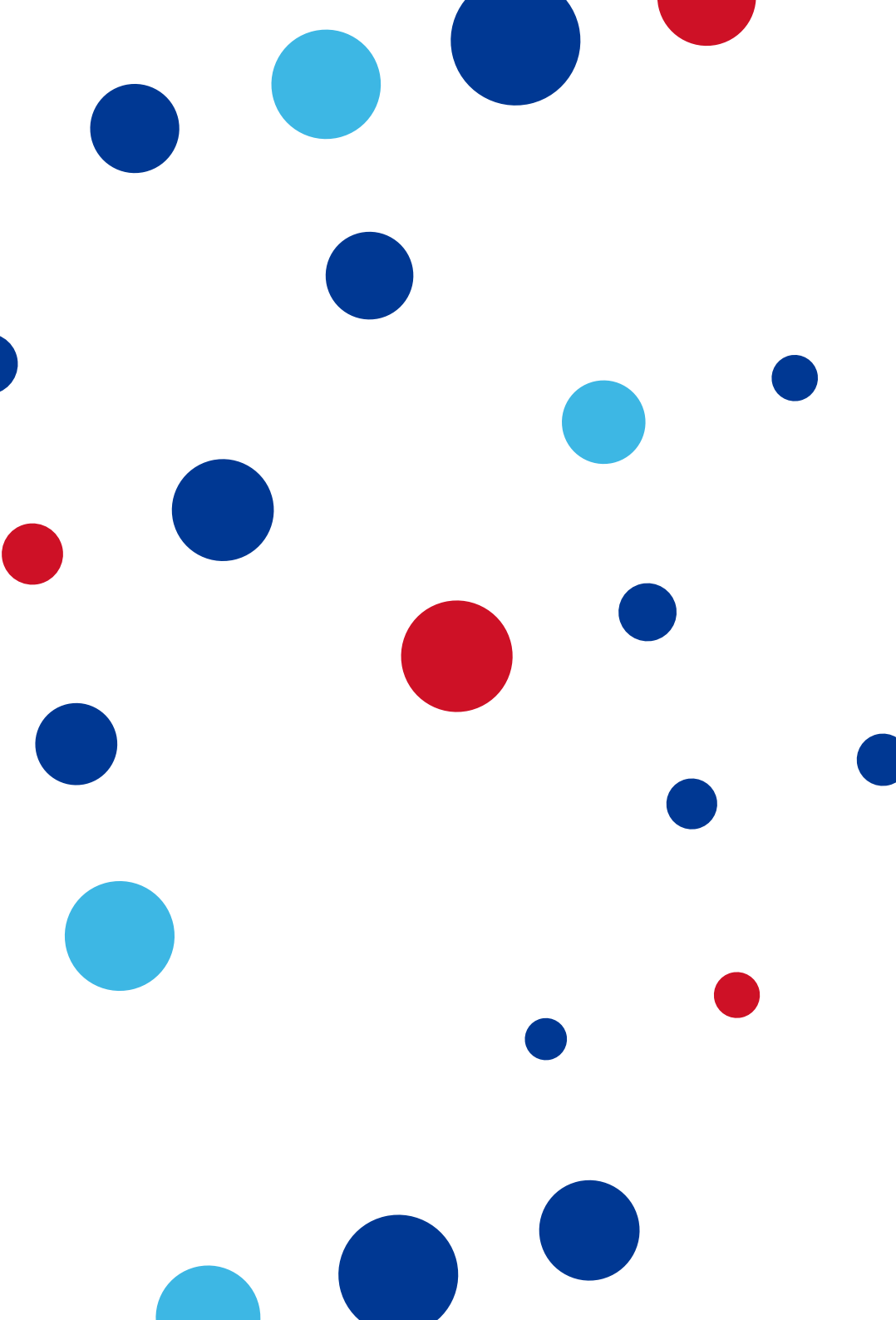


# Annual Report 2017

<b>1 Association Profile</b>	<b>3</b>	<b>9 Education and awareness</b>	<b>41</b>	<b>17 Sales growth</b>	<b>74</b>
		9.1 Communication with the public	42		
<b>2 Foreword of the Chairman of the Board of Directors</b>	<b>5</b>	9.2 Popularisation TV series	43	<b>18 List of contractors acc. to clause 45.4. of the Statutes</b>	<b>76</b>
		9.3 CZ.NIC Academy education centre	43		
<b>3 Introductory word of the CEO</b>	<b>7</b>	9.4 Conferences	46	<b>19 Data on the facts between the date of the financial statements and the general assembly</b>	<b>78</b>
		9.5 CZ.NIC editions	46		
<b>4 The .CZ domain</b>	<b>9</b>	<b>10 Cooperation and partnerships</b>	<b>47</b>	<b>20 Auditor's report</b>	<b>80</b>
4.1 Registration status and trends	10	10.1 Czech Republic	48		
4.2 Registrars	13	10.2 From abroad	51	<b>21 Registered office and contact details</b>	<b>83</b>
4.3 Register data improvements	15				
<b>5 Infrastructure</b>	<b>18</b>	<b>11 Grant projects</b>	<b>54</b>		
5.1 Technical aspects of domain administration	19	11.1 Involvement in European cooperation projects	55		
5.2 Internet infrastructure support	23	11.2 Engagement in national projects and other projects	56		
5.3 Support of basic Internet infrastructure	24				
<b>6 CSIRT security team</b>	<b>26</b>	<b>12 Structure of the association</b>	<b>58</b>		
6.1 CSIRT.CZ - National CSIRT of the Czech Republic	27	12.1 Member base	59		
6.2 CZ.NIC-CSIRT	30	12.2 Bodies of the association	63		
		12.3 Board of Directors	64		
<b>7 MojID</b>	<b>32</b>	12.4 Supervisory Board	64		
7.1 When we say mojID...	33	12.5 Management	64		
7.2 Support of mojID	33	<b>13 Human Resources</b>	<b>65</b>		
7.3 External validation points	34	13.1 Staffing and development	66		
7.4 MojID users	34	13.2 Structure of employees	67		
7.5 MojID as a tool of cross-border authentication in Europe	35	<b>14 Selected financial indicators</b>	<b>68</b>		
<b>8 CZ.NIC labs</b>	<b>36</b>	<b>15 Balance Sheet</b>	<b>70</b>		
8.1 Summary of 2017 activities	37				
8.2 Projects and activities	37	<b>16 Profit and Loss Statement</b>	<b>72</b>		

# 1 Association Profile



CZ.NIC is an interest association of legal entities, an open and independent entity, whose long-term goal is to support the development of the Internet community both in the Czech Republic and abroad.

The core activity of the association is the administration and security of operation of the top-level national.CZ domain registry. The activity of the association in the field of security is also very important and proceeds both through the Czech CSIRT.CZ National Security Team and through security projects, particularly the Turris home router ecosystem.

In addition to these activities, the association is dedicated to research and development in the field of the Internet, Internet protocols or network traffic. Other activities include education and trainings in the Internet and new technologies domains.

The CZ.NIC association was established in May 1998 and the main reason for its establishment was the growth of the importance of the Internet and thus the number of its users and those interested in registering domain names in ccTLD .CZ. By the end of 2017, the association had 115 members, which are divided into three chambers.

The association is a stable and trustworthy entity capable of ensuring the reliable operation of the Czech national domain .CZ. Since 2013, CZ.NIC has been the holder of the ISO 27001 certificate confirming the safe handling of information, including the setting of appropriate rules and procedures.

For domain owners, registrars but also other entities that use the Internet for their work and leisure time, the association is a reliable partner that not only provides domain name management, but also safeguards Internet security and socially beneficial activities - whether in the form of laboratory projects or education.

## 2 Foreword of the Chairman of the Board of Directors

# Dear Ladies and Gentlemen,

every year I am finding pleasure in my duty to introduce our Annual Report. Also, in 2017 our association was the reliable administrator of the Czech national domain and the number of registered domains has exceeded the impressive number 1.3 million and has been growing still. We are very happy about this, because some other big registers have seen their registrations drop. The portfolio of our registrars has been stable in the long run and we believe that more than 40 of them are evidence of how rich our offer is for end users.

Our mission is to operate and develop a trustworthy, robust, and secure infrastructure for internet services. Trustworthiness does not only mean smooth operation to us, but also transparency. And this is why we are an open association and provide a lot of relevant information about us. We seek to improve transparency of the state administration and in this connection, I would like to mention that we signed the contract for the MoQoS project which supports the extension of open data in Europe and in which, besides our association, also the Czech Telecommunication Office will be involved.

We decided to make our infrastructure even more robust and raised the capacity of DNS nodes to 100Gbps, so it can now also withstand larger DDoS attacks. We organised several tenders and installed the first systems by the end of the year. We could make this big investment thanks to our funds in which we have been accumulating the surpluses from past years.

In the area of security, we have been involved in many different projects. Let me name at least some of them: Support of capacity development in cybersecurity in the Czech Republic, HaaS, PROKI, Safer Internet and operation of the national CERT. Our biggest project going beyond

security is the design and production of safe Turris routers, primarily intended for households and small businesses. Our Omnia model is a true success story - we have already produced more than 10,000 units. We want to continue with this activity and are preparing a smaller modular model MOX suitable also for the IoT domain. mojelD, bringing secure identification and authentication technologies, is definitely another interesting project. We have been developing this technology in line with European legislation in this field (eIDAS) and our users, of which there is more than 600,000, can use it for cross-border authentication.

We are eager not only to start a project, but also finish it, because circumstances can change rapidly. This happened for example with the Router Catalogue project evaluating the security features of small routers. But as the assessor must be neutral, we lost this neutrality due to the start of production of our own routers.

And what was going on in the non-public areas of the association? We amended our statutes at a board meeting. This amendment happened after many years and involves an update of the association's business subject - amendment of provisions about conflicts of interest, entering into agreements with the state and some more amendments connected with the recoding of legal regulations.

I would like to thank the managers and staff who did a great job in 2017 and achieved great results. We managed to fulfill the financial plan but also our challenging schedule of internal activities. We have a remarkable team and other registers can only envy them.

You will find all important information about the activities of the association in 2017 further down in this report. I am convinced that we will be your transparent and reliable partner also in 2018, the year when we are going to celebrate of 20-year anniversary.



# 3 Introductory word of the CEO

# Dear Ladies and Gentlemen,

every year I do my best to find the most prominent projects our association is working on. And they are often projects now only vaguely connected with the original mission of CZ.NIC. So, if I shall find the most interesting deed of the year 2017, I have to get back to the basics of our existence: administration of the .CZ national domain. By the end of 2017 we started a major upgrade of our infrastructure in which the acceleration of the DNS node to 100Gbps was the most visible thing. Even registers much bigger than CZ.NIC usually do not have such a powerful DNS, which is why this message really deserved feedback far beyond the Czech borders.

The aim was to prepare the infrastructure for major DDoS attacks we may face in the future. This is why we were not only improving our own network but started cooperation with significant Czech companies as well - installation of local mirrors of our DNS in their network. Vodafone and Seznam.cz were among the first companies and the list is expected to grow.

The expanding amount of registers using our registration system FRED is another piece of news. It had been used only in Europe, Africa and Latin America before 2017. But in 2017, following an implementation in Lesotho, it was extended to another continent: Macau, the special administration area of China, with the .mo domain.

Even though the .CZ domain has one of the highest DNSSEC-based security penetrations all over the world, we are not resting on our laurels and constantly promote this technology and make its deployment easier. And our two software projects are extremely useful for this activity: the FRED registration system and the authoritative DNS server Knot DNS. And it was the new functionalities of these projects thanks to which we

could announce as the first association in the world that we support automated administration of DNSSEC keys in the registry according to RFC 7344 and RFC 8078 standards. This mechanism makes the DNSSEC deployment much easier and fully eliminates the duty of ensuring key generation and rotation for administrators of subordinated zones. Despite the huge amount of energy invested in domain-related things, we also remembered other essential activities. The CZ.NIC association always supported open and free Internet, which is why we - together with the NIX.CZ and ICT Unie associations - were strongly opposing the adoption of a law amendment on military intelligence, because this amendment allowed permanent and uncontrolled wiretapping of the Czech cyberspace. And finally, it seems that our joint arguments were heard, because this amendment was not passed during the office term of this government.

As you can see, our association made great leaps in 2017 and I can certainly state that 2017 was a very successful year. I must thank my colleagues for this, because none of these achievements would have been possible without them.

**Mgr. Ondřej Filip, MBA - CEO**

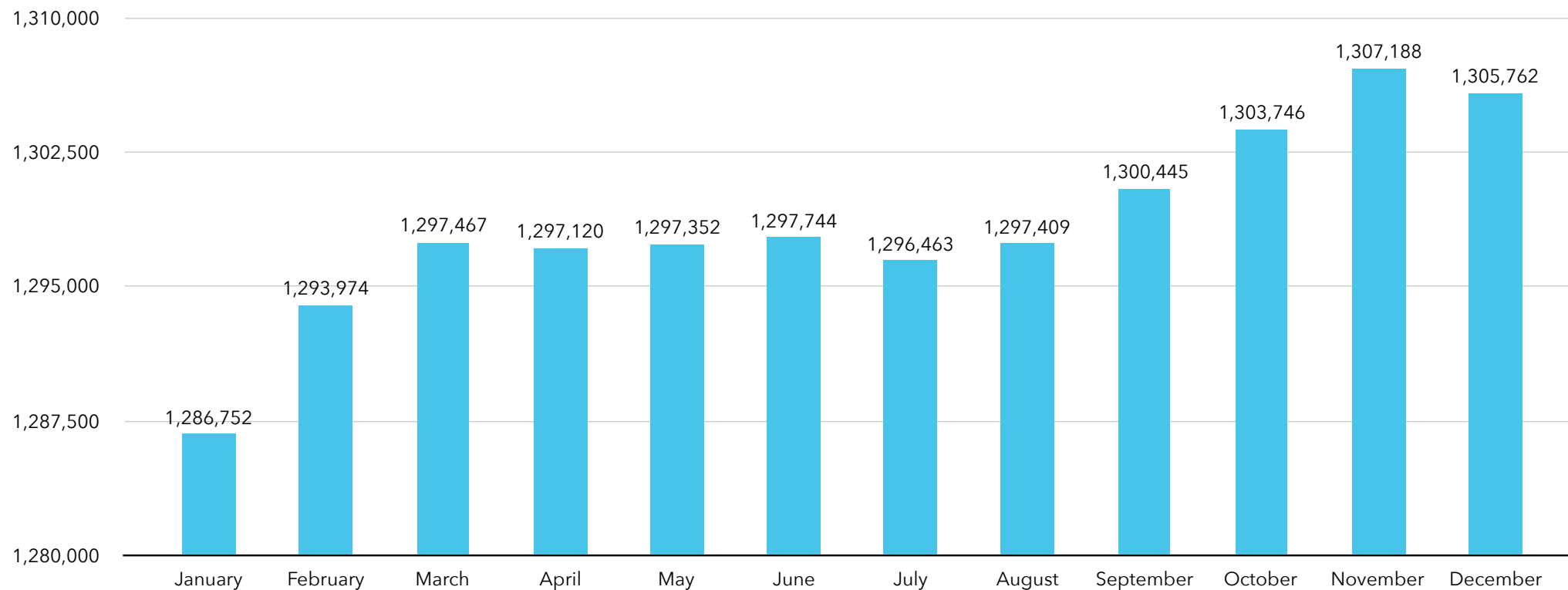


# 4 The .CZ domain

# 4.1 Registration status and trends

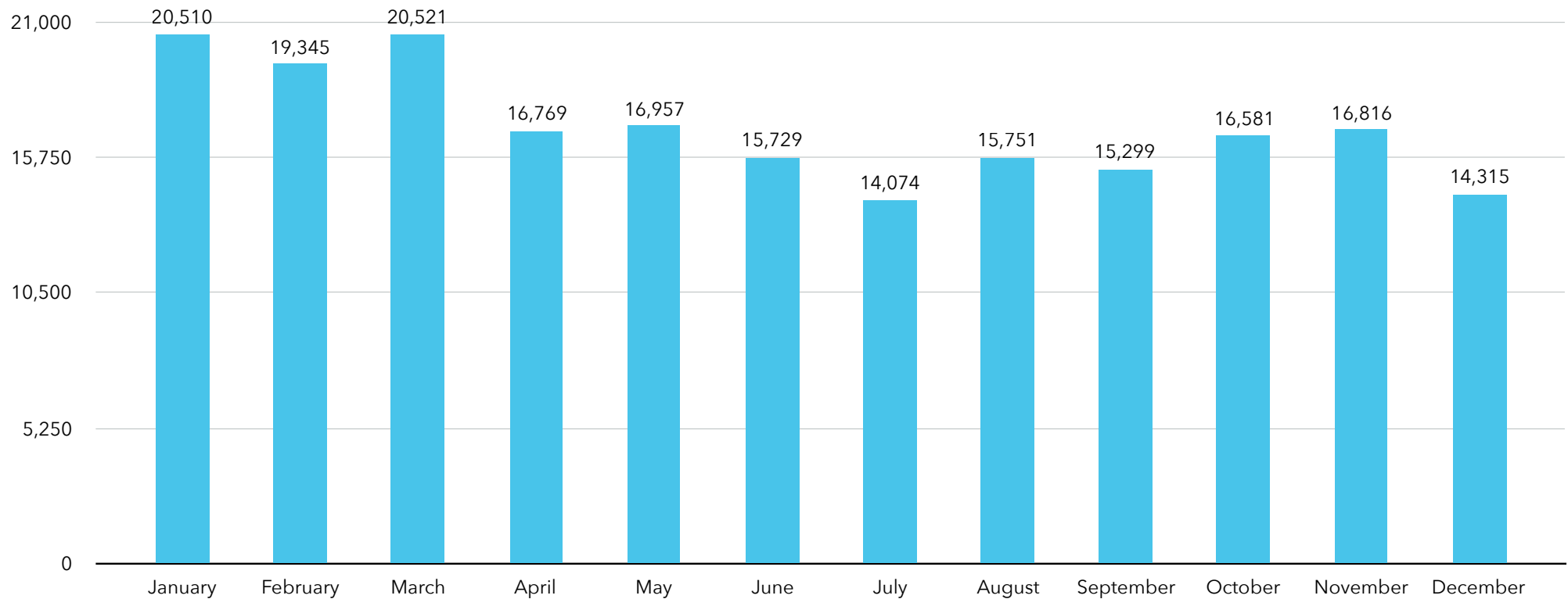
During 2017 the total number of domains in the .CZ zone rose by 19,010 which constitutes growth of almost 2%. The Czech national domain .CZ therefore reflects a trend that is being experienced by almost all national registers: a falling tendency of national domain registrations (ccTLD), caused mostly by market saturation and partly also by new alternatives for domain name registration through so-called new generic domains (new gTLD).

## Total number of registered .CZ domain names in 2017

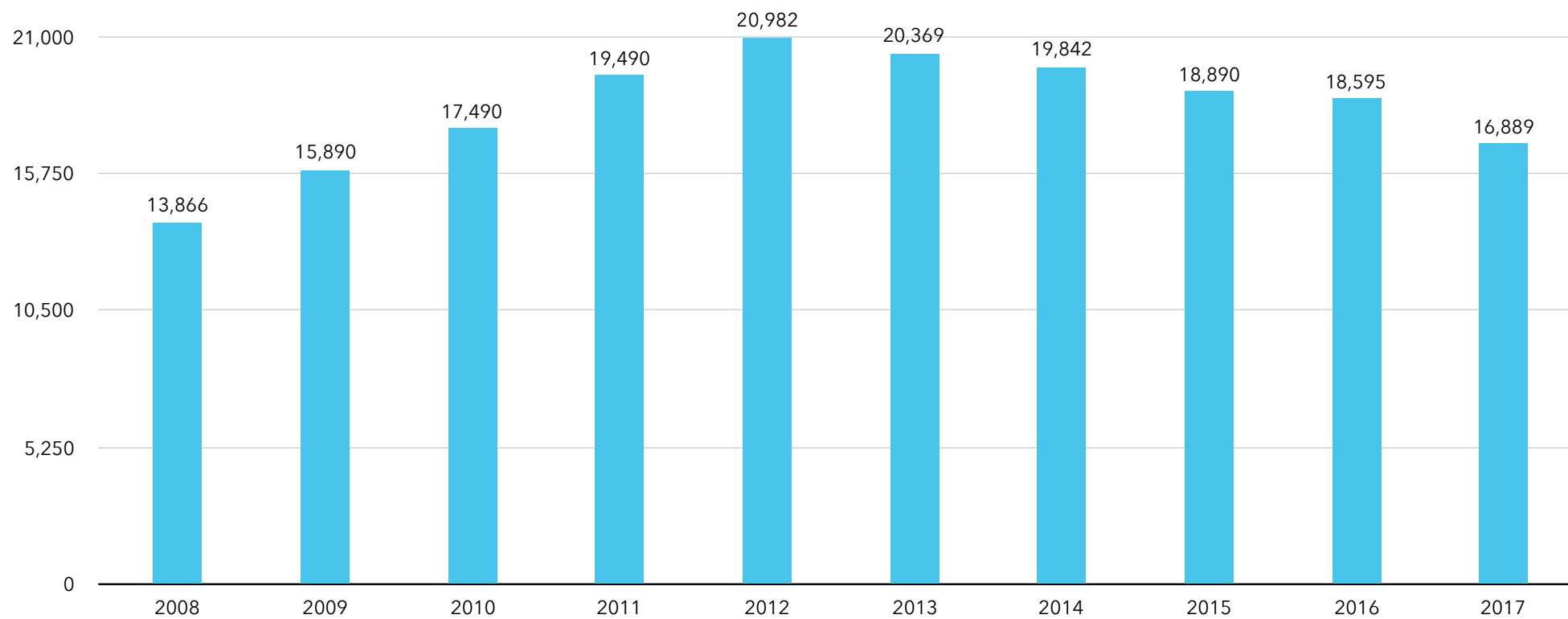


In 2017 an average of 16,889 new domain names were registered every month. Like in the past period, this slight drop in the average number of registrations reflected the trend of global growth in new domains. The following charts show the number of new registrations on a month-to-month basis in 2017 and the trend of the average number of new registrations since 2008.

### Number of .CZ domain names registered in 2017



## New registrations 2008-2017 (monthly average)



## 4.2 Registrars

The administration system of .CZ domains is based on the so-called distributed principle where contracting partners of CZ.NIC - registrars perform the domain name registration. CZ.NIC is their business partner, lays down the fundamental terms and provides the technical functionality of the top-level domain but does not interfere with the relationships between registrars and end users.

In 2017 registrars AXFONE s. r. o. and NEW MEDIA GROUP s. r. o. terminated their contracts.

At the end of the year, a total of 44 companies, 27 domestic and 17 foreign, were keeping the registrar contract. This number offers a wide choice for end user, but also provides sufficient competition.

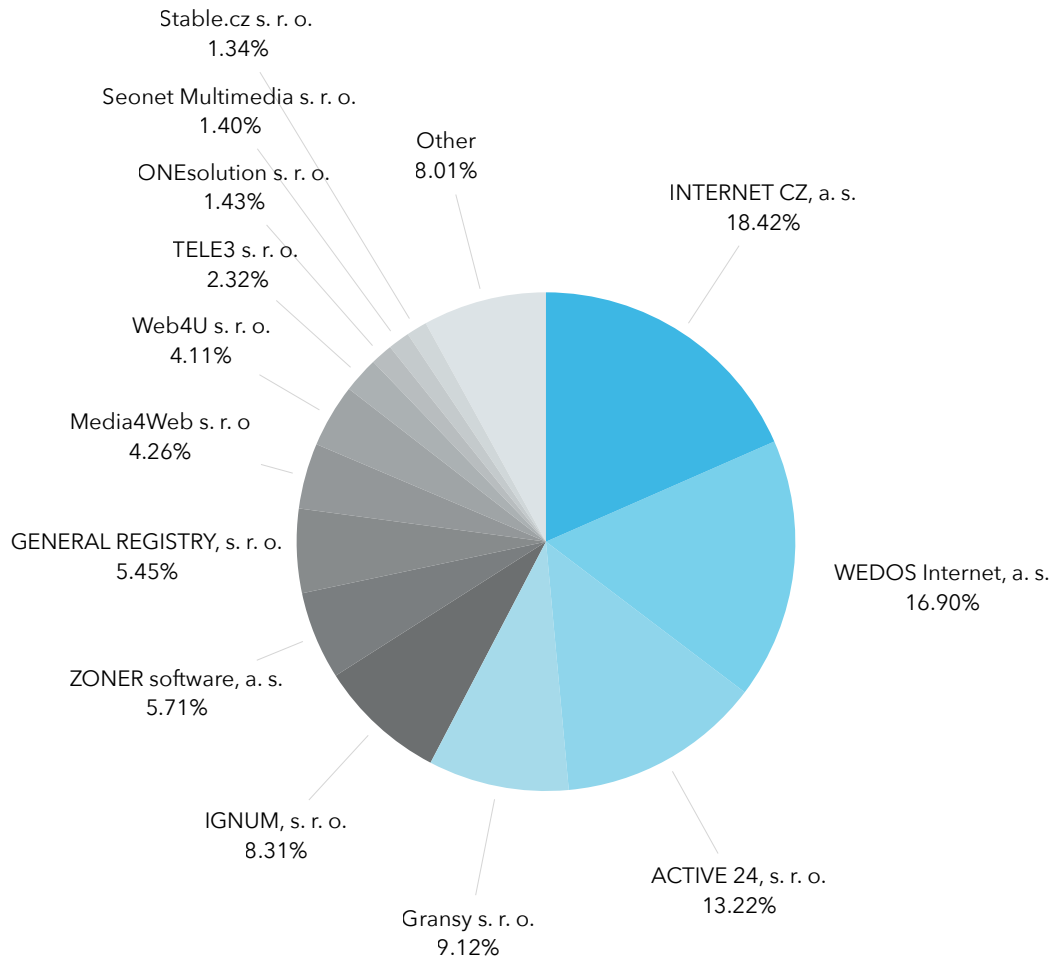
### 4.1.1 List of .CZ domain name registrars

#### List of all certified registrars as of 31 Dec 2017

1API GmbH	MarkMonitor Inc.
Above.com Pty. Ltd	Media4Web s. r. o
ACTIVE 24, s. r. o.	MIRAMO spol. s r. o.
AERO Trip PRO s. r. o.	nexum Trilog a. s.
Ascio Technologies inc.	Com Laude
ASPone, s. r. o.	ONE.CZ s. r. o.
e-BAAN Net s. r. o.	ONEsolution s. r. o.
Economia, a. s.	OVH, Sas
CORE ASSOCIATION	PIPNI s. r. o.
O2 Czech Republic a. s.	Safenames Ltd.
Dial Telecom, a. s.	Seonet Multimedia s. r. o.
4X	Sonexo B.V.
Gandi SAS	Stable.cz s. r. o.
GENERAL REGISTRY, s. r. o.	TELE3 s. r. o.
Gransy s. r. o.	TERMS a. s.
IGNUM, s. r. o.	united-domains AG
Instra Corporation Pty Ltd	Variomedia AG
INTERNET CZ, a. s.	Web4U s. r. o.
InterNetX GmbH	Websupport, s. r. o.
IP Mirror Pte Ltd	WEDOS Internet, a. s.
Key-Systems GmbH	ProfiHOSTING s. r. o.
KRAXNET s. r. o.	ZONER software, a. s.

## 4.1.2 Most important .CZ domain name registrars

Like in 2014, INTERNET.CZ, a.s., followed by WEDOS Internet, a.s., ACTIVE 24, s. r. o., IGNUM, s. r. o. and Gransy s. r. o. were the biggest registrars based on the number of administered domains in 2017. The following chart shows the number of registrars with a market share over 1%.



## 4.1.3 Registrar certification

Launched in the middle of 2011, the certification project shall make it easier for end users (i.e. parties interested in a new registration as well as existing domain name holders) to find their way through among the high number of registrars, particularly regarding the portfolio and service quality. The certification method was prepared in collaboration with APEK (Association for Electronic Commerce) registrars and organisations.

Registrars who participate in the programme can always get the "Certified Registrar" logo for one year.

From initially nine registrations done under voluntary certification in 2011, the number rose to twelve. The end customer can hence enjoy constant service quality improvements. At the end of 2017 it was 9 registrars who met the most demanding criteria for the award of five stars. There is also no longer a registrar among the certified registrars with only three stars. The service quality of registrars, reflected by the number of stars, is shown in the next chart.

	2011	2012	2013	2014	2015	2016	2017
*****	3	6	8	9	10	10	9
****	3	5	4	3	2	2	3
***	2	1					
**	1						

## 4.1.4 Cooperation with registrars - co-marketing scheme

The CZ.NIC association seeks to support registrations of .CZ domains of the highest level in the long term in line with its mission. Given the distributed administration method of the national domain, the CZ.NIC association has limited options how to address potential domain name holders through direct marketing.

This fact gave birth to the co-called co-marketing scheme, within which CZ.NIC contributes to registrars to their communication campaigns, promoting domain name registrations in ccTLD.CZ, provided they have fulfilled applicable requirements. The contribution from CZ.NIC depends on the size of the registrar, the campaign volume and other factors such as the use of mojEID or domain security through DNSSEC which CZ.NIC uses to motivate registrars to expand this technology.

The popularity of the co-marketing scheme, thanks to which the .CZ domain has become very popular and visible for example on outdoor advertisement surfaces, has been growing in terms of the registrars involved and the volume of funding. In 2017, the scheme was attended by 14 registrars, to which CZ.NIC paid a record amount of over CZK 13,000,000.

## 4.3 Register data improvements

It is essential that the user data stated in connection with the domain name are correct for the domain name owners and the CZ.NIC association.

There are several reasons for this. For the domain owner it is the need for up-to-date information relevant for its domain and for the association it is the need for complying with statutory regulations related with personal data processing. Quality improvements of data maintained in the domain name register continued also in 2017 when, like in 2014, the aim was to merge multiple duplicate contacts which have been accumulating in the database. Also, as mentioned above, the aim was to verify user data to improve security, correctness and hence make it easier for CZ.NIC to contact the holder for example when there was a risk that the domain would be cancelled due to an outstanding payment of the registration fee. Domain name holders were motivated to update and verify their data - a small reward (promotional item of CZ.NIC) was offered to them.

For the needs of domain owners, we introduced a new service during 2017: the user can generate the official domain data statement at our website. The statement has a time stamp and electronic signature.

## 4.3.1 Disputes about domain names in ccTLD .CZ

As the duration of an average dispute with the general court is about three years (provided no complications arise), which may not look too bad, this is still a very long period (not only) for the Internet environment. Therefore, the association tried to find an alternative solution to disputes about domain names that will be fast, stable but trustworthy. The so-called Alternative Dispute Regulation (ADR) system has been in use since the summer of 2014 for this reason. Until 2015 the system was working as the arbitration proceedings and disputes related to domain names aimed against its owner could be held with the Court of Arbitration attached to the Czech Chamber of Commerce and Agrarian Chamber of the Czech Republic. During the ten years of existence of this alternative dispute solving method, the Arbitration Court discussed over one hundred disputes.

Following the ruling of the Supreme Court from the end of 2013, there was a change and since March 2015 a new ADR method was introduced, sharing the underlying principles with those that have been successfully used for disputes about TLD (UDRR) or names of domains registered in the top-level .EU domain. The platform where the disputes are under way is still administered, based on the memorandum concluded, by a trustworthy entity - the Court of Arbitration attached to the Czech Chamber of Commerce and Agrarian Chamber, which is one of the three permanent arbitration courts in the Czech Republic enjoying high esteem and acting as an authority. The fact that it is one of the few offering on-line proceedings is certainly a big advantage, mostly for disputes about domain names.

The ADR system used since 2015 is however not an arbitration process complying with the arbitration law and this is also reflected in the terminology used. The system is based on contractual negotiations and only a domain name transfer or cancelling (no other claims such as damage compensation) can be claimed. The awards are having no executive power and proceedings under way in the ADR system are no obstacle for litispentence (i.e. other parallel proceedings in the same matter).

Also, closed disputes are no obstacle for matters that have already been decided. The same claims can be therefore forwarded to a general court during the proceedings or afterwards.

In 2015, when the new ADR was launched, users were very careful but in 2016 they accepted the system and 2017 only confirmed this:

Year	Number of disputes in the ADR system
2015	7
2016	20
<b>2017</b>	<b>22</b>

From the general courts it is mostly the Municipal Court in Prague that decides disputes about domain names, because it is a court specialised, among other things, in economic competition and intellectual property disputes - i.e. areas where the breach is most frequent.

## 4.3.2 Customer support

24/7 customer support is an integral part of the secured operation of the .CZ domain. The customer support shall first of all ensure the best possible care of domain name holders, particularly in scenarios where the domain name might be cancelled and/or contact details change or



the domain is transferred. Assistance to mojID service users and their validation is also an integral part of customer support.

In the relationship with domain name holders, customer support is based on a pro-active approach, the aim of which is to prevent domain name unregistration or expiry due to obsolete contact details or forgotten payment. Given the distributed .CZ domain administration system, customer support is the only case where the CZ.NIC association is in direct touch with domain name holders.

Besides standard e-mails sent to customers on an automated basis by the domain registration system that mostly notify about the failure to pay the

extension fee for registration for the next period, our customer support has, for example, manually reviewed over 300,000 domains facing unregistration and almost 100,000 holders, whose domains were facing termination, were contacted by phone or SMS.

We shifted from calling users whose domains would soon face termination to sending SMS. This shift was possible mostly because the number of mobile phone numbers entered with each contact has been growing. This change meant for us that we can now address many more domain holders.

The following table shows activity trends converted into the monthly average.

	2010	2011	2012	2013	2014	2015	2016	2017
Manual check of domains facing unregistration	-	8,916	15,176	18,586	21,598	20,512	20,894	21,834
Manual check of domains facing termination	-	4,314	11,061	14,378	16,666	16,041	16,529	16,864
Phone calls made to customer whose domain was facing cancellation	4,263	4,314	4,767	6,690	7,808	7,367	7,826	7,573
SMS notifications of upcoming domain name termination	-	-	-	-	-	-	-	8,139
E-mails sent prior to unregistration	1 201	1,429	1,708	1,716	1,915	1,718	1,849	3,157
Responses to e-mail queries	828	1,240	1,746	1,945	2,782	3,015	2,074	2,319
Responses to phone queries	561	1,063	1,120	1,242	1,416	1,262	1,227	994
Requests (validation, blocking, etc.)	145	180	248	315	455	405	701	776

The data constitute the average number of tasks per month

# 5 Infrastructure

# 5.1 Technical aspects of domain administration

The DSDng register central system was designed as a fully redundant system. All hardware and software are located in three mutually independent locations

- the TOWER data centre of České Radiokomunikace in Prague 3,
- Telehouse CE Colo in Prague 10 and
- a non-public location outside Prague.

All locations have their own Internet connection, but also a connection to the power grid. The TOWER data centre is connected to the distribution network from three independent transformer stations, the Telehouse CE Colo and the location outside Prague are supplied from two transformer stations. A back-up power supply is available in all data centres via UPS and possible longer outages are bridged by power from diesel generators.

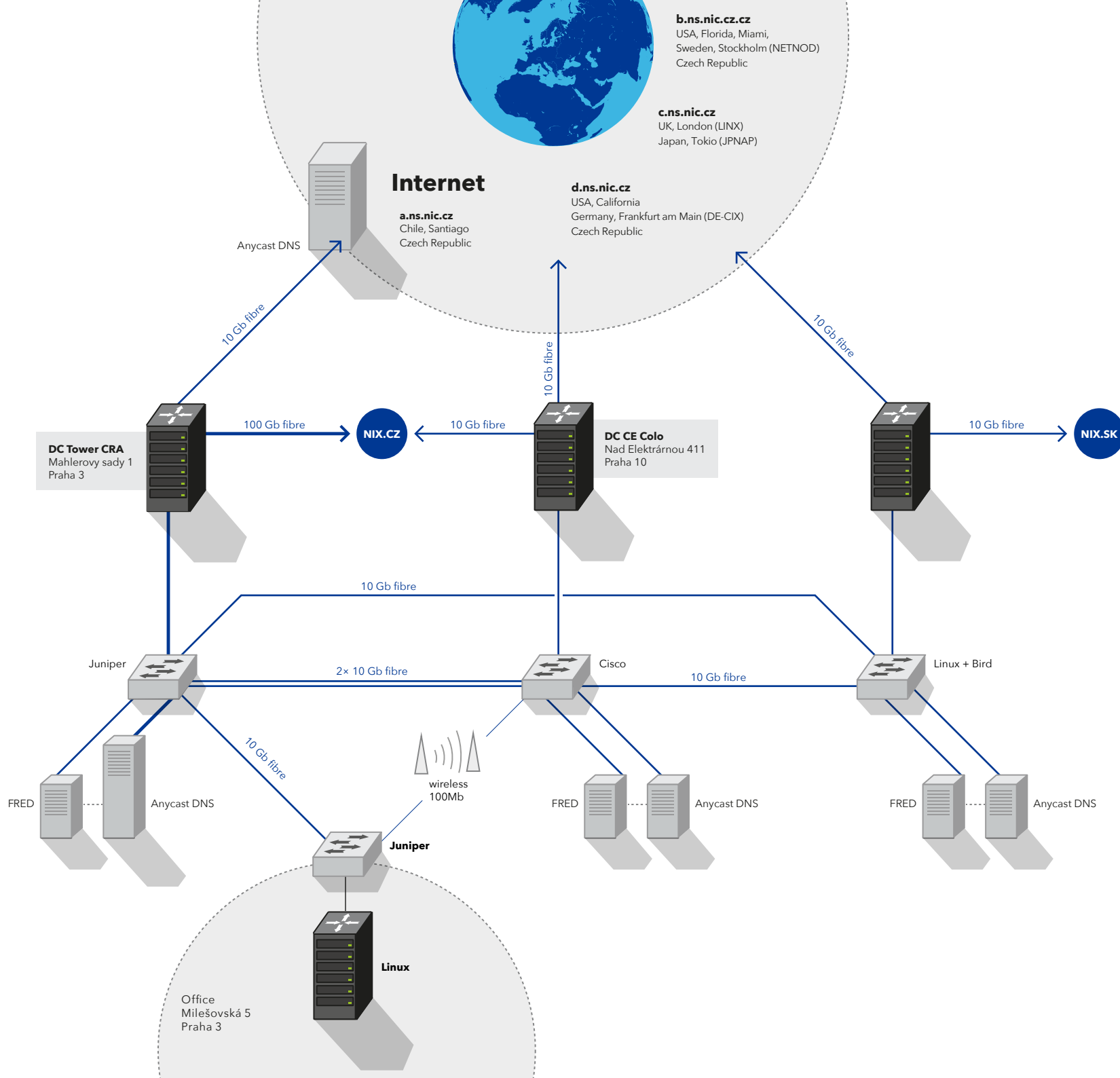
The system is built as a fully heterogeneous system - any defect of any hardware manufacturer must not bring down the central register. Therefore, systems from different suppliers are installed in every location. The same approach applies to authoritative DNS servers, operated even on three different systems (Knot, Bind and NSD).

The actual software of the central register is designed in a way ensuring that any component of the architecture can be replaced by any copy running on the server in the other locations. The PostgreSQL database is the critical component and in routine operation it is replicated into both

other locations. Therefore, if the primary location fails, operation can be moved to the replicated database without any restrictions and impacts on functionality. Back-up systems are designed and operated in a way as to make it possible to take over any components within a short period of time and take over their operation in the registry.

The central registry system is prepared for operation on IPv4 and IPv6 and its current implementation for the .CZ domain (as well as all DNS servers) is operated on these both protocols.

In 2017 we introduced the support of automated administration of DNSSEC keys and continued with refactoring of the central register code, which primarily applies to the implementation of the EPP protocol used for communication between registrars and registers. We also started with the transition to the new C++14 standard. A big portion of the registry code is therefore completely overwritten after 10 years in accordance with today's standards and safety requirements. A new testing framework was developed and automatic tests, accelerating the quality control of new system versions, has been extended. Due to the growing popularity of the FRED system among foreign registers, we have further extended its [documentation](#).



## FRED (Free Registry for ENUM and Domains)

This software, developed for the central registry and operated by CZ.NIC, was made available as open and free software as part of our support of smaller registries. This means that smaller and start-up registries can operate their domains on the system, designed for the Czech domain environment and prepared (thanks to its parameters and capacity) for a much higher number of domain names than currently registered in ccTLD .CZ.

Besides the Czech Republic, this system was controlling in 2017 the domain management in eleven more countries. It is used to administer the domains of Costa Rica (.cr), Faroe Islands (.fo), Tanzania (.tz), Angola (.it.ao and .co.ao), Albania (.al), Macedonia (.mk), Togo (.tg), Malawi (.mw) and Argentina (.ar). In 2017 the FRED system was deployed in Lesotho (.ls) and Macau (.mo). The deployment in Argentina with more than 500,000 domains is second largest instance of the FRED.



## System of authoritative DNS servers for .CZ

Servers administering .CZ domain records are operated by the CZ.NIC association in several locations all over the world. Besides the three locations in the Czech Republic mentioned in chapter [Technical aspects of domain administration](#), there are more locations in these countries: Sweden (Stockholm), Austria (Vienna), Great Britain (London), Germany (Frankfurt), Chile (Santiago de Chile), USA (Redwood City and Culpeper), Japonsko (Tokio).

## Upgrade of the DNS infrastructure

In 2017 CZ.NIC started with a major upgrade of the DNS anycast infrastructure. The biggest motivation is to improve resistance of the .CZ DNS infrastructure against DoS attacks and accommodate the needs of the steady growth in routine operation. The DNS infrastructure reached its theoretical operating peak before the upgrade: about 20 million queries per second (QPS) and about 60Gbps of traffic. When the upgrade has been completed, the .CZ DNS infrastructure will be able to handle 100 million queries per second with 200Gbps data flows. In 2017 the scheduled part of the upgrade was done in the DC TOWER. After launching the new robust DNS stack with a powerful hardware router and thirty DNS servers and after connecting it via 100Gbps connections to the NIX.CZ node, one half of the performance parameters of the DNS infrastructure planned was reached. The project will continue in 2018.

Along with the major upgrade of the DNS infrastructure for locations in the Czech Republic, an upgrade of selected foreign locations started as well and will be completed in 2018.

For important internet connectivity providers CZ.NIC started offering in 2017 the possibility of operating node mirrors of the .CZ DNS anycast, so-called ISP DNS Stacks, in the networks of these providers. The main

advantage of this service is full availability of services in the .CZ domain in case of an attack against the DNS servers of the CZ.NIC association. Corporate customers with the ISP DNS Stack will therefore not be affected by the possible attack and internet services in the .CZ domain will remain available to the full extent for them. Another advantage is the improvement of the query through rate and acceleration of their responses in the network of the provider with the ISP DNS stack. Among the first companies that joint this activity of the CZ.NIC association was Seznam.cz and Vodafone. Negotiations with more companies are under way.

## Reducing TTL in the .CZ zone

TTL (Time To Live) defines how fast DNS records become obsolete in the DNS system and controls how frequently recursive DNS servers query authoritative DNS servers. Historically, TTL was set to five hours in the .CZ zone. To accelerate the promotion of relegation changes in the registry for the DNS system, given the successful upgrade of authoritative DNS servers and based on studies of TTL reduction in other national tones, TTL was reduced for the .CZ zone to one hour in four steps. All delegation changes in the registry will hence reach authoritative DNS servers and also recursive servers much faster, so the DNS system provides more up-to-date data to all users of the .CZ domain.

# 5.2 Internet infrastructure support

## 5.2.1 Support of IPv6

IP addresses are the basic building element of the internet. It is not possible to connect to the worldwide network without IP addresses, i.e. mutual recognition and hence connection between PCs within the global network is not possible. The current space of IP addresses of the version 4 (IPv4) internet protocol has been almost exhausted. The new internet protocol of version IPv6 is the response to the lack of IPv4 addresses, as it offers a much bigger bank of addresses and also new options.

Support of the introduction of this new technology on all levels (i.e. on the level of the content, networks and end devices) is among the long-term objectives of CZ.NIC. CZ.NIC also cooperates with registrars who often provide webhosting, so it can seek support for IPv6 on the side of web, e-mail and DNS servers.

The association was also promoting the use of IPv6 in state administration within the European project GEN6 and in close cooperation with the Ministry of Industry and Trade. A government decision made by the end of 2013 also contributes to accelerated introduction of IPv6 in state administration.

Thanks to these activities, IPv6 has been enjoying growing support in the Czech Republic and according to independent surveys our country belongs to the world powers in IPv6 introduction.

## Support of IPv6 within the Czech national domain (percentage)

	2010	2011	2012	2013	2014	2015	2016	2017
Web servers	5.19	9.48	15.06	19.46	23.33	25.95	29.28	30.33
DNS servers	20.31	45.90	51.27	55.11	60.71	59.16	73.40	74.04
Mail servers	8.61	8.70	13.15	15.22	16.08	16.15	17.31	18.58

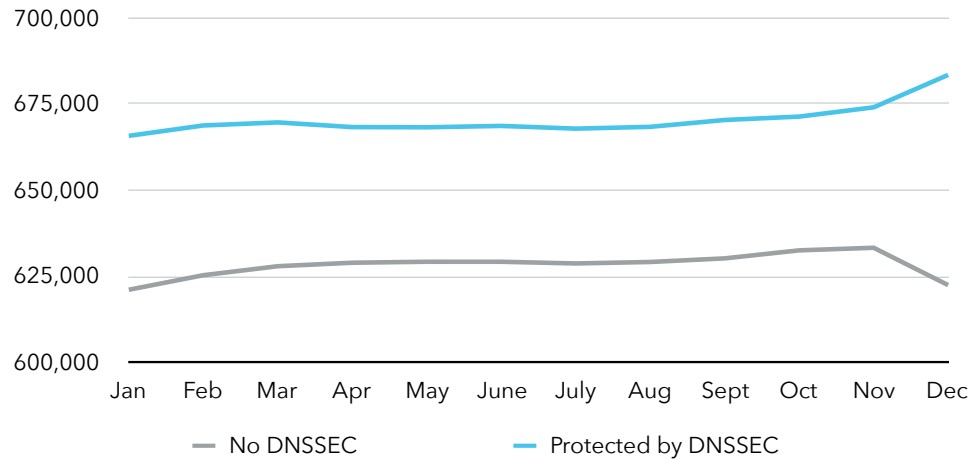
## 5.2.2 Support of DNSSEC

DNSSEC extends the domain name system (DNS) and improves its security. The DNSSEC technology gives the users the certainty that the information they obtained from DNS was provided from a correct source, it is complete, and its integrity was not compromised during the transfer.

Within the Czech national domain .CZ, the DNSSEC technology can be used since 2008. The number of such secured domains has grown steadily since then, and cooperation with registrars is also contributing to this. At the end of 2017 the rate of DNSSEC support for .CZ exceeded 52%. Most signed domains can be found only with the .NO domain and then with the .CZ domain, so the share of signed domains makes the Czech Republic be among the world leaders.

## Share of .CZ domains secured through DNSSEC (percentage)

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
0.01	0.23	14.74	34.07	37.70	37.12	38.57	38.77	51.83	52.33



Besides the support from registrars, DNSSEC has been gradually introduced among main internet connectivity providers in the Czech Republic, which has made this system fully functional for the majority of standard internet users.

In 2017 CZ.NIC was the first domain registry in the world to introduce support for automated administration of DNSSEC keys. This was enabled thanks to the introduction of support for new standards [RFC 7344](#) and [RFC 8078](#) in the FRED domain administration system. Knot DNS, compatible with these standards since 2017, will also help administrators of authoritative DNS servers with the introduction of this simplification. Thanks to these changes it is possible to easily introduce the support of the DNSSEC technology also for these domains where this had been

impossible before. It is also possible to maintain it, for example with domains where the registrar does not support DNSSEC or with domains where the administrator differs from the registrar.

## 5.3 Support of basic Internet infrastructure

The CZ.NIC association continued to operate mirrors on root servers F, K and L, thus running mirrors on three of a total of thirteen root name servers that are the basis of the Internet domain names system (DNS). They increase security and stability of root servers on the global scale and make them available mostly in the European region.

Besides these root servers, CZ.NIC uses its infrastructure to support growing registries through secondary name servers for their ccTLD. Angola, Tansania and Macedonia are using this option for the administration of their national domains.

Hosting the websites of some NGOs (e.g. the popular Ubuntu linux distribution) is another form of support of the local internet community.

CZ.NIC is also actively involved in the RIPE Atlas Global Monitoring Network project. As one of the first organisations, CZ.NIC supported this project by hosting fixed monitoring points called RIPE Atlas Anchor. One such probe was upgraded in 2017.

One of the key operating conditions of many computer systems is correct time synchronisation. Systems connected to the Internet for this purpose



use the NTP Internet Protocol. CZ.NIC hosts a public top-level NTP server (stratum 1) controlled by GPS and fitted with a high-quality oscillator of the OCXO DHQ type.



## 6 CSIRT security team

The ever-increasing importance of the internet and the growing number of users goes hand in hand with an increasing number of security incidents (misuse of a PC, network element or network for illegal purposes – e.g. sending spam, breaching copyrights, phishing, interception of secret data) and also their gravity has been growing. This creates an acute need for creating efficient protection against these attacks and giving it a formal shape. So-called CSIRT teams (Computer Security Incident Response Teams) are created for this purpose. CZ.NIC, an entity with long experience with internet infrastructure projects, engages security teams on the national and academic levels. CZ.NIC has its own CZ.NIC-CSIRT team, responsible for dealing with incidents within AS25192 as well as incidents affecting name servers for the .CZ domain and 0.2.4.e164.arpa.

## 6.1 CSIRT.CZ - National CSIRT of the Czech Republic

The CSIRT.CZ security team is the official security team of the Czech Republic and is operated in accordance with act No. 181/2014 coll. on cybersecurity and the public contract made on December 18, 2015 with the National Security Authority. The mission of the CSIRT.CZ team is to deal with incidents connected with cybersecurity in networks operated in the Czech Republic. The team collects and evaluates information on reported incidents and forwards such reported incidents to persons responsible for the network or services being the source of the incident and/or it provides help with coordination.

The team cooperates with entities on the national level (National Security Office, the government CERT, academic CSIRT, ISP, banks, etc.) and international level (national CSIRT of other countries, ENISA, FBI and other) and exchanges information on incidents and the way they were resolved with these entities based on a relationship of mutual trust.

CSIRT.CZ also participates in a number of grant projects, including PROKI (Prediction and Protection against Cyber-Incidents), which is supported by the Security Research Scheme of the Czech Republic in 2015-2020. In 2017 the project entered the verification phase and reports have been delivered since October to the administrators of all affected end networks. The report contains information on all incidents observed during the period in connection with their network. The team was also involved in activities related with the SIC CZ project (Safer Internet Centre). To be more specific, it was the STOPonline.cz hotline designated for reporting illegal on-line content and for spreading awareness and education of among children and parents. Another project in which the CSIRT.CZ was involved is the Support of Capacity Development for Cybersecurity in the Czech Republic, supporting further deepening of national and international cooperation, further education and more professional skills of the team.

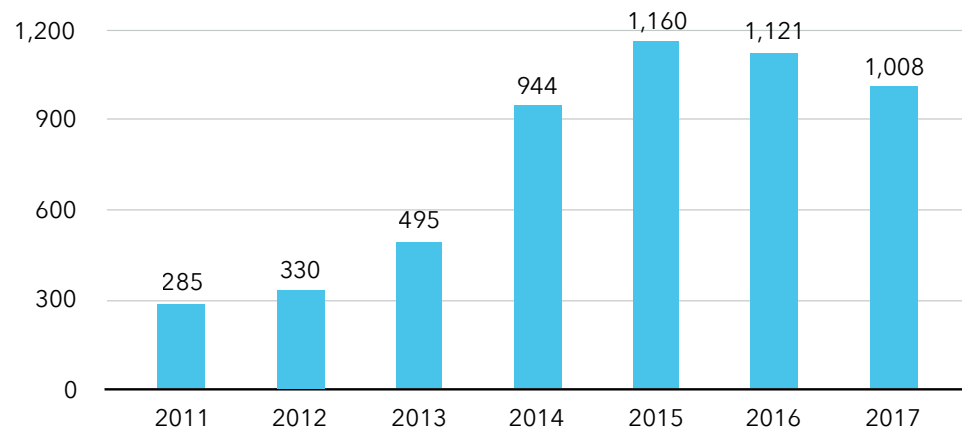
### Operating statistics

In 2017 CSIRT.CZ was dealing with 1,008 security incidents. More e-mails (up to 6,527 in 2016 from 6,867 in 2017) were sent year-on-year within the incident management process. The growing complexity of incidents is the reason for this trend: nowadays several different parties, of which all must be contacted, are often involved in one incident.

It was already in 2016 that the Convey open source tool was developed, allowing automated communication regarding security incidents in which several parties are involved. In 2017 there were more activities to further modify this tool. The tool is now much more universal and not

tied to the ticket system (used by the security team) only, which bring more implementation options in the security community. The possibility of universal work with columns, search for additional information such as the country, host name and DNS/WHOIS information batch fetching are among the newly added features.

## Number of incidents



## Type-based incident statistics

<b>Phishing</b>	409
<b>Spam</b>	121
<b>Other</b>	200
<b>Malware</b>	99
<b>Trojan</b>	94
<b>Probe</b>	26
<b>DoS</b>	14
<b>Botnet</b>	29
<b>Portscan</b>	13
<b>Pharming</b>	3

Like in 2017, several major DDoS attacks, botnets, malware spreading campaigns, including the well-known WannaCry ransomware and brute force attacks were recorded in 2018. Even lists of compromising e-mail accounts (mostly in large free mail services) were faced.

An interesting incident was initiated by the IDS system (Intrusion Detection System), which responds to attempts to communicate by sending a notification e-mail to the network from which the request for communication arrived. Based on the notification sent by the system the ISP team, who tested the new CPE, was contacted. As it was obvious that the device was compromised in a certain way and was scanning other networks, the supplier provided the device and the actual CPE was analysed for vulnerability.

## Awareness and educational activities

CSIRT.CZ was also devoted to many awareness and educational activities. The already established collaboration in the creation of the popular series Postřehy z bezpečnosti (What we spotted about security) on the Root.cz server continued. The CZ.NIC Academy did five trainings "How the CSIRT team works", because they have become a popular source of information for entities that are setting up or are going to set up their own security team.

As part of the European Cyber Security Month, the team organised for the users a one-day seminar in 2017 where the users learnt, among other things, current trends in phishing, malware and ransomware and/or about the STOPonline project. On top of this, the team did an international training TRANSIT I intended for its new members and in cooperation with the Vysočina region it organised a one-day training for the Czech Police regarding matters of cyber security.

Besides this, the team attended many conferences and seminars in the Czech Republic and abroad, published several papers in printed and

on-line media and provided remarks on awareness TV serials for children broadcast on the children's channel of the Czech TV. It also continued with publishing cyber security news on our website: more 130 pieces of news were published.

## National and international cooperation

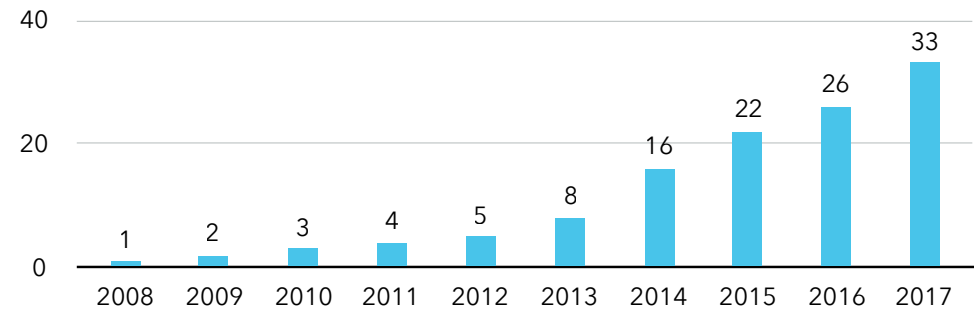
The National Cyber and Information Security Agency and the government CERT are the strategic partner in national cooperation. This includes for example legislation, formulation of joint statements within the CSIRT Network and cooperation on cybernetic trainings. The national and government CERT meet several times a year at different occasions, which gives them enough room for sharing information about the work of the teams and their possible coordination.

Cooperation with the National Cybercrime Department of the National Centre against Organised Crime of the Criminal Police and Investigation Service continued on the national level.

In 2017 two meetings of the CSIRT.CZ task group took place where current changes to the legislation, particularly the GDPR amendment to the cyber security act, were discussed. The meetings had a technical focus as well: attention was paid to the malware cryptolocker, malware analyses, routers and useful tools that can be used within the security community.

The number of Czech CSIRT teams, officially set up within TF- CSIRT, also grew in 2017. Seven new teams emerged, which means that there are now 33 CSIRT teams in the Czech Republic. Security teams from the private sector enjoy the highest degree of representation. The growing number of security teams also places higher demands on the National CERT regarding the engagement of these teams in the Czech security community.

Regarding international cooperation, the team was actively involved in TF-CSIRT meetings where it presents its own findings from different fields at least on the annual basis. Activities continued in the TF-CSIRT Steering Committee. The team was also participating in the CSIRT Network. This duty arose from the NIS regulation. It is a group of mostly government and national teams on the level of EU member states.



## Preventive action

CSIRT.CZ also engaged in preventive activities in the past year as well. Besides the activities known from past years, e.g. distribution of information on vulnerable or compromising systems and accounts, provision of unknown malware samples to antivirus companies and testing of networks for resistance to DDoS attacks, the team started work on even more preventive measures. Besides the testing of resistance to DDoS attacks, CSIRT.CZ also did set of one penetration testing for a major customer from the public administration domain.

As already said above, the PROKI project (Prediction and Protection against Cybernetic Incidents) entered the verification phase, which is among the visible activities of CSIRT.CZ. Connected with this is the sending of information on detected incidents to the end networks. Thanks to these reports, network administrators can find out compromising systems in their network and take necessary countermeasures.

Last year the CMS event (Content Management System) took place in two rounds. In the first round the automatic tool scanned all website presentations in the .CZ domain.

The aim was to identify websites using any of the two popular CMS WordPress and Joomla for their operation. We could also identify, and version of the CMS used. Where it was found that the website was operated on an out-of-date CMS version, the domain holder was notified in an e-mail. The second round of scanning saw an improvement by 20.71% (done two weeks following initial testing). In this round only, the websites already identified were scanned (10,514 domains in total).

## Web Scanner

The web scanner is one of the preventive security services that was launched in 2013. It is intended for website providers and administrators and free-of-charge help to them with revealing potential vulnerability of their internet presentation. The service is primarily intended for non-profit organisations and the public administration.

Vulnerability analysis is performed in two phases. First with the use of automatic tools and then in a manual website test by a senior tester who evaluates, among other things, the vulnerabilities he/she found in the entire website and offers corresponding solutions. Finally, the party that ordered the test is sent a final report containing detected vulnerabilities, their classification based on the gravity level and also proposals of possible ways how the vulnerability can be handled. The service is based on its own measurements and experience of the security team and on a list of general top ten most serious security risks according to Open Web Application Security (OWASP).

In 2017 the tools underwent a major review and some procedures were reclassified and improved. We created our own Domaincheck tool that

accelerates and automates the website header check and the check of certain vulnerabilities and that searches for possible entries to web administration, forgotten configuration files and backup files.

We tested 60 web presentations based on 53 purchase orders in 2017. We scanned another ten websites as part of our extensive penetration testing done based on special purchase orders.

## 6.2 CZ.NIC-CSIRT

The CZ.NIC-CSIRT team is responsible for handling incidents affecting name servers for the .CZ domains and 0.2.4.e164.arpa and AS 25192. As provided in the registration terms, the CZ.NIC association can cancel the domain name delegation if it is used in such a way that it compromises national or international computer security, mostly through distributing malign content (viruses and malware) through the domain name or service or pretending the content of another service (particularly phishing).

The CZ.NIC-CSIRT team can cancel the domain name also when the server, available through the domain name, is the control centre of networked hardware which distributes the malign content (botnet).

### Activities of CZ.NIC-CSIRT in 2017

CZ.NIC-CSIRT operates its own system used for searching websites with .CZ (MDM) domains that have been attacked. In 2016 the team started dealing with website defacement on top of phishing, malware and C&C in the MDM project. Information on 454 website defacements was sent in 2017.

In the CZ.NIC association the CZ.NIC-CSIRT team implements internationally accepted information security management systems (ISMS) in compliance with the ISO 27001 standard.

In 2017 an external audit took place and confirmed that CZ.NIC continues to meet all the requirements of this standard.

In 2017 CZ.NIC-CSIRT was also engaged in preparations for the implementation of the General Data Protection Regulation (GDPR) in the processes and systems operated in the CZ.NIC association, so that when this regulation entered into force in May 2018, everything was ready for compliance.

# 7 MojelD



## 7.1 When we say mojelD...

Launched already seven years ago, MojelD is a unique service giving the internet users in the Czech Republic the possibility of logging to different websites and electronic services using uniform identification data.

Internet users who use mojelD do not have to set a new account and go through the registration process over and over again. Besides higher user convenience, the service providers who enable the logging to their systems by using mojelD obtain verified information for their users about their visits and offer the users more benefits.

The mojelD service is based on the OpenID standard extended with unique features which other OpenID services do not have – e.g. user identity data transfer with every user login and user validation on multiple levels in different ways.

When this service was being developed, emphasis was placed on security, personal data protection and trustworthiness of the whole system. The user data registry is protected on the same, high level as the .CZ domain registry and the user can define with every login which data he/she gives from his/her profile to the provider to which he/she wants to log in using the mojelD service. This gives the user full control over his/her data and the user also knows what data he/she provided to what entity and even retrieve this information.

MojelD is constantly evolving and responding to the current needs of its users. Among the 2017 innovations was also the password restoration option: now the password can be sent to another e-mail than that the user entered in his/her user account. Also, the password policy became

stricter. The personal business card now includes new templates where the newly published bank account, the PGP key, Vimeo and Flickr can be published.

Since 2017 the user of the mojelD service can be validated on-line via ISDS (the data box information system). The testing environment of the national eIDAS node was launched for cross-border authentication and connected to the so-called NIA (national identification and authentication point). MojelD was also used in public administration systems, e.g. for municipal on-line voting.

## 7.2 Support of mojelD

The service providers who allow their users to log to their systems by using mojelD are the promoters of the further expansion of this service. The growing number of services using mojelD affect the number of new users for who it is important to be able to use a single login and password to access as many services as possible, no matter if those used on the daily basis or those (e.g. on-line shops) they visited for the first time. MojelD saves their time with registration and gives them control over the data they provide.

Regarding the relationship with the service providers, we seek to enter new segments and strengthen our position in existing ones such as community servers, website presentations of cities, towns and municipalities and electronic trading.

We were extremely happy about the mojelD implementation in the IS STAG university information system, so now universities can use

mojeID as well. This means that the students of the universities can now log to the information system: University of West Bohemia, University of South Bohemia in České Budějovice, Technical University of Liberec, Jan Evangelista Purkyně University in Ústí nad Labem and Karel Engliš College.

MojeID can be effectively used for age verification on shopping portals with items for smokers (e.g. Tabacos.cz, Kuracke-potreby.cz and Etrafika.cz) and so help their providers with legal compliance. Since 2017 also the customers of the Slovak shopping portal Alza.sk can log in. The mojeID service is also the identity verification tool for winners in the receipt lottery Účtenkovka.cz.

## 7.3 External validation points

To simplify the validation option for end users, i.e. the highest identify verification level within the mojeID account, CZ.NIC focused on the extension of the external validation point network in 2017. It has been mostly deployed in libraries: e.g. the Regional Library of the Vysočina Region in Havlíčkův Brod, Václav Čtvrťka Library in Jičín, Šmidinger Library in Strakonice and the City Library in Třebíč. New validation points opened in 2017 at the University of South Bohemia in České Budějovice and Karel Engliš College in Brno. Nineteen more validation points were opened in 2017 on top of the existing 31 existing validation points. Validation is done free of charge.

Also the conference participants for which mojeID was the partners could validate their account - Internet in State Self-Administration (ISSS 2017) and Internet and Technologies 17.2 (IT 17.2).

## 7.4 MojeID users

The users are the most precious part of mojeID. It would be difficult to win new and so reputable service providers and raise the service awareness among the broad public without a growing user base. In 2017 the CZ.NIC association was seeking to increase the number of users but also the share of the so-called identified accounts (i.e. with verified phone number and correspondence address). Our regular newsletter was one of the efficient tools of notifying users about useful features and improvements of mojeID in 2017. The mojeID service won 49,268 new users during the year, which is an almost 17% year-on-year growth. By the end of 2017 the mojeID service had almost 595,014 registered users. The number of validated users (i.e. validated on the basis of a valid identity document) has increased significantly in 2017 - to more than 17,000. This result was however influenced by significant factors: the newly opened external validation points and the launch of the Účtenkovka national receipt lottery.

### Account security level of mojeID

Year	Validated contact	Identified contact	Partly identified contact	Users total
2010	163	2,168	1,324	3,655
2011	680	17,218	24,369	42,267
2012	1,760	75,513	86,218	163,491
2013	3,324	143,364	144,376	291,064
2014	5,920	207,242	211,409	424,571
2015	8,280	249,649	241,270	499,199
2016	10,446	273,334	257,650	541,430
<b>2017</b>	<b>18,378</b>	<b>293,503</b>	<b>283,133</b>	<b>595,014</b>

# 7.5 MojelD as a tool of cross-border authentication in Europe

During the implementation of the European pilot project STORK 2.0 (2012-2015) mojelD was used for testing cross-border authentication in Europe. MojelD was used as the login tool for many systems administered by the European Commission within the EU Login portal. Our experience with this operation translated to the development of the cross-border authentication gateway in accordance with the eIDAS regulation, which the association launched in the testing mode as part of the European project CZ.PEPS.

# 8 CZ.NIC labs

CZ.NIC labs are an independent research and development site dealing mostly with innovative projects for the benefit of the Czech and the world internet community. Most projects involve infrastructure protocols and services, traffic monitoring and network security. Some projects deliberately support important trends of the current digital society such as open data, eGovernment, open source software and support of disadvantaged users.

## 8.1 Summary of 2017 activities

CZ.NIC laboratories focused on further development of existing projects in 2017. This primarily involved:

- the Turris project focused on the security of end domains and SOHO networks,
- twin DNS servers - authoritative Knot DNS and recursive Knot Resolver,
- multi-protocol routing daemon BIRD,
- the Tablexia teaching app for children with dyslexia and other learning disorders.

## 8.2 Projects and activities

### BIRD

The routing daemon for dynamic IP protocol routing is designed for Linux and BSD. The project was set up at the Faculty of Mathematics and Physics of Charles University in Prague and the CZ.NIC labs have been participating in its further development. It is currently the most popular software for route servers in peering centres in the world. According to surveys of the EURO-IX organisation, more than two thirds of them are using it. Following long-term development, the new version 2.0.0 was released in 2017. This version makes it possible to use several different address types within a single daemon. Thanks to this, it is for example possible to transfer IPv6 routes via the IPv4 BGP relation and similar. It is no longer necessary to compile two different daemons for IPv4 and IPv6. The 2.0.x branch has been marked as experimental so far and code stabilisation will be the mission of 2018. The existing 1.6.x series will be still supported.

### Datovka - an app for accessing data boxes

The Datovka software came from the CZ.NIC labs in 2010 as part of support of internet infrastructure and free and open software as the interface for access to the data box information system (ISDS). It is currently available for PC users with the Linux, Windows and macOS operating systems. It is existing as the mobile device version for Android and iOS.

In 2017 the API was designed and implemented in cooperation with SingleCase for uploading data messages from the Data Box to filing

services. The Data Box makes handling data messages easier for users who simultaneously use filing services for organising their documents. The description of this API is available, and its use is not restricted. Other providers of the filing services implemented the API in 2017 as well.

The MSI installer was created for Windows system administrators allowing an automated installation process. Support for encrypted storage of passwords or full-text search of Data Boxes was added to the desktop application. The mobile app enables the users to create and send data messages. The total number of users of all applications is around 35,000 – mostly SMEs, freelancers and natural persons.

## HaaS (HoneyPot as a Service)

HoneyPot is a special security app simulating a certain operating system and creating – for the attackers – the illusion of communication with the real system. The attacker can log in via SSH or telnet and launch requests and/or upload or download malware. The requests of the attacker are however recorded and used for analysing his/her behaviour and intentions.

The biggest benefit of the HaaS project is the possibility of engaging a wide range of users who do not have the necessary knowledge and means to operate their own honeyPot. The attack data are analysed by the CZ.NIC and CSIRT.CZ security teams who use them for the timely detection of new security threats. In 2017 the HaaS service was prepared for deployment and tested in verification operation.

## JetConf

Implementation of the RESTCONF [RFC 8040] protocol, used for secure remote configuration and administration of network devices and services, has been primarily development as part of this project. The laboratory

staff is personally involved in the development of this protocol and related standards in IETF.

JetConf is being developed in the Python 3 language and uses HTTP/2 transport with obligatory security using TLS. Support of atomic transactions and the application program interface were implemented for connection to specific devices and services.

The project also includes a software library for work with data models in the YANG [RFC 7950] language.

## Knot DNS

This is a purely authoritative DNS server, primarily developed with an emphasis on high performance for processing incoming queries and strict compliance with modern DNS standards. This is a multi-thread implementation without using locks. Thanks to this, the server can be reconfigured, and/or the zones provided can be modified without any restrictions to the response speed. Support of a large number of basic but also very advanced functions is another benefit: fully automated administration of DNSSEC security with respect to easy configuration. The server also offers an interface for use modules through which the response process can be extended or modified. The server is currently used by the providers of DNS root servers, TLD domain providers and hosting companies.

## Knot Resolver

Under the Knot Resolver project, independent implementation of the recursive DNS resolver is being developed. It was introduced to the public in 2015 as a sister project of a high-performance open Knot DNS server. After being deployed in 2016 as the default resolver for Turrís Omnia routers, its further development continues.

The biggest 2017 innovation is the implementation of the so-called aggressive DNSSEC cache which improves the resolver performance and protects domains signed by the DNSSEC technology against Random Subdomain attacks. Support was also added for forwarding by using the TLS protocol, a technology for higher convenience of resolver users.

## NetMetr

The NetMetr project joint the European Open crowdsourcing data project related to the quality of service of high-speed Internet (MoQoS) in 2017 where we cooperate with other partners from Slovakia, Slovenia and Austria on the standardisation of the measuring methodology and extension of the possibilities of this device. The measuring options were extended – a client for measuring the speed of fixed connection, thanks to which hardware probes can be created e.g. from the Turrís Omnia router, was added. Similarly, like the apps for Android and iOS platforms, this client is available free of charge to anybody and is published in the form of source codes. We have also been successful in increasing the number of users and measurements.

This was achieved thanks to awareness and performances in the media, for instance in the @online programme broadcasted by the Czech TV.

## Tablexia

Tablexia is a modern educational app for children with dyslexia attending the second grade of primary schools. It is widely used at schools as the supplement of standard learning but also in pedagogical-psychological counselling centres and other counselling institutes for children with learning difficulties. It is available free of charge at Google Play and in the App Store.

Research was done in 2017 into the effect of Tablexia in re-educational activities. Data was collected from two primary schools in Prague and two primary schools in Germany (to also verify the effect of the German language version). The research was done within diploma theses and presented at the conference of the European Dyslexia Association.

Two new games were created for the training of verbal abilities and hearing seriality, which closed up the development of all ten games foreseen for the app. Based on the data collected and testing with children directly at the schools, the difficulty level was modified in games Lupiči ("The Robbers"), Střelnice ("The Shooting Arena" and Pronásledování ("Follow Them"). The Hlídka game ("The Watch") underwent a major graphic upgrade. The young detectives can now upload their own photo into their profile and/or change their age.

## Turrís

In 2017 the Turrís project concentrated on meeting its objectives arising from the crowdfunding campaign and improving its internal infrastructure used for security research tasks. A set of features was continuously being added and their control in the router simplified. A monitoring centre for set up for monitoring the network and collecting and evaluating data on attacks. It was for example used for timely warning of Petya attacks. The basic concept of digital threats assessment was completed. The concept will be further developed in 2018.

Two "upgrade" packages were created for the users of older (blue) Turrís routers 1.x. The free-of-charge software upgrade enabled the users to use the btrfs file system, which significantly improved the router backup and restoration options. The hardware upgrade enabled the transition to the highest standard WiFi 802.11ac against a fee. This extended the service life of routers by at least three more years and had a positive impact on the network of Turrís 1.x routers for data collection.

Some projects developed within Turrís have become independent as well. This for example applies to the HaaS and NetMetr projects mentioned above.

Implementation started of the project Construction and Verification Operation of the Cyber Threat Intelligence System, focused on the monitoring of network criminality for the National Cyber and Information Security Agency (NÚKIB) in cooperation with the CESNET association. This project is scheduled for the next five years.

Development of the cheaper version of Turrís Omnia routers under the name MOX started. The aim is to introduce attractive and powerful network device meeting all the security parameters according to project standards. The device will be introduced to the public during 2018.



# 9 Education and awareness

# 9.1 Communication with the public

They include press releases and messages for professional journalists but also journalists from media covering the broad public or specific recipients only. CZ.NIC publishes these releases in section News at [www.nic.cz](http://www.nic.cz). The News section is also part of the information website of the educational centre of the association (CZ.NIC Academy), the CSIRT.CZ security team and selected projects from CZ.NIC Labs.

Other communications channels include accounts on social networks Facebook, Twitter and Google+. Information was intensively published on these accounts in 2015. The news was supported - in some cases by numerous - images, photos and graphics on a daily basis. This is also one of the reasons why CZ.NIC had over 2,800 fans at the end of the year, which is about 8% more than in 2016. Also, the fan base on Twitter grew year-on-year from about 3,088 at the end of 2016 to more than 3,573 in December 2017. The association also used Google+ communication in 2017, although this service is not as popular with the public as the previous two. The NIC-NEWS newsletter was another communication tool. It was distributing messages to people interested who were logged in the e-mail conference almost every week. The CZ.NIC employees were notified about current activities through the IN newsletter with the same periodicity. An on-line blog of CZ.NIC staff is also an essential communication element. More than 50 contributions were published in 2017 thanks to activities of the association employees. The blog was serving as the official communication channel of the association, so it does not come as a surprise that journalists are using this information for various purposes.

The topics communicated in 2017 were connected with the association itself, with its designers and activities, but also with topics that more or less affect CZ.NIC and its activities (cybersecurity, personal data protection, etc.).

Like last year, the portion of media with technical and non-technical orientation was more balanced. From the technically oriented media the most frequent were portals Root.cz and Lupa.cz, while Securityworld and IT Systems were the most frequent printed journals.

The CZ.NIC staff published over 70 papers in 2017 not only on the above-mentioned internet portals and in the magazines, but also in such media as School Management and Computerworld.cz. Ondřej Filip, the CZ.NIC CEO, and other employees were hosts in TV shows and radio programmes. They mostly attended @online broadcasted by the Czech TV and Online Plus on Czech Radio. Topics regarding internet security and the Czech national domain .CZ were enjoying high interest.

	Outputs in media		Social networks (fans)	
	Papers	Blog	Facebook	Twitter
2012	21	97	900	630
2013	29	95	1,100	1,000
2014	38	84	1,500	1,750
2015	57	82	1,800	2,370
2016	57	59	2,600	3,088
<b>2017</b>	<b>73</b>	<b>49</b>	<b>2,826</b>	<b>3,573</b>

## 9.2 Popularisation TV series

### Jak na Internet (How to use the Internet)

The How to use the Internet series is still the most visible educational activity of the association. In 2017 ten new episodes were produced and broadcasted on Czech TV with such topics as cybergrooming, smart cities, children in the on-line world and eHealth. The production of these new episodes of the popular TV series was cofunded by the European Union.

The most successful episodes could be watched during the whole year on Czech TV channels and by the end of the year the additional texts at [www.jaknainternet.cz](http://www.jaknainternet.cz) were updated.

### Nebojte se Internetu (Don't be afraid of the Internet)

Don't be afraid of the Internet is the second awareness TV series of CZ.NIC. The aim of this sitcom is to bring the Internet and its technologies closer to the older generations. All ten episodes were repeated in 2017 on Czech TV channels and the series was a success also beyond TV screens. Besides the growing popularity of the [www.nebojteseinternetu.cz](http://www.nebojteseinternetu.cz) portal, the complete series was available in the on-board entertainment systems on the Regiojet buses and trains and on the employee intranet of Škoda Auto. These materials were also used by the specialised organisations Elpida and Moudrá Sovička for systematic education of senior citizens.

### Nauč tetu na netu (Teach your aunt with the internet)

Also, this successful series co-produced by the Czech TV and CZ.NIC deserved a continuation. Therefore, 16 episodes of Series II were broadcasted on the Děčko children's channel during the autumn of 2017.

Even though a teenager who is trying to make his aunt an expert on the secrets and traps of the Internet is the main hero, this series, intended for children aged 10-12, shall raise awareness of the possibilities offered by the Internet, its technologies and on-line security primarily among children. Also, this year's production was co-funded from EU resources.

The CZ.NIC association became the partner of the "Sdílej bezpečně" ("Share Safely") project ([www.sdilejbezpecne.cz](http://www.sdilejbezpecne.cz)) which warns - through a series of short videos - against naive sharing of personal data and gives practical instructions how to protect our data in the on-linen world in 2017.

## 9.3 CZ.NIC Academy education centre

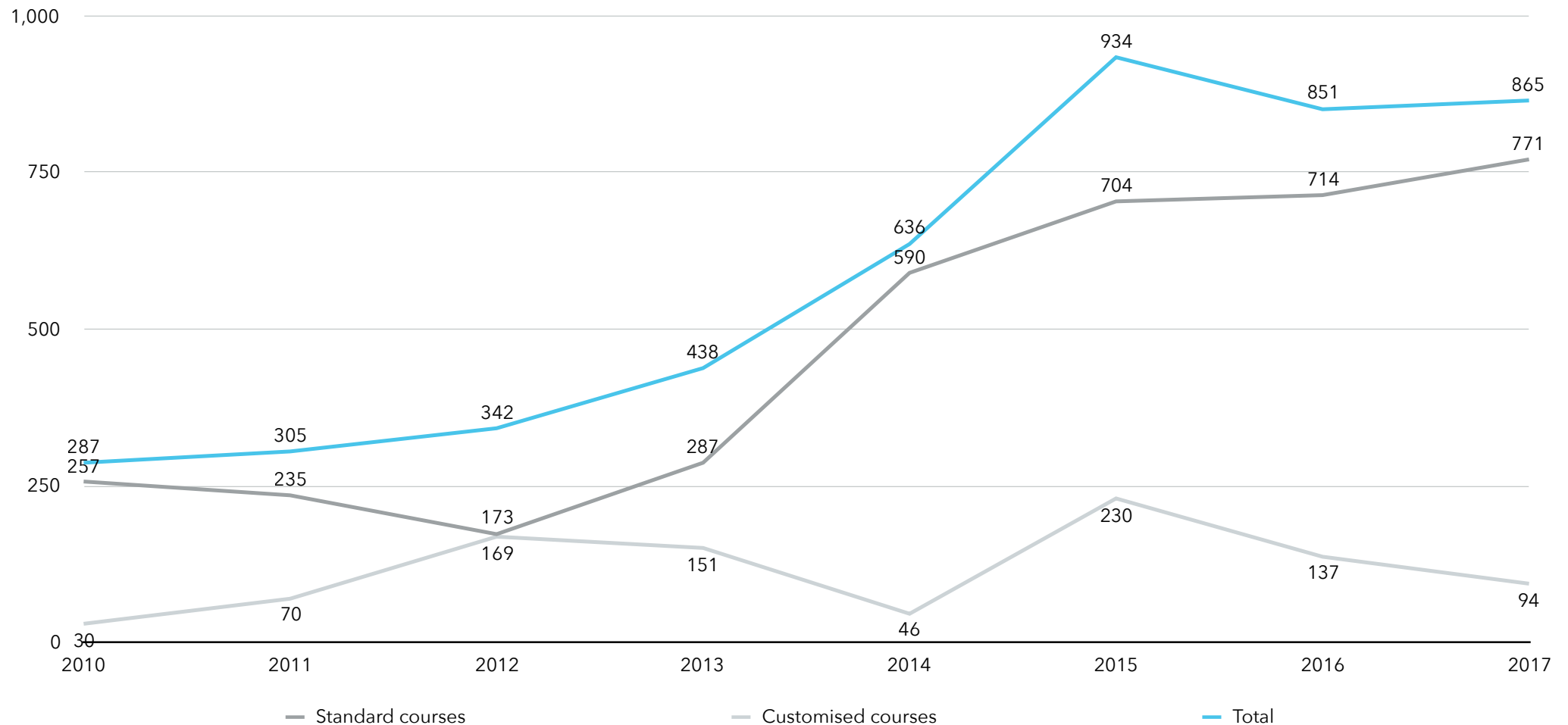
The CZ.NIC Academy extended its portfolio of offered courses in 2017 and added four new courses: Bezpečnost webových aplikací (Website Application Safety), Elektronická komunikace pro školy (Digital Communication for Schools), IPv6 pro pokročilé (IPv6 for the Advanced) and Základy fungování CSIRT týmu (How the CSIRT Team Works). Besides these presentation courses, the Academy also produced a new electronic course "Základy IPv6" ("The Basics of IPv6") being the introduction into the above-mentioned IPv6 course for advanced users.

The CZ.NIC Academy was providing its premises not only for internal trainings and meetings of the association's staff but also to other organisations and groups such as the Educational Institute of the Central Bohemian Region, NIX.CZ and PyLadies in 2017. In cooperation with Prague 9, the Academy organised a weekly children's cybercamp on its premises. The CZ.NIC Academy does not only offer its premises but provides support for many educational activities. In 2017 these activities

included a vocational school competition and a competition of school websites sCool Web.

The biggest change in 2018 will be the moving of the main Akademie.CZ offices. A new teaching room was set up in 2017 in the Olšanka hotel. The premises were handed over to us by the end of 2017.

## Development of the number of students in the CZ.NIC Academy



## List of professional courses conducted at the CZ.NIC Academy in 2017

Name of course	Number of rounds	Number of students
3D printing	2	11
Arduino pro učitele (Arduino for teachers)	3	45
Web application security	7	89
DNSSEC - DNS security	3	21
Elektronická komunikace pro školy (Digital Communication for Schools)	2	23
Git - univerzální verzovací systém (Git - universal versioning system)	6	70
Implementace IPv6 (IPv6 implementation)	3	41
Internet věcí (Internet of things)	1	5
IPv6 pro pokročilé (IPv6 for the Advanced)	2	18
Nařízení eIDAS přehledně (The eIDAS regulation in a clear way)	4	38
Pokročilé síťování v Linuxu (Advanced networking in Linux)	4	63
Principy a správa DNS (DNS principles and administration)	4	40
Směrovací protokol BGP (BGP routing protocol)	2	26
Turris Omnia prakticky (The practicalities of Turris Omnia)	9	91
Úvod do Linuxu (Introduction to Linux)	6	74
Vim	3	24
Základy fungování CSIRT týmu (How the CSIRT team works)	5	92

## List of customised courses conducted at the CZ.NIC Academy in 2017

Name of course	Number of rounds	Number of students
Arduino pro učitele (Arduino for teachers)	1	20
Nařízení eIDAS přehledně (The eIDAS regulation in a clear way)	1	8
Git - univerzální verzovací systém (Git - universal versioning system)	3	30
Implementace IPv6 (IPv6 implementation)	1	10
CZ.NIC projects	1	10
Svět domén a internetových technologií (The world of domains and internet technologies)	1	10
OSPF training	1	6

## Total number of courses organised by the CZ.NIC Academy in 2017

Course type	Organised in total	Students total
Professional courses	66	771
Customised courses	9	94
Total	75	865

## 9.4 Conferences

In 2017 CZ.NIC organised two conferences, the focus of which was internet technologies and IT, in the Czech Republic in cooperation with its partners. A two-day conference Internet and Technologies (17) took place from June 20 to June 21, 2017 and introduced topics which are of interest in DNS, the Turris project, popular internet security and other current internet-related topics. The conference included supporting activities such as a workshop. The registrars and other guests introduced their innovations here. The conference was attended by 164 people and 2,206 viewers were watching the lectures on-line.

A one-day continuation of the Internet and Technologies (Feb 17) took place on Nov 24 on the premises of the National Technical Library. The conference offered lectures exclusively by the association's employees who informed about the changes in infrastructure of authoritative DNS servers for the CZ domain.

They also informed about the results of the analysis of DNS queries and about the preparations for the transition from the backend FRED system to the modern C++. Also, the representatives of the Datovka, Knot DNS, Tablexia and Turris projects made their contributions. The conference was attended by 100 visitors and 543 viewers were following it on-line.

The CZ.NIC association was presenting itself in 2017 at many professional events and conferences in the Czech Republic and abroad. We can for example mention Otevřená data ve veřejné správě 2017 (Open Data in Public Administration 2017), Doba digitální (The Digital Age), Mobile Internet Forum, Eduspace, SecurityFest, ISSS 2017, Suricon, Kam kráčí telekomunikační sítě (Where are telecommunication networks heading), OpenWRT Summit, Open Data Expo, OpenAlt, LAW FIT, Linux Days,

Communication Wednesday, sCool Web, the SECURITY 2017 conference, the OSS weekend and InstallFest.

Together with its partners Comcast and NBC Universal, CZ.NIC was hosting the international meeting of internet experts, researchers and engineers IETF 99 in accordance with the association's policy. A total of 1,230 participants came to attend this meeting in Prague between July 16 and 21.

## 9.5 CZ.NIC editions

Publishing books from our domain and popularisation books with topics connected with the Internet and its technologies has become the traditional awareness-raising activity of CZ.NIC. In the CZ.NIC edition printed, and electronic books are published. The electronic versions are available for free download at the knihy.nic.cz website and also in the content distributors network (Palmknihy, Wooky, eReading and the City Library in Prague) in the PDF format or other formats designated for e-book readers. Printed books are now available in the Kosmas, Euromedia Group and Pemic Books distribution networks, which opens the door to the shelves of hundreds of retail and internet book stores for them.

In 2017 the Edition received two new titles and now counts 16 publications. During the first six months the title "Průvodce labyrintem algoritmů" (A Guide Through the Algorithm Labyrinth) by Martin Mareš and Tomáš Valla was published. The second book published in 2017 is "Hradla, volty, jednočipy - Úvod do bastlení" (Gates, volts, Single Chips - An Introduction into DIY) by Martin Malý, intended for all those enthusiastic about electronics, numerals technologies and DIY activities for the Internet of Things.



# 10 Cooperation and partnerships

Today, without exaggeration, the Internet is the most important communication tool that connects tens of millions of users across continents, including Antarctica. We can often hear that the Internet has no borders and does not fall under the authority of any government. This does not mean, however, that the Internet would not be controlled and had no rules. Contrary to many other fields, these rules are often created by the internet community (with a significant portion of pride, we can say that even the staff of the association have their part in it) who are one big family of fans and supporters of this worldwide network. To ensure that no efforts of any member or organisation are in vain, mutual cooperation is essential, both on the national and international level.

Co-operation with domestic partners helps find the most acceptable system for national domain administration for the Czech user and at the same time contribute, mostly thanks to the projects of our Laboratories, to the expansion of new technologies and the development of the information society.

International cooperation helps not only follow world trends, but also - thanks to active participation of the association's employees - contributes to their creation and shaping, which affects our everyday lives.

Thanks to its high level of expertise, the representatives of the association, both management and staff, are the welcome guests in domestic and international expert forums.

## 10.1 Czech Republic

Thanks to the importance of the implemented activities, CZ.NIC is the natural partner of both public administration and interest associations operating in the Internet domain.

### 10.1.1 Cooperation with public administration

The importance of the domain name administration system and related Internet infrastructure is comparable to that of other critical infrastructures, for example in the energy and transport sectors. The CZ.NIC association, as the administrator of the national domain .CZ, considers the protection of this infrastructure its duty and a moral obligation to the Czech Republic. It follows up to the co-operation with a number of state bodies such as the National Security Authority, the National Cyber and Information Security Agency (NÚKIB), the Czech Telecommunication Office, the Ministry of the Interior and the Ministry of Industry and Trade.

Cooperation with the Czech state in the field of critical infrastructure deepened further in 2017 thanks to the "Zabezpečení DNS serverů v ČR" (Securing DNS servers in the CR) project (see [Grant projects](#)) implemented under the Security Research for the Needs of the State scheme in 2016-2019.



The representatives of the CZ.NIC association from the "Development Projects" department made significant contributions to the implementation of Regulation (EU) No. 910/2014 of the European Parliament and Council of 23 July 2014 on electronic identification and trust-building services for electronic transactions in the internal market (the so-called EIDAS regulation). Our colleague Jiří Průša was working in the European Commission and the Ministry of the Interior expert groups and has become a sought-after and respected expert in this European legislation in this connection.

Another activity which has recently started in cooperation with the public administration was cooperation on the so-called School Connectivity Standard within the funding from the Integrated Regional Operational Programme (IROP).

The "Standard konektivity" (Connectivity Standard) tool was developed for the needs of the Ministry for Regional Development and the individual recipients – schools within the MoQoS project (see chapter [Grant projects](#)).

The Association also cooperates with the Czech Police, execution authorities, the courts and authorities according to the legal authorisation, i.e. the Office for Personal Data Protection, trade and financial authorities, Czech Trade Inspection Authority, the Customs Administration, etc.

Like in previous years, the CZ.NIC association supported the Zlatý erb (Golden Coat of Arms) competition for the best website of the city and municipality in 2017.

Being the technical partner in the competition, the association writes the evaluation criteria for the "Support of IPv6 and DNSSEC" and participates in the evaluation of other criteria as well.

And last but not least, CZ.NIC was cooperating with the Prague Municipal Authority which supported the international conference IETF 99th in 2017 by organising the evening ceremony.

## 10.1.2 Collaboration with the non-profit sector and social responsibility

### Člověk v tísní (People in need)

Other social activities of the CZ.NIC association include the support of the Člověk v tísní (People in Need) Foundation, in particular its *Jeden svět na školách* (One World in Schools) educational project, which offers schools documentary films and accompanying methodological aids to teach current topics of the contemporary world and modern history.

### Forum for open data

The CZ.NIC association continued its partnership with the Forum for Open Data, which was created on the basis of the Otakar Motejl Fund's initiative and thanks to the support of the Faculty of Informatics and Statistics of the University of Economics and the Faculty of Mathematics and Physics of Charles University. The key task of this activity is to show the possibilities of using open data in practice and provide methodological and consulting support to the public administration and general public. The CEO of the association, Ondřej Filip, was the chairman of the expert jury of the 5th year of the competition

*Společně otevíráme data* (We jointly open the data) that appreciated the best student and public applications using open data for socially beneficial services.

### Helping animals

The CZ.NIC association has been contributing in the long term to the Prague and Zlín Zoos to the breeding of the Australian cassowary, whose original home is New Guinea and Australia. In the Czech Republic, we can rarely see its relative cassowary domain, who has hardly been scientifically studied. You can study it in detail at [www.kasuar.cz](http://www.kasuar.cz).

### The Srdce na dlani (The Heart on the Palm) endowment fund

Committed to the support of children from children's homes, the CZ.NIC association became a partner of the charity concert commemorating the 15th anniversary of the Srdce na Dlani endowment fund which took place on November 29, 2017 in the National House in Vinohrady. The proceeds from the benefit concert of the endowment fund were used for activities of children from children's homes.

## 10.1.3 Membership in industry and interest organisations

### Czech Television - Děčko

In April 2017 Jiří Průša became a member of Děčkolegia, an informal union of consultants providing expert advice, feedback and opinions on the programme and contents of the popular children's channel Děčko of the Czech TV. He was helping with making the parents familiar with media-related topics.

### NIX.CZ

The largest Czech Internet Exchange Point (IXP) covers domestic and foreign Internet service providers for the interconnection of their networks.

The NIX.CZ association is the largest IXP in the Czech Republic and one of the most important ones in the world. The CZ.NIC association is a member of NIX.CZ and actively contributes to its activities primarily through the FENIX project. Important is also the use of the CZ.NIC Laboratories products, especially BIRD within NIX.CZ.

### Involvement in the FENIX project

CZ.NIC helped establish the FENIX node on the platform of the biggest Czech peering node NIX.CZ in 2013. Its aim is to provide availability of internet services between entities involved in this activity in case of massive DoS attacks. The FENIX project is intended for businesses

providing connectivity for major connectivity and content providers who need to secure their operation also in the most critical situations.

Any entity that meets the entry terms can join the FENIX project. These terms go hand in hand with the values of CZ.NIC and its mission, i.e. development of a transparent, secure and stable internet infrastructure and services of general interest. This primarily involves the development of trustworthy, secure and stable Internet infrastructure and services of general benefit. To join the FENIX project, the applicant must for example run its CERT/CSIRT team, support IPv6 and DNSSEC, have the response rate limiting implemented and use BCP-38 source address filtering in its network.

## 10.2 From abroad

Thanks to the activities of the association on the international internet scene or interested foreign organisations are increasingly selecting CZ.NIC as a partner for cooperation and the Czech Republic as the venue for their meetings. The CZ.NIC association welcomes this fact, as the representatives of the local Internet community gain easier access to interesting topics as well as to leading experts from the world of the Internet.

### 10.2.1 Membership in industry and interest organisations

#### APWG (Anti-Phishing Working Group)

A global coalition of private companies, state institutions and security forces focused on the global fight against cyber-crime, especially spam.

#### CENTR (Council of European National Top-Level Domain Registries)

A non-profit organisation associating top-level and national top-level domain name administrators. It primarily targets European registries, but among the members are also the representatives of more remote regions – e.g. Canada or Japan. Since 2001 CZ.NIC has been the member of different task groups and was sending two representatives to their meetings in 2017: Jaromír Talíř (CENTR Technical Working Group) and Bedřich Košata (CENTR R&D Working Group) who were heading the groups.

#### Cybersecurity DSI Governance Board

As part of international cooperation between the CERT and CSIRT teams in the building of European digital infrastructure (DSI), the representatives of development project units were engaged in activities of the Cybersecurity DSI Governance Board set up within the SMART 2014/1079 project.

## DNS-OARC (The Domain Name System Operations, Analysis and Research Center)

A trustworthy platform on which the key entities are meeting and sharing their experience in DNS operation, analyses and research, so that they can best coordinate their work in the most efficient way possible, particularly in the area of security.

In 2017, after Ondřej Surý left his post in DNS-OARC, already the third representative of the Czech Republic and CZ.NIC, Jaromír Talíř, was appointed as his successor.

## EURid (The European Registry of Internet Domain Names)

An association which, under the authority of the European Commission, administers the .eu Top Level Domain. CZ.NIC is an associate member and has a representative in the board.

## EuroISPA (European Internet Services Providers Associations)

The European Internet Service Provider (ISP), the largest organisation bringing together more than 2,300 organisations around the world. The main objective of EuroISPA, to which CZ.NIC is a member since 2008, is to represent ISPs within the legislative processes of the European Union and facilitate the exchange of experience between individual internet services providers.

## The CSIRT Network

An interest group of CSIRT teams which fulfills the role of the contact point for obligated persons identified in the NIS directive. The CZ.NIC

association, through the CSIRT.CZ team, fulfills the role of the CSIRT team for digital service providers and is therefore expected to participate in this group. The group primarily deals with technical issues related to the implementation of this agenda. In 2017 the CSIRT.CZ team was active in all the meetings.

## FIRST

The First international organisation associating security teams. It has 400 members and American and European teams are represented to a significant degree. It is the only organisation that provides membership to teams from around the world and also covers product teams. The team became member of the FIRST organisation in 2015.

## ICANN (Internet Corporation for Assigned Names and Numbers)

An international non-profit organisation founded in 1998, the main task of which is not only to administer and assign generic top-level domain names (gTLDs) and top-level national domain names (ccTLDs) but also IP addresses. The CZ.NIC association, as a national domain administrator, sends its representatives to regular meetings and its experts actively participate in activities of the working groups. Ondřej Surý is a member of the Root Server System Advisory Committee Caucus (RSSAC) and the Registry Services Technical Evaluation Panel (RSTEP), and Ondřej Filip, the CZ.NIC CEO, acts as a member of the prestigious SSAC (Security & Stability Advisory Committee) committee.

## IETF (Internet Engineering Task Force)

An organisation founded in 1986, which is directly linked to the birth of the Internet. It includes an international community of leading experts, network architects and representatives of the commercial

sphere. IETF approves and enforces Internet standards, so-called RFC documents, which govern most Internet traffic, and our employees are actively involved in some of them. The meeting of the members of this organisation has also taken place several times thanks to the cooperation of the CZ.NIC association in Prague. In 2017 it was already 99th meeting.

## **INHOPE (International Association of Internet Hotlines)**

An international association of the so-called hotlines seeking to eliminate illegal on-line content, particularly child pornography. CZ.NIC and its hotline STOPonline.cz became an associate member of the INHOPE on June 14, 2017. The main benefits of membership in INHOPE include access to the IC-CAM database and the possibility of efficient cooperation with other countries and such institutes as INTERPOL and EUROPOL in the removal of illegal content.

As part of the STOPonline.cz hotline operation, the association started cooperating with the National Centre against Organised Crime.

## **RIPE NCC (Réseaux IP Européens Network Coordination Centre)**

An independent non-profit organisation supporting the Internet infrastructure. Its core activities include the RIR operation (Regional Internet Registry) which allocates Internet resources and related services (such as IP addresses) to its members. The CZ.NIC association, as one of the members, attends not only regular meetings, but also participates in other thematic meetings and trainings organised by this organisation.

## **TF-CSIRT**

TF-CSIRT is an organisation associating security teams mostly from Europe. The CSIRT.CZ and CZ.NIC-CSIRT team it its accredited member. In 2017 Zuzana Duračinská was representing the CZ.NIC-CSIRT and CSIRT.CZ teams in the Steering Committee of this organisation.



# 11 Grant projects

In line with its long-term objective of developing Internet technologies and the information society and the medium-term concept of the association for the years 2016-2019, the CZ.NIC association is actively involved in the investigation of grant projects.

Thanks to the great success, grant projects are an increasingly important source of funding for the entire association, of which some parts (mostly the CSIRT.CZ security team) are now largely paid from these funds. Grant projects are also contributing to a significant degree to the development of the Turris project.

Implementation of new projects on the European and national level commenced in 2017. More project was prepared and their implementation shall start in 2018. This means that the volume of funding which CZ.NIC gets from these sources will increase again.

## 11.1 Involvement in European cooperation projects

European cooperation projects represent not only a significant source of income for CZ.NIC, but also the possibility of participating in unique projects that often help determine the future direction of the information society.

Within the projects supported by the European Commission from the European Interconnection Facility (CEF), CZ.NIC became the most successful Czech applicant and even one of the most successful in the

whole EU. Thanks to these projects, CZ.NIC is significantly involved in building infrastructure intended primarily for cross-border electronic services of the public administration. The implementation of these projects also helps strengthen the status of the association as a trusted partner of the state.

Thanks to its unique experience in the CEF programme, CZ.NIC started offering grant advice to other entities such as the security teams from Latvia and Austria, for which they prepared commercial proposals for their projects for European Commission funding.

The following projects were implemented with the support of the European Commission in 2017:

### CZ.PEPS (Czech Pan European Proxy Services)

The objective of the CZ.PEPS project, launched in January 2016, is primarily the implementation and operation of national infrastructure (so-called eIDAS node) for cross-border recognition of electronic identification in Europe in accordance with Regulation No. 910/2014 of the European Parliament and Council (eIDAS). As part of this project funded by the European Commission through the Connecting Europe Facility, it is envisaged that it will be connected with the National Identity Authority (NIA) established by the Ministry of the Interior and/or Basic Registries Administration. The project ensures the operation of the node until the end of 2019, i.e. more than one year after the legal effect of the relevant eIDAS provisions.

## e-SENS (Electronic Simple European Networked Services)

Implementation of a project aimed at supporting electronic services and tools such as electronic identification or electronic delivery of documents started in April 2013. The aim of the project is to help support the development of the digital single market and e-services of the public and private sectors.

## MoQoS (Open crowdsourcing data related to the quality of service of high-speed Internet)

Since January 2017, CZ.NIC has been heading the international consortium of a project focused on the building of a multi-platform framework allowing quality measurements of high-speed Internet (QoS) and making it possible to publish the results in the form of open data. Besides the development of functionalities of the NetMetr app, a tool was developed in 2017 for measurements on Turris routers.

Together with our association, national telecommunication regulators from the Czech Republic (ČTÚ), Slovakia (RÚ) and Slovenia (AKOS), including the Austrian company Specure, are involved in the project.

## SIC CZ (Safer Internet / Bezpečnější Internet)

In 2016 the CZ.NIC association joined the SIC CZ project aimed primarily at enhancing on-line children security and their protection in cyberspace. CZ.NIC operates a hotline where content with sexually abused children, child nudity and cybergrooming can be reported (STOPonline.cz). It is also offering awareness campaigns, lectures and meetings with parents. In 2017 a total of 632 students and 32 parents were trained in them. Another major activity is attendance of conferences for the public and private

sectors. Thanks to the Safer Internet project, CZ.NIC has been deepening cooperation with such organisation as Člověk v tísni (People in Need) and Kraje pro bezpečný internet (The Regions for a Safe Internet) and wants to continue and further develop its recent initiatives.

## Strengthening cyber-security capacities in the Czech Republic

This project shall improve the knowledge and technical capacities of the national security team CSIRT.CZ and prepare it for its new roles arising from the EU Network and Information Security directive (so-called NIS Directive). The project consortium includes the Czech neutral connecting node NIX.CZ which is mostly being developed by the FENIX project in cooperation with CZ.NIC.

# 11.2 Engagement in national projects and other projects

In addition to European projects, the CZ.NIC association also participates in national projects, especially within the framework of Czech security research.

## HaaS (Honeypot as a Service)

The aim of the HaaS project is to develop and implement a so-called public honeypot, to which end-users of the Internet can redirect attacks



on their end devices (typically home routers). In 2017 we managed to launch the central honeypot serving not only the users of the Turris router, but which also other people can use free of charge. The project, supported by the Czech Technology Agency within the Delta scheme, is being developed in cooperation with the Institute for Information Industry from R.O.C. (Taiwan).

## Ludus

This project is supported by the Czech Technology Agency (TACR) within the Epsilon programme and uses the research findings applied by the CTU: machine learning and game theory application and increase in collaborative protection against internet attacks. The network of Turris routers is used as the testing infrastructure under this approach.

## PROKI (Prediction and Protection from Cyber-Incidents)

The aim of the project, supported within the security research of the Czech Republic for the years 2015-2020, is mainly the development of a system addressing the analysis of information on cyber-incidents from a wide range of sources and the evaluation of this information by the National Security Team CSIRT.CZ operated by the CZ.NIC association pursuant to Act No. 181/2014 Coll. on cyber-security. When developed, the system will then enable the sharing of information on cyber-threats among key players, especially national and governmental CERT/CSIRTs and major ISPs.

## Building and verification operation of the Cyber Threat Intelligence (CTI) system

Supported by the Ministry of the Interior of the Czech Republic within the Security Research for the Needs of the State scheme 2016-2021, the project involves the building of an effective mechanism for detecting, identifying and preventing cyber threats and evaluating cyber security incidents. The project also involves the distribution and placement of more than 800 hardware probes based on Turris routers with selected public administration entities who will this way receive better protection against cyber-attacks.

## Securing DNS servers in the Czech Republic

This two-year project implemented within the framework of the Security Research for the Needs of the State scheme in 2016-2019 involves the implementation of research focused on securing DNS servers in the Czech Republic. CZ.NIC will create and develop a software tool for scanning large numbers of domains (typically the ccTLD zone) and a web interface for individual testing. A unique URL database of the public administration will be created under the project as well.



# 12 Structure of the association

# 12.1 Member base

The member base of the association is made up of a number of entities which are significantly involved in the functioning of the Czech Internet. Among the members we can find not only representatives of Internet and telecommunication service providers, domain name registrars, publishers of Internet and printed media, e-commerce entrepreneurs but also entities for which the Internet and domain names are an important communication tool.

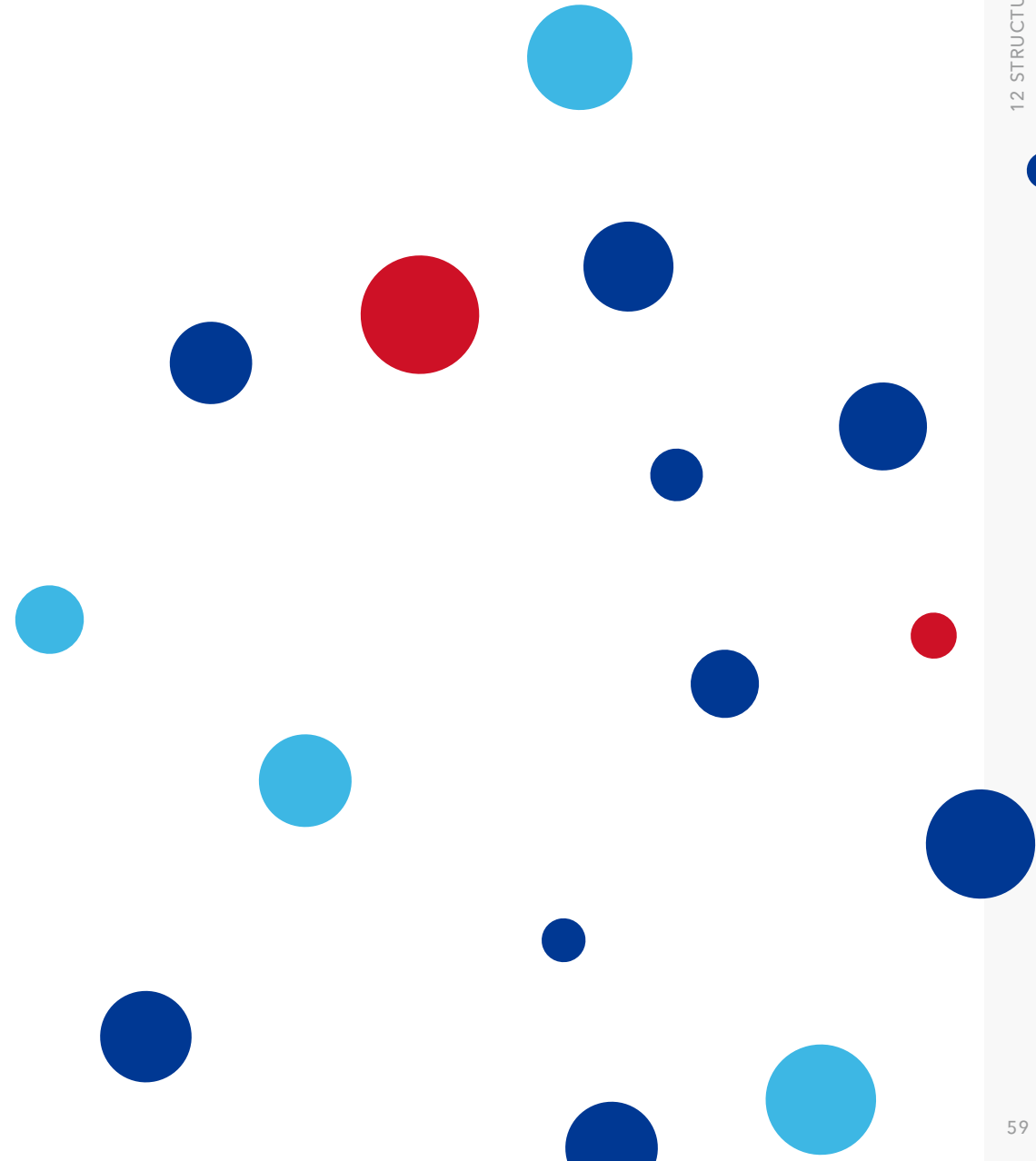
The CZ.NIC association is one of the places where these representatives can meet and so influence the future direction of the Czech Internet. The wide range of members' business activities and their involvement in the activities of the association, either through participation in general meetings, working groups and seminars, in e-mail conferences or directly in the bodies of the association, enriches and extends the knowledge portfolio of the association, makes its management more effective and responds to the constant development that is so typical of the Internet.

## Membership terms

Any legal entity that fulfills the general membership terms, including the location of a registered office or an organisational unit on the territory of one of the Member States of the European Union, the holding at least one domain name in ccTLD .CZ and payment of an entry membership fee, can become member of the association.

The members of the association are divided into three chambers - a chamber of domain name holders, an ISP chamber and a registrar chamber. The special conditions of the membership in the individual chambers are governed by the statutes. The chamber arrangement brings benefits to the members of the association who can easily specify and

defend their opinions and interests together with other similarly oriented entities. The chamber arrangement also streamlines the course and the meetings of the association bodies, in particular board and general meetings.



## 12.1.1 Members count according to chambers

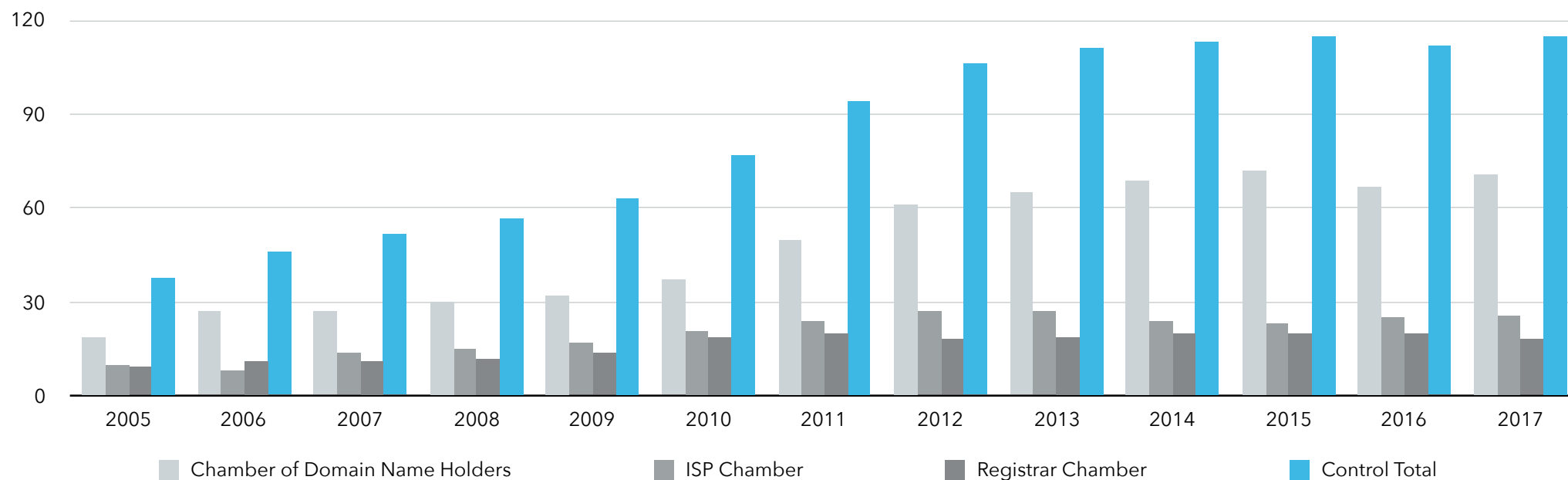
As of 31 Dec 2017 CZ.NIC had a total of 115 members. Four new members joined the chamber of domain name holders: one member in the ISP chamber and two members left the chamber of registrars, because they ceased to be the domain name registrars and became members of the chamber of domain name holders.

### Member division according to chambers

Chamber of Domain Name Holders	61 %
ISP Chamber	23 %
Registrar Chamber	16 %

### Member count development by chamber

Year	Chamber of Domain Name Holders	ISP Chamber	Registrar Chamber	Control Total
2005	19	10	9	<b>38</b>
2006	27	8	11	<b>46</b>
2007	27	14	11	<b>52</b>
2008	30	15	12	<b>57</b>
2009	32	17	14	<b>63</b>
2010	37	21	19	<b>77</b>
2011	50	24	20	<b>94</b>
2012	61	27	18	<b>106</b>
2013	65	27	19	<b>111</b>
2014	69	24	20	<b>113</b>
2015	72	23	20	<b>115</b>
2016	67	25	20	<b>112</b>
<b>2017</b>	<b>71</b>	<b>26</b>	<b>18</b>	<b>115</b>



## 12.1.2 List of chamber members list

### Chamber of Domain Name Holders (company, reg. No.)

ABRATICA s. r. o.	26108534
ACOMWARE s. r. o.	25047965
ADAPTIVITY s. r. o.	24156027
AdminIT s. r. o.	27864901
Advio Network, s. r. o.	28565673
AKREDIT, spol. s r. o.	25797387
ALEF NULA, a. s.	61858579
ALENSA, s. r. o.	27179681
AliaWeb, spol. s r. o.	26117363
Asociace pro elektronickou komerci, z. s.	68684797
AUDITEL, s. r. o.	26775034
CD PROFESIONAL security agency, s. r. o.	25712713
CISCO SYSTEMS (Czech Republic) s. r. o.	63979462
ComSource s. r. o.	29059291
Com-Sys TRADE spol. s r. o.	16188781
CQK HOLDING a. s.	28405579
CYBERSALES a. s.	26199653
Datahost s. r. o.	26390973
DELL Computer, spol. s r. o.	45272808
ECOMOLE LTD.	9526615
ekolo.cz s. r. o.	27141659
EXPLORER a. s. v likvidaci	26726653
Fortion Networks, s. r. o.	26397994
Greenlux s. r. o.	28608747
Holubová advokáti s. r. o.	24686727

H17 Networks, s. r. o.	27374041
ICZ a. s.	25145444
igloonet, s. r. o.	27713482
I. H. P. společnost s ručením omezeným	48117846
INBES, spol. s r. o.	14502593
Intell. Net s. r. o.	27971546
Internet Info, s. r. o.	25648071
Internet Mall, a. s.	26204967
i - registry s. r. o.	28451082
Klíč, spol. s r. o.	28129377
Laurián s. r. o.	29018919
MAFRA, a. s.	45313351
MARIAS s. r. o.	26136139
MASANTA s. r. o.	25730533
MEDIA FACTORY Czech Republic a. s.	26288311
Michal Krsek & partneři s. r. o.	27418570
MITE Infonet s. r. o.	25660292
Moonlake Web Services, s. r. o.	29249911
Neutral czFree eXchange, z. s. p. o.	75093201
NEW MEDIA GROUP s. r. o.	26124611
Nux s. r. o.	27234631
Občanské sdružení Ubuntu pro Českou republiku	22674608
Orego finance s. r. o.	24718955
Panificium, s. r. o.	4526767
PharoCom s. r. o.	25172131
Prague Business Office s. r. o.	27143481
Pražský Účetní Servis s. r. o.	26740575
Q3, s. r. o.	26226073
Seznam.cz, a. s.	26168685
Skymia s. r. o.	28238613
Software602 a. s.	63078236
Socha, spol. s r. o.	48291153
SuperNetwork s. r. o.	25492063
SVBsoft, s. r. o.	28523644

Tech Ware spol. s r. o.	14891107
TIKWI s. r. o.	28917651
Trustica s. r. o.	26514362
Unie vydavatelů, z. s. (Czech Publishers Association)	15887081
ÚVT, s. r. o.	25701118
Vema, a. s.	26226511
VIZUS.CZ s. r. o.	27155315
VOLNÝ, a. s.	63080150
Vymáhání a odkup pohledávek s. r. o.	27566510
Webarium, s. r. o.	26089602
Webnames s. r. o.	44848692
1X s. r. o.	44632142

## ISP Chamber (company, reg. No)

ABAK, spol. s r. o., čes. ABAK, GmbH něm. ABAK, Co.Ltd. angl.	40763153
CASABLANCA INT s. r. o.	25079832
CentroNet, a. s.	26165473
CESNET, z. s. p. o.	63839172
COOLHOUSING s. r. o.	14893983
ČD - Telematika a. s.	61459445
České Radiokomunikace a. s.	24738875
Dragon Internet a. s.	27237800
Družstvo EUROSIGNAL	26461129
Faster CZ spol. s r. o.	60722266
FreeTel, s. r. o.	24737887
INTERNEXT 2000, s. r. o.	25352288
IPEX a. s.	45021295
ISP Alliance a. s.	28205812
JHComp s. r. o.	26051362
LAM plus s. r. o.	25129619
Mach3net s. r. o.	27344860

Master Internet, s. r. o.	26277557
NetArt Group s. r. o.	27612694
PODA a. s.	25816179
Qnet CZ s. r. o.	25518097
STARNET, s. r. o.	26041561
T-Mobile Czech Republic a. s.	64949681
ÚVT Internet s. r. o.	24288705
VSHosting s. r. o.	61505455
2 connect a. s.	29007542

## Chamber of Registrars (company, reg. No)

ACTIVE 24, s. r. o.	25115804
Dial Telecom, a. s.	28175492
e-BAAN Net s.r.o.	26867257
GENERAL REGISTRY, s. r. o.	26027267
Gransy s. r. o.	28087755
IGNUM, s. r. o.	26159708
INTERNET CZ, a. s.	26043319
KRAXNET s. r. o.	26460335
Media4web, s. r. o.	26735903
ONE.CZ s. r. o.	25503651
ONEsolution s. r. o.	27710335
O2 Czech Republic a. s.	60193336
Seonet Multimedia s. r. o.	27522041
Stable.cz s. r. o.	28741048
TELE3 s. r. o.	26096960
TERMS a. s.	14499037
Web4U s. r. o.	26058774
ZONER software, a. s.	49437381

# 12.2 Bodies of the association

## General Meeting

The supreme body of the association is the General Assembly, in which all members of the association are members. They are divided into three chambers - Registrar Chamber, ISP Chamber, and Chamber of Domain Name Holders. Each member of the association has the right to participate in the General Meeting and promote its ideas, provide opinions and comments.

## College

The college is a body of the association consisting of members elected by the individual chambers of the general assembly and/or by other persons. The powers of the college include for example approvals of the conception and budget of the association, approve contracts made between the association and the state, electing and recalling members of the board of directors and members of the supervisory board. The college has a total of 21 members, of which 18 members elect the individual chambers of the general assembly. Three members are nominated by public administration bodies. The term of office for the College members is three years.

## Members of the College elected by the general assembly from 1 Jan to Dec 31, 2017

### Chamber of Domain Name Holders

Antoš Marek - re-elected at BM 13. Dec 2017  
Ohnesorg Dan  
Pajr Michal  
Redl Jan - re-elected at BM 13. Dec 2017 Šváb Jan  
Vorlíček David

### ISP Chamber

Filip Ondřej - re-elected at BM 13. Dec 2017 Košnar Tomáš  
Kysela Jiří  
Pečínka Vlastimil - re-elected at BM 13. Dec 2017 Pospíchal Zbyněk  
Taft Karel

### Chamber of Registrars

Fiala Tomáš Kukačka Martin Kysela Stanislav Syrovátka Erich  
Šmída Petr - re-elected at BM 13. Dec 2017  
Štětina Jaroslav - re-elected at BM 13. Dec 2017

### College members nominated by state administration bodies:

Marie Moravcová, Economic Chamber of the Czech Republic  
Markéta Petruňová (until 31 Jan, 2017),  
Tereza Vyleťalová (since Feb 2, 2017), Ministry of Industry and Trade  
Jiří Peterka, Czech Telecommunication Office

## 12.3 Board of Directors

The Board of Directors is the statutory body that represents and controls its activities. The powers of the Board of Directors include approvals of domain name registration rules or other services provided. The Board of Directors consists of five members whose term of office is three years. The election and dismissal of the members of the Board of Directors lie within the scope of competence of the College.

### Members of the Board of Directors from Jan 1 to Dec 31, 2017

Karel Taft (\*1971), Chairman of the Board of Directors  
 Marek Antoš (\*1979), Vice Chairman of the Board of Directors  
 Tomáš Košnar (\*1965), Member  
 Martin Kukačka (\*1980), Member  
 Jiří Kysela (\*1955), Member

## 12.4 Supervisory Board

The Supervisory Board represents the control body of the association which oversees the exercise of the powers of the Board of Directors and the activities of the association. The Supervisory Board is a three-member board and the term of office of its members is, as for the Board of Directors, three years.

### Members of the Supervisory Board from Jan 1 to Dec 31, 2017

Jan Redl, Chairman of the Supervisory Board  
 Ilona Filípková, Member  
 Vlastimil Pečínka, Member

## 12.5 Management

Ondřej Filip, CEO  
 Martin Peterka, Head of Operation and Deputy CEO  
 Zdeněk Brůna, Technical Director  
 Ladislav Lhotka, Head of Research Team (CZ.NIC Labs) since July 1, 2017  
 Bedřich Košata, Head of Research Team (CZ.NIC Labs) from Jan 1 to June 30, 2017  
 Jaromír Talíř, Technical Partner  
 Ondřej Surý, Technical Partner, from Jan 1 to Sept 24, 2017  
 Ondřej Písek, Marketing Director  
 Vilém Sládek, PR Manager



# 13 Human Resources

The strength of the association lies in the professionally competent and qualified employees who are essential for achieving its mission and further development. For many employees it is possible to say without exaggeration that they are leading experts in the field who have not only domestic but also international reputation. To strengthen individual competencies, all employees are continuously educated, both in the field of foreign languages, so-called soft skills, and in professional knowledge, so that they can achieve the highest possible professional and personal qualities and contribute with their knowledge and skills to further development of the Czech Internet and the association.

## 13.1 Staffing and development

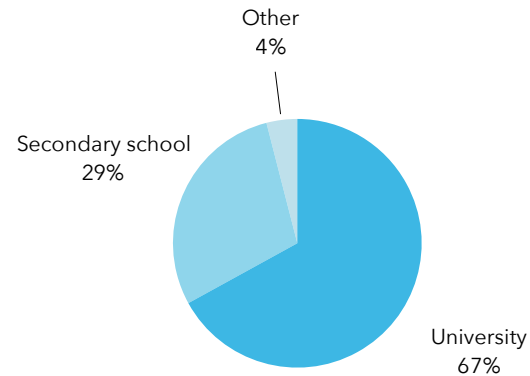
In 2017 an increase in the number of employees of the association continued, reflecting above all the need for staffing for the development and implementation of new activities. Significant staff growth occurred in the CZ.NIC Laboratories in connection with the Turris project and the expansion of other projects in line with the concept of the association. The team of network administrators, providing the registry operations and infrastructure, was reinforced. The number of employees grew by nine in 2017.

Department	Number of employees 1 January 2017	Number of job positions 1 January 2017	Number of employees 31 December 2017	Number of job positions 31 December 2017
<b>Lead workers</b>	8	8.00	7	7.000
<b>Marketing/PR</b>	6	6.00	8	7.500
<b>CZ.NIC Academy</b>	2	2.00	2	2.000
<b>Development</b>	19	17.90	18	16.800
<b>Network administration</b>	8	7.30	10	9.375
<b>CZ.NIC Laboratories</b>	49	41.05	55	43.800
<b>Legal department</b>	2	1.25	2	1.625
<b>Administrative workers</b>	3	2.25	3	2.250
<b>Customer support</b>	12	12.00	12	12.000
<b>CSIRT Security Team</b>	10	8.45	10	8.450
<b>EU projects</b>	2	2.00	2	2.000
<b>Total</b>	<b>121</b>	<b>108.20</b>	<b>129</b>	<b>112.800</b>

# 13.2 Structure of employees

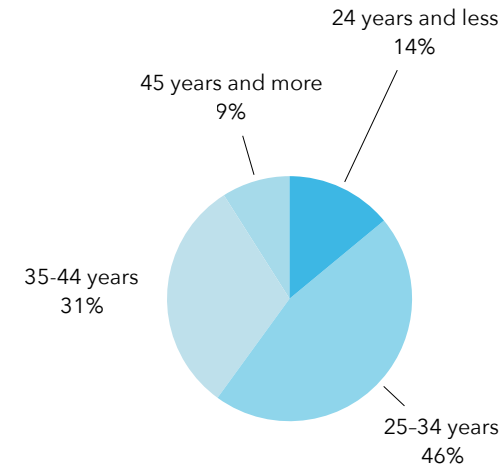
## Structure of employees by education

Most employees of the association have a university degree. The CZ.NIC association gives an opportunity to acquire professional experience also to fresh graduates from universities, for which it is trying to build suitable conditions and places them in its branches in Brno, České Budějovice and Plzeň. As a result of this, the association again managed to maintain a high portion of university graduates among its employees in 2017.



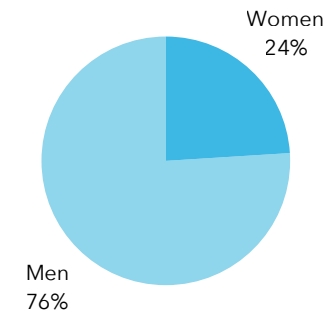
## Structure of employees by age

The average age of employees of the association is 33 years. In terms of the age structure, employees aged between 25 and 34 prevail, mainly due to the high number of university graduates and the support of university graduates.



## Structure of employees by gender

In recruiting new employees, CZ.NIC encourages equal opportunities and the involvement of women. We managed to increase the share of women in CZ.NIC in 2017. The possibility of working part-time certainly plays a big role in this - the work and family balance. Due to the structure of graduates in the technical branches of higher education institutions, however, the proportion of men still prevails like in other technology companies.



# 14 Selected financial indicators

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Revenues</b>	155,848	119,376	140,994	137,751	136,998	141,912	222,736	199,898	197,704	210,708	<b>305,718</b>
<b>Costs</b>	132,369	65,909	97,799	100,781	104,370	125,352	209,127	186,092	211,703	189,057	<b>295,442</b>
<b>Profit after tax</b>	23,479	53,467	43,195	36,970	32,628	16,560	13,609	13,806	13,999	21,650	<b>10,276</b>

# 15 Balance Sheet

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Assets total</b>	171,222	221,778	275,087	312,202	361,566	387,674	405,154	431,392	449,278	491,643	<b>503,747</b>
<b>Fixed assets</b>	8,381	8,135	8,268	12,258	8,781	63,840	77,095	101,406	89,398	84,611	<b>85,885</b>
<b>Intangible assets</b>	3,806	1,522	0	0	0	300	249	331	281	1,914	<b>659</b>
<b>Tangible property</b>	4,575	6,613	8,268	12,258	8,781	63,540	76,846	101,075	89,117	82,697	<b>85,226</b>
<b>Financial investments</b>											
<b>Securities</b>											
<b>Current assets</b>	161,456	212,200	265,160	292,563	351,125	322,087	326,095	327,745	358,842	406,080	<b>416,699</b>
<b>Stocks</b>	55	211	48	184	278	189	277	453	798	14,340	<b>20,829</b>
<b>Long-term receivables</b>		715	1,196	1,351	1,379	1,335	59	59	58	58	<b>304</b>
<b>Short-term receivables</b>	1,018	1,051	1,851	4,338	12,180	10,676	18,540	22,100	4,948	6,282	<b>16,870</b>
<b>Financial property</b>	160,383	210,223	262,065	286,690	337,288	309,887	307,219	305,133	353,038	385,400	<b>378,696</b>
<b>Other assets</b>	1,385	1,443	1,659	7,381	1,660	1,747	1,964	2,241	1,038	952	<b>1,163</b>
<b>Liabilities total</b>	171,222	221,778	275,087	312,202	352,036	387,674	405,154	431,392	449,278	491,643	<b>503,747</b>
<b>Own equity</b>	77,535	131,181	174,197	211,167	243,795	261,094	274,591	288,397	302,395	324,045	<b>332,308</b>
<b>Registered capital</b>											
<b>Capital funds</b>											
<b>Profit funds</b>	7,627	7,627	7,627	7,627	44,597	44,597	93,784	107,393	121,198	135,197	<b>156,847</b>
<b>Economic result of past years</b>	46,429	69,908	123,375	166,570	166,570	199,937	167,198	167,198	167,198	167,198	<b>165,185</b>
<b>Economic result of the accounting period</b>	23,479	53,646	43,195	36,970	32,628	16,560	13,609	13,806	13,999	21,650	<b>10,276</b>
<b>Foreign sources</b>	13,706	16,764	13,851	14,877	15,988	17,684	27,479	22,497	32,140	48,059	<b>53,906</b>
<b>Reserves</b>					9,530	884	1,832	1,662	2,662	2,359	<b>3,064</b>
<b>Long-term liabilities</b>		193					241	304	1,344	617	<b>8,571</b>
<b>Current liabilities</b>	13,706	16,571	13,851	14,877	15,988	16,559	25,343	20,600	28,134	45,083	<b>42,271</b>
<b>Bank loans</b>											
<b>Other liabilities</b>	79,981	73,833	87,039	86,158	92,253	108,896	103,084	120,498	114,743	119,539	<b>117,533</b>

# 16 Profit and Loss Statement



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Performance and sales</b>	147,564	108,671	109,764	120,980	127,135	134,030	142,295	155,134	167,480	195,269	<b>196,746</b>
<b>of which earnings and sales</b>	144,740	108,671	109,764	120,980	127,133	134,144	138,755	150,880	166,318	194,897	<b>196,746</b>
<b>Activation</b>	2,824	0	0	0	0	0	3,379	4,044	797	153	<b>0</b>
<b>Performance consumption and costs</b>	88,668	19,509	27,572	37,451	44,440	70,414	67,042	66,335	64,701	73,668	<b>75,970</b>
<b>Added value</b>	58,896	89,162	82,192	83,529	82,693	63,616	75,253	88,799	102,779	121,754	<b>120,776</b>
<b>Personnel costs</b>	20,193	20,567	27,113	31,520	39,227	43,328	57,245	66,541	72,930	85,706	<b>98,706</b>
<b>Depreciation of property</b>	6,042	5,851	5,069	6,980	6,145	4,183	4,922	13,296	15,552	16,807	<b>16,524</b>
<b>Clearance of reserves</b>					533	313	1,020	-137	1,020	-124	<b>393</b>
<b>Other operating revenues</b>	246	574	1,156	1,496	1,208	1,082	2,290	2,029	1,800	1,884	<b>12,184</b>
<b>Other operating costs</b>	435	393	433	3,034	351	626	916	1,432	994	1,789	<b>1,865</b>
<b>Operating profit / loss</b>	32,448	63,033	50,566	43,491	37,795	16,245	13,442	9,664	14,259	19,450	<b>15,472</b>
<b>Other financial revenues</b>	7,885	10,054	30,041	15,075	8,435	6,724	78,118	42,736	40,943	13,555	<b>96,788</b>
<b>Other financial costs</b>	7,077	4,129	25,342	11,208	4,623	685	74,915	38,254	39,428	11,731	<b>100,810</b>
<b>Financial result for financial operations</b>	808	5,925	4,699	3,867	3,812	6,039	3,203	4,482	1,515	1,824	<b>-4,022</b>
<b>Financial result for routine business</b>	33,256	68,958	55,265	47,358	41,607	22,284	16,645	14,146	15,774	21,274	<b>11,450</b>
<b>Income tax</b>										-376	
<b>Extraordinary revenues</b>										0	<b>0</b>
<b>Extraordinary costs</b>	9,777	15,312	12,070	10,388						0	<b>0</b>
<b>Extraordinary profit / loss</b>	-9,777	-15,312	-12,070	-10,388						0	<b>0</b>
<b>Profit after tax</b>	23,479	53,646	43,195	36,970	32,628	16,560	13,609	13,806	13,999	21,650	<b>10,276</b>



**17 Sales growth**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Sales</b>	144,741	108,523	109,576	120,701	127,133	134,144	138,755	150,880	166,318	194,897	<b>196,746</b>

# 18 List of contractors acc. to clause 45.4. of the Statutes

<b>ComSource s. r. o.</b>	reg. No. 29059291	5,246,540.12 CZK
<b>Česká televize</b>	reg. No. 00027383	5,562,620.00 CZK
<b>DELL Computer, spol. s r. o.</b>	reg. No. 45272808	3,444,036.10 CZK
<b>Acquisition of DELL HW through third parties</b>		3,371,701.40 CZK



# 19 Data on the facts between the date of the financial statements and the general assembly

No events occurred during the period of time reported affecting the data presented in the 2017 financial statements.



# 20 Auditor's report



## ZPRÁVA NEZÁVISLÉHO AUDITORA pro členy zájmového sdružení právnických osob

### Výrok auditora

Provedli jsme audit přiložené účetní závěrky zájmového sdružení právnických osob CZ.NIC (dále jen „CZ.NIC“) sestavené na základě českých účetních předpisů, která se skládá z rozvahy k 31.12.2017, výkazu zisku a ztráty, za rok končící 31.12.2017, přehledu o změnách vlastního kapitálu, přehledu o peněžních tocích a přílohy této účetní závěrky, která obsahuje popis použitých podstatných účetních metod a další vysvětlující informace. Údaje o CZ.NIC jsou uvedeny v části 1 přílohy této účetní závěrky.

**Podle našeho názoru účetní závěrka podává věrný a poctivý obraz aktiv a pasiv zájmového sdružení právnických osob CZ.NIC k 31.12.2017 a nákladů a výnosů a výsledku jejího hospodaření za rok končící 31.12.2017 v souladu s českými účetními předpisy.**

### Základ pro výrok

Audit jsme provedli v souladu se zákonem o auditorech a standardy Komory auditorů České republiky pro audit, kterými jsou mezinárodní standardy pro audit (ISA) případně doplněné a upravené souvisejícími aplikačními doložkami. Naše odpovědnost stanovená těmito předpisy je podrobněji popsána v oddílu Odpovědnost auditora za audit účetní závěrky. V souladu se zákonem o auditorech a Etickým kodexem přijatým Komorou auditorů České republiky jsme na CZ.NIC nezávislí a splnili jsme i další etické povinnosti vyplývající z uvedených předpisů. Domníváme se, že důkazní informace, které jsme shromáždili, poskytují dostatečný a vhodný základ pro vyjádření našeho výroku.



### Ostatní informace uvedené ve výroční zprávě

Ostatními informacemi jsou v souladu s § 2 písm. b) zákona o auditorech informace uvedené ve výroční zprávě mimo účetní závěrku a naši zprávu auditora. Za ostatní informace odpovídá představenstvo CZ.NIC.

Náš výrok k účetní závěrce se k ostatním informacím nevztahuje. Přesto je však součástí našich povinností souvisejících s auditem účetní závěrky seznámení se s ostatními informacemi a posouzení, zda ostatní informace nejsou ve významném (materiálním) nesouladu s účetní závěrkou či s našimi znalostmi o účetní jednotce získanými během provádění auditu nebo zda se jinak tyto informace nejeví jako významně (materiálně) nesprávné. Také posuzujeme, zda ostatní informace byly ve všech významných (materiálních) ohledech vypracovány v souladu s příslušnými právními předpisy. Tímto posouzením se rozumí, zda ostatní informace splňují požadavky právních předpisů na formální náležitosti a postup vypracování ostatních informací v kontextu významnosti (materiality), tj. zda případné nedodržení uvedených požadavků by bylo způsobitelné ovlivnit úsudek činěný na základě ostatních informací.

Na základě provedených postupů, do míry, již dokážeme posoudit, uvádíme, že

- ostatní informace, které popisují skutečnosti, jež jsou též předmětem zobrazení v účetní závěrce, jsou ve všech významných (materiálních) ohledech v souladu s účetní závěrkou a
- ostatní informace byly vypracovány v souladu s právními předpisy.

Dále jsme povinni uvést, zda na základě poznatků a povědomí o CZ.NIC, k nimž jsme dospěli při provádění auditu, ostatní informace neobsahují významné (materiální) věcné nesprávnosti. V rámci uvedených postupů jsme v obdržených ostatních informacích žádné významné (materiální) věcné nesprávnosti nezjistili.

### Odpovědnost představenstva CZ.NIC za účetní závěrku

Představenstvo CZ.NIC odpovídá za sestavení účetní závěrky podávající věrný a poctivý obraz v souladu s českými účetními předpisy a za takový vnitřní kontrolní systém, který považuje za nezbytný pro sestavení účetní závěrky tak, aby neobsahovala významné (materiální) nesprávnosti způsobené podvodem nebo chybou.



Při sestavování účetní závěrky je představenstvo CZ.NIC povinno posoudit, zda je CZ.NIC schopno nepřetržitě trvat, a pokud je to relevantní, popsat v příloze účetní závěrky záležitosti týkající se jejího nepřetržitého trvání a použití předpokladu nepřetržitého trvání při sestavení účetní závěrky, s výjimkou případů, kdy představenstvo CZ.NIC plánuje zrušení CZ.NIC nebo ukončení její činnosti, resp. kdy nemá jinou reálnou možnost než tak učinit.

### **Odpovědnost auditora za audit účetní závěrky**

Naším cílem je získat přiměřenou jistotu, že účetní závěrka jako celek neobsahuje významnou (materiální) nesprávnost způsobenou podvodem nebo chybou a vydat zprávu auditora obsahující náš výrok. Přiměřená míra jistoty je velká míra jistoty, nicméně není zárukou, že audit provedený v souladu s výše uvedenými předpisy ve všech případech v účetní závěrce odhalí případnou existující významnou (materiální) nesprávnost. Nesprávnosti mohou vzniknout v důsledku podvodů nebo chyb a považují se za významné (materiální), pokud lze reálně předpokládat, že by jednotlivě nebo v souhrnu mohly ovlivnit ekonomická rozhodnutí, která uživatelé účetní závěrky na jejím základě přijmou.

Při provádění auditu v souladu s výše uvedenými předpisy je naší povinností uplatňovat během celého auditu odborný úsudek a zachovávat profesní skepticismus. Dále je naší povinností:

- Identifikovat a vyhodnotit rizika významné (materiální) nesprávnosti účetní závěrky způsobené podvodem nebo chybou, navrhnout a provést auditorské postupy reagující na tato rizika a získat dostatečné a vhodné důkazní informace, abychom na jejich základě mohli vyjádřit výrok. Riziko, že neodhalíme významnou (materiální) nesprávnost, k níž došlo v důsledku podvodu, je větší než riziko neodhalení významné (materiální) nesprávnosti způsobené chybou, protože součástí podvodu mohou být tajné dohody (koluze), falšování, úmyslná opomenutí, nepravdivá prohlášení nebo obcházení vnitřních kontrol.
- Seznámit se s vnitřním kontrolním systémem CZ.NIC relevantním pro audit v takovém rozsahu, abychom mohli navrhnout auditorské postupy vhodné s ohledem na dané okolnosti, nikoli abychom mohli vyjádřit názor na účinnost jejího vnitřního kontrolního systému.
- Posoudit vhodnost použitých účetních pravidel, přiměřenost provedených účetních odhadů a informace, které v této souvislosti představenstvo CZ.NIC uvedlo v příloze účetní závěrky.

- Posoudit vhodnost použití předpokladu nepřetržitého trvání při sestavení účetní závěrky představenstvem a to, zda s ohledem na shromážděné důkazní informace existuje významná (materiální) nejistota vyplývající z událostí nebo podmínek, které mohou významně zpochybnit schopnost CZ.NIC nepřetržitě trvat. Jestliže dojdeme k závěru, že taková významná (materiální) nejistota existuje, je naší povinností upozornit v naší zprávě na informace uvedené v této souvislosti v příloze účetní závěrky, a pokud tyto informace nejsou dostatečné, vyjádřit modifikovaný výrok. Naše závěry týkající se schopnosti CZ.NIC nepřetržitě trvat vycházejí z důkazních informací, které jsme získali do data naší zprávy. Nicméně budoucí události nebo podmínky mohou vést k tomu, že CZ.NIC ztratí schopnost nepřetržitě trvat.
- Vyhodnotit celkovou prezentaci, členění a obsah účetní závěrky, včetně přílohy, a dále to, zda účetní závěrka zobrazuje podkladové transakce a události způsobem, který vede k věrnému zobrazení.

Naší povinností je informovat představenstvo CZ.NIC mimo jiné o plánovaném rozsahu a načasování auditu a o významných zjištěních, která jsme v jeho průběhu učinili, včetně zjištěných významných nedostatků ve vnitřním kontrolním systému.

Ve Strakonících, dne 15. června 2018

ADU.CZ s.r.o.  
Záměstí 68, 387 06 Malenice  
oprávnění Komory auditorů České republiky číslo 368  
za auditorskou společnost vypracovala Ing. Simona Pacáková, auditor  
auditorské oprávnění Komory auditorů České republiky číslo 1825



Digitálně podepsal Ing.  
SIMONA PACÁKOVÁ  
Datum: 2018.06.15  
00:12:13 +02'00'



# 21 Registered office and contact details

# CZ.NIC, z. s. p. o.

Milešovská 1136/5  
130 00 Praha 3

Company reg. No.: 67985726

VAT reg. No.: CZ67985726

Phone: +420 222 745 111

Fax: +420 222 745 112

[www.nic.cz](http://www.nic.cz)

The Association is registered in the association registry kept with the Municipal Court in Prague, file number L 58624.

CZ.NIC - non-stop customer support

Phone: +420 222 745 111

Tel.: +420 731 657 660

E-mail: [podpora@nic.cz](mailto:podpora@nic.cz)

