

Do We Know 'Managed DNS Services' Well?

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ICANN76 TechDay

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Abstract (TL;DR)

- Authoritative DNS service is mandatory infrastructure to operate wide variety of internet services such as Web and Email. Especially, if the operation of the services is based on organizational activity, availability and stability of authoritative DNS service is mission critical.
- In Japanese DNS operators' community, there is high demand to have publicly available feature/functionality list of major managed authoritative DNS services provided domestically or globally, to select alternative for on-premise. This is to be able to operate appropriate authoritative DNS service (or its own zone) fit for objectives of IT section or service operation section of the organization.
- Volunteer Team of DNSOPS.JP started investigation to create such feature / functionality list on 2020. The team is incorporating feedback from the community through brief report meeting held few times per year, and keeping its activity expansively.
- This presentation shares overview of the investigation activity and its outcomes to AP region, and also solicits feedback from AP region (other than Japan).

Background and Goal

- Volunteer team at DNS Operators Group, Japan (hereinafter, DNSOPS.JP) started investigation of features of 'Managed DNS Services' and listing them into a table since 2020
 - By expectation that appropriate use of 'Managed DNS Service' brings stability of DNS operation and name resolution
- Aiming to be a reference for DNS operators at organizations to select suitable 'Managed DNS Service(s)' for their use cases

Who we are?

The volunteer team members



Leader &
Investigator

Masayuki OKADA



Investigator

Atsuko TANAKA



Investigator

Naoki SHIBAO



Investigator
& Support

Yoshiro YONEYA



Manager

Yoshiki ISHIDA



Support

Toshio TACHIBANA

Investigating features (Overview)

Feature	Overview
Confidentiality	MFA for service console login, Role base authentication, TSIG for zone XFR, protection against subdomain hijacking, etc.
Availability	Regional redundancy, RRL capability, Primary/Secondary with other DNS services, region specify, SLA, DR for update requests, etc.
Integrity	Backup method, Backup frequency, DNSSEC support, etc.
Usability	Easy configuration for average users, batch registration of a large number of RRs, etc.
Resource Record	At least A/AAAA/CNAME/MX/NS/TXT/SRV must be supported, CAA/DNSSEC should be supported, etc.
Support	Operational reports be generated, office hour of user support is clear, etc.
Cost/Service Agreement	Billing structure is clear, contract term and cancellation method is clear, etc

Investigated Managed DNS services

- Global services (dictionary order)

Provider	Service Name
Akamai	Edge DNS
Amazon	Route53
Cloudflare	Managed DNS
GoDaddy	Premium DNS
Google	Cloud DNS
IBM	IBM cloud DNS
Microsoft	Azure DNS
NeuStar	UltraDNS
Oracle	Dyn Dynamic DNS

- Domestic services (dictionary order)

Provider	Service Name
GMO	Onamae.com
IIJ	IIJ DNS Platform Service
Interlink	Leave it to me DNS

Source: Detailed Matrix in Full Report 2022-Apr Ver.
<https://docs.google.com/spreadsheets/d/1sM6r6pscUS4Ujngp2qQsreQNrUKFe3A32GDavDMvbM4/edit#gid=0>

Investigation about authoritative DNS servers

How usually is managed DNS services used in the wild?

University of Nagasaki
Naoki SHIBAO

Background

What is the suitable 'Managed DNS Services'?

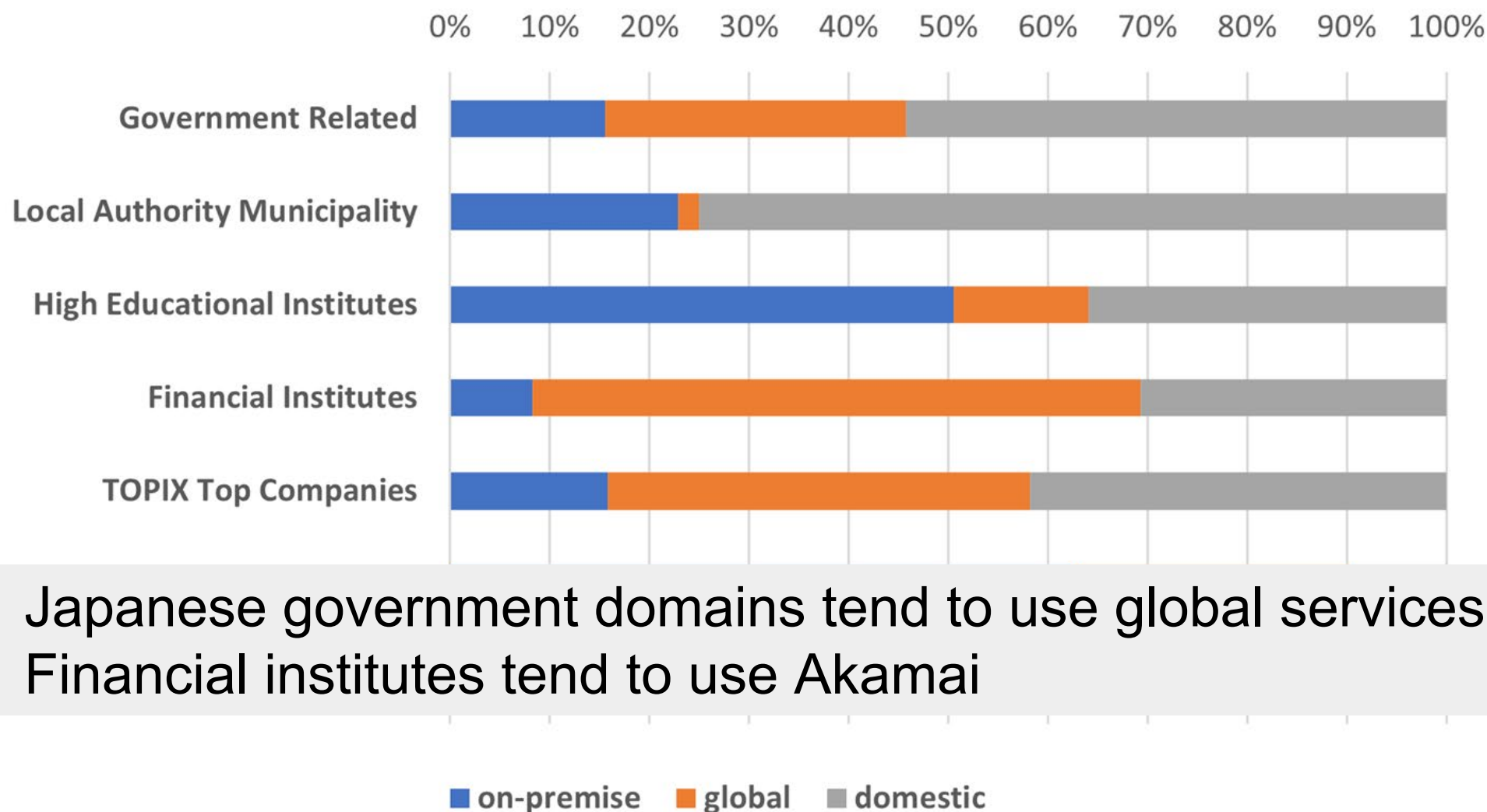
Analysis about the authoritative DNS servers in several fields.

Make the data that is the reference for DNS operators at organizations to select suitable 'Managed DNS Service(s)' for their use cases.

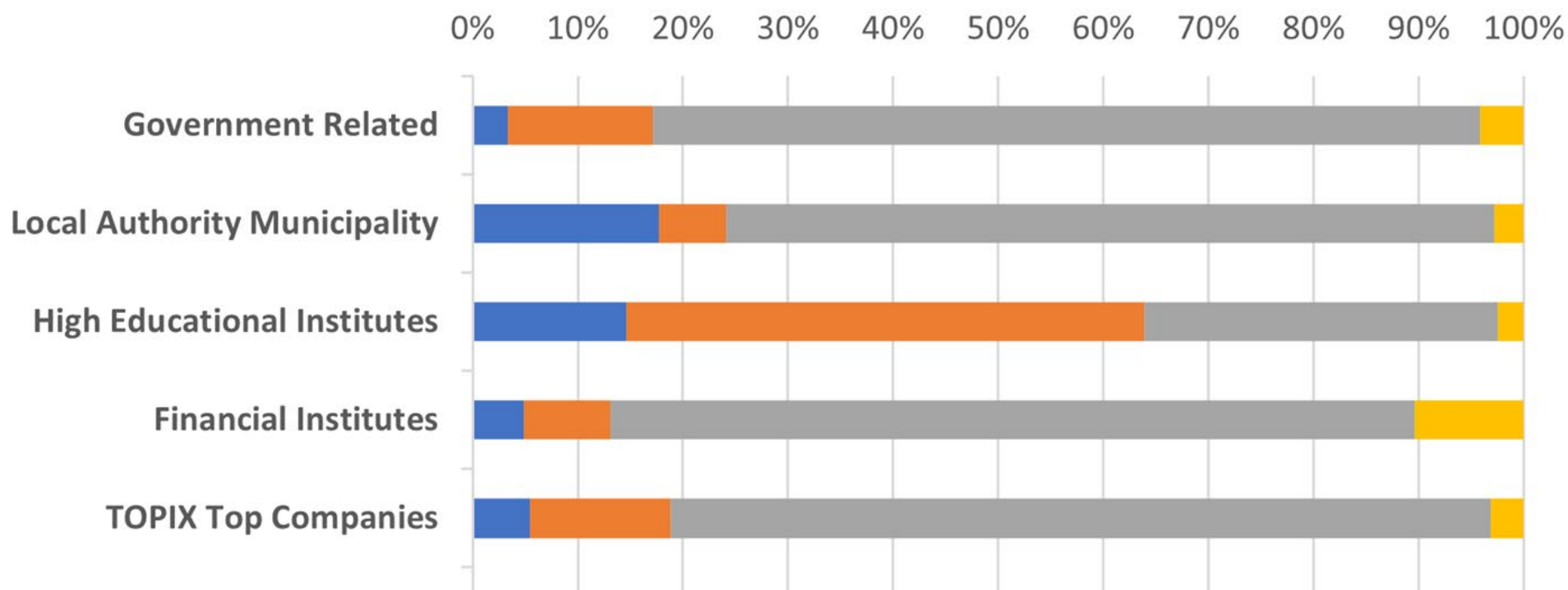
Various 'managed DNS services'



Status about authoritative DNS servers in various field



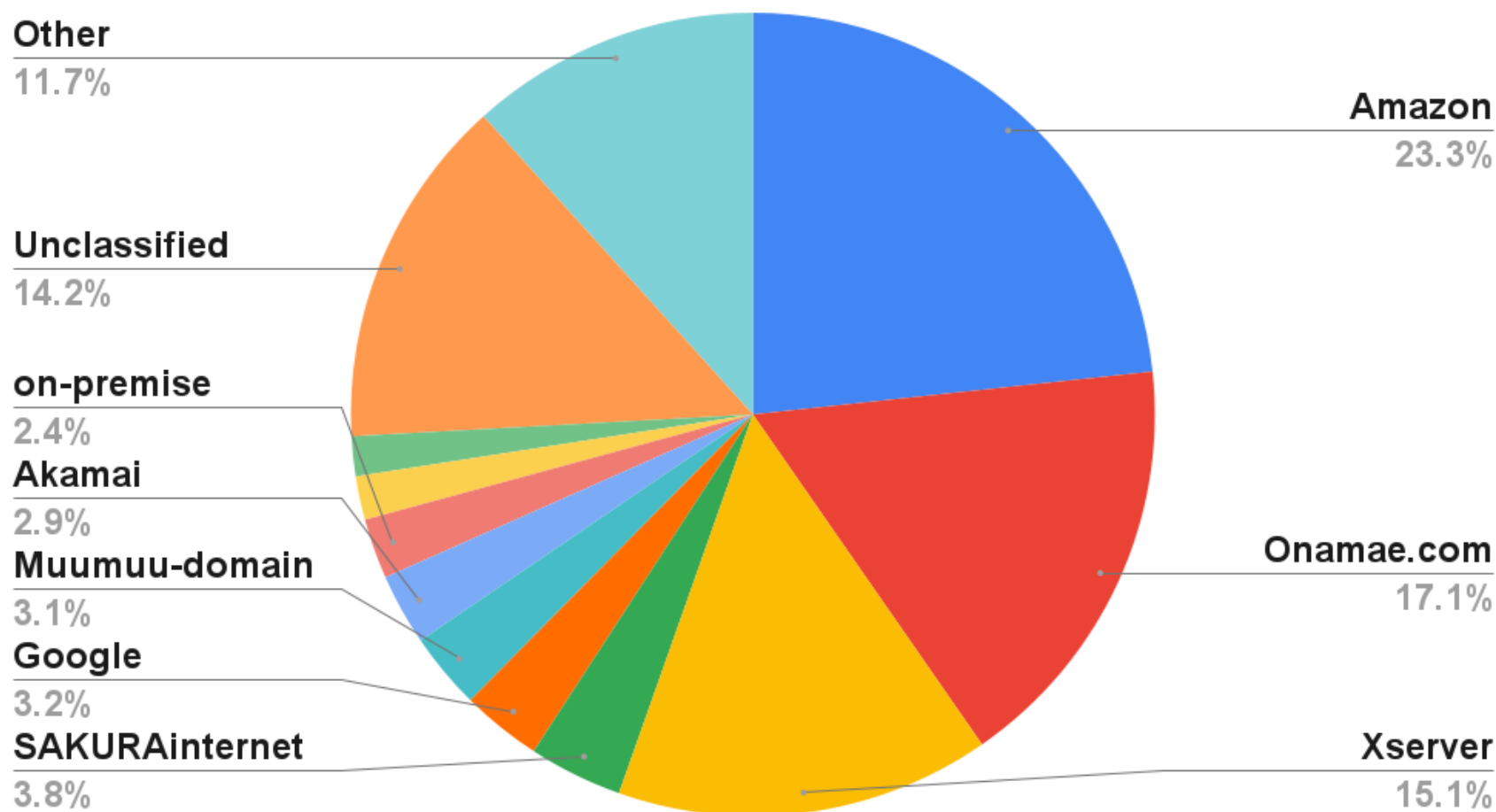
Status about configuration of DNS servers



- Financial institutes tend to use multiple services
- High educational institutes run their own(on-premise) + SINET

Currently under investigation

Crawled domain names from press releases



CONCLUSION

- Organizations in mission critical area are running their own + managed service
- Characteristics are differs by areas
- Many of organizations uses managed DNS services



Wishlist

- Crawl domain names from other sources (like similarweb)
- Not limited in Japan, but globally

Investigation of Authoritative name server

~The right service for the right place~

Mirai Communication Network Inc.

Atsuko TANAKA

Self introduction

- Atsuko TANAKA
- Mirai Communication Network Inc.
Technical team
- Career

2005/4～ DesigNET Inc.

2018/4～ Mirai Communication Network Inc.

2021/11～ Joined managed DNS service investigation team

2022/7～ Initiated ChuNOG(NOG for Central Region of Japan)



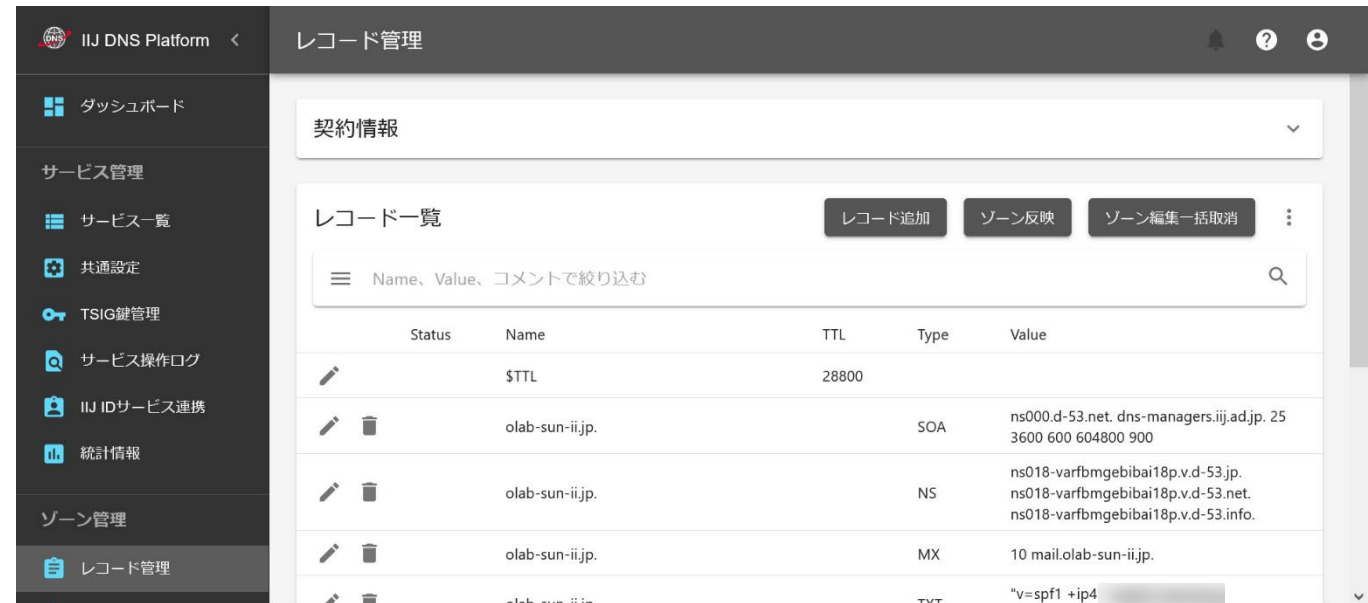
Abstract

Actually used several managed DNS services as a DNS operator of registrar, and summarized pros and cons of each service from my perspective.

- Targets
 - Domestic: IJ/Interlink
 - Global: deSEC
- Investigated items (c.f. slide#5)
 - Confidentiality / Availability / Integrity / Usability / Support & Cost / Service Agreement

IIJ Managed DNS Service

- Description
 - Authoritative DNS service provided by IIJ
 - Can be both primary/secondary
 - 2000JPY(15USD)/month or more



Interlink Omakase DNS

The meaning of "omakase" is "leave it to me"

- Description
 - Authoritative DNS service provided by Interlink
 - Can be both primary/secondary
 - 1000JPY(9USD)/month/domain
 - Can accommodate carry-on domain name

おまかせ DNS Manager

スレーブモード設定

ドメイン名: atana.jp

No	プライマリDNSのIPアドレス
No 1	
No 2	

※プライマリDNSのIPアドレスで記入してください。2つまで指定できます。

マスターモード設定

ドメイン名: atana.jp

TTL: 600

ホスト名	タイプ	データ
www	A	35
www	AAAA	:35
mail	A	35
	MX	10 mail.atana.jp.
	TXT	"v=spf1 +ip4: 35 +ip6: "
sub993	NS	
sub993	NS	
_ftp_tcp	SRV	0 100 21 www.atana.jp.
dev	CNAME	www.atana.jp.

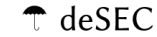
※SOALレコードおよびゾーン全体に対するNSレコードは省略されています。

一括アップロード 欄を増やす ダウンロード 簡単設定

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deSEC

- Description
 - Non-profit company based on Berlin
 - Free for charge
 - Globally distributed instances
 - Aiming for DNSSEC deployment
 - No warranty



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Modern DNS Hosting for Everyone

deSEC is a **free DNS hosting** service, **designed with security in mind**.

Running on **open-source software** and **supported by SSE**, deSEC is free for everyone to use.

- ☐ Managed DNS account
☐ dynDNS account



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DOMAIN MANAGEMENT

TOKEN MANAGEMENT

MORE

Record Sets atana.jp

Search



i You can edit your DNS records here. If you have questions, feel free to post in [our forum](#), or shoot us an email.

Type	Subname	Content	TTL (seconds)	Last touched	Actions
Loading items...	(optional)	Hostname			
		ns1.desec.io.	×	3600	11 minutes ago
		ns2.desec.org.	×		
		+ add another value			

Rows per page: 10

My evaluation(Confidentiality, Availability, Integrity)

Conf- identi- -ality	Items	IIJ	Interlink	deSEC	Avail- ability	Items	IIJ	Interlink	deSEC
	Comply ISO27017	✓				Diversity of placement	✓		✓
	MFA for GUI sign in	✓				RRL capability	✓		
	Role based authentication	✓				Can be primary/secondary of others	✓	✓	
	TSIG for zone xfr	✓				Has explicit SLA	✓		
						DR structure for update processing	✓	?	?
	Measures for subdomain hijacking	✓	?	?	Integ- rity	Backup capability, frequency, expiration cycle	✓		?
						DNSSEC	✓		✓

My evaluation(Usability)

	Items	IJJ	Interlink	deSEC
Usability	Average user can configure RR appropriately	✓	✓	✓
	Batch update of massive RRs (through API)	✓	✓	✓
	Syntax check for RRs	✓	✓	✓
	Referable zone update log	✓		
	Easy roll back to a previous configuration	✓		
	CNAME Flattening	✓		
	Multilingual or easy English on control panel UI	✓		✓

My evaluation(Support, Cost & Service Agreement)

support	Items	IJJ	Inter link	deSEC
	Technial QA Support	✓		
	Office hours(24/7, 9-17)	24H365D Tel9-19	24H 365D	
	Contact methods (Tel, Mail, Web, Chat)	✓ Tel/Mail/web	✓ Web	✓ Web
	Additional inquiry cost	✓ No cost	✓	✓ No cost
	SLA for CS response time			
	Notification method of service outage(Tel, Mail, Web, Chat)	✓ Mail、 Web	✓ Web	✓ Web
	SLA for notification time of outage			

Cost & Service Agreement	Items	IJJ	Inter link	deSEC
	Clear Pricing policy	✓	✓	—
	Clear period of contract / cancelling method	✓	✓	—
	Auto continuation	✓	✓	—
	Form of contract application	✓ Only via sales	✓ Web	✓ Web
	Reverse lookup capability	✓		

Summary

Targets	Pros	Cons
IIJ	• Separate management personnel for each zone • Ability to manage history • Fully featured DNS, marvelous IIJ Management features are also excellent	• Needs budgeted, minimum charge of 1kUSD/mo for hundreds of domain
Interlink	• Compact features and UI • Can start immediately after sign up if there is existing registrant contract • Can easily setup secondary on outside	• Login IDs are standardized for all Interlink services under contract. • TTL is a per-zone setting and cannot be less than 600
deSEC	• Free of charge • Only email address and domain name are required for use • Easily setup DNSSEC	• They always ask for donations • Use case is limited due to no warranty • Unclear how to update DNSSEC keys periodically

Findings and next steps

- It is important for users that the process from the contracting procedure to the start of service use is easy. It is only after they have actually signed the contract and started using the service that they will know if the process was really easy or not.
- From the user's point of view, the availability and integrity of the service is difficult to see from the publicly available information. Availability and integrity are important when a failure occurs, so users need to check them carefully before starting to use the service.
- The more functions a service has is the better, but the less is not the worse. Each service has its own pros and cons. So users should choose according to their requirements.



We have survey items that we have yet to visualize and scale. We would like to trigger users to use the services like restaurant reviews. We will continue to investigate services with diverse feedback.

Final Remarks

- Our activity is well accepted by Japanese DNS operators' community, and continuously updating in correspond to feedback from the community
 - Publishing full report once a year at dedicated reporting conference (in Spring), and snapshot updates at event of DNSOPS.JP (in Summer and Winter)
 - Conducting questionnaire survey to understand demands/warries/expectations of DNS operators

Q&A

- We welcome feedback from you to improve our activity
- We also want to know situation of other regions/
countries all over the world

Resources (in Japanese)



Full Report

[2021-Apr Ver.](#)

[2022-Apr Ver.](#)

Feedback Form

[Users' opinion](#)

←From the view point of Managed DNS service users

[Providers' opinion](#)

←From the view point of Managed DNS service providers

[Questionair: Why not use Managed DNS service](#)

Presentations (in the past events)

2020-06-26	DNS Summer Day 2020	Slides 1	Slides 2	
2020-11-26	DNSOPS.JP BoF 2020	Slides		
2021-04-09	Dedicated report Conference 2021	Slides 1	Slides 2	
2021-06-25	DNS Summer Day 2021	Slides 1	Slides 2	
2021-07-16	JANOG48	Slides 1	Slides 2	Slides 3
2021-11-19	DNSOPS.JP BoF 2021	Slides 1	Slides 2	
2022-04-22	Dedicated Report Conference 2022	Slides 1	Slides 2	Slides 3
2022-06-24	DNS Summer Day 2022	Slides 1	Slides 2	Slides 3
2022-07-15	JANOG50	Slides 1	Slides 2	Slides 3
2022-11-29	DNSOPS.JP BoF 2022	Slides 1	Slides 2	Slides 3

Acknowledgements

This activity is funded by a part of sponsor fee of DNSOP.JP's event, the 'DNS Summer Day'. The team and the DNSOPS.JP community highly appreciate our sponsors to make this activity possible.

<https://dnsops.jp/event.html>