REPORT 2020

of the .ch Registry

SWITCH

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System relevance

The registry as critical infrastructure

'Just pull out the plug in the evening, go to bed and see what happens.' I receive these or similarly helpful comments when I declare that SWITCH operates critical infrastructure but hardly anyone realises it. I'm not sure it would be worth me even putting my pyjamas on before the phone rings.

I received two unexpected calls shortly after the national lockdown began in spring 2020. The regulatory authorities in Switzerland and the Principality of Liechtenstein were making sure that the internet, an important communication channel, would continue to work without disruption during the pandemic and that the operation of the registry would remain secure. I was able to confirm this with a clear conscience, because SWITCH employees always fulfil this mission, whether from their office desks or from a home office.

The domain name growth figures show a surge in digitalisation triggered by the lockdown. Many companies were only able to continue selling their products and services by switching to digital channels. New digital collaboration and e-commerce services began springing up. The registry, ISPs and hosts were able to support this innovation boom with scalable services.

Critical infrastructure is often associated with maintaining the current system in the face of incidents or crises. This pandemic has clearly shown that the SWITCH registry and the IT industry services that rely on it are far more than this. They are essential factors in Switzerland's digital transformation.

SWITCH therefore has a high level of responsibility and makes an essential contribution to the future information society in Switzerland.

The infrastructure must be robust enough to cope with all conceivable and inconceivable incidents, while at the same time fuelling Switzerland's innovative strength. That's a challenge that SWITCH, together with the regulatory authorities and registrars, is happy to take on.

Urs Eppenberger
Head of Registry, SWITCH
(photo SWITCH)

Combating cybercrime

PHENOMENA

In 2020, we continued our measures to combat cybercrime.

The number of websites compromised by phishing increased again. However, the number of domain names suspected of being registered improperly continued to decline. Collaboration with the Swiss authorities was expanded. The process of identifying improper registrations was improved further with support from additional Swiss authorities.

Drive-by and malware increased once again after falling in 2019. One reason for this was an increased number of reports from the National Cybersecurity Centre (NCSC) and the improvement of our own detection capabilities.

Web page: https://www.switch.ch/saferinternet/

TYPE OF ACCESS TO DOMAIN NAMES
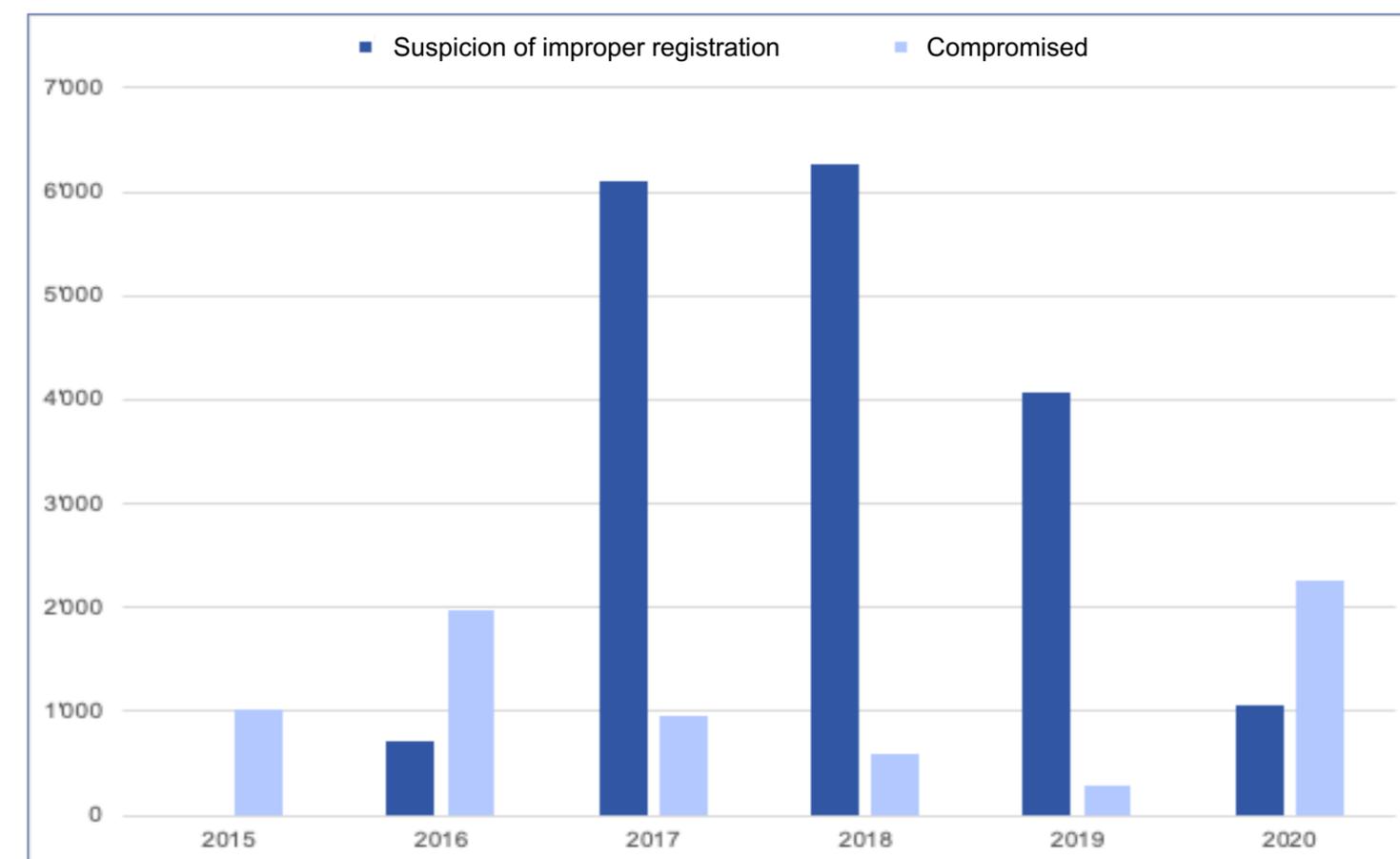
Dealing with cases of suspected misuse

REQUESTS FROM RECOGNISED AUTHORITIES – OID ART. 15.1

In 2020, accredited authorities sent a total of 150 requests under OID Art. 15.1 for immediate blocking of domain names (technical/administrative). All except two of these requests were due to phishing under Art. 15.1a. In two cases, the MELANI reporting and analysis centre blocked a domain name for spreading malware under Art. 15.1b.

Requests	Consequences	2020
Not answered	Domain names deleted	115
Answered	Domain names reactivated	35
Total		**150**

ADMINISTRATIVE ASSISTANCE – OID ART. 16.3

At the request of an intervening Swiss authority acting within its area of responsibility, 948 requests were submitted for Swiss correspondence addresses under OID Art. 16.3.

Requests	Consequences	2020
Not answered	Domain names deleted	871
Answered	Domain names reactivated	77
Total		**948**

Security awareness

SECURITY AWARENESS DAY

On 27 October 2020, SWITCH hosted its third Security Awareness Day, this year online. While the presentations were broadcast via Zoom, the total of 72 participants had the opportunity to connect with other experts on the 'Gather' networking platform.

Once again, the purpose of this year's programme was to heighten awareness of security-related issues in the SWITCH community, while also sharing ideas and encouraging communication and interaction.

All presentations are available online: https://swit.ch/ssad2020-videos

Implementing the virtual Security Awareness Day 2020 required a lot of technology.

IBARRY/SISA

In collaboration with SISA, SWITCH this year launched a campaign focusing on internet security as part of the European Cyber Security Month in October.

In keeping with the current circumstances, face masks and stickers with a theme of 'Malware: Watch out for viruses, worms and Trojans!' were sent out accompanied by easy-to-understand information on www.ibarry.ch.

Recipients of the stickers and face masks included universities and OFCOM, as well as over 50 registrars.

Security awareness

TRACK THE HACKER – THE SWITCH SECURITY AWARENESS ADVENTURE

'Track The Hacker', a scavenger hunt through Zurich, was launched in the middle of the year and is the second SWITCH Security Awareness Adventure after 'Hack The Hacker – the escape room'.

Working as a team, players have to rescue their organisation's data by pursuing the data thief across Zurich. The introduction provides basic security knowledge, which must then be applied in practice in the search for the stolen data. At the end, participants explain and discuss what they learned and experienced in a debriefing.

Web page:
https://swit.ch/track-the-hacker

PODCAST: SECURITY AWARENESS INSIDER

The 'Security Awareness Insider' podcast has been published on a monthly basis since November.
Katja Dörlemann (SWITCH) and Marcus Beyer (Swisscom) talk about raising employee awareness of security issues and new and creative methods, tools and training approaches, provide insight into the security awareness programmes of companies and organisations and much more.

Available on Spotify or here:
https://www.securityawarenessinsider.ch

Swiss Web Security Day

On 28 October 2020, SWITCH organised the fourth Swiss Web Security Day in collaboration with Swico and SISA. The aim of the meeting was to promote awareness of security issues.

This year, the event was held virtually and reduced to a half day. The 94 participants from different industries were able to follow the presentations and panel discussions via Zoom and connect on the 'Gather' networking platform.

Representatives of the Swiss hosting and security community and international guests gave a broad range of presentations. Topics ranged from criminal prosecution of cybercrimes to panel discussions about newly gained knowledge from the COVID-19 pandemic situation.

The Swiss Web Security Day will be held again next year.

All contributions are available online: https://swit.ch/swsd2020-videos
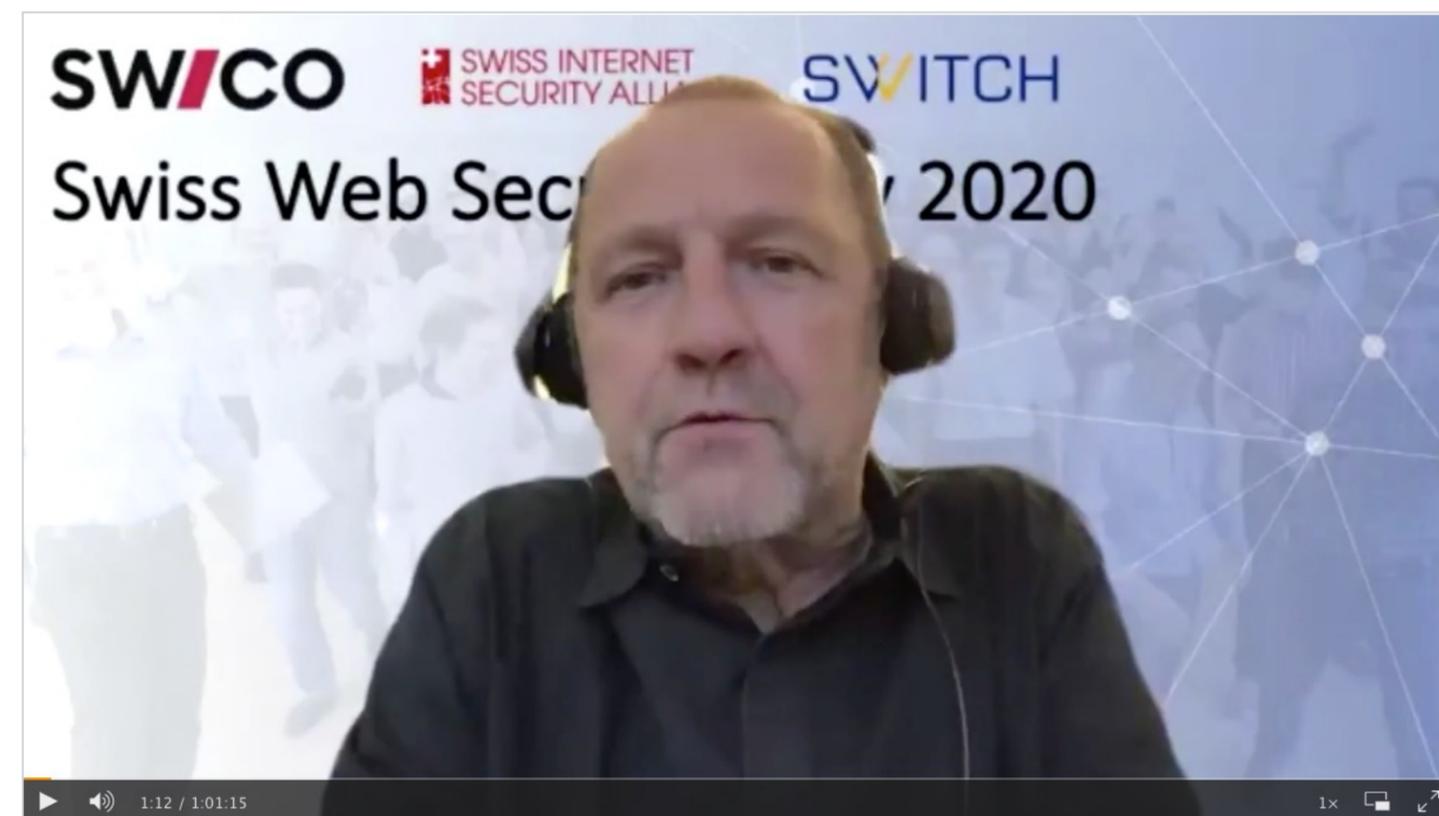
Christoph Hugenschmidt (founder of inside-it.ch) moderated the panel discussion with Kaspar Geiser (Aspectra CEO), David Burkhardt (Cyon CEO), Rene Luria (Infomaniak CTO) and Jens-Christian Fischer (SWITCH).

COVID-19 & cybercrime

Impact of the pandemic on domain name misuse

There have been many warnings in the international press about new 'COVID-19 domains' that can spread computer viruses. As the registry for .ch domain names, SWITCH has indeed received an unusually high number of reports from private individuals about allegedly improper registrations of domain names including 'corona', 'covid' or 'virus'.

SWITCH has investigated all of these reports. Where there were doubts about domain holders' identity, a check was performed in which the holders had to confirm their identity by providing an ID document.

There were actually some cases where these requests went unanswered and the domain names were therefore deleted. However, in most cases, the domain holders correctly identified themselves and no further measures were required.

The authorities recognised by OFCOM for combating cybercrime which have access to the .ch zone file were able to analyse the new registrations promptly and report suspicious cases to SWITCH.

The authorities applied Art. 30 OID for the first time and domain names were revoked at the request of a Swiss administrative or law enforcement authority. These were sex sites that had violated the COVID-19 regulation in March and April 2020. After removing certain content, most of the domain names were able to be reactivated.

The established cooperation with the authorities was continued successfully during the COVID-19 pandemic.

COVID-19 & SWITCH infrastructure

In March 2020, SWITCH also felt the effects of the COVID-19 pandemic and the associated lockdown on its infrastructure.

NETWORK
From one day to the next, user behaviour on the SWITCH network changed dramatically. At the interface with commercial ISPs, the network traffic is usually fairly balanced. However, due to the lockdown and associated working from home, data imports doubled while data exports tripled. This was mainly due to videoconferencing and e-learning services from universities.

In the early days of the lockdown, SWITCH was able to expand bandwidth everywhere so that no bottlenecks occurred in the network. The registry and DNS maintained normal availability at all times.

DIGITAL UNIVERSITY TUITION
Within days, university tuition had to switch from face-to-face teaching to distance learning. SWITCH offers corresponding services that were upscaled massively to meet the demand.
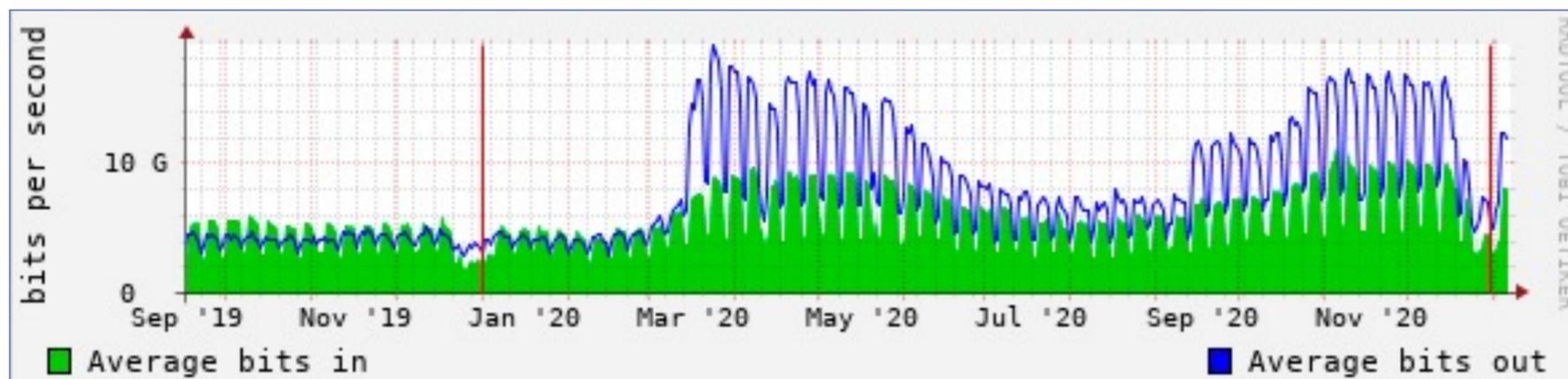
Data traffic between SWITCH and Swiss internet nodes (exchange points/peers)
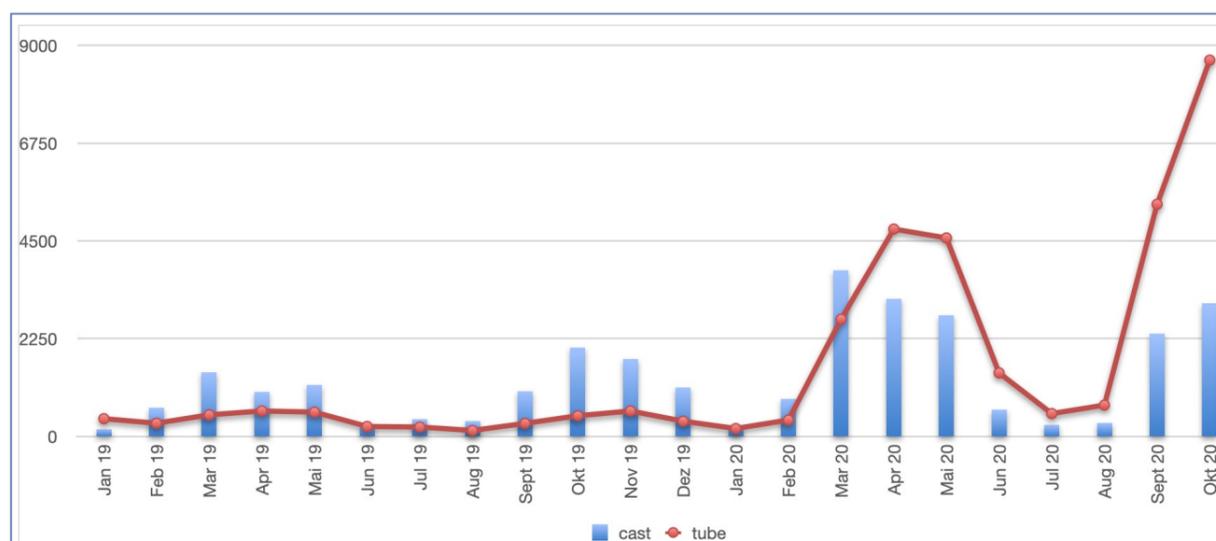
New lecture hours (SWITCHcast) and instructional videos (SWITCHtube) per month

| 10

Registry operations

NEW FEATURES FOR REGISTRARS – CHECK BALANCE

In the Registrar Portal, registrars have long been able to view their current account balance. At the request of some registrars, we've now created the option of querying account balances directly via the EPP interface.

TRIAL CONTRACT FOR PROSPECTIVE REGISTRARS

Effective immediately, prospective registrars can now receive a trial contract to try out the use of the EPP interface. The trial contract has a term of six months. The implementation of the interface and the mandatory testing procedure must be completed within this period. The registrar then receives the registrar contract to sign and is considered to be accredited.
The reason for this change is that SWITCH had concluded numerous registrar contracts with interested parties who then took no further steps to complete their accreditation.

SIGNATURE FOR .CH ZONE

The key signing ceremony for the .ch domain took place on 27 August 2020. For further details, please refer to the minutes prepared for OFCOM.

FAILURE OF DATA ESCROW

During the weekend of 2 and 3 May 2020, the daily backup procedure failed. The cause of the failure could only be determined and rectified on the Monday morning. From 4 May 2020, the daily process was running smoothly again.

ACCOUNTING SYSTEM IRREGULARITIES

In the period 26 November to 3 December 2020, irregularities were detected in the registry's accounting system. This saw VAT and a large proportion of subscription renewals being charged twice until 3 December. All registrars were affected by this. The cause was an error in upgrading our technical infrastructure on 26 November.

The problem was already fixed on 1 December and the errors were corrected by 3 December. Importantly, all affected parties were kept informed and the SLA was fulfilled.

ISMS recertification

In 2020, SWITCH successfully recertified the registry for domain names according to the ISO 27001 standard. The certificate is valid until December 2023.

The recertification was completed without any deviations, conditions or improvements. Four recommendations were made which were integrated into the continuous improvement process.

The results of the recertification are documented in an audit report: No deficiencies were identified.

The auditor made the following introductory remark in the report:
'SWITCH is conscious of its crucial role in the Swiss internet and goes to great lengths to ensure the security of the web.'

This confirms that SWITCH and the registry are achieving the desired success in their ongoing efforts to maintain and improve the security and stability of .ch and .li.

*ISO 27001
Certificate for the
SWITCH registry*

ZERTIFIKAT
Nr. 410252

LL-C
Certification

Dieses Zertifikat bestätigt, dass das Informationssicherheits-Managementsystem der Organisation

SWITCH
Werdstrasse 2
8021 Zürich
Schweiz

beurteilt wurde und die in der folgenden Norm festgelegten Anforderungen erfüllt werden.

ISO/IEC 27001:2013

Geltungsbereich:

Domain Namen Registrierung

Anwendbarkeitserklärung SoA V 1.2 vom 29.04.2019

Dieses Zertifikat wurde ausgestellt unter der Nummer 410252 für die Registrierungsperiode vom 5. Dezember 2020 bis 4. Dezember 2023. Das Erstaustellungsdatum des Zertifikates ist der 5. Dezember 2017.

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Transition to PostgreSQL

The database for the registration application was previously based on Oracle and dedicated certified hardware.
For 20 years, eight months and 17 days, SWITCH used this Oracle database to manage .ch domain names. This era came to an end on Sunday, 16 August 2020.

Over the past two years, SWITCH has systematically built up know-how to implement an alternative solution based on the open-source database PostgreSQL. Each new software feature was developed and tested in parallel to the operation of the current infrastructure. After long planning, extensive adaptation of all applications and comprehensive testing, by 16 August 2020 everything was ready to put the new PostgreSQL database into operation.

At the same time as the change to the new software, the database was also migrated to other hardware. Instead of running on dedicated physical servers, the database now runs on SWITCH's cloud infrastructure, also at the two locations in Zurich and Lausanne.

The conversion from Oracle to PostgreSQL was implemented without any problems.

The third substantial change relates to our support partner. After years of collaboration with Trivadis, we're now purchasing similar services from dbi services ag, whose staff have a high level of PostgreSQL expertise.

DNS Health Report

The DNS Health Report, which is new this year, checks the availability of domain names and name servers under .ch and .li. In the event of technical problems, SWITCH informs the operator and makes recommendations for resolving them. As such, the DNS Health Report improves the reliability of the internet in Switzerland.

SWITCH checks all domain names under .ch and .li that are signed with DNSSEC. It checks whether DNSSEC-signed domain names can be resolved using a validating recursive resolver. In addition, all name servers that host domain names under .ch and .li are checked. They are checked for compliance with the DNS standards using their IP addresses.

The individual DNS Health Reports are made available in summary form to the operator and are not accessible to the public. However, SWITCH publishes the raw data from the tests on SWITCH's open data website: https://www.switch.ch/open-data

Web page: https://www.nic.ch/security/dns_health

DNS Health Report: Name Server
For a reliable Swiss internet

The following name server addresses that you own or operate have been detected as not complying with DNS standards. Click on a name server address for more details.

IP Address	Test Domain Name	TCP	EDNS	EDNS Cookie	Query Type
203.0.113.4	switch.ch	✔	✖	✖	✖

Last updated: 2021-01-01

Description
The DNS Health Report checks the reachability of name servers which host .ch and .li domain names. More information about the DNS Health Report

TCP
This test checks if DNS messages over TCP succeed as DNS messages may be delivered using UDP or TCP communications. Also see RFC 7766. Sample test command: `dig +nocookie +norec +tcp A zone @server`

EDNS
This test checks EDNS compliance. The server must either comply with the original DNS standard from 1987 (RFC 1035) or the newer EDNS standards from 1999 (RFC 2671 and RFC 6891). Note that supporting EDNS is not a requirement. Sample test command: `dig +nocookie +norec +edns +bufsize=1232 +dnssec A zone @server`

EDNS Cookie
This test checks EDNS cookie compliance. As in the EDNS test, the server must respond with an EDNS-compliant answer (but supporting EDNS is not a requirement). If the server supports EDNS, the answer must also be EDNS cookie-compliant. Also see RFC 7873. Sample test command: `dig +cookie +norec +edns +bufsize=1232 +dnssec A zone @server`

Query Type
This test checks if the server returns a response to a more recent query type, such as CDS. The expected behaviour is a data or NODATA response. A NODATA response means there are records for the requested domain name, but none of them match the query type in the request. A data response would be an actual CDS record for example. Sample test command: `dig +nocookie +norec +edns +bufsize=1232 +dnssec CDS zone @server`

Remediation
The general recommendation for name servers that fail one of the DNS compliance tests is to update the DNS software to the latest stable version. If the tests continue to fail in future DNS Health Reports, please check your firewall configuration, as some configuration settings are known to break DNS compliance.
Specific tests can be performed again manually with the test commands shown in the test description using the tool **dig** from ISC BIND . The following online tools may be used as well, but they cover a wider range of tests:

- EDNS Compliance Test
- Zonemaster

DNS Health Report: Domain Name
For a reliable Swiss internet

The following domain names that you own or operate have been detected as failing DNSSE... for more details.

Domain Name	DNSSEC Validation
switch.li	✖

Last updated: 2021-01-11

Description
The DNS Health Report tests .ch and .li domain names which are signed with DNSSEC. More... Report

DNSSEC Validation
This test checks whether a DNSSEC-signed domain name can be resolved over a validating rec... the domain is unreachable for any user who uses a DNSSEC validating recursive resolver. More...

Remediation
You should contact your name server operator (often your registrar or hosting provider) to r...
You can use Whois to look up the registrar of your domain name.
We recommend using one of the following online tools to get more information about why... DNSSEC validation or to retest your domain name:

- DNSViz
- DNSSEC Analyzer

DNS Health Report
This is what the reports sent to the operators look like.

➜ *Statistical indicators of the error rate for name servers and domain names can be found on page 28.*

Adaptation to the revised OID

The entry into force of the revised Ordinance on Internet Domains (OID) on 1 January 2021 was preceded by considerable development costs.

INFORMATION SERVICE
The publicly accessible Whois service is being replaced by a domain name query that shows only the registered domain name, the responsible registrar and the name servers. For data protection reasons, the personal data of domain name holders will only be disclosed on a case-by-case basis if there is evidence of overriding interest.
The registry has adapted its website accordingly and developed the necessary processes, communication and applications.

RDAP SERVICE
The RDAP service was developed to facilitate queries without case-by-case checking. This allows the retrieval of registration data in a structured format. Ensuring efficient and secure processes for the various user groups (authorities, domain name holders, technical contacts for domain names, name server operators) is an essential part of this.

REVISION OF LEGAL DOCUMENTS
The partial revision of the Telecommunications Act and the revision of the Ordinance on Internet Domains (OID) required changes to SWITCH's general terms and conditions for which they serve as a basis, along with the registrar contract and the conditions of use which are still being processed.

ADJUSTMENTS TO THE EPP INTERFACE
The technical interface for registrars (registration system) had to be adapted to make personal data accessible only to authorised registrars. In addition, the technical documentation was created and the registrars were kept comprehensively informed.

EXTENSION OF RESERVED DOMAIN NAMES
The reserved designations in Art. 26 para. 1 (b) OID were extended to include localities in Switzerland. The processes for implementing the specification were adapted and the corresponding names were entered in the registry database.

PUBLICATION OF THE ZONE FILE
The information on downloading the zone file and the terms of use are published on SWITCH's open data website.

dialog@switch virtual meeting

On 16 June 2020, SWITCH organised a meeting with registrars, dialog@switch. Due to COVID-19, the event was held virtually instead of a face-to-face meeting at SWITCH in Zurich.

We use dialog@switch to inform the registrars about upcoming changes and developments. We welcomed 17 participants from 12 registrars.

The focus was on the new OID/TAV ordinances and security awareness.

OID AND TAV

We informed the participants about the changes to the Ordinance of Internet Domains (OID) and the TAV as of 1 January 2021, insofar as such changes were already known. The adjustments to the Whois/RDAP service as well as 'deferred delegation' to combat cybercrime were of great interest to the registrars.

SECURITY AWARENESS

SWITCH presented the results of a survey on the subject of internet security which SWITCH helped to initiate. In this context, we were able to draw the registrars' attention to our current awareness campaigns.

FEEDBACK

The feedback from the registrars was consistently positive and encourages us to continue holding such events – either physically or virtually – in the future to listen to their concerns.

Barry says "stay safe!"

Research collaboration

SWITCH combines security know-how with IDSIA's machine learning expertise

In the context of a five-month SWITCH Innovation Lab, SWITCH-CERT together with the Dalle Molle Research Institute for Artificial Intelligence (IDSIA) conducted basic research with security monitoring data.

The aim was to use artificial intelligence to create security-relevant added value from the big data that SWITCH-CERT and the registry have at their disposal. Each party focused on its core speciality: SWITCH on its technical security knowledge, IDSIA on its expertise in machine learning and artificial intelligence.

We saw two concrete immediate benefits from this research collaboration:
• IDSIA was able to gain experience with a completely new form of data.
• SWITCH learned to prepare data for researchers and enrich it with meta-knowledge.

Whether and in what form further analysis will be performed is still an open question at the moment. In any case, there was interest on both sides.
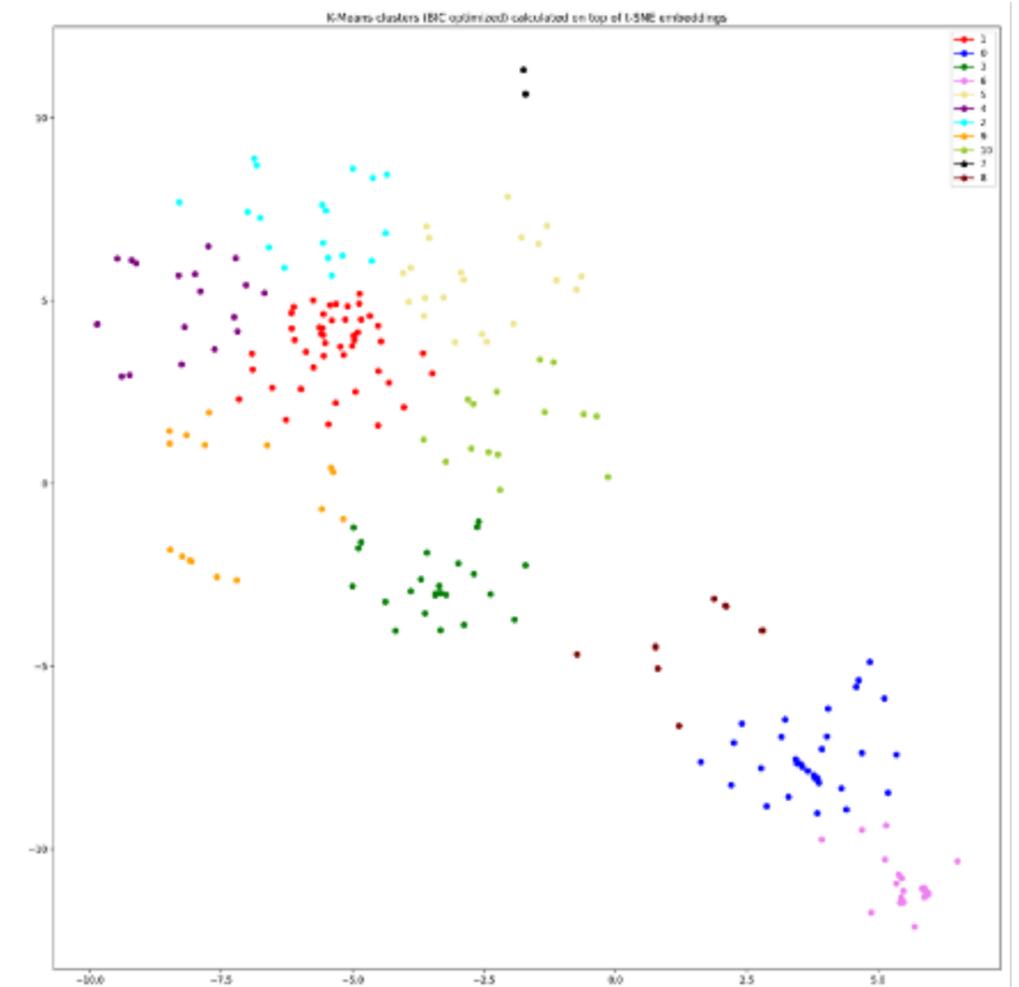
*Cluster analysis of SWITCH-CERT data by the IDSIA Research Institute*

Customer survey

Registrar satisfaction

In November 2020, SWITCH conducted a customer satisfaction survey of all its registrars. 46 of 136 registrars took part in the survey. The results are therefore considered to be indicative.

SUMMARY

- Among the registrars, SWITCH has a reputation characterised by high trustworthiness, security, stability, friendliness, quality focus, cooperation and competence.
- In a comparison with all major registries worldwide, SWITCH by far offers the best overall service, according to the survey participants.
- Overall, the registrars gave SWITCH a very high average score of 8.7 out of 10 points.

8.7
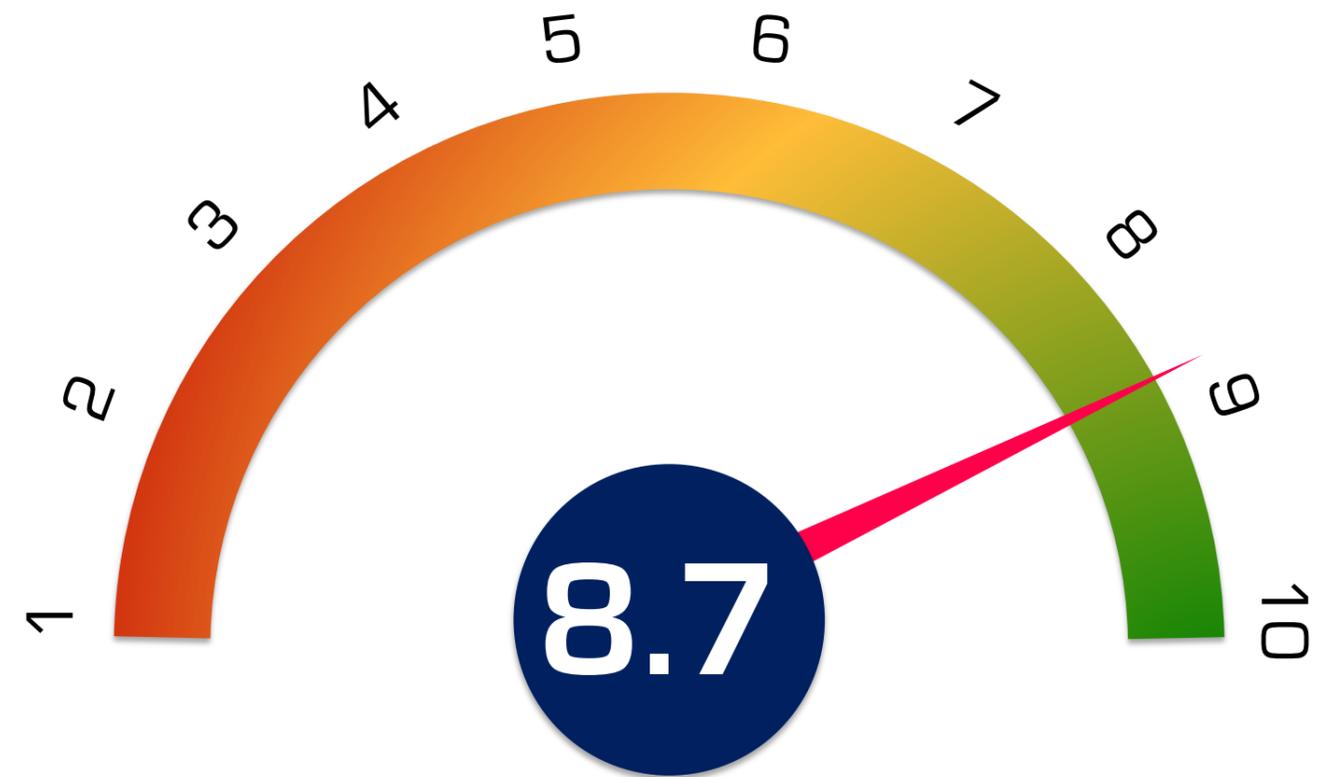
GENERAL IMPRESSION OF SWITCH
Question: Considering everything you know about SWITCH as a registry, what is your overall impression of SWITCH? Scale: 1 = very negative; 10 = very positive

Domain name inventory

Developments 2020

DEVELOPMENT OF .CH

The inventory of .ch domain names increased by around 113,000 in the past year. The marked increase in registrations in 2020 compared to the previous year is a result of the COVID-19-related digitalisation surge and advertising initiatives by large registrars.

DEVELOPMENT OF .LI

The inventory of .li domain names increased by more than 2,000 in the past year. This means that growth doubled compared to the previous period (2018 to 2019).

	2019	2020
New registrations	282,272	323,602
Deletions	246,450	234,980
Reactivations*	28,520	24,943
Domain inventory as at 31/12	2,257,527	2,370,925

	2019	2020
New registrations	8,588	9,462
Deletions	8,379	8,077
Reactivations*	813	859
Domain inventory as at 31/12	64,497	66,732

DOMAIN NAME INVENTORY
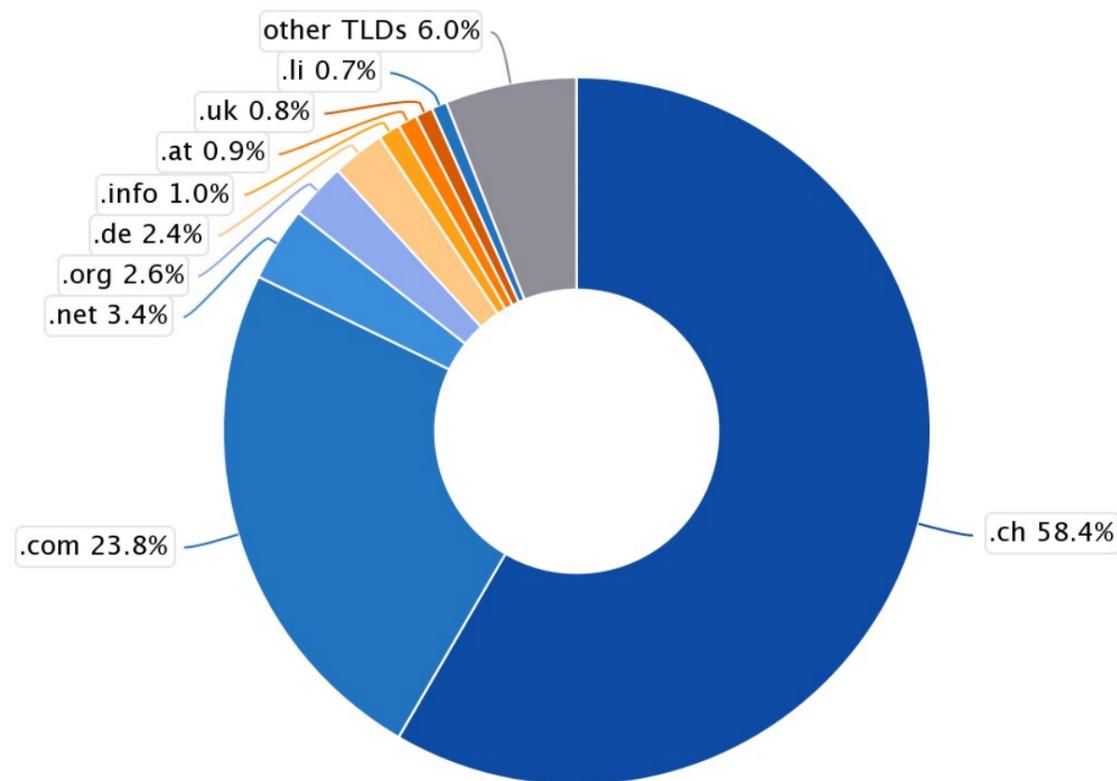*Development of the domain name inventory for .ch and .li*
* Deleted domain names which were reactivated by the
registrar within the 40-day transition period.

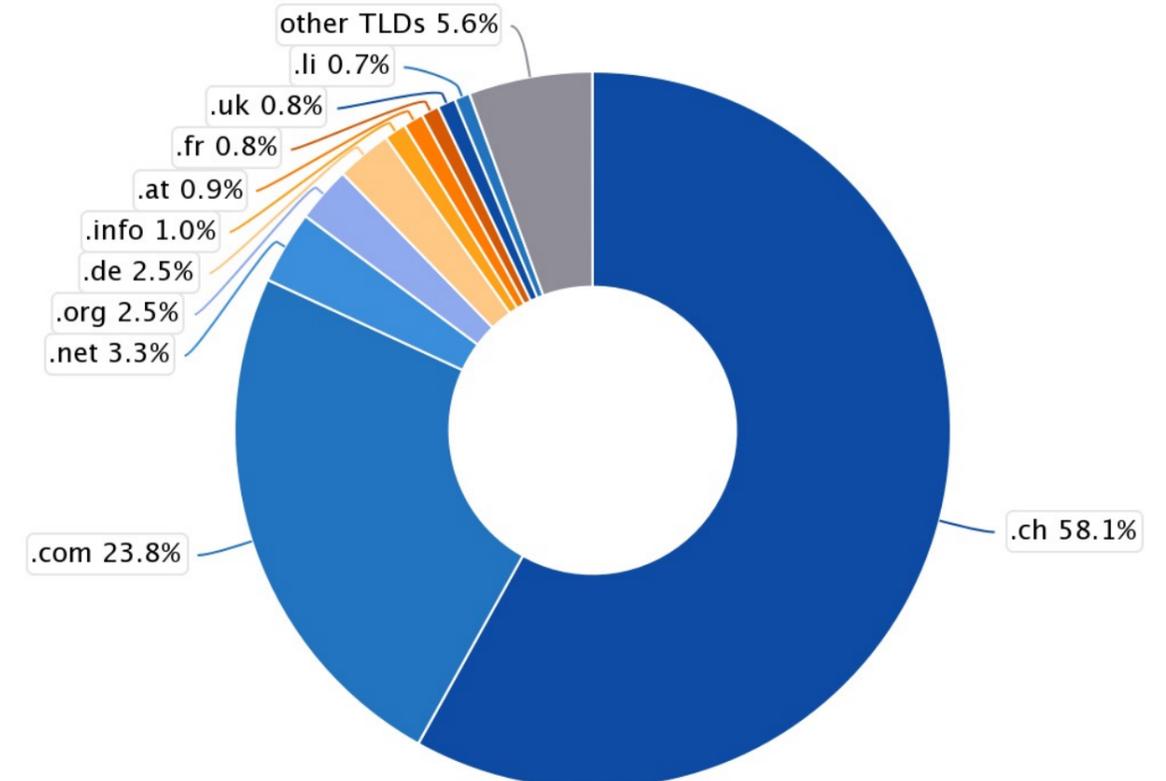# *Market share of .ch and .li*

among Swiss domain name holders

The market share of the TLD (top-level domain) .ch among holders in Switzerland was almost unchanged from January 2020 to January 2021.

other TLDs 6.0%
.li 0.7%
.uk 0.8%
.at 0.9%
.info 1.0%
.de 2.4%
.org 2.6%
.net 3.4%
.com 23.8%
.ch 58.4%

MARKET SHARE JANUARY 2020
*of different TLDs among domain name
holders in Switzerland
Source: CENTR*

There was little change in the market share for the old generic TLDs .com/.net/.org, or for .li domain names.

other TLDs 5.6%
.li 0.7%
.uk 0.8%
.fr 0.8%
.at 0.9%
.info 1.0%
.de 2.5%
.org 2.5%
.net 3.3%
.com 23.8%
.ch 58.1%

MARKET SHARE JANUARY 2021
*of different TLDs among domain name
holders in Switzerland
Source: CENTR*

DNSSEC developments

Number of signed domain names

The number of .ch domain names signed with DNSSEC increased to over 130,000 by the end of 2020. This corresponds to a share of 6% of all .ch domain names compared to 4.8% in the previous year.

With this current status, we're still a long way from the infrastructure secured with DNSSEC which Swiss society needs to guarantee its digital transformation.
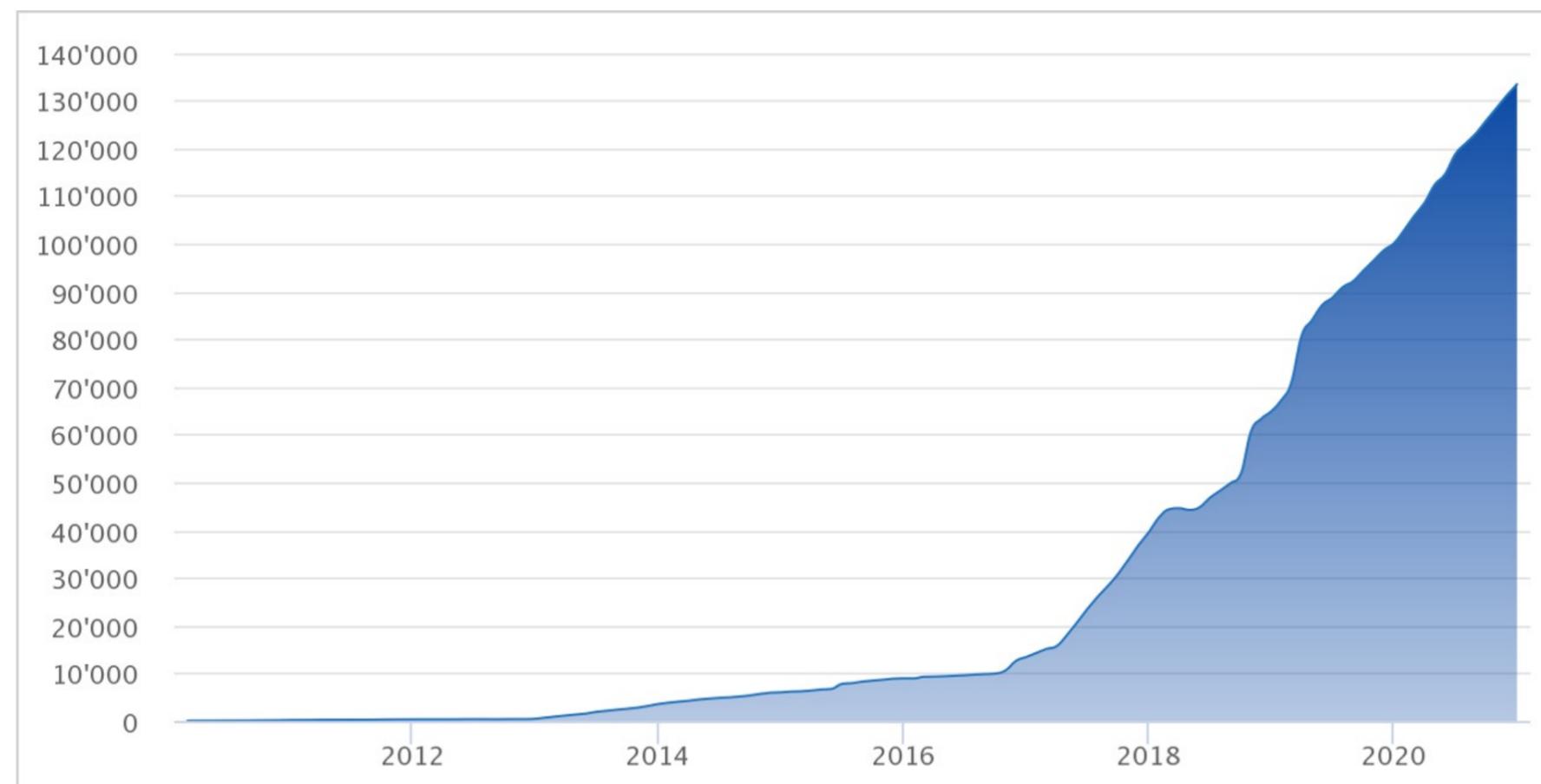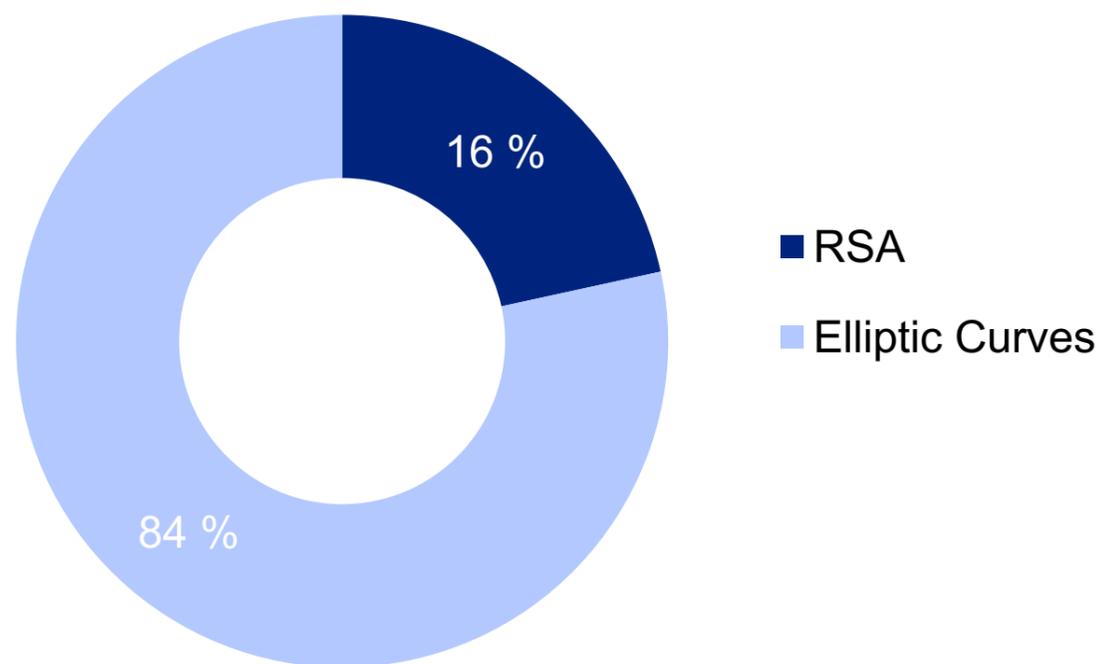

DNSSEC
Number of .ch domain names signed with DNSSEC

DNSSEC developments

Distribution of DS algorithms

84% of the .ch domain names signed with DNSSEC use modern ECDSA (elliptic curve) signatures. The share increased by 5% compared to the previous year, with 16% being traditional RSA signatures.

■ RSA

■ Elliptic Curves

Percentage of DNSSEC algorithms

| DNSSEC algorithm	Number	Percentage
5 – RSASHA1	201	0.15%
7 – RSASHA1-NSEC3-SHA1	9,093	6.78%
8 – RSASHA256	12,833	9.57%
10 – RSASHA512	78	0.06%
13 – ECDSAP256SHA256	111,453	83.10%
14 – ECDSAP384SHA384	47	0.04%
15 – ED25519	420	0.01%
16 – ED448	1	0.00%

DNSSEC signatures used

DNSSEC validation

in Switzerland

DNSSEC VALIDATION AT 65%

According to APNIC measurements, the validation of DNSSEC on resolvers of Swiss ISPs remained constant at around 65% in the past year. The reason for this leap is that Swisscom activated DNSSEC validation on all its resolvers in mid-2019.

Web page: https://stats.labs.apnic.net/dnssec/CH
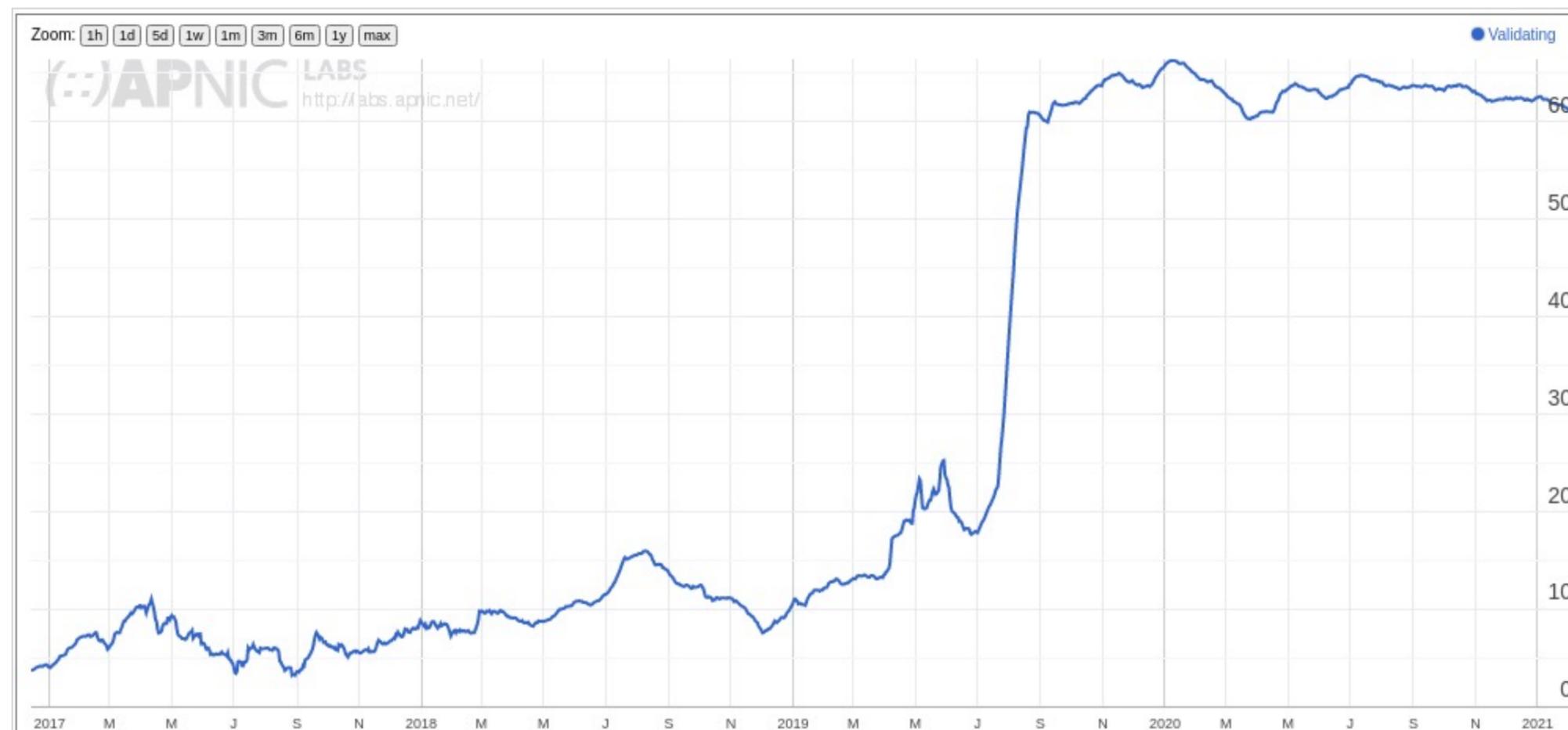
DNSSEC VALIDATION
on Swiss resolvers

Dispute resolution cases

Since 2004, SWITCH has been using the WIPO (World Intellectual Property Organization) dispute resolution service. WIPO operates an ICANN-accredited dispute resolution service for over 70 other registries.

In 2020, the experts made decisions on 15 .ch domain names. The expert decision is the final step in the process. A somewhat smaller number of cases are closed, for example, during arbitration or because proceedings are abandoned.

WIPO decision	2019	2020
Transfer to applicant	7	15
Complaint rejected	2	–
Number of proceedings	**9**	**15**

	Domain names
Transfer to applicant	skyscaner.ch scyscanner.ch skyskanner.ch wwwskyscanner.ch marazzigroup.ch dtte-concept.ch sdx.ch apco-technologies.ch beach-tech.ch beachtech.ch metaco.ch outletlahalle.ch archivioalbertogiacometti.ch fondazionealbertogiacometti.ch fondazionegiacometti.ch
Complaint rejected	–

DISPUTE RESOLUTION
WIPO decisions as of February 2021

Registrar developments

With the announcement of domain name migration from SWITCH to the registrars, the number of registrars leapt from 83 to 100 in 2015. An increasing number of hosting and email providers are aiming to become registrars so that they can manage their customers' domains themselves in the future.

This trend has slowed a little, and SWITCH had 104 active registrars by the end of 2016. There were only three additional registrars in 2017. In 2018, considerably more registrars than expected were added; by the end of the year, we recorded 122 registrars. In 2019, the number of registrars rose to 131 and the registry had 137 registrars at the end of 2020.

The market is working well and potential holders have a wide range of providers to choose from.
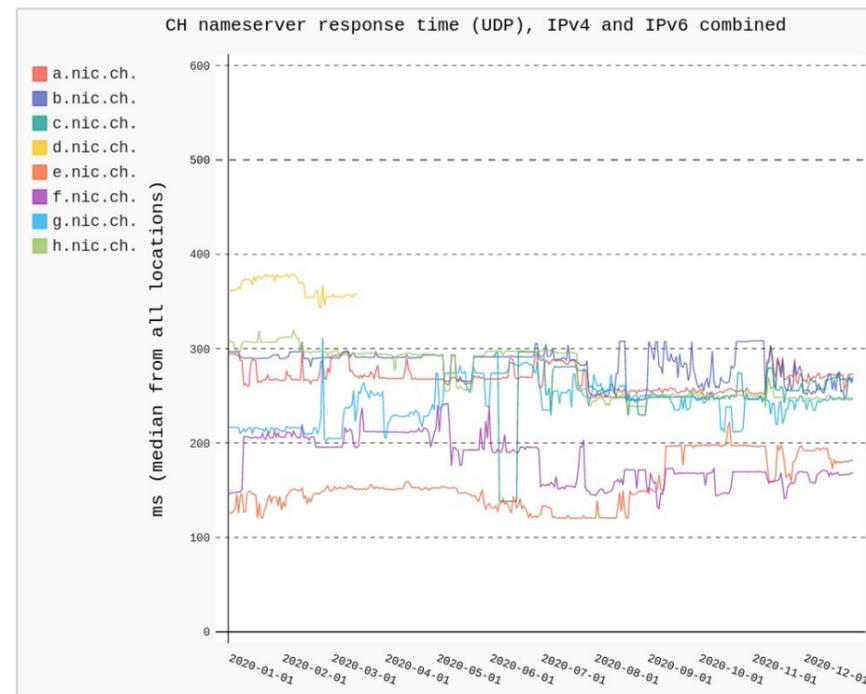

INVENTORY DEVELOPMENT
At the end of 2020, the registry had
137 active registrars.

Performance

of the name servers

In terms of DNS performance measurement, SWITCH relies on the response time requirements for DNS queries stipulated by the ICANN Agreement; queries in the CH zone must be answered by at least one logical name server within 500 ms (UDP) or 1,500 ms (TCP).
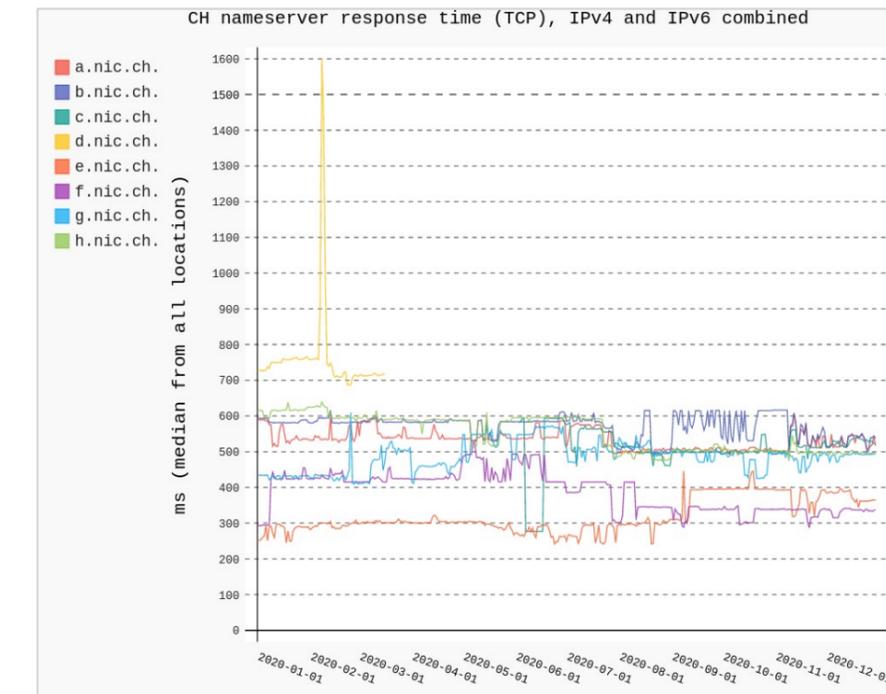
In 2020, this requirement was met in each instance. The measurements were made by RIPE and are available to the public at https://atlas.ripe.net/dnsmon/group/ch.
UNICAST a.nic.ch (CH), b.nic.ch (CH), d.nic.ch (BR, out of service), h.nic.ch (CH)
ANYCAST c.nic.ch (new), e.nic.ch, f.nic.ch, g.nic.ch

UDP RESPONSE TIMES
Combined response times of IPv4 and IPv6

TCP RESPONSE TIMES
Combined response times of IPv4 and IPv6

Cybercrime

QUANTITATIVE

In the reporting year, we captured and processed the following cases:

	# malware cases	# phishing cases
Reports received	1,622	746
Suspicion confirmed	1,192	314
Number of blocked domain names	562	129
Reason for lifting block: - Statutory period expired - Fixed after block - In progress on the cut-off date	98 306 7	15 11 40
Revoked domain names	151	83

NUMBER OF MALWARE AND PHISHING CASES 2020
quantitative view

QUALITATIVE

The time spent on cases was:

	Duration	
Duration of blocking according to OID Art. 15. 1,2,3. Max. blocking time 30 days (720 hours)	Min. time Average Max. time	0.30 h 136.83 h 718.97 h
Response time from SWITCH following notification	Average	8.62 h
Time until elimination of threat after notifying holders	Average	119.80 h

***NUMBER OF MALWARE AND PHISHING CASES 2020***
qualitative view

DNS Health statistics

Checking the availability of name servers and domain names

SWITCH has been sending DNS Health Reports since October 2020. Name server reports are sent quarterly, while domain name reports are sent monthly. Emails are only sent to operators who manage several defective domain names or several defective name servers. The threshold for sending emails is adjusted regularly. The aim is to reach as many operators as possible without placing too much strain on our customer service.

In the first few months, a decrease in the number of defective name servers and domain names was achieved.
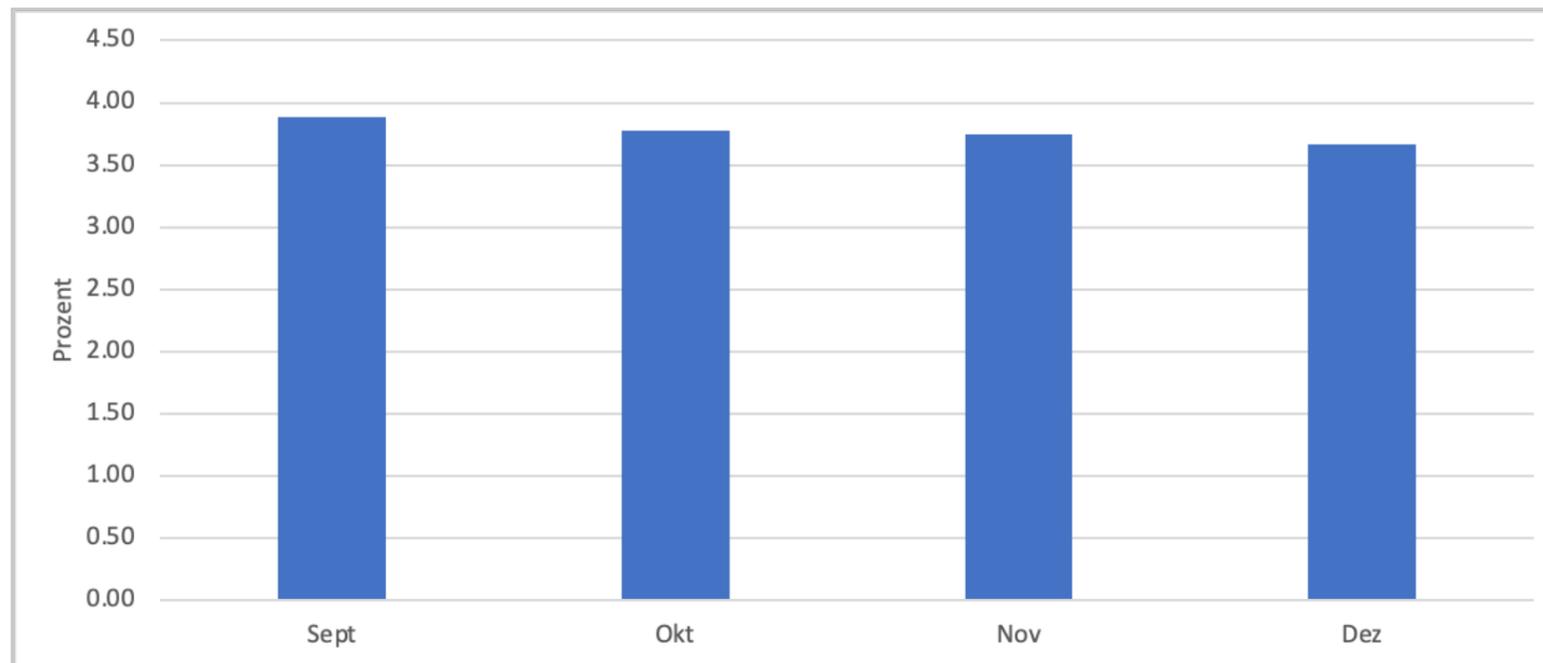
Error rate in the accessibility measurement of name servers over time
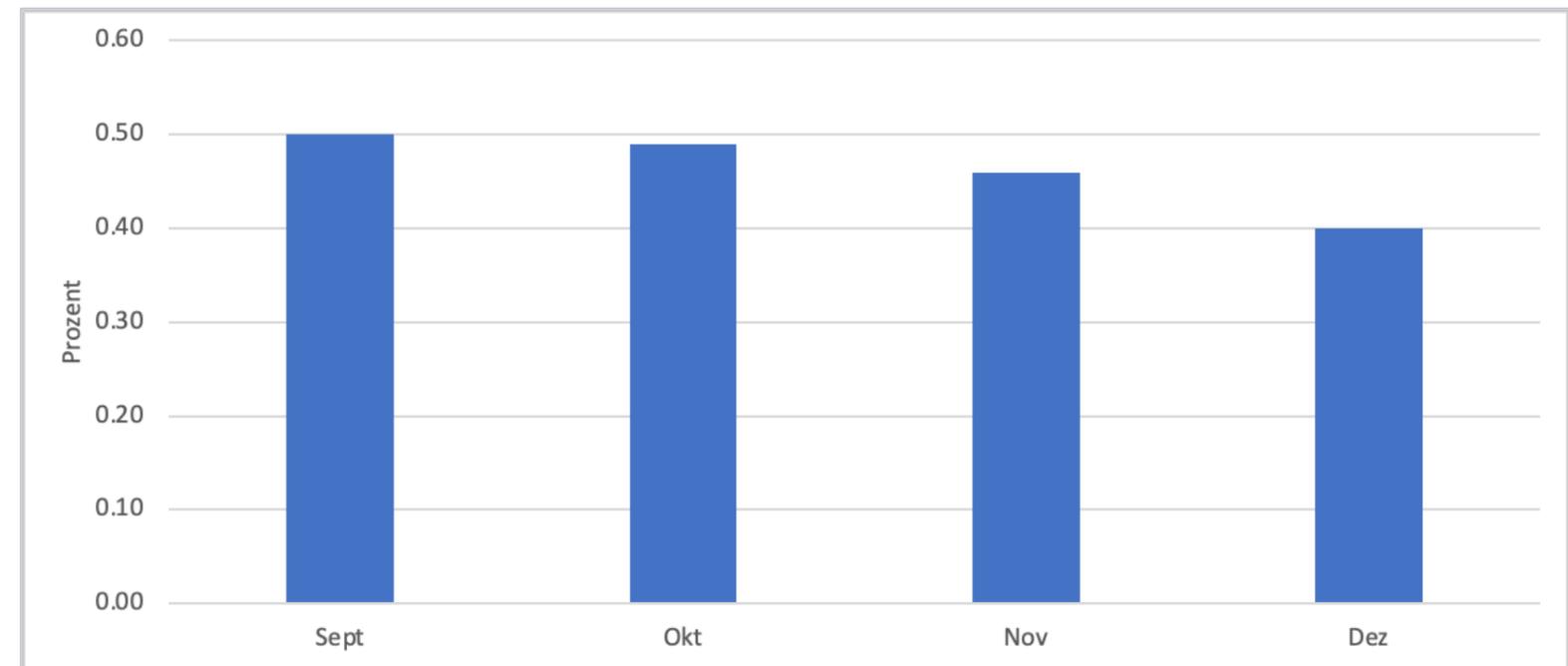
Error rate in the accessibility measurement of domain names over time

Economic indicators

The Foundation Council session of 3 June 2021 will pass the SWITCH foundation's 2020 annual report along with the balance sheet and income statement. Dispatch and publication will be on 4 June 2021.

No figures will be published at this point. Instead, interested parties will be referred to the comprehensive documents of the 2020 SWITCH Annual Report.

Orientation and goals 2021

1/2

INTRODUCTION OF THE RESILIENCE PROGRAMME

The proportion of DNSSEC-signed domains is far too low at only 6%. The validation is already over 60% complete which compares well with the rest of the world. The first step of the resilience programme is intended to increase the number of DNSSEC-signed domains significantly. This is being done with a financial incentive that comes into effect in 2022.

There will be two complementary mechanisms for this purpose:

1. Price differentiation for domain names that do not meet the security requirements.
2. Distribution of additional turnover to those registrars whose domain names meet the security requirements.

Measuring will start as early as mid-2021. The mechanisms and test criteria will be coordinated with the stakeholders. This means that communication and the detailed specification will start in the first quarter of 2021.

'TRUSTED RECURSIVE RESOLVER' ACCORDING TO SWISS LAW

The authoritative name servers for .ch are part of Switzerland's critical infrastructure. However, the permanent availability and integrity of these servers would be largely useless if this availability and integrity were not guaranteed as far as the recursive resolver used by the internet users. Upcoming changes to the 'DNS ecosystem' also require addressing the resolver infrastructure requirements which are essential for access to the authoritative servers.

Confidentiality and integrity are new requirements for the DNS. SWITCH has found a partner, Quad9, which operates a globally scalable, secure and stable infrastructure under the name server address 9.9.9.9.
To ensure confidentiality of use, modern protocols such as DoH and DoT are also supported.

In the initial phase, SWITCH will launch the necessary information campaigns with ISPs and become the contact point for all security questions in connection with the DNS.

Orientation and goals 2021

2/2

DEFERRED DELEGATION

SWITCH establishes relationships with registries that already use a system that qualifies new registrations. This includes the registries for the .eu and .be TLDs.

The network is also being expanded, as a result of which signs of misuse can be processed and weighted centrally.

Both are important prerequisites for setting up a points system which facilitates the decision to either activate (delegate) a newly registered domain name immediately or send an identity request to the holder first.

Whether and to what extent 'deferred delegation' will be operational in 2021 is still unclear. In the planned preliminary work, important components of the overall system are being developed and tested.

INFORMATION SERVICE ACCORDING TO THE NEW OID

The Data Protection Act has led to adjustments to ordinances. As of 1 January 2021, personal data is no longer published in the directory service. SWITCH operates an information service that answers queries with legitimate interest. The volume of queries is still unclear and SWITCH is prepared accordingly.

Special interests will come from various authorities and associations. Making the right trade-offs here will pose a great challenge. In the initial phase, especially, close co-ordination with OFCOM will be extremely important.

SWITCH expects to have a heavy workload in the first half of the year. By the middle of the year, it's expected there will be enough experience that new queries can be based on decisions that have already been made.

Planned innovations 2021

AUTOMATED ACCESS (RDAP) FOR AUTHORITIES
SWITCH will set up RDAP access for Swiss authorities. This grants controlled access to holder information. The RDAP server has already been implemented, but the user administration is a new feature. The conditions of use must also be drawn up in co-ordination with OFCOM.

AUTOMATED ACCESS (RDAP) FOR HOLDERS, TECHNICAL CONTACTS AND NAME SERVER OPERATORS
This is an optional extension that will be implemented as an extension depending on resource availability. Identifying requesters and managing their authorisations poses a particular challenge.

PREPARING THE ACCOUNTING SYSTEM FOR THE RESILIENCE PROGRAMME
The resilience programme provides for two different prices for subscription renewals. There are also plans to distribute additional income to registrars whose administered domain names meet the security requirements. These two mechanisms must be ready to deploy by 1 January 2022.

MEASUREMENT AND DESIGNATION OF DOMAIN NAMES WITH DNSSEC
There will be a review of the domain name inventory as part of the resilience programme. For this measurement, a neutral third party is evaluated. The measurement results must be processed in the registration application. Registrars need transparency concerning how many and which of their domain names meet certain criteria, because this subsequently determines the price of their subscription renewals.

CONVERSION OF THE ACCOUNTING SYSTEM
The registration application has previously been used to manage the registrar accounts. Payments were entered there and deductions were made for subscription renewals and registrars' new registrations. The payable VAT was calculated monthly and the accounting documents for registrars were created. This data had then to be updated in the accounting system manually.

This task is now split up. The SWITCH accounting system is responsible for calculating the VAT and creating the accounting documents. The registration application processes the daily movements in the registrar accounts. These processes are fully automated to minimise manual effort.

Growth forecast

.ch domain names

In 2020, the registry experienced unexpected growth triggered by the digitalisation surge and marketing initiatives by hosts. Also, .ch domain names have grown faster than the ccTLDs in neighbouring countries.
Both of these new factors make it difficult to forecast the results for 2021. It's unclear how long the digitalisation surge will continue and how sustainable the holders' marketing measures will be.

As a long-term trend, we forecast a return to the subdued growth of previous years but with a higher inventory level due to the surge in 2020.

In view of these considerations, the growth forecast for 2021 foresees an increase of 2.9% over 2019 levels.
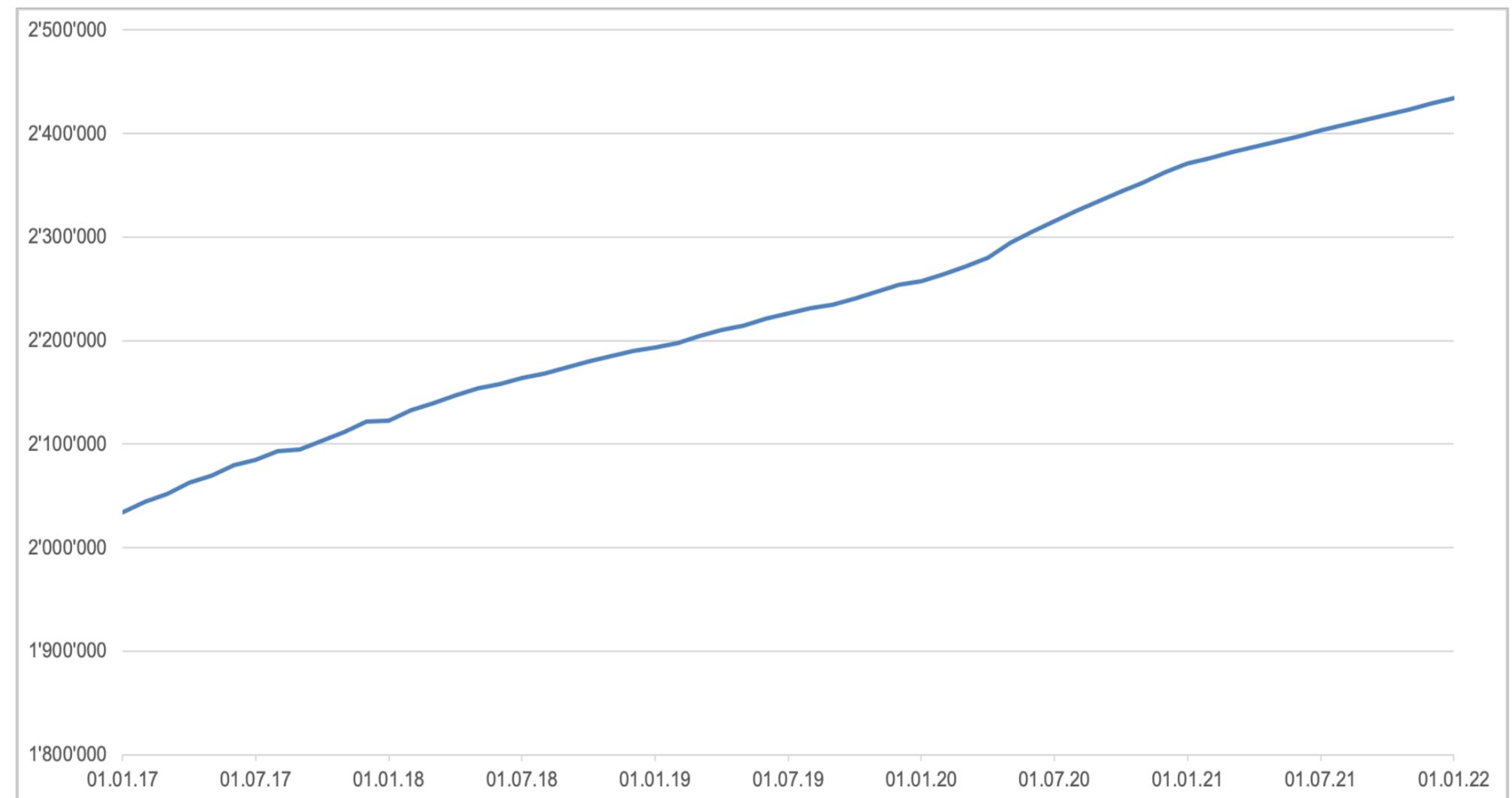
SWITCH

Working for a better digital world

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