!Jp

JP Domain Name Registry Report

Introduction

As technology advances the Internet is being used in more broad and diverse areas of society. The impacts of COVID-19 have continued since 2020, and the trend toward working from home as well as streaming and viewing video online has accelerated, changing social activities and people's lifestyles. As such, the types and volume of information distributed on the Internet are increasing. This shift has raised the importance of communication infrastructure that underpins Internet-based services and technologies, while also underlining the significance of the Domain Name System (DNS) along with domain names that form the basis of the Internet.

With this background, the number of JP domain name registrations surpassed 1.68 million as of January 2022. Of those, 1.13 million are registered as General-use JP domain names, accounting for about 70% of total registrations. 520,000 names are Organizational Type JP domain names, the domain name space categorized by organizational type of registrants. Over 450,000 names are registered under "co.jp," making it the most registered category in Organizational Type JP domain names; many companies are using "co.jp" domain names.

JPRS continued its efforts in 2021 to improve JP domain name services, develop systems and carry out promotional activities to facilitate the use of JP domain names and deliver greater value to users.

The domain name industry has experienced events and crises that pose challenges to the stable operation of the Internet, such as large-scale DNS failures caused by operational errors in some major social media and other services and vulnerabilities detected in DNS software.

As a company supporting the basis of the Internet society through domain names and DNS, JPRS tackles the challenges and risks and provides information in a timely manner. JPRS also actively contributes to discussions on global issues and conveys relevant information to the community in Japan to make the Internet safe for everyone to use.

The management and administration of JP domain names require a high level of commitment to enhancing the public interest and getting ahead in the competition. Recognizing this vital nature of its services and influence on society, JPRS carries out its tasks and publishes the annual "JP Domain Name Registry Report" on its management and administration of JP domain names.

JPRS will continue to ensure that JP domain names remain useful and contribute to the development of the Internet society.

Koki Higashida
President
Japan Registry Services Co., Ltd.

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01·1　Goal of JPRS as the JP Domain Name Registry

Our main objectives as the registry are: to continuously improve the value of JP domain names; to gain stronger support from the local and global Internet community; and to provide domain names as well as management and administration services that contribute to society in an environment where JPRS competes and collaborates with other registries of TLDs[1] and similar service providers.

JPRS defines the following as the core concepts for its services including the management and administration of JP domain names.

Reliability: establishing services with social credibility
Stability: operating and administering stable systems
Usability: providing user-friendly services
Fee Performance: setting reasonable service fees

With the mission of supporting the Internet infrastructure, JPRS considers it important to ensure reliability and stability while pursuing a good balance with usability and fee performance.

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[1] TLD: Top Level Domain

01·2 Major Topics of 2021

In 2021, JPRS continued to contribute to the development of the Internet and worked to enhance its JP registry services and the value of JP domain names in cooperation with the JP Registrars and other related organizations.

Publication of "Internet White Paper 2021" with JPRS Participating in Planning and Editing (January)

"Internet White Paper" is a yearbook that summarizes the current state of the Internet from various perspectives including that of business, society and technology. Its 2021 edition, "Internet White Paper 2021 (subtitle: DX Strategy in the Post-COVID-19 Era)," was published. JPRS has been collaborating with Impress R&D[1], IAjapan[2] and JPNIC[3] in the Internet White Paper Editorial Committee in the planning and steering the White Paper since 2013.

● **https://jprs.co.jp/topics/2021/210129.html (in Japanese)**

Internet White Paper 2021

Addition of "Internet White Paper 2020" to "Internet White Paper ARCHIVES" (February)

"Internet White Paper 2020" published in 2020 was added to "Internet White Paper ARCHIVES," the website organized and operated by the Internet White Paper Editorial Committee.
"Internet White Paper ARCHIVES" is a compendium of Internet White Papers, which are published annually and span from 1996 to the previous year's edition. The archive is publicly available free of charge. Going forward, the white paper that becomes a back issue in the year following its publication will also be added to the archive.

● **https://jprs.co.jp/topics/2021/210205.html (in Japanese)**

Launch of "HISTORY OF 20 YEARS," JPRS's 20th Anniversary Website (February)

"Internet White Paper 2020" published in 2020 was added to "Internet White Paper ARCHIVES," the website organized and operated by the Internet White Paper Editorial Committee.
"Internet White Paper ARCHIVES" is a compendium of Internet White Papers, which are published annually and span from 1996 to the previous year's edition. The archive is publicly available free of charge. Going forward, the white paper that becomes a back issue in the year following its publication will also be added to the archive.

● **https://jprs.co.jp/en/press/2021/210226.html**
● **https://jprs.co.jp/20th/en/**

HISTORY OF 20 YEARS

*1 Impress R&D
　 https://www.impressrd.jp/ (in Japanese)
*2 IAjapan: Internet Association Japan
　 https://www.iajapan.org/index-en.html
*3 JPNIC: Japan Network Information Center
　 https://www.nic.ad.jp/en/

Support for the 23rd Japan Junior/Senior High School Web Contest (March)

JPRS supported the "23rd Japan Junior/Senior High School Web Contest[4]," a Web contest that was held by JAPIAS[5] for junior and senior high school students. JPRS provided 156 General-use JP domain names (both in Japanese and ASCII) free of charge for the works of 78 teams so that they could have original domain names. JPRS also presented the "Best Domain Naming Award" to the team who had chosen the most effective domain name to increase the appeal of their work.

● **https://jprs.co.jp/press/2021/210309.html (in Japanese)**

Participation in Interop Tokyo 2021 (April)

Interop Tokyo 2021 was held as a hybrid event with both in-person and online participation, due to the COVID-19 pandemic.

JPRS ran a booth and held a series of video seminars each of which was given a title starting with "Learn in 5 Minutes." It also organized a presentation-style seminar on site with physical distancing, where the audience could learn the basics of domain names, DNS, server certificates as well as an overview of and countermeasures against subdomain takeovers.

In addition, JPRS provided information to visitors through a panel exhibition and by distributing technical documents.

JPRS booth

● **https://jprs.jp/related-info/event/2021/0430_interop.html (in Japanese)**

Free Cartoon Booklet on the Internet System Sent to Junior and Senior High Schools and Technical Colleges across Japan (May)

As part of its Internet-related educational activities, JPRS set up channels including a special website "https://マンガで学ぶ.jp/" (Learn from Manga) where junior and senior high school and technical colleges could apply to receive educational materials from May 17 to June 30, 2021. Recognizing the growing importance of Internet-related education and the shortage of teaching materials in schools, JPRS has worked on this project since 2010. The number of copies distributed in the last ten years exceeds 310,000.

The material that JPRS distributed is a graphical comic-style booklet entitled "Ponta's Great Adventure in the Network." It contains a story with many illustrations to help readers learn how to reach websites and how a "Domain Name," which is an Internet address, works. In addition, it describes HTTPS, a scheme for ensuring secure telecommunications, in a simple manner.

Ponta's Great Adventure
in the Network

● **https://jprs.co.jp/press/2021/210517.html (in Japanese)**

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[4] Japan Junior/Senior High School Web Contest
http://webcon.japias.jp/ (in Japanese)

[5] JAPIAS: Japan Association for Promotion of Internet Application in School Education
http://japias.jp/ (in Japanese)

Support for SECCON 2021 (from May)

SECCON 2021[*6] was a series of events held from May to December 2021 with the aim of recruiting and training information security personnel and providing a place for hands-on experience with related technologies. JPRS supported SECCON 2021 as a sponsor. It agrees with the purpose of SECCON and has cosponsored it since 2014.

● **https://jprs.co.jp/topics/2021/211206.html (in Japanese)**

Support for "Oshigoto Hakubutsukan," a Career Education Support Program by Asahi Shimbun (June)

Recognizing the importance of career education for the children who will lead the next generation and the benefits of understanding the Internet infrastructure at an early age, JPRS co-sponsored "Oshigoto Hakubutsukan [*7] (Occupations Museum)," a career education support program conducted by Asahi Shimbun Company. JPRS also provided the program with educational materials regarding domain names.

Under the program, "Oshigoto Nenkan (Occupations Yearbook)" is distributed to schools free of charge, and clearly explains to students how businesses and institutions work. The yearbook complies with government guidelines on education and can be used as a teaching tool. A total of 70,000 copies of the 2021 yearbook were donated to about 20,000 elementary schools and 10,000 junior high schools across the country, and the contents are also published on the web version of "Oshigoto Hakubutsukan."

Oshigoto Nenkan 2021

● **https://jprs.co.jp/topics/2021/210621.html (in Japanese)**

Support for Internet Week Showcase Online 2021 (July)

Internet Week Showcase is a free event that features carefully selected programs of the previous year's Internet Week, a conference held by JPNIC in Tokyo every year around November.

JPRS supported Internet Week Showcase Online 2021 as a sponsor and gave a lecture that was an updated version of its lunch time webinar entitled "DNS Administration in the Era of Managed Service: Featuring DNS Takeover" originally presented at Internet Week 2020 held in November 2020.

● **https://jprs.co.jp/topics/2021/210706.html (in Japanese)**

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*6 SECCON 2021
   https://www.seccon.jp/2021/ (in Japanese)
*7 Oshigoto Hakubutsukan
   https://www.oshihaku.jp/ (in Japanese)

JPRS, HOTnet and QTnet Commenced Operation of Local Nodes for the JP DNS Servers (July)

JPRS, in collaboration with HOTnet*8 and QTnet*9, started operating the local nodes for the JP DNS servers on July 12, 2021, for the first time in the history of JP DNS. Server nodes on the Internet are divided into two types: global nodes that provide services to the entire Internet and local nodes that serve only connected networks, and they are used differently depending on the intended purpose. In this joint effort, local nodes were set up in Hokkaido and Kyushu, enhancing the JP DNS servers.

The nodes were installed following the outcome of the demonstration experiment undertaken by JPRS and the domestic ISPs from 2019 to 2021. Following the installation, services in each area will be more stable, and the impact of system errors and changing situations outside of the area will be mitigated. Moreover, this measure will spread access across more servers, and thereby improve the stability and reliability of all the JP DNS servers.

● **https://jprs.co.jp/press/2021/210714.html (in Japanese)**

Traditional Chinese Edition of the Cartoon Booklet on the Internet System Co-produced with TWNIC (September)

JPRS and TWNIC*10 collaborated to develop and publish in PDF format the traditional Chinese edition of "Ponta's Great Adventure in the Network: Learn the Structure and Mechanism of the Internet with Fun," a graphical comic-style booklet explaining how the Internet works.

JPRS created and published Japanese and English versions of the booklet before this collaborative project. The traditional Chinese edition was produced at the request of TWNIC, who highly evaluated the original booklet and wanted to provide supplementary educational materials related to the Internet in their local language. The booklet was translated by TWNIC and PDF was made by JPRS, and has been published by both the JPRS website and the TWNIC website.

Ponta's Great Adventure
in the Network
Traditional Chinese Edition

● **https://jprs.co.jp/en/topics/2021/210910.html**
● **https://jprs.jp/related-info/study/ponta-zh-Hant.pdf**

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*8 HOTnet: Hokkaido Telecommunication Network Co., Inc.
　https://www.hotnet.co.jp/ (in Japanese)
*9 QTnet: QTnet, Inc.
　https://www.qtnet.co.jp/ (in Japanese)
*10 TWNIC: Taiwan Network Information Center
　https://www.twnic.tw/

JPRS Held 12th ".jp DNSSEC Key Ceremony" (October)

In public-key cryptography, a key ceremony is a procedure in which a unique pair of private and public keys is generated. In JPRS, ".jp DNSSEC Key Ceremony" is a procedure for creating key- and zone-signing keys and signing the jp zone.

It is vital for the reliability and stability of DNSSEC that the procedure for generating and managing the key pairs is properly and securely executed. For this reason, JPRS invites External Witnesses, who are not affiliated with JPRS, to the .jp DNSSEC Key Ceremony.

Like in 2020, two External Witnesses observed and confirmed the process in the 12th ceremony held on October 5, 2021. Due to COVID-19, the ceremony was observed via live streaming rather than the usual on-site examination.

● **https://jprs.co.jp/en/topics/2021/211006.html**

Distribution of a Free Poster to Educational Institutions across Japan to Help Students Enjoy Learning about ccTLDs (November)

As part of its efforts to support education regarding the Internet, JPRS produced a poster listing the ccTLDs[11] all around the world and distributed copies for charge-free to junior and senior high schools as well as technical colleges across Japan.

Students use ccTLDs daily without realizing it. JPRS produced the poster to help them gain a deeper understanding about ccTLDs in a fun way. This project has been carried out for three consecutive years since 2019.

The poster presents the ccTLDs, the names of the countries and territories to which respective ccTLDs are allocated, and an interesting story about each of them. The latest version contains some updated episodes and newly added pictures characteristic of the countries and territories, which makes the poster more visually appealing. Besides, new videos showcasing ccTLDs by continent such as Asia and Europe have been added to the dedicated website, which visualizes on the globe which ccTLD is allocated to which part of the world.

Poster: ccTLDs of the World

● **https://jprs.co.jp/press/2021/211115.html (in Japanese)**
● **https://sekai-domain.jp/ (in Japanese)**

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*11 ccTLD: Country Code Top Level Domain

Support for Internet Week 2021 (November)

JPRS supported Internet Week 2021 as a sponsor and sent Kazunori Fujiwara to serve on the Program Committee and contribute to the planning of DNS-related sessions.

In addition, Yoshitaka Aharen, Kazuki Ikeda, Yuri Takamatsu and Kazunori Fujiwara of JPRS introduced domain names, DNS and other related topics in the program called "DNS DAY."

At the Lunch Time Webinar, Yasuhiro Morishita and Hikaru Yoshino of JPRS gave a presentation entitled "Let's Think about the 'DNS of Tomorrow': Lunch with DNS" and talked about the DNS, which has supported the evolution of the Internet as one of its underlying services. They highlighted various changes that the DNS has undergone since its inception and discussed signs of a new shift that might take place in the future.
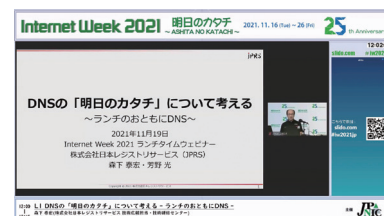
Lunch Time Webinar at Internet Week 2021

● **https://jprs.co.jp/en/topics/2021/211006.html**

Events and Seminars for JP Registrars

In 2021, JPRS organized the events and seminars for JP Registrars in a hybrid format, with both in-person and online attendees. Video recordings and handouts were published for JP Registrars after each session.

"JP Registrar Seminar: An Introduction to Domain Name Registration and Administration" (May)
JPRS explained the basics of JP domain names, how to register and administer them, as well as the fundamental structure of DNS to newly accredited JP Registrars and the staff of JP Registrars who recently started handling JP domain names.

"JPRS Partners' Meeting" (October)
JPRS described the latest developments in the domain name industry, future service changes as well as information useful for day-to-day operations to those staff members who were handling domain names in JP Registrars.

01·3 International Relations

1. Participation in ICANN

ICANN[1] is a private non-profit organization established in the United States in 1998 to coordinate globally the resources underpinning the Internet, such as domain names and IP addresses.

Since its foundation, JPRS has been actively participating in the organization of ICANN and various policy discussions and supporting the facilitation of Internet resource management led by the private sector, with ICANN playing the central role. In 2002, JPRS signed a "ccTLD Sponsorship Agreement" with ICANN and has since been entrusted by ICANN to serve as the registry of Japan's ccTLD ".jp."

ICANN71

By participating in various organizations established within ICANN, as well as by giving presentations and information exchanges at various sessions, JPRS participates in policy development and implementation planning to cope with issues facing ICANN and registries. As the .JP registry and one of the operators of the M-Root DNS server, JPRS is sharing its experience with the global community via ICANN, thereby contributing to the development of the Internet as a whole.

ICANN holds three public meetings each year to enable stakeholders from every country and region of the world to participate and discuss Internet resource management and related rules. In 2021, all three meetings were held online due to COVID-19. ICANN70 took place in March, ICANN71 in June and ICANN72 in October.

With the participation of numerous parties interested in ccTLD and gTLD[2], ICANN has always functioned as an important forum for information-sharing and discussions on policies and governance concerning domain name management. Considering the burden of the attendees in different time zones, each Supporting Organization (SO) and Advisory Committee (AC) focused on discussing issues of their own concern in 2021, while continuing dialogue between different SOs/ACs to promote a better understanding of each other. Even in such a situation, ICANN continues to play an important role as a forum to share and exchange views about not only issues related to Internet resources but also various topics of interest to each SO/AC. In 2021, the participants of the ICANN meetings covered a wide range of topics, such as Registry Voluntary Commitments, which are efforts made by gTLD registries based on their contract with ICANN, and utilization of Reputation Block Lists, which are lists of blocked IP addresses and host names used for spam email. The attendees also exchanged opinions about the form of future ICANN public meetings in consideration of the impact of COVID-19.

The following reports JPRS's activities in the SOs and ACs within ICANN.

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*1 ICANN: Internet Corporation for Assigned Names and Numbers
   https://www.icann.org/
*2 gTLD: Generic Top Level Domain

(1) ccNSO

ccNSO*[3] is one of the Supporting Organizations set up in ICANN to assist its activities. The role of ccNSO as an alliance of ccTLD managers is to cooperate with the other Supporting Organizations in ICANN, form a consensus in the ccTLD community on global issues concerning the entire ccTLD space and to make recommendations to the ICANN Board. JPRS prepared for the establishment of the ccNSO in 2003 and has been a member since then. Hirofumi Hotta of JPRS served as a member of the ccNSO Council from its establishment to March 2020. Also, Atsushi Endo of JPRS is a member of the SOPC (ccNSO Strategic and Operational Planning Standing Committee)*[4] which submits a petition regarding ICANN's "Five-Year Operating and Financial Plan" and "Annual Operating Plan and Budget." Endo also serves on the subgroup within the ccNSO Guidelines Review Committee (GRC), which re-examines the guidelines for the operation of ccTLDs, and contributes to the development of proposed revisions. Yuri Takamatsu is taking part in the MPC (ccNSO Meetings Programme Standing Committee)*[5] which designs programs for the ccNSO-related meetings as well as ccPDP4*[6] which develops policy proposals for IDN*[7] ccTLDs.

Considering the burden on the participants from the ccTLD registries who had to attend from various time zones due to the online nature of the ICANN meetings, the ccNSO decided, as in 2020, to focus in its meetings on the issues that should be addressed and discussed by the entire ccTLD community. On the other hand, the sessions to share specific topics and trends unique to ccTLD registries were held between the ICANN meetings.

In 2021, the ccNSO meetings featured a Q&A session between the ccNSO-appointed ICANN Board members and the ccNSO members, a discussion on the draft revision to the ccNSO Rules that had been proposed by the GRC subgroup and formulated in 2004, a deliberation of the process for retiring a ccTLD, as well as a debate on the requirements for applying for an IDN ccTLD. In addition, there was a session on discussing what they may expect from the ccNSO with respect to mitigation of DNS Abuse.

Revision of the ccNSO Rules will be voted on by the ccNSO members following discussions at each ICANN meeting and consultations with the members via webinars and other opportunities. Atsushi Endo of JPRS has been participating in the development of proposed revisions in the GRC subgroup since it was set up.

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*3 ccNSO: Country Code Names Supporting Organisation
   https://ccnso.icann.org/
*4 SOPC
   https://ccnso.icann.org/en/workinggroups/sopiwg.htm
*5 MPC
   https://ccnso.icann.org/en/workinggroups/mpwg.htm
*6 ccPDP4
   https://ccnso.icann.org/en/workinggroups/idn-cctld-strings.htm
*7 IDN: Internationalized Domain Name

(2) Label Generation Rules for the Root Zone

Label Generation Rules for the Root Zone (LGR) aim to establish rules for adding labels that include non-ASCII scripts to the root zone. Each language community leads the development of its respective LGR.

The following two types of panels are working on developing the LGRs for the DNS root zone:

1. Generation Panel (GP)
Each GP is composed of key figures of each language community and experts in linguistics and domain names. Each GP creates a proposed LGR for a given script and is organized for each script to be added in the root zone.

2. Integration Panel (IP)
IP is a panel of experts in character encoding or IDNs and is tasked with integrating rules developed by the GPs into a consistent set of LGRs.

The IP was established in 2014, and several GPs for different scripts were formed in 2015. Developments have been under way in each language community.

The cultural community that uses Han (Kanji) script includes the Chinese, Korean and Japanese communities, so it is necessary to develop the LGRs that are consistent across those language communities. Therefore, the Japanese community has been working on its LGR in consideration of such necessity. The study is being conducted in the Japanese Generation Panel (JGP) involving IDN experts representing the Japanese language community, linguists and registry experts, with JPNIC and JPRS serving as the secretariat. Hirofumi Hotta of JPRS is leading the initiative as the chair, and Yoshiro Yoneya along with Yuri Takamatsu are members of the JGP. They are contributing their expertise gained through designing, providing and operating the Japanese JP Domain Name services.

The JGP completed the coordination with the Chinese GP and Korean GP by 2019, and consultation with the IP by September 2021. It submitted the final proposal of the Japanese LGR to ICANN in September 2021, which was followed by ICANN's public comment period until November of the same year. Several comments were received, but none of them was deemed to affect the proposal. As a result, the Japanese LGR was finalized in December 2021.

The Chinese LGR finalized in May 2020 was integrated into the Root Zone Label Generation Rules Version 4 (RZ-LGR-4) released in November 2020, and the Korean LGR confirmed in May 2021 will be incorporated into the next version of the RZ-LGR (RZ-LGR-5) along with the Japanese LGR.

(3) RSSAC

The RSSAC[8] is one of the Advisory Committees within ICANN that advises the ICANN community and the Board on matters relating to operation, administration, security, and integrity of the Root DNS Server (Root Server) System. As one of the operators of the M-Root DNS server, JPRS has been participating in the activities of the RSSAC in collaboration with the WIDE Project[9], the other operator.

The RSSAC continued its work in each ICANN meeting and via its own regular conference calls in 2021, which resulted in the release of the principles guiding the operation of the Root Server Operators (RSSAC055[10]), specific examples of rogue behaviors of a Root Server Operator (RSSAC056[11]) and the requirements for assessing the local perspective on the root server system (RSSAC057[12]). The RSSAC has also been working on a new governance model of DNS Root Server System.

Hirofumi Hotta of JPRS has been playing an active role in these discussions representing both two M-Root DNS server operators. Moreover, Yoshitaka Aharen, Shinta Sato, Kazunori Fujiwara and Hirofumi Hotta of JPRS are on the RSSAC Caucus tasked with considering and drafting proposals to the ICANN Board and the community. They were involved in the development of RSSAC056 and RSSAC057.

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[8] RSSAC: Root Server System Advisory Committee
    https://www.icann.org/groups/rssac
[9] WIDE Project
    https://www.wide.ad.jp/index_e.html
[10] RSSAC055
    https://www.icann.org/en/system/files/files/rssac-055-07jul21-en.pdf
[11] RSSAC056
    https://www.icann.org/en/system/files/files/rssac-056-07jul21-en.pdf
[12] RSSAC057
    https://www.icann.org/en/system/files/files/rssac-057-09sep21-en.pdf

(4) Participation in the Discussion to Propose a New Governance Model for the Root Server System

The Root Server System consists of 13 sets of root DNS servers called A-M and is comprised of over 1,300 instances. These root DNS servers are operated stably by 12 Root Server Operators working together on a voluntary basis.

As the importance of the Internet continues to grow, there are increasing calls for improved stability and assured reliability for the operation of the Root Server System. Against this backdrop, the Root Server Operators took the initiative in the RSSAC, one of ICANN's Advisory Committees, to propose a more robust governance model that could underpin the foundation of the Internet into the future.

The results of the discussion were submitted to the ICANN Board as document RSSAC037[13] in June 2018, whereupon the direction for deliberation based on RSSAC037 was approved by the ICANN Board. Subsequently, the ICANN Root Server Governance Working Group (GWG) was established in January 2020 to develop a concrete governance model according to the direction for deliberation.

The GWG comprises ten representatives: two from ccNSO, two from ICANN Registries Stakeholder Group, two from IAB[14] / IETF[15], three from Root Server Operators and one from the ICANN Security and Stability Advisory Committee. The GWG also comprises three liaisons: one from IANA, one from the ICANN Board and one from Root Zone Maintainer. Hirofumi Hotta of JPRS has been participating in the discussions in the GWG as one of the three representatives of the Root Server Operators. As a member of the GWG, he also shared the status of the working group with APAC Space, an arena for the Asia Pacific community.

The GWG has drawn up an interim report to date. Going forward, all the Root Server Operators will join the process of fleshing out the details.

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*13 RSSAC037
  https://www.icann.org/en/system/files/files/rssac-037-15jun18-en.pdf
*14 IAB: Internet Architecture Board
  https://www.iab.org/
*15 IETF: Internet Engineering Task Force
  https://www.ietf.org/

2. Participation in IETF

IETF was established in 1986 by IAB to promote standardization of Internet technologies. There are a number of WGs in IETF that are developing standards in various technology areas. Discussion and other activities of IETF are handled via its mailing lists. IETF also holds meetings three times per year, and engineers gather from every region across the world to attend these meetings.
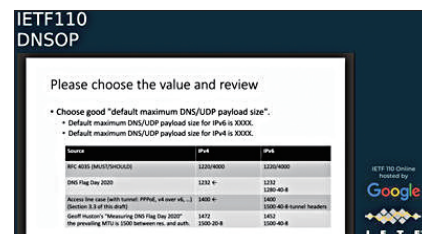
IETF 110

All the IETF meetings scheduled for 2021 were held online due to COVID-19. IETF 110 was organized in March, IETF 111 in July and IETF 112 in November.

JPRS is participating in the standardization activities in IETF by suggesting solutions to the issues related to DNS operations and proposing standardization of the technologies employed by registries. The following reports on JPRS's activities in IETF.

(1) dnsop WG

The name of the dnsop WG[1] derives from DNS Operations. The working group aims to compile a guideline for DNS operation in general, including administration of DNS servers and registration data.

JPRS has actively participated in the dnsop WG with its expertise as the JP DNS operator to point out the ambiguity in the DNS protocol, present the issues caused by misconfigurations of DNS servers and discuss the operational method of DNSSEC. Besides that, JPRS engineers co-authored RFC 4074, RFC 7719, RFC 8198 and RFC 8499, and these RFCs were issued thus far.

In 2021, the dnsop WG continued the discussion on "draft-ietf-dnsop-avoid-fragmentation" co-authored by Kazunori Fujiwara of JPRS and Paul Vixie. The document is a proposal to avoid IP fragmentation in the DNS and was revised by the working group in February, June and December.

In addition, the working group considered "draft-ietf-dnsop-rfc8499bis," an updated version of RFC 8499 being prepared by Paul Hoffman of ICANN and Kazunori Fujiwara of JPRS. The document was revised in June and September 2021.

Furthermore, Fujiwara submitted his new idea in the form of "draft-fujiwara-dprive-doh-via-httpproxy-00," a proposal to improve the privacy of DNS over HTTPS (DoH) using Open HTTP Proxy, in July 2021.

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*1 dnsop WG: Domain Name System Operations Working Group
  https://datatracker.ietf.org/wg/dnsop/

3. Participation in Registry Associations

(1) APTLD

APTLD[1] is an association composed of ccTLD registries mainly in the Asia Pacific (AP) region. JPRS has been a member of APTLD since 2002. As the JP registry, JPRS proposes improvements of APTLD activities, provides information and exchanges views at presentations and discussions so that the ccTLD community in the AP region can gain experience and expertise and raise the level of service standards.

In the APTLD meetings held twice a year, the groups and the organizations related to the region introduced their activities and the participants explained what they were implementing and considering, such as the service of each ccTLD registry and efforts to improve the security of domain names, which led to active discussions.

Yoshiro Yoneya of JPRS shared his thoughts on the examples of use of DoH/DoT (DNS over TLS) as an introduction to the panel within the session on DoH/DoT and DNS at the February 2021 meeting. In the Annual General Meeting held in conjunction with the February meeting, JPRS, as a member of APTLD, made a proposal to the association on how to report the activities of the Board of Directors and how to share past meeting materials. In this way, JPRS has been actively participating in the discussion about organizational management of APTLD as well.

(2) CENTR

CENTR[2] is an association consisting of ccTLD registries mainly in Europe. As an Associate member, JPRS shares information and exchanges opinions with other CENTR members. In addition, CENTR conducts surveys and information-sharing among members, so JPRS is actively taking part in these activities to consider its future services in the light of what it learns in CENTR.

Sumika Uchikawa of JPRS shared its most recent efforts as the JP domain name registry, including marketing activities, at the Marketing Workshop held online in February and October 2021. Uchikawa also presented JPRS's marketing actions taken to date in relation to Japanese JP domain names at the CENTR webinar on IDNs held online in May and described JPRS's efforts to build relationships with JP Registrars at CENTR 2021 Members' Days held online in June.

*1 APTLD: Asia Pacific Top Level Domain Association
  https://www.aptld.org/
*2 CENTR: Council of European National Top Level Domain Registries
  https://www.centr.org/

4. Other International Activities

(1) Participation in the Internet Governance Forum (IGF)

IGF[1] is an international conference organized under the auspices of the United Nations (UN) and has been held annually since 2006. IGF 2021 was held from December 6 to 10 as a hybrid event with in-person participation in Katowice, Poland as well as online attendance. Hirofumi Hotta and Yuri Takamatsu of JPRS participated in the event.

Under the overarching theme of "Internet United," IGF 2021 featured more than 300 sessions on six themes, including "Economic and Social Inclusion and Human Rights," "Universal Access and Meaningful Connectivity" and "Emerging Regulation: Market Structure, Content, Data and Consumer Rights and Protection." In his video message for the Opening Session, the UN Secretary-General emphasized the importance of the Internet in the economy and our lives, which has increased dramatically amid the coronavirus. He also stated that strengthened cooperation would be needed to solve the problems and challenges that have been magnified due to the pandemic and reiterated that the goal was to connect everyone to the Internet by 2030. Going forward, JPRS will make good use of the information gained from the discussion in IGF 2021 and will stimulate related discussions in Japan.

(2) Participation in the Asia Pacific Regional Internet Governance Forum (APrIGF)

APrIGF[2] has been held annually since 2010, with the participation of mainly the members of the community in the Asia Pacific. It has been a forum for discussing issues related to Internet governance in not only the AP region but also the entire world. Hirofumi Hotta of JPRS is on the Multi-Stakeholder Steering Group (MSG) that considers the policy direction of the APrIGF.

APrIGF 2021 was held in September as a hybrid meeting in Kathmandu, Nepal, allowing attendees to participate either in-person or online. Yuri Takamatsu of JPRS participated in the event. As in the previous year, APrIGF 2021 had several sessions that focused on realizations and issues arising out of the continuing impact of COVID-19. It also highlighted the fact that the Internet has not only benefited people but also had negative effects, such as copyright infringement and hate speech. The participants shared information about such issues and discussed how to deal with them.

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*1 IGF: Internet Governance Forum
   https://www.intgovforum.org/
*2 APrIGF: Asia Pacific Regional Internet Governance Forum
   https://www.rigf.asia/

(3) Participation in AP* Retreat

AP*(APstar*[3]) Retreat is a meeting that is held twice a year in principle and gathers the Internet-related associations in the Asia Pacific region as well as the participants representing the organizations playing key roles in the Internet in each country and region. At the AP* Retreat meetings the participants share the activities and concerns of each participating organization and discuss how the Asia Pacific community as a whole should address the issues related to the Internet.

AP* Retreat was held online in February and September in 2021, and Hirofumi Hotta and Atsushi Endo of JPRS participated in both events. Endo shared the activities of JPRS, and Hotta outlined the deployment of the M-Root DNS server around the AP region as an M-Root DNS server operator in the February retreat. In addition, Hotta served as the chair of the September retreat.

(4) Participation in Root DNS Server Operation

JPRS and the WIDE Project collaboratively operate the M-Root DNS server, one of the root DNS servers, for the purpose of ensuring the reliability and stability of DNS operations.

The 12 root DNS server operator organizations from around the world meet in conjunction with IETF meetings which are held three times a year, and JPRS has been participating in these meetings as one of the organizations in charge of the operation of the M-Root DNS server. At these meetings, attendees share information principally on the stability of server operations and topics related to the latest technology.

With the cooperation of APNIC, the M-Root DNS server has been expanding its footprint around the AP region since 2020. The operation in Hanoi, Vietnam started in 2021.

Making good use of its experience as the .JP registry, JPRS has been contributing to the global Internet community while also building on the JP Domain Name services with the knowledge it has gained in the operation of the root DNS server.

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*3 APstar: The Community of Asia Pacific Internet Organizations
   https://www.apstar.org/

(5) Participation in DNS-OARC

DNS-OARC[4] is an international organization established in 2004 for the purpose of improving the stability and quality of DNS through various activities related to operation, analysis and study of DNS, the system widely used on the Internet. DNS-OARC conducts the annual DITL[5], which involves collecting and evaluating server packets of DNS including the root servers once a year for 50 hours.

DNS-OARC workshops were organized in February, May, September and November in 2021. All these events were held entirely online due to COVID-19.

In OARC 35 held in May 2021, Yoshitaka Aharen of JPRS gave a presentation entitled "Evaluation of anti-DDoS features in full-service resolvers" and shared the evaluation results of anti-DDoS functionalities implemented in full-service resolvers. In addition, Kazunori Fujiwara of JPRS gave a talk entitled "Keep my privacy: DNS over HTTPS over CGN or public NAT64" and discussed ways to protect the privacy of DoH by using CGN, NAT64 and HTTP Proxy.

(6) Participation in APRICOT

APRICOT[6] is a non-profit forum for advancing the understanding and technology necessary to grow a robust Internet infrastructure in the AP region.

Takayasu Matsuura of JPRS participated in the conference held online in March 2021 and presented the results of a demonstration experiment, which had been conducted jointly with domestic ISPs, to place local nodes for TLD DNS servers using ".jprs," a TLD for research. He gave the presentation together with Nagisa Yano of OPTAGE[7], one of the organizations participating in the experiment.

(7) Participation in W3C

W3C[8] is a non-profit organization founded in 1994 to develop a series of technical standards for the World Wide Web. JPRS participates in W3C and plays an active role in enhancing Web security and internationalization of identifiers.

(8) Activities in Academic Societies

JPRS continues to participate in academic societies through its study and research on DNS and other related areas of study. Takeshi Mitamura of JPRS sits on the Special Interest Group on Business Informatics within the Japanese Society of Artificial Intelligence as an expert member. Kazunori Fujiwara served as an expert member of the Technical Committee on Internet Architecture of EIC Communication Society until March 2021.

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*4 DNS-OARC: The DNS Operations, Analysis, and Research Center
　https://www.dns-oarc.net/
*5 DITL: Day In The Life of the Internet
　https://www.dns-oarc.net/oarc/data/ditl
*6 APRICOT: Asia Pacific Regional Internet Conference on Operational Technologies
　https://www.apricot.net/
*7 OPTAGE: OPTAGE Inc.
　https://optage.co.jp/en/
*8 W3C: World Wide Web Consortium
　https://www.w3.org/

01·4 Activities in Japan

(1) Participation in JANOG

JANOG[1] is the organization established to promote the smooth operation of networks through discussions and information-sharing among network operators to contribute to Internet users and engineers. The members discuss various issues on the mailing list and gather at JANOG Meetings held twice a year. JANOG also convenes Interim Meetings as necessary between regular JANOG meetings.
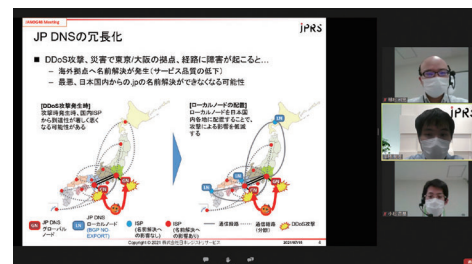
JANOG48 Meeting

In 2021, all the JANOG meetings were organized as hybrid events with both in-person and online participation. JANOG47 Meeting was held in Fukuoka City, Fukuoka Prefecture in January. At the JANOG48 Meeting in Ogaki City, Gifu Prefecture, Yuri Hirabayashi of JPRS, in collaboration with Yoshiki Komatsu and Toshiaki Uematsu of HOTnet, gave a presentation entitled "Achieving Redundancy in Various Regions in Japan with a View to Local Node Installation." They shared the results of the demonstration experiment which had been carried out jointly by JPRS, HOTnet, OPTAGE and QTnet using ".jprs" as a TLD for research. The experiment was conducted assuming a situation where a DDoS attack targeting an authoritative DNS server of a TLD caused a loss of reachability to that server. It verified whether the installation of local nodes, which had been proved effective for mitigating physical fragmentation caused by a large-scale disaster, was also effective for continuing name resolution services even in the event of a logical fragmentation brought about by a cyberattack. With a view to applying the outcome of the experiment in the actual environment, the local nodes for JP DNS were installed in Hokkaido and Kyushu and started operation on July 12, 2021.

JPRS continues to participate in the discussion on the mailing list as well as in the meetings and supports the JANOG Meetings as one of the sponsors. It also runs an exhibition booth at the meeting venue to distribute technical information materials about domain names, DNS and server certificates.

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*1 JANOG: JApan Network Operators' Group
https://www.janog.gr.jp/en/html/

(2) Participation in DNSOPS.JP

DNS Operators Group, Japan (DNSOPS.JP)[2] was established in 2006 with the intention of contributing to the stable operation of the Internet through the administration of DNS. Yasuhiro Morishita of JPRS participated in the establishment as one of the founding members. DNSOPS.JP serves as a forum for DNS operators where they can exchange and share information and discuss related issues.

DNSOPS.JP holds a BoF (Birds of a Feather) annually for technical presentations and discussions. It has also organized "DNS Summer Day," in which participants share their efforts related to DNS and give lightning talks, every summer since 2012.

At DNS Summer Day 2021 held online in June 2021, Yoshitaka Aharen of JPRS, together with Yoshiki Komatsu and Toshiaki Uematsu of HOTnet, gave a talk entitled "Evaluation of Anti-DDoS Features in Full-Service Resolvers." They spoke about the joint project conducted in collaboration with the domestic ISPs to evaluate new mitigation technologies to be applied in the event of a DDoS attack. The speakers also shared the feedback of the evaluation that had been provided to the vendors of DNS server software. Using ".jprs," a TLD for research, JPRS has worked together with Enecom[3], OTNet[4], OPTAGE, QTnet, CNCI[5], SoftBank[6], HOTnet, HTNet[7] and FreeBit[8] to carry out the evaluation through demonstration experiments.[9]

Yoshitaka Aharen of JPRS and Yoshibumi Suematsu of QTnet also gave a presentation entitled "Key Points for Migration from BIND 9.11 to 9.16" and explained what to keep in mind when upgrading from BIND 9.11, which is no longer supported, to BIND 9.16, the next long-term supported version.

In addition, Kazunori Fujiwara of JPRS showcased the measures to protect the privacy of DoH using CGN, NAT64 and HTTP Proxy in his presentation entitled "Keep my privacy: DNS over HTTPS over CGN or public NAT64." Yoshiro Yoneya of JPRS, and Masayuki Okada and Taiga Koga of the University of Nagasaki jointly gave a presentation entitled "Findings from a Study on Authoritative DNS Services" and reported the results of their research on the confidentiality and availability of various DNS services.

Moreover, Yasuhiro Morishita of JPRS shared technical information, such as vulnerability information on DNS that JPRS had published over the past year, in his presentation entitled "Technical Information Provided by JPRS (July 2020–June 2021)."

Furthermore, Takayasu Matsuura of JPRS made the opening and closing remarks at the BoF held in November 2021.

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[2] DNSOPS.JP: DNS Operators Group, Japan
   https://dnsops.jp/ (in Japanese)
[3] Enecom: Energia Communications, Inc.
   https://www.enecom.co.jp/ (in Japanese)
[4] OTNet: Okinawa Telecommunication Network Co., Inc.
   https://www.otnet.co.jp/ (in Japanese)
[5] CNCI: Community Network Center Inc.
   https://www.cnci.co.jp/ (in Japanese)
[6] SoftBank: SoftBank Corp.
   https://www.softbank.jp/en/
[7] HTNet: Hokuriku Telecommunication Network Co., Inc.
   https://www.htnet.co.jp/ (in Japanese)
[8] FreeBit: FreeBit Co., Ltd.
   https://freebit.com/en/
[9] .jprs TLD Labs: Demonstration Experiments for DDoS Attack
   https://tldlabs.jprs/en/

(3) Participation in ICANN Readout Sessions

ICANN Readout Session is the event that has been organized jointly by JPNIC and IAjapan from 2001 to 2017 and by JPNIC from April 2017 onward. JPRS has been participating in the ICANN Readout Sessions and reporting to the Japanese community about the development of the ccNSO and other relevant topics.

In 2021, the readout sessions were held in May, August and December. In these events, JPRS reported on the development and issues in the ccNSO and, as a Root Server Operator, gave a status update on the deliberations of the future governance model for the DNS Root Server System.

As a member of the Japanese Generation Panel (JGP), JPRS also talked about the development of the Label Generation Rule (LGR) for the Japanese community and called for comments on the draft proposal of LGR.

(4) Participation in ISOC-JP

ISOC-JP[10] was established in August 1994 and has made various efforts to promote the Internet in Japan as the Japan Chapter of the Internet Society (ISOC[11]). Yoshiro Yoneya of JPRS has been taking part in the Internet Standardization Promotion Committee (ISPC) of ISOC-JP since 2017 and serving as the ISPC Vice Chair since 2019.

(5) Participation in ICT-ISAC

ICT-ISAC[12] was established in 2016 to contribute to the formation of a secure society underpinned by information and communication technology (ICT). It has been working together with businesses and organizations from a wide range of fields related to ICT to keep distribution and communication of information stable, thereby improving security countermeasures and achieving a higher level of responses. JPRS has been participating in ICT-ISAC as a member since 2017.

ICT-ISAC undertakes activities through various working groups consisting of its members. JPRS is taking part mainly in the Cyber Attack Defense Exercise WG (CAE-WG), Rapid Response to DoS Attacks WG (DoS-WG), Special Interest Group for DNS Operators (DNS-SiG), Society of Network Abuse Response WG (SoNAR-WG) and IoT Security WG to contribute to enhancing the security related to ICT.

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*10 ISOC-JP: The Internet Society Japan Chapter
　　https://www.isoc.jp/
*11 ISOC: Internet Society
　　https://www.internetsociety.org/
*12 ICT-ISAC: ICT Information Sharing And Analysis Center Japan
　　https://www.ict-isac.jp/english/index.html

(6) Participation in the Efforts Related to Internet Governance

Hitherto, there have been efforts such as the Japan IGF and Internet Governance Conference Japan, to promote discussions about Internet governance within the country.

In addition, a group of volunteers reviewed the past efforts and summarized them in "Experience and Issues of Internet Governance-related Activities in Japan" to enhance the national activities in preparation for IGF 2023 to be held in Japan. Hirofumi Hotta of JPRS lead the review and creation of the document.

This review triggered the establishment of a voluntary body called "National Activity Promotion Team for IGF 2023" which aimed to propose a framework to actively join IGF 2023 and held events to raise awareness on topics and debates related to Internet governance. Hirofumi Hotta and Yuri Takamatsu of JPRS participated in the discussion of the team, and Takamatsu served as the master of ceremonies for the Japan Pre-IGF 2021 Meeting which took place on October 7–8, 2021.

Hotta and Takamatsu also took part in the planning of a capacity building event on Internet governance-related discussions organized by DotAsia[13] for youth, one of the key stakeholders especially for the future evolution of the Internet. As DotAsia's first conference for Japanese youths, the panel and group discussions of the event featured topics that attracted a lot of attention in Japan, such as manga piracy and data sovereignty.

(7) Participation in the Council of Anti-Phishing Japan

The Council of Anti-Phishing Japan[14] is a council tasked mainly with collecting and providing information on phishing and issuing alerts. Atsushi Endo of JPRS has been contributing to the overall operation of the Council as a member of its steering committee since 2020.

The Council has published the "Anti-Phishing Guidelines" for service providers and consumers. It also has a working group (Technology and Legal System WG) to consider refining the guidelines every year, taking into consideration the current threats. Atsushi Endo and Toshihiro Sasaki of JPRS took part in the working group as members for drawing up the 2021 edition of the guidelines[15] and engaged in the awareness campaign and educational activities about domain name abuse. Endo and Sasaki are participating in drawing up the 2022 edition, too.

In addition, Kazumitsu Shiraiwa and Yoshiro Yoneya of JPRS have been on the working group charged with sharing information about phishing scams and discussing collaboration between organizations (Hazard Info WG). Moreover, Shiraiwa, Yoneya and Hayato Machida of JPRS participated in the working group for promoting knowledge about server certificates (Certificate Promotion WG).

Yasuhiro Morishita of JPRS spoke at the 1st Anti-Phishing Study Meeting held in February 2021 and gave a lecture entitled "Overview of Subdomain Takeover and Preventive Measures."

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*13 DotAsia: DotAsia Organisation
   https://www.dot.asia/
*14 Council of Anti-Phishing Japan
   https://www.antiphishing.jp/ (in Japanese)
*15 Anti-Phishing Guidelines (released in June 2021, in Japanese)
   https://www.antiphishing.jp/report/guideline/antiphishing_guideline2021.html

(8) Participation in Telecom Services Association

Telecom Services Association[16] was founded for the purpose of promoting the sound evolution of information and telecommunication businesses in the competitive market, thereby contributing to the development of the industry as a whole and enhancing the benefits to citizens as well as public welfare.

The Service Ethics Committee within the Telecom Services Association is tasked with addressing ethics and other related issues in network services. It works on improving the Internet use environment by exchanging opinions and information on the laws and regulations related to network services and the challenges facing providers. Takaharu Ui of JPRS participated in the committee as a member and joined the discussions on the Provider Liability Limitation Act, disclosure of sender information and the other relevant topics in 2021.

(9) Participation in KEIDANREN (Japan Business Federation)

The Committee on Digital Economy of KEIDANREN (Japan Business Federation)[17] is the body tasked with deliberating and making policy proposals about issues such as promoting the use of personal data and measures to ensure the free flow of data across national borders. In 2021, Hirofumi Hotta and Takaharu Ui of JPRS took part in wide-ranging discussions in the Planning Subcommittee within the Committee on the Digital Economy.

*16 Telecom Services Association
    https://www.telesa.or.jp/en
*17 KEIDANREN (Japan Business Federation)
    https://www.keidanren.or.jp/en/

01·5 Overview of this Term's Activities and Challenges for the Future

JPRS has constantly worked to strike a proper balance among reliability, stability, usability and fee performance, which constitute the basis of JP domain name registry services and JP DNS operation, while also improving each of the four values.

In 2021, the first local nodes for JP DNS were installed in Hokkaido and Kyushu and started operation. This project was undertaken to improve the stability and reliability of JP domain name services and JP DNS, and to utilize the results of the demonstration experiment using ".jprs," a TLD for research, in a real environment. The experiment was conducted by JPRS and domestic ISPs from May 2019 to November 2021.

JPRS also tapped into its expertise as the .JP registry to provide information related to domain names and DNS and promote understanding of industry trends at events and meetings, many of which were held online using video conferencing services due to COVID-19.

The year 2021 saw several challenges threatening the stable operation of the Internet, such as large-scale DNS failures, which were caused by operational errors in some major social media and other services, and vulnerabilities in DNS software. JPRS has responded to these problems through its information provision activities, including security alerts and educational programs.

As part of its Internet-related educational support activities, JPRS has distributed a free booklet on how the Internet works to educational institutions across Japan for twelve years in a row, with the total number of copies distributed exceeding 310,000. It also produced a poster to help students learn about ccTLDs in a fun way and distributed copies free of charge to educational institutions across Japan for the third year in a row since 2019. Moreover, JPRS continued to provide domain names free of charge at the website creation contest for junior and senior high school students to support children who will lead the next generation.

With the accelerating digital transformation of society, JPRS will continue to improve the security of its system while reinforcing its equipment and administrative structure. In doing so, JPRS aims to foster an environment where people can use the Internet more safely. JPRS will also continue to work with other relevant organizations and the JP Registrars to disseminate information on DNS technology and issue security alerts to address vulnerabilities in the entire DNS.

The COVID-19 pandemic has accelerated and expanded the use of the Internet and brought about changes in corporate and social activities. Consequently, public demand for stable communications infrastructure has risen significantly. In view of the circumstances, JPRS will ensure greater continuity of the service in times of disaster by ensuring faster recovery and improved reliability through enhancement of its system infrastructure and exercises assuming various situations.

As the JP registry, JPRS will continue its efforts to provide better and stable services.
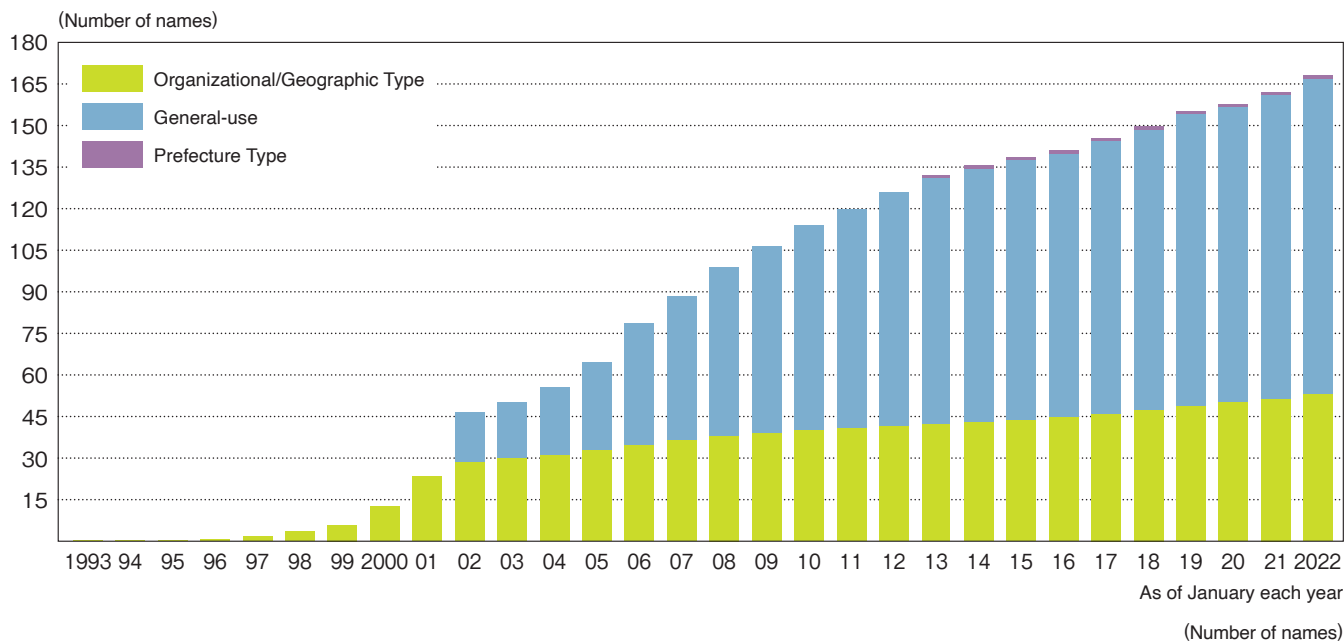
02·1 Change in the Cumulative Number of Registered JP Domain Names

As of January 1, 2022, the number of registered JP domain names reached 1,680,673, an increase of 60,470 in one year.

(Number of names)

As of January each year

(Number of names)

Month/Year	Organizational/ Geographic Type	General-use (Japanese domain name)	Prefecture Type (Japanese domain name)	Total
1993/1	953	——	——	953
1994/1	1,341	——	——	1,341
1995/1	2,206	——	——	2,206
1996/1	4,781	——	——	4,781
1997/1	15,477	——	——	15,477
1998/1	33,739	——	——	33,739
1999/1	58,549	——	——	58,549
2000/1	124,573	——	——	124,573
2001/1	234,294	——	——	234,294
2002/1	283,340	183,499 (61,507)	——	466,839
2003/1	297,413	205,493 (51,544)	——	502,906
2004/1	309,193	245,100 (45,402)	——	554,293
2005/1	327,742	317,455 (63,324)	——	645,197
2006/1	346,340	439,784 (116,602)	——	786,124
2007/1	363,768	518,557 (124,153)	——	882,325
2008/1	378,903	609,983 (141,858)	——	988,886
2009/1	389,598	674,133 (134,921)	——	1,063,731
2010/1	399,339	740,820 (133,754)	——	1,140,159
2011/1	406,856	791,249 (123,711)	——	1,198,105
2012/1	413,332	845,054 (119,337)	——	1,258,386
2013/1	421,606	888,657 (122,394)	8,452 (1,915)	1,318,715
2014/1	428,467	915,854 (126,182)	11,781 (2,948)	1,356,102
2015/1	435,390	940,427 (120,801)	11,684 (3,117)	1,387,501
2016/1	446,004	953,041 (113,521)	11,202 (2,612)	1,410,247
2017/1	458,947	984,270 (114,130)	11,419 (2,524)	1,454,636
2018/1	472,906	1,010,615 (107,363)	11,956 (2,524)	1,495,477
2019/1	486,956	1,052,832 (99,869)	11,569 (1,953)	1,551,357
2020/1	499,366	1,065,561 (95,123)	11,480 (1,829)	1,576,407
2021/1	513,038	1,095,928 (90,494)	11,237 (1,612)	1,620,203
2022/1	529,032	1,139,718 (87,921)	11,923 (1,733)	1,680,673

*Please refer to "Statistics" (https://jprs.co.jp/en/stat/) for the latest information.

02·2 Breakdown of JP Domain Name Registrations by Name Space

*As of January 1, 2022

Prefecture Type
0.7%

Organizational/
Geographic Type
31.5%

General-use
67.8%

CO：86.3%

ED：1.2%
GO：0.1%
GR：1.0%
LG：0.4%
NE：2.4%
OR：7.4%
Geographic Type：0.4%
AC：0.7%
AD：0.1%
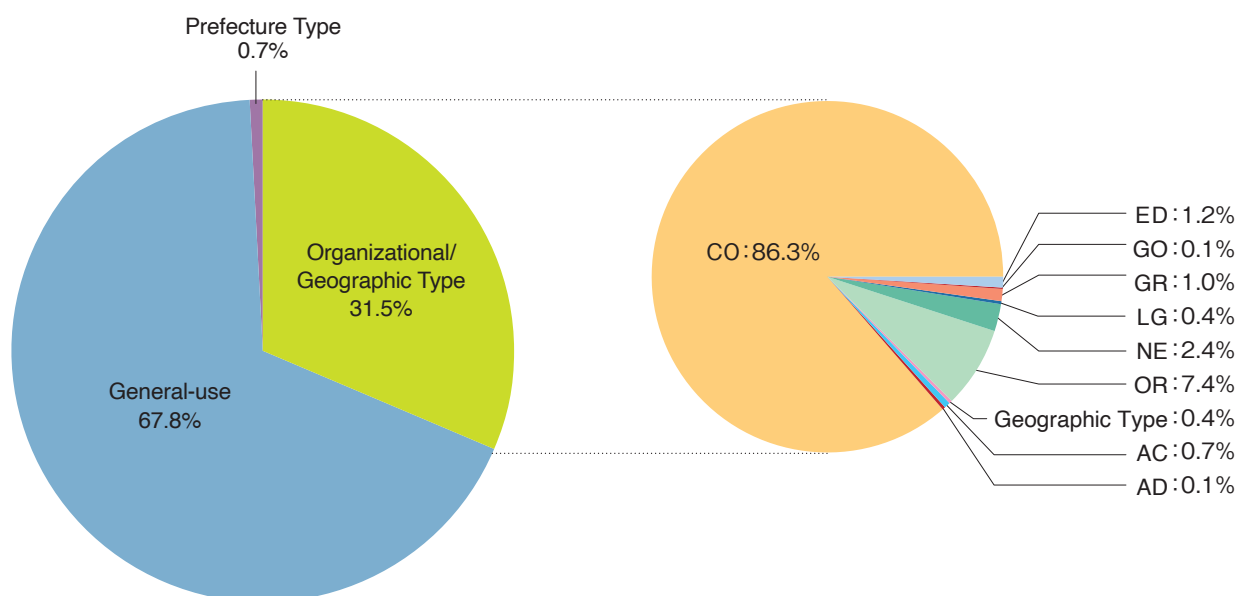
(Number of names)

JP Domain Name Types		1 Jan 2022 Number of Registrations	1 Jan 2021 Number of Registrations	Difference
Organizational/ Geographic Type	AC: Higher education institution	3,779	3,727	+52
	AD: JPNIC Member	250	253	−3
	CO: Company	456,727	441,688	+15,039
	ED: Primary school, junior and senior high school	6,258	5,979	+279
	GO: Japanese government	679	628	+51
	GR: Group	5,516	5,696	−180
	LG: Japanese local authority	1,895	1,894	+1
	NE: Network service	12,766	12,866	−100
	OR: Corporation other than company	39,045	38,158	+887
	Geographic Type	2,117	2,149	−32
General-use (Japanese domain name)		1,139,718 (87,921)	1,095,928 (90,494)	+43,790 (−2,573)
Prefecture Type (Japanese domain name)		11,923 (1,733)	11,237 (1,612)	+686 (+121)
Total JP Domain Name Registration		1,680,673	1,620,203	+60,470

*Please refer to "Statistics" (https://jprs.co.jp/en/stat/) for the latest information.

02·3 Number of JP Domain Name Registrations by Prefecture

*As of January 1, 2022

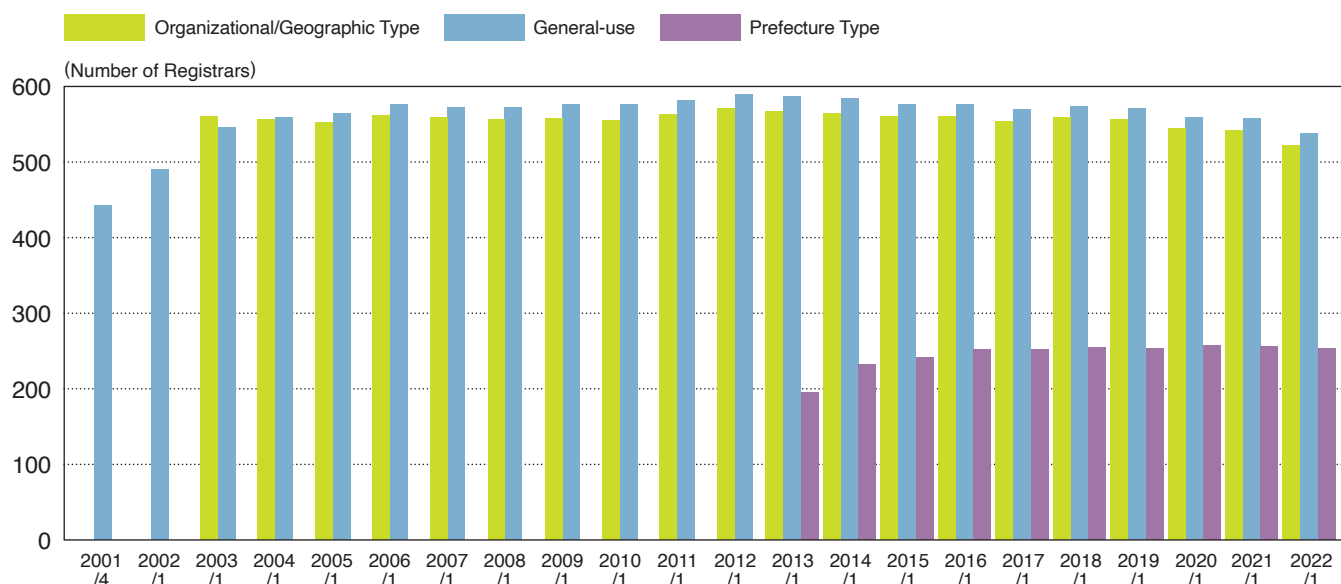| Prefecture	Organizational/ Geographic Type	General-use	Prefecture Type
Hokkaido	2.8%	2.1%	2.4%
Aomori	0.5%	0.3%	0.5%
Iwate	0.4%	0.3%	0.5%
Miyagi	1.3%	0.8%	0.8%
Akita	0.4%	0.3%	0.5%
Yamagata	0.6%	0.3%	0.4%
Fukushima	0.9%	0.5%	0.5%
Ibaraki	1.4%	1.0%	0.5%
Tochigi	1.0%	0.6%	1.5%
Gunma	1.1%	0.7%	1.6%
Saitama	4.4%	2.8%	2.9%
Chiba	3.3%	2.3%	2.7%
Tokyo	32.4%	42.3%	36.0%
Kanagawa	6.6%	4.9%	4.6%
Niigata	1.1%	0.7%	1.5%
Toyama	0.6%	0.4%	0.5%
Ishikawa	0.7%	0.6%	0.5%
Fukui	0.5%	0.3%	0.4%
Yamanashi	0.5%	0.4%	0.4%
Nagano	1.3%	0.9%	1.3%
Gifu	1.1%	0.8%	1.0%
Shizuoka	2.1%	1.5%	1.2%
Aichi	5.4%	3.7%	2.9%
Mie	0.8%	0.5%	1.1%
Shiga	0.7%	0.5%	1.1%
Kyoto	2.0%	2.5%	5.9%
Osaka	9.4%	15.2%	9.4%
Hyogo	3.2%	2.3%	1.6%
Nara	0.6%	0.7%	1.3%
Wakayama	0.4%	0.4%	0.5%
Tottori	0.2%	0.2%	0.3%
Shimane	0.3%	0.3%	0.3%
Okayama	1.1%	0.7%	0.7%
Hiroshima	1.6%	1.0%	1.0%
Yamaguchi	0.5%	0.3%	0.2%
Tokushima	0.3%	0.3%	0.3%
Kagawa	0.5%	0.4%	0.5%
Ehime	0.6%	0.4%	0.6%
Kochi	0.3%	0.2%	0.4%
Fukuoka	3.3%	2.6%	3.8%
Saga	0.3%	0.2%	0.5%
Nagasaki	0.5%	0.3%	0.7%
Kumamoto	0.8%	0.6%	1.6%
Oita	0.4%	0.4%	0.8%
Miyazaki	0.4%	0.3%	0.5%
Kagoshima	0.6%	0.4%	0.6%
Okinawa	0.7%	0.6%	1.3%

02·4 Transition of DNS Configuration Rate

*As of January 1, 2022
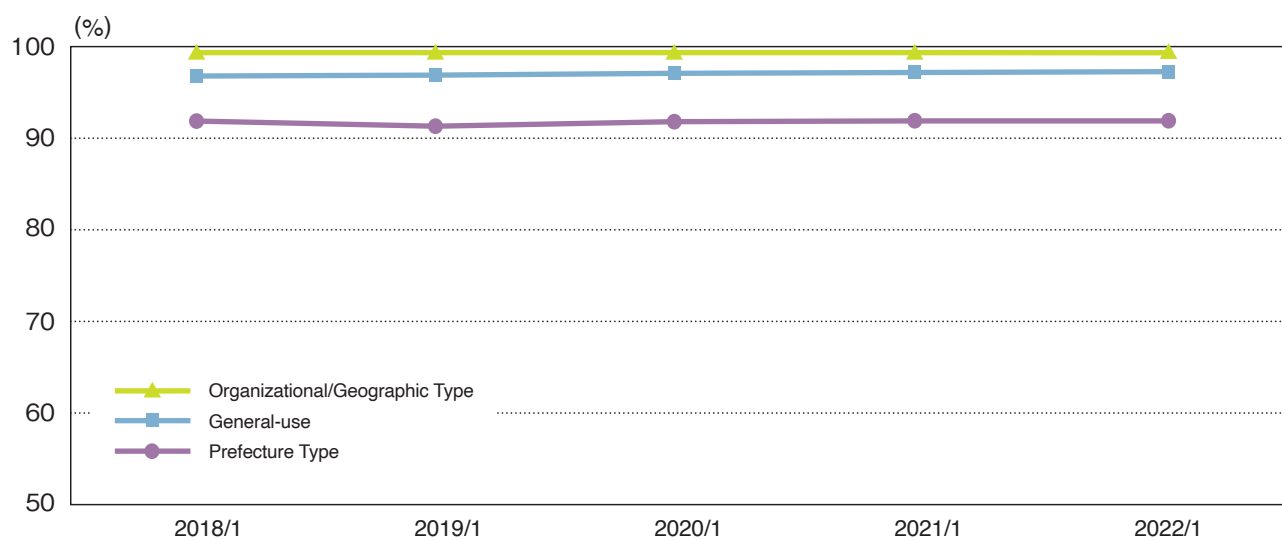
Month/Year	Organizational/Geographic Type	General-use	Prefecture Type
2018/1	99.4%	96.8%	91.9%
2019/1	99.4%	96.9%	91.3%
2020/1	99.4%	97.1%	91.8%
2021/1	99.4%	97.2%	91.9%
2022/1	99.5%	97.3%	91.9%

02·5 Number of Accredited JP Registrars

- Organizational/Geographic Type
- General-use
- Prefecture Type

(Number of Registrars)

(Number of Registrars)

Month/Year	Organizational/Geographic Type	General-use	Prefecture Type	Cumulative Total
2001/4	——	443	——	443
2002/1	——	490	——	490
2003/1	560	546	——	1,106
2004/1	557	559	——	1,116
2005/1	553	564	——	1,117
2006/1	562	576	——	1,138
2007/1	559	572	——	1,131
2008/1	557	573	——	1,130
2009/1	558	577	——	1,135
2010/1	555	577	——	1,132
2011/1	563	582	——	1,145
2012/1	571	590	——	1,161
2013/1	566	586	197	1,349
2014/1	564	582	227	1,373
2015/1	560	577	241	1,378
2016/1	560	576	252	1,388
2017/1	554	569	252	1,375
2018/1	559	574	255	1,388
2019/1	556	571	254	1,381
2020/1	544	559	257	1,360
2021/1	542	559	256	1,357
2022/1	522	538	254	1,314

*The number of JP Registrars for the Organizational/Geographic Type JP domain names is the figure after April 2002 when management and administration was transferred from JPNIC to JPRS.

02·6 Number of Complaints Based on JP Domain Name Dispute Resolution Policy (JP-DRP)
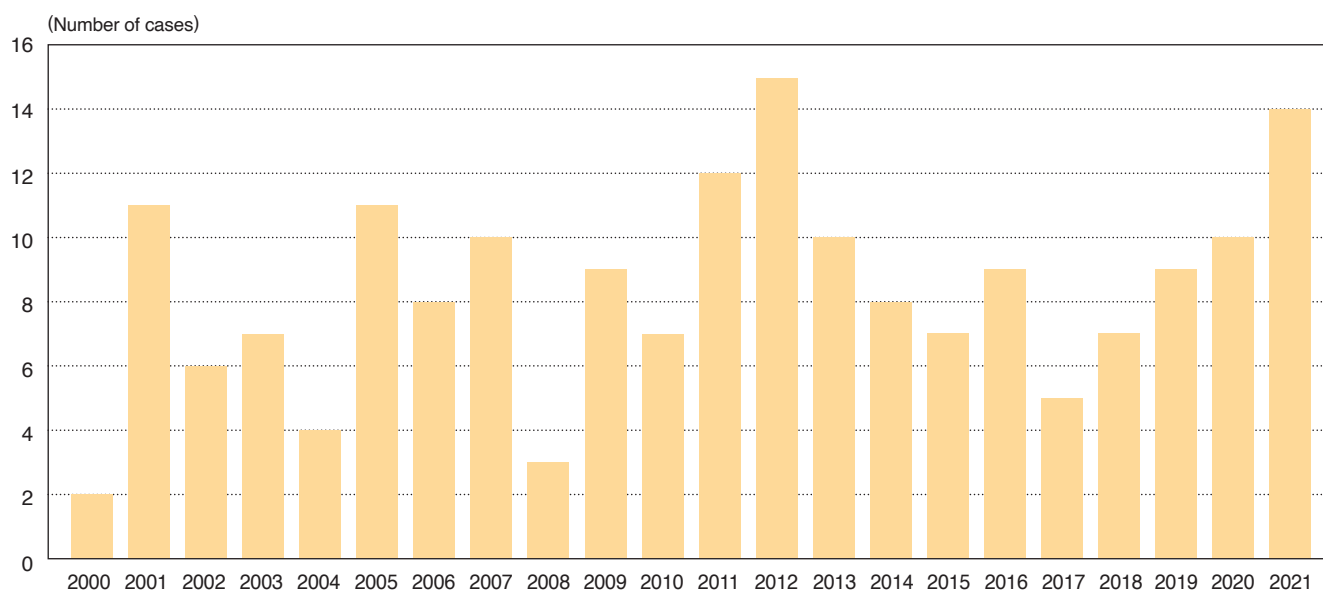
(Number of cases)

Year	Number
2000	2
2001	11
2002	6
2003	7
2004	4
2005	11
2006	8
2007	10
2008	3
2009	9
2010	7
2011	12
2012	15
2013	10
2014	8
2015	7
2016	9
2017	5
2018	7
2019	9
2020	10
2021	14

(Number of cases)

*For details of domain name disputes, please refer to the "Domain Name Dispute Resolution Policy (DRP)" posted by Japan Network Information Center (https://www.nic.ad.jp/en/drp/).

03·1 History

2000	Dec.	JPRS was established.
2001	Feb.	General-use JP Domain Priority Registration Application started.
	Apr.	General-use JP Domain Concurrent Registration Application started.
	May	General-use JP Domain First-Come First-Served Registration Application started.
2002	Feb.	ccTLD Sponsorship Agreement was concluded with ICANN.
	Apr.	Management and administration of .JP TLD was transferred from JPNIC to JPRS.
	Oct.	LG.JP was established.
2003	Jan.	The number of registered JP domain names surpassed 500,000.
	Jun.	JPRS received the approval from ICANN to start IDN service.
	Jul.	RFC-based Japanese JP Domain Name registration service started.
2004	Feb.	IP Anycast technology was introduced in JP DNS service ([a.dns.jp] [d.dns.jp]).
	Jul.	JP domain name started full support for IPv6, for the first time in the world as a TLD.
	Dec.	The portal site "Nihongo dot JP" (https://日本語.jp/) for promoting Japanese JP Domain Name was launched.
2005	Jan.	The portal site "Jinmei Jiten dot JP" (https://人名事典.jp/) to introduce Japanese JP domain names using personal names was launched.
	Dec.	"Eki Machi Guide" (https://駅街ガイド.jp/), which provides information on areas around stations using Japanese JP domain names consisting of station names throughout Japan, started.
		JPRS started operation of the M-Root DNS server in cooperation with the WIDE Project.
2006	Jan.	JPRS started deleting improper DNS server registrations.
	Apr.	JPRS shortened the processing time for JP DNS update.
	Nov.	The number of registered General-use JP domain names surpassed 500,000.
	Dec.	JPRS published guidelines for making URLs consisting of Japanese domain names clickable in email text.
2007	Mar.	"Procedure for recovering deleted domain name registration" was introduced for General-use JP Domain Name.
	Dec.	IP Anycast technology was introduced to the JP DNS service ([e.dns.jp]).
2008	Mar.	The number of registered JP domain names surpassed 1 million.
	Jun.	JPRS started the real-time application process service for CO.JP Domain Name.
	Oct.	The JP DNS server configuration was changed (c.dns.jp and g.dns.jp added).
2009	Apr.	JPRS announced its participation in the "BIND 10" development project.
	Nov.	JPRS extended the coverage of the real-time application process service.
2010	May	JPRS started distributing a cartoon booklet "How the Internet Works" free of charge to junior and senior high schools across Japan.
2011	Jan.	JPRS deployed DNSSEC to the JP domain name service.
	Feb.	JPRS started providing "gTLD Registration Services."
	May	JPRS published "DNS Practices," a book on DNS, written by JPRS engineers.
2012	Jul.	Priority Registration Application of the Prefecture Type JP Domain Name started.
	Sep.	Concurrent Registration Application of the Prefecture Type JP Domain Name started.
	Nov.	General Registration Application of the Prefecture Type JP Domain Name started.
2013	Mar.	The number of registered Prefecture Type JP domain names surpassed 10,000.
	Nov.	The TTL value of the DS RR for JP DNS servers was changed.
2014	Nov.	JPRS introduced Japanese characters into the Prefecture Labels of the Prefecture Type JP Domain Name.
2015	Jun.	JPRS signed an MoU with ICANN and JPNIC on Japanese translation of ICANN materials.
	Oct.	JPRS started providing JP Registrars with "JP Domain Name Usage Support Program for Students."
2016	Apr.	JPRS Started Digital Certificates Issuance Services.
	Jun.	JPRS submitted a notification of its telecommunications business in response to the enactment of the partial amendment to the Telecommunications Business Law.
2017	Sep.	The number of registered General-use JP domain names surpassed 1 million.
	Oct.	JPRS started accepting Concurrent Registration Applications for Japanese JP domain names representing school names.
		JPRS published the report of joint research with 8 ISPs of the electric power corporation group on continued use of the Internet in case of a large-scale disaster.
2018	Feb.	The number of registered JP domain names surpassed 1.5 million.
	Nov.	"Textbook to understand DNS well," a practical guide to DNS authored by JPRS engineers, was published.
2019	Sep.	JPRS acquired ISO 27001 certification (for the domain registry business).
2020	Jan.	JPRS attained full compliance with the WebTrust criteria that ensure the reliability of Certificate Authorities.
	Aug.	JPRS, the WIDE Project and APNIC agreed to establish a new cooperative relationship for the deployment of M-Root instances.
	Oct.	The number of registered JP domain names surpassed 1.6 million.
2021	Jul.	JPRS, HOTnet and QTnet commenced operation of the local nodes for the JP DNS servers.

03·2 JP Domain Name Advisory Committee

The JP Domain Name Advisory Committee was established in 2002 in order to maintain fairness and neutrality of the .JP registry operations. The committee members from outside of JPRS with various viewpoints consider policies for JP domain name services. JP Domain Name Advisory Committee meetings are open to the public, and the minutes and documents are publicly accessible on the JPRS website.

(1) Advisory Committee Meetings

Feb. 16 **70th JP Domain Name Advisory Committee**

The committee members reviewed the draft recommendation that had been adjusted following the advisory report entitled "Method for Appointing Members of the 11th JP Domain Name Advisory Committee" (JPRS-ADVRPT-2020002). The recommendation was confirmed and then delivered to JPRS on February 16.

Jun. 1 **71st JP Domain Name Advisory Committee**

It was reported that the JPRS Board of Directors had appointed all the nominees in accordance with the advisory report, "Method for Appointing Members of the 11th JP Domain Name Advisory Committee" (JPRS-ADVRPT-2020002), as well as the recommendation. It was also informed that the appointees had assumed their positions in the 11th JP Domain Name Advisory Committee. Shigeki Goto was elected and appointed as Chair, and Hironao Kaneko as Vice Chair, of the committee.

JPRS outlined the status of .JP and other TLDs, the circumstances surrounding domain names and its recent activities. The committee then held a question-and-answer session and exchanged opinions.

(2) Consultations and Advisories

The JP Domain Name Advisory Committee did not receive consultations or issue advisories in 2021.

*For details about the past consultations and advisory themes, please refer to "JP Domain Name Advisory Committee" (https://jprs.jp/advisory/) (in Japanese).

03·3　Proposals and Presentations

Date	Title	At	Hosted by
Feb. 5	Overview of Subdomain Takeover and Preventive Measures	1st Anti-Phishing Study Meeting	Council of Anti-Phishing Japan
Feb. 23	Tour de table	34th CENTR Marketing Workshop	CENTR
Feb. 24	Thoughts on DoH/DoT aka DNS over Encryption	APTLD79	APTLD
Feb. 25	Introduction to the Governance of RSS	APAC Space, Online (Zoom)	APAC Space
Feb. 28	Deployment of M-Root instances in AP region	AP* Retreat	AP* Retreat
Mar. 3	Deployment of TLD Anycast node to ISPs for stability and resiliency	APRICOT 2021 Conference	APRICOT
Mar. 4	Cautionary Points about Deletion of Domain Names	Technology and Regulation WG Update Meeting, Council of Anti-Phishing Japan	Council of Anti-Phishing Japan
Apr. 1	RSSAC in ICANN70	APAC Space ICANN70 Readout	APAC Space
Apr.14-Apr.16	Learn in 5 Minutes: Domain Name Basics	Interop Tokyo 2021	Interop Tokyo Steering Committee
Apr.14-Apr.16	Learn in 5 Minutes: Basics of Server Certificate (Always On SSL)	Interop Tokyo 2021	Interop Tokyo Steering Committee
Apr.14-Apr.16	Learn in 5 Minutes: Mechanism of DNS Resolution	Interop Tokyo 2021	Interop Tokyo Steering Committee
Apr.14-Apr.16	Learn in 5 Minutes: Subdomain Takeover	Interop Tokyo 2021	Interop Tokyo Steering Committee
Apr.14-Apr.16	Let's Learn in 15 Minutes: Overview of Subdomain Takeover and Preventive Measures	Interop Tokyo 2021	Interop Tokyo Steering Committee
Apr. 15	Progress in DNSSEC Validation 〜Case of Japan〜	Progress in DNSSEC Validation 〜Case of Japan〜	ICANN APAC／TWNIC
May 6	Evaluation of anti-DDoS features in full-service resolvers	OARC 35	DNS-OARC
May 6	IDN marketing hits and misses	CENTR webinar on IDNs	CENTR
May 6	Keep my privacy: DNS over HTTPS over CGN, public NAT64 （or IPv6 transition technologies, Open HTTP proxies）	OARC 35	DNS-OARC
May 13	Update of the Discussion on the DNS Root Server System	60th ICANN Readout Session	JPNIC
May 13	Root Zone LGR and Japanese Generation Panel (JGP)	60th ICANN Readout Session	JPNIC
May 13	Update of ccNSO at ICANN70	60th ICANN Readout Session	JPNIC
May 26	Regulatory Demands to TLD Registries in Japan	ICANN ccTLD news #1	ICANN
Jun. 2	Meetings with registrars	CENTR 2021 Members' Days	CENTR
Jun. 25	Technical Information Provided by JPRS (July 2020−June 2021)	DNS Summer Day 2021	DNSOPS.JP
Jun. 25	Key Points for Migration from BIND 9.11 to 9.16 (for Authoritative DNS Servers)	DNS Summer Day 2021	DNSOPS.JP
Jun. 25	Evaluation of anti-DDoS features in full-service resolvers	DNS Summer Day 2021	DNSOPS.JP
Jun. 26	draft-ietf-dnsop-avoid-fragmentation-05	IETF 111 dnsop WG	IETF
Aug. 5	Japanese Root Zone LGR	61st ICANN Readout Session	JPNIC
Aug. 5	Update of ccNSO at ICANN71	61st ICANN Readout Session	JPNIC
Sep. 15	draft-ietf-dnsop-avoid-fragmentation-05	IETF dnsop WG interim meeting (interim-2021-dnsop-01)	IETF
Oct. 14	Japanese Script Root Zone Label Generation Rules (Latin Script RZ-LGR)	ICANN72	ICANN
Oct. 19	Tour de table	35th CENTR Marketing Workshop	CENTR

Date	Title	At	Hosted by
Nov. 18	SEO strategies in Japan	APAC DNS Forum 2022	MYNIC/ICANN
Nov. 19	Let's Think about the "DNS of Tomorrow": Lunch with DNS	Internet Week 2021 Lunch Time Webinar	JPNIC
Nov. 19	Update on DNS Server Software (for Authoritative DNS Servers)	Internet Week 2021 DNS DAY	JPNIC
Nov. 19	Standardization Related to DNS and Domain Name in IETF (Continued): Evolution of DNS Protocol in 2021	Internet Week 2021 DNS DAY	JPNIC
Nov. 19	Domain Name, Certificate and TLS: from the Standpoint of a Private Person Operating a Mail Server	Internet Week 2021 DNS DAY	JPNIC
Nov. 19	DNS Update: Domain Name Overview	Internet Week 2021 DNS DAY	JPNIC
Nov. 19	JP DNS Update	Internet Week 2021 DNS DAY	JPNIC
Nov. 23	RSSAC in ICANN72	APAC Space	APAC Space
Dec. 14	Update of the Discussion on the DNS Root Server System	62nd ICANN Readout Session	JPNIC
Dec. 14	Update of ccNSO at ICANN72	62nd ICANN Readout Session	JPNIC

03·4 Press Releases

Date	Title
Feb. 26	JPRS Launched its 20th Anniversary Website "HISTORY OF 20 YEARS"
Mar. 9	JPRS Supports "23rd Japan Junior/Senior High School Web Contest" to Provide Experience of Using JP Domain Names (in Japanese)
Mar. 29	JPRS Publishes "JP Domain Name Registry Report 2020" (in Japanese)
May 17	JPRS Distributes Free Graphic Comic-style Booklet on Domain Names and DNS That Underpin the Internet to Educational Institutions across Japan (in Japanese)
Jul. 14	JPRS, HOTnet and QTnet Commenced Operation of Local Nodes for JP DNS Servers (in Japanese)
Nov. 15	JPRS Starts Distributing Free Poster That Helps Students Have Fun Learning Internet ccTLDs to Educational Institutions across Japan (in Japanese)

*Please refer to "Press Release" (https://jprs.co.jp/en/press/) for the latest releases in English.

03·5 Provision of Technical Information Related to DNS

As the company supporting the basis of the Internet society through DNS and striving to ensure stable operation of the Internet, JPRS publishes technical information related to DNS such as warnings on the detection of DNS software vulnerabilities and other relevant alerts.

*Original materials are written in Japanese.

Date	Title
Jan. 15	Vulnerability Information on Windows DNS Posted (CVE-2021-1637)
Jan. 25	Vulnerability Information on "DNSpooq" in dnsmasq Posted: Appropriate Responses Including Version Upgrade and Firmware Update Strongly Recommended
Feb. 12	Vulnerability Information on Windows DNS Posted (CVE-2021-24078)
Feb. 18	(Urgent) Vulnerability of BIND 9.x (DNS Service Outage and Remote Code Execution) (CVE-2020-8625)
Mar. 12	Vulnerability Information on Windows DNS Server Posted (CVE-2021-26877, CVE-2021-26893, CVE-2021-26894, CVE-2021-26895, CVE-2021-26896, CVE-2021-26897, CVE-2021-27063)
Apr. 16	Vulnerability Information on Windows DNS Posted (CVE-2021-28323, CVE-2021-28328)
Apr. 30	(Urgent) Vulnerability of BIND 9.x (DNS Service Outage and Remote Code Execution) (CVE-2021-25216)
Apr. 30	(Urgent) Vulnerability of BIND 9.x (DNS Service Outage) (CVE-2021-25215)
Apr. 30	Vulnerability of BIND 9.x (DNS Service Outage) (CVE-2021-25214)
May 10	Vulnerability Information on Knot Resolver Posted
Jul. 16	Vulnerability Information on Windows DNS Posted (13 CVE Records Including CVE-2021-33745)
Jul. 29	Vulnerability Information on PowerDNS Authoritative Server Posted (CVE-2021-36754)
Aug. 19	(Urgent) Vulnerability of BIND 9.16.19 (DNS Service Outage) (CVE-2021-25218)
Sep. 17	Vulnerability Information on Windows DNS Posted (CVE-2021-36968)
Oct. 15	Vulnerability Information on Windows DNS Server Posted (CVE-2021-40469)
Oct. 28	Vulnerability of BIND 9.x (Degraded Performance) (CVE-2021-25219)

*For the latest information, please refer to the "Technical Information Related to DNS" (https://jprs.jp/tech/) (in Japanese).

About JPRS

JPRS provides domain name services such as domain name management, administration and distribution, and also performs domain name system (DNS) operations. In addition, JPRS is engaged in research and development of various Internet technologies.

● Domain Name Management and Administration

PRS manages and administers domain names. In particular, JPRS plays an important role as the registry of JP Domain Name, or domain names of Japan. You may have seen addresses for websites and emails such as "https://○○○.jp" and "△△△@○○○.jp." JPRS manages and administers a part of these addresses, namely, strings in the form of "○○○.jp." Domain names are the key to accessing the Internet. JPRS is constantly improving its services so that JP domain names will continue to assist the activities of all kinds of Internet users, including companies, organizations, and individuals.

● DNS Operation

DNS (domain name system) is a system for identifying computers connected to the Internet using domain names, so it is sometimes referred to as the "phone book for the Internet." If DNS were to fail, people would not be able to access websites or exchange emails using domain names. To prevent such a catastrophe, JPRS has established a 24/7 system to ensure stable operation of the "JP DNS" for managing JP domain names.

● R&D of Internet Technologies and International Activities to Support the Internet

JPRS takes an active part in the research and development of advanced technologies to promptly respond to changes in the Internet environment and social needs. Specifically, JPRS engages in internationalization of the identifiers used in protocols, devises methods for resolving issues concerning DNS operations and submits proposals to standardize registry technologies. JPRS actively publishes the results of these activities and shares information at IETF and other meetings to contribute to the network society.

jPRS

Japan Registry Services Co., Ltd.

https://jprs.co.jp/en/