- ARIN Online (staff interface)
- Infrastructure tools
- Security and performance monitoring
- Cloud-based tools
- Email
- Various environments, including development, daily testing/regression tests, long-running tests, current release, staging, and branch environments
- Analytics
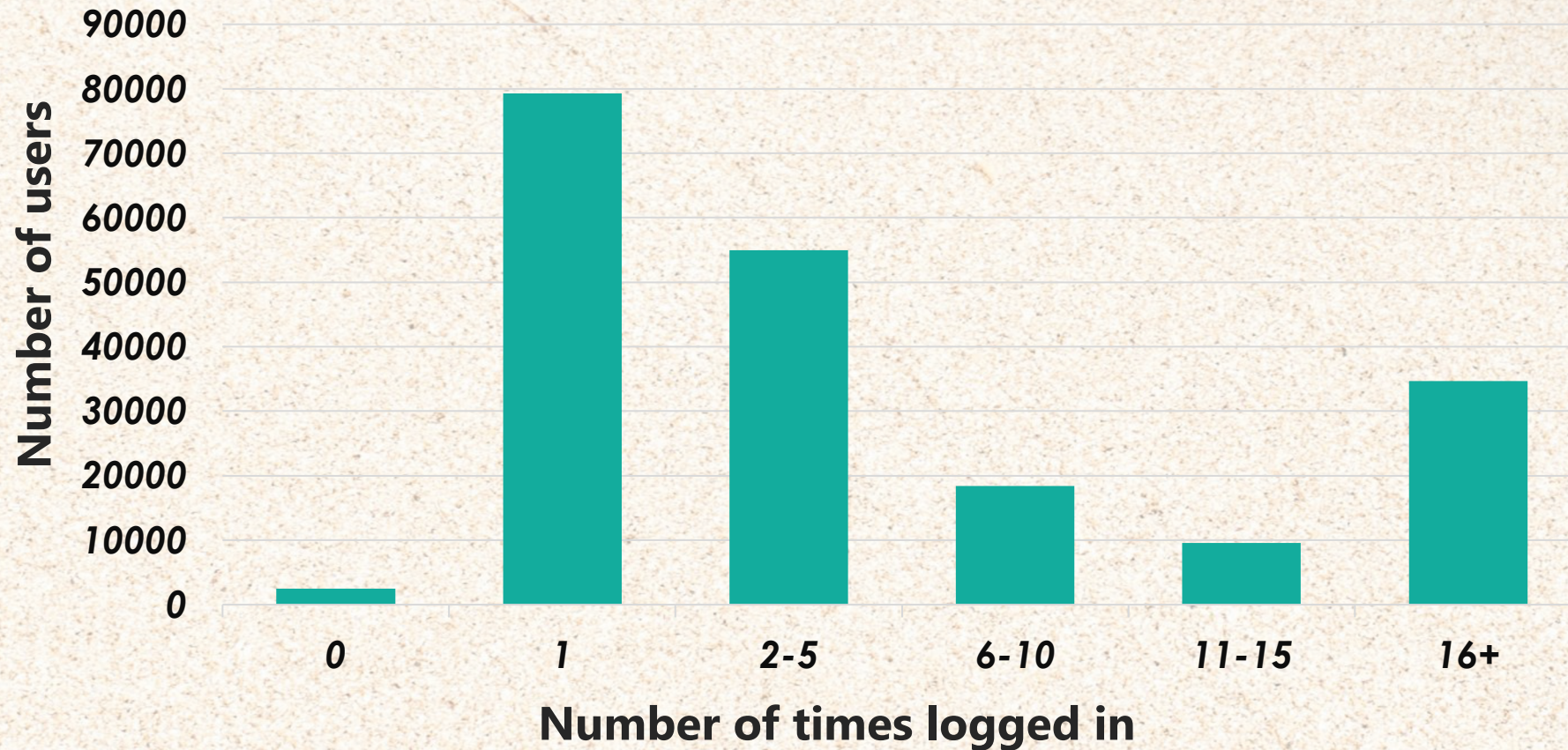
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Statistics

ARIN Online

205,092

accounts activated since inception through Q1 of 2023
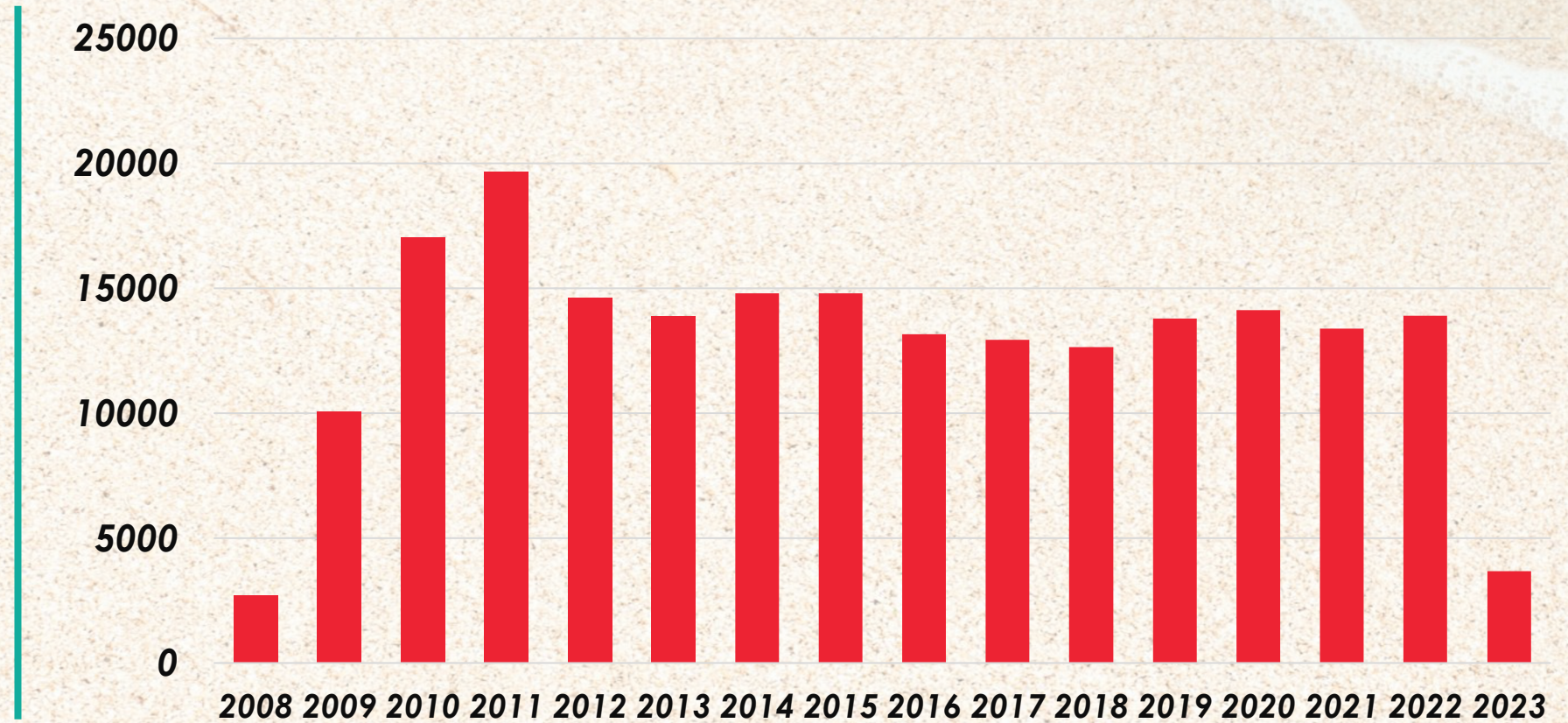
ARIN Online Logins (Cumulative)

Logins from inception through Q1 of 2023

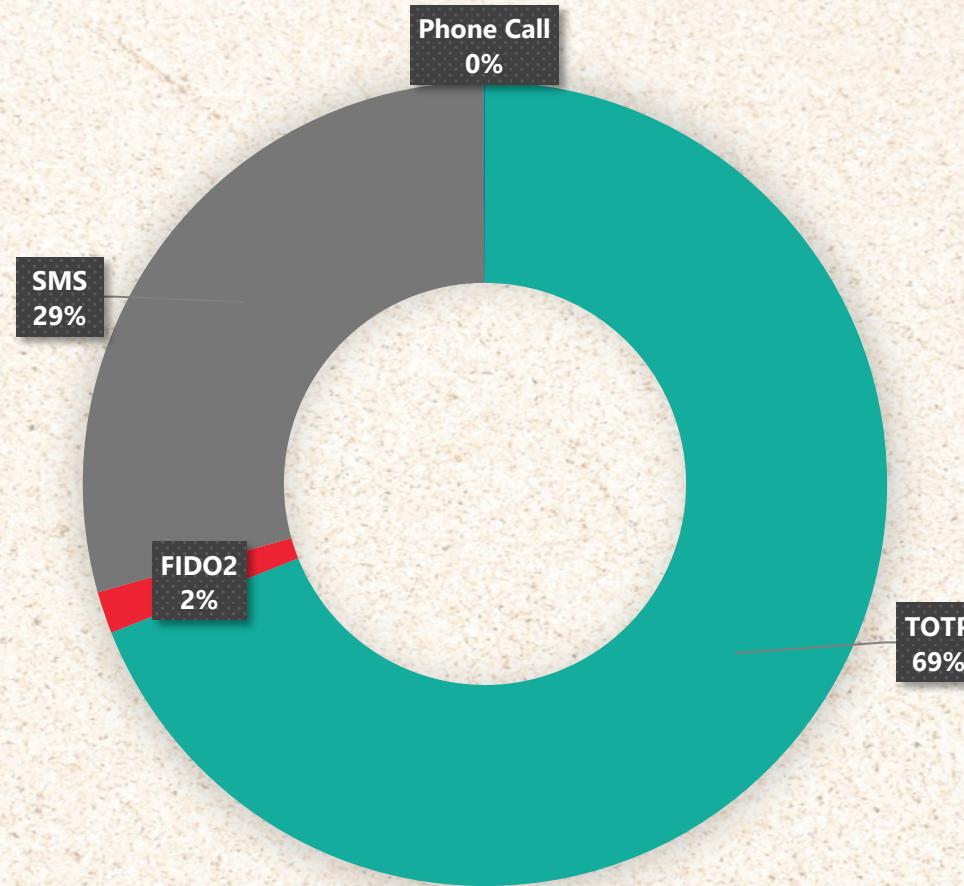# 2FA Adoption (Inception)

Before SMS deployment

6,618

two-factor authentication users

End of Q1 2023

22,662

two-factor authentication users

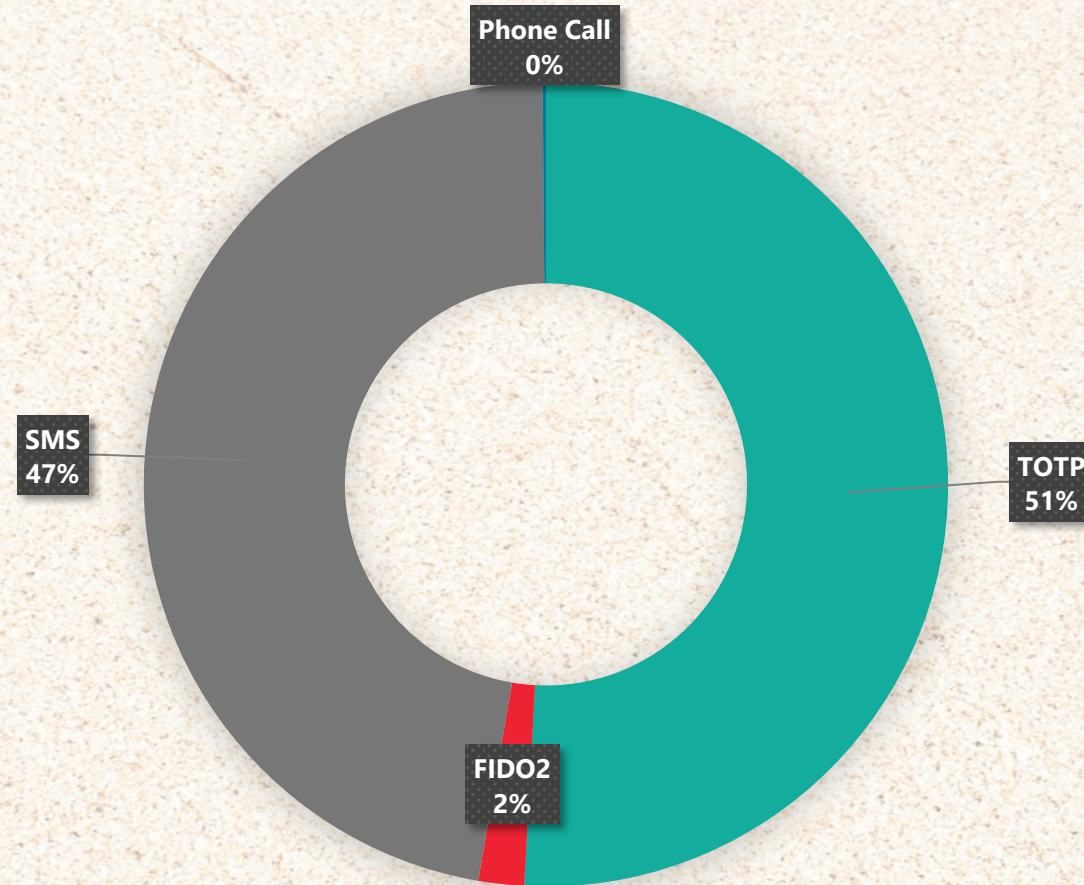Phone Call 0%

SMS 29%

FIDO2 2%

TOTP 69%

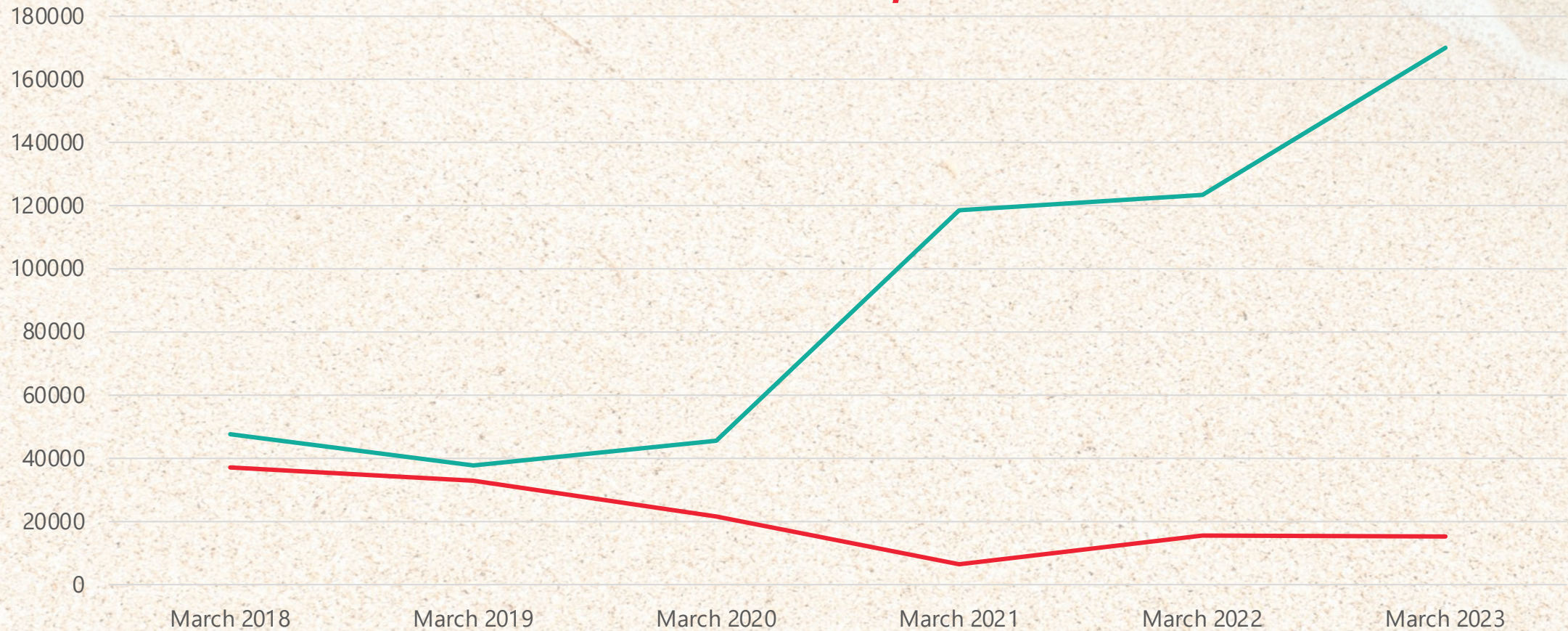# 2FA Adoption Since 2FA Was Made Mandatory

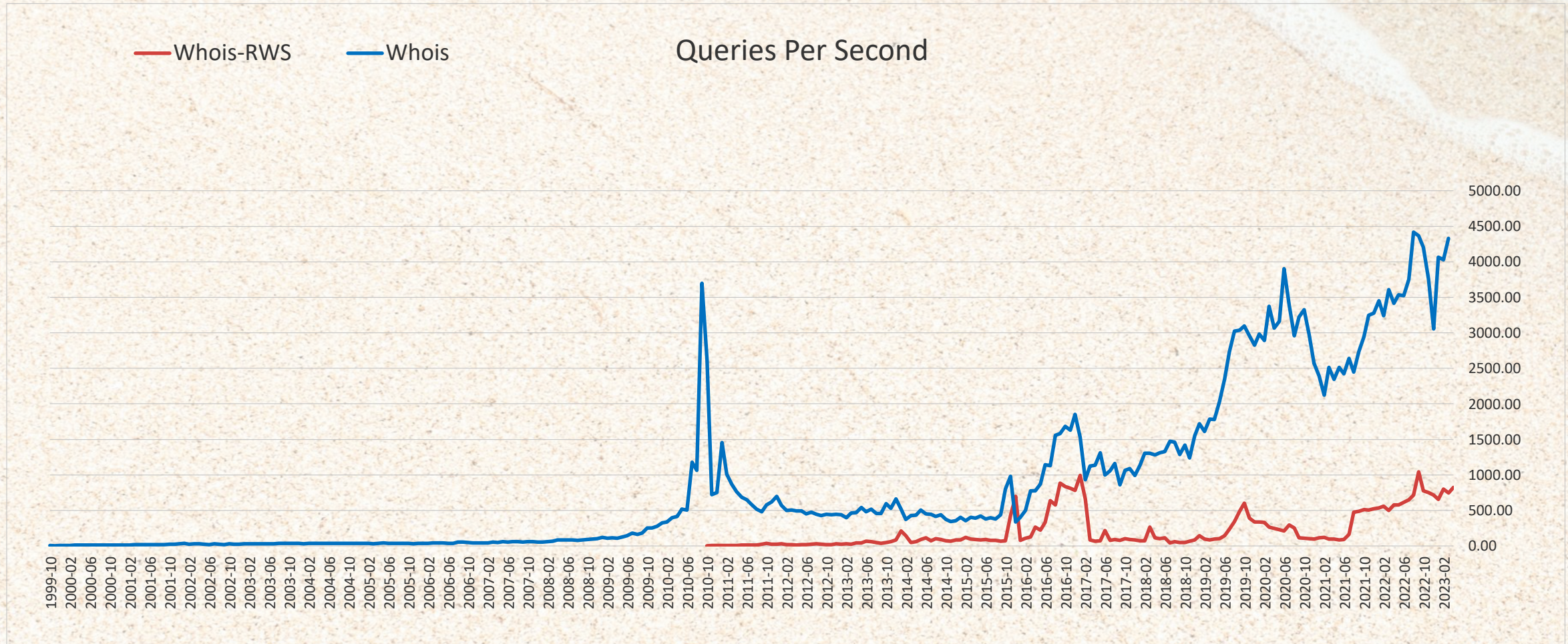As of 1 February 2023, two-factor authentication is mandatory for all ARIN Online accounts
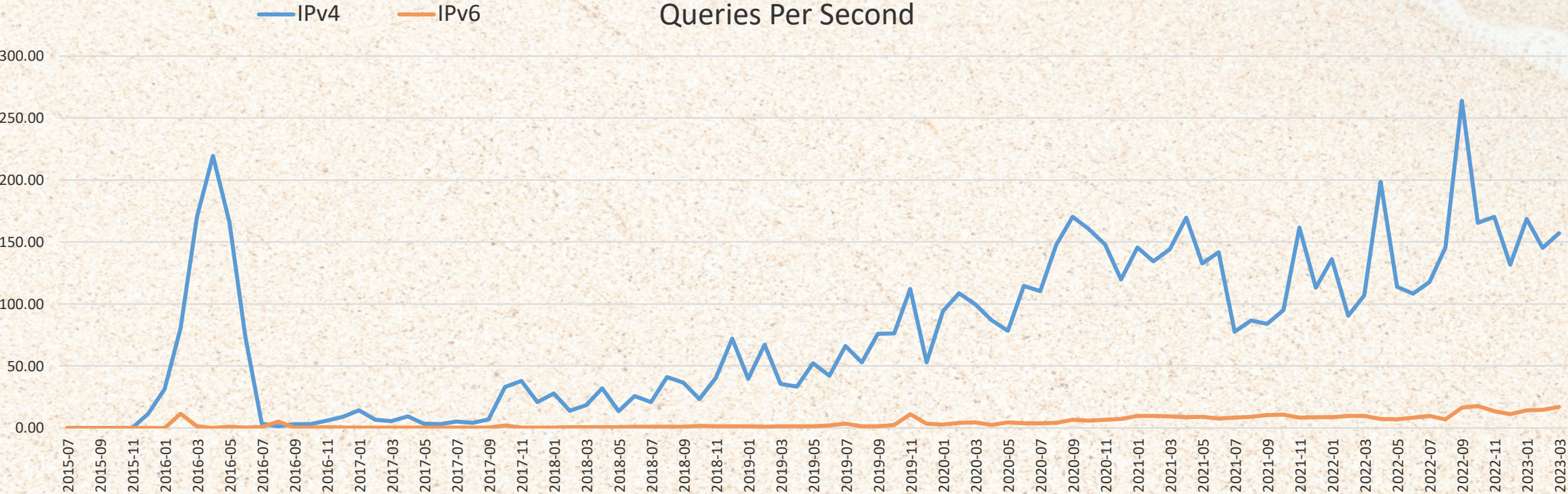
Provisioning Transactions

(RESTful + Templates)

Whois and Whois-RWS

Registration Data Access Protocol (RDAP)

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DNS - ARIN Managed /8's

	avg	current
Total Queries	11.9 K	13.8 K
PTR	6.26 K	7.18 K
A	2.28 K	2.67 K
DS	1.76 K	1.98 K
NS	1.18 K	1.47 K
SOA	158	163
DNSKEY	156	157
TKEY	125	134
AAAA	11.2	13.7
ANY	7.13	9.43

Overall Query Rate
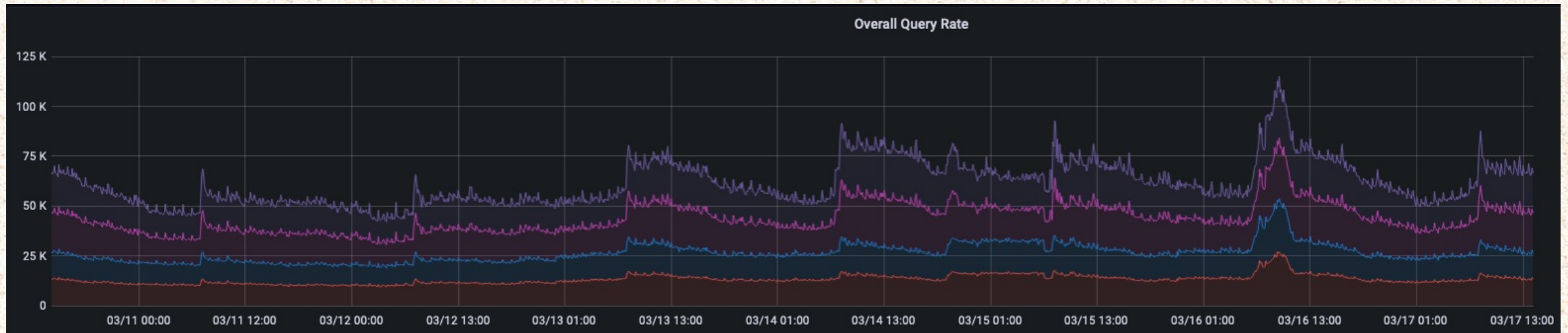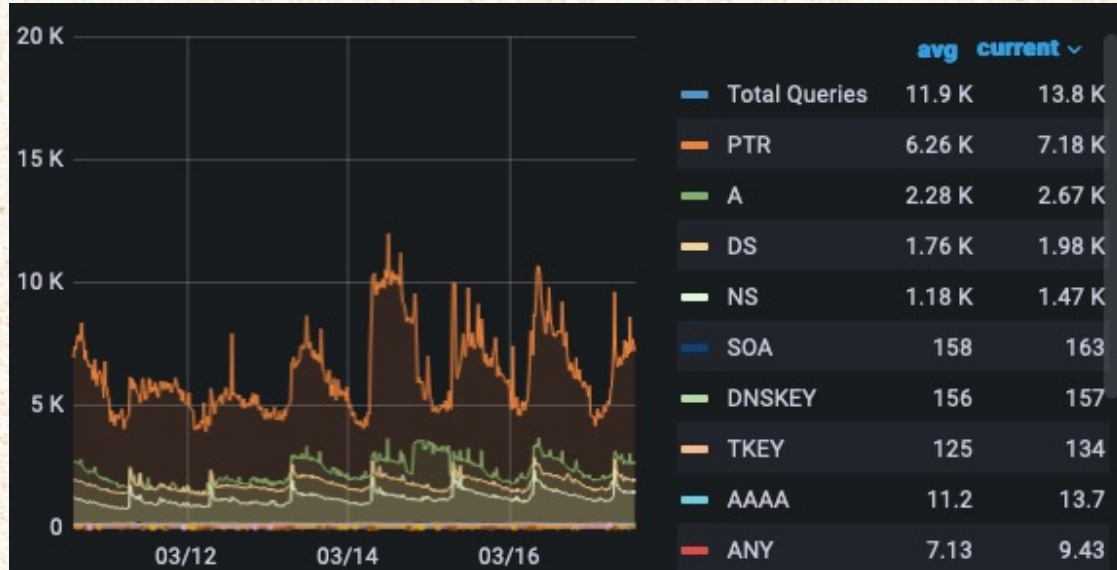
Releases and Improvements

Releases Since ARIN 50

- **Secure routing enhancements**
  - New ARIN Online dashboard for IRR and RPKI
  - New scalable method of updating our repositories
- **Two-factor authentication (2FA) enhancements**
  - Added FIDO2-enabled security key authentication method
  - 2FA mandatory as of 1 February

- **API key security enhancements**
- **New:** Successful completion of System and Organization Controls (SOC) 2 Type 1 audit
- **New:** Third-party payment processor
- **New:** Architecture vetted for public facing services (PFS) sites
- **Ongoing:** Reduction of technical debt

Improvements Since ARIN 50

End-of-life box replacements are now concurrent with a steady transitioning to Kubernetes

Preparing to roll out new hardware for PFS sites

Third-party security audit completed for 2022

Challenges and What's Next

Challenges Over Time

Brute Force Login Attacks (ARIN 49)

- Periodic incidents
- Automated production of audit logs, reports, and suspect accounts are sent to ARIN's Registration Services Department (RSD)

SOC 2 Audit Preparation (ARIN 50)

- Policy development
- Process checking and evidence collection

Balance of Urgent Needs (ARIN 51)

- ARIN Online enhancements
- Internal tools for customer-facing teams
- Technical debt

What's Next

- Technical debt
  - Continue to replace libraries that are end of life

- PFS site improvements
  - Install a re-engineered hardware solution for our public-facing sites

- Ongoing support for SOC 2 Type 2 compliance

- Support for multisite logging and monitoring

- IRR/RPKI enhancements (see Brad Gorman's presentation on Tuesday morning for details)

- The Vault integration (archived content at arin.net)

Thank You