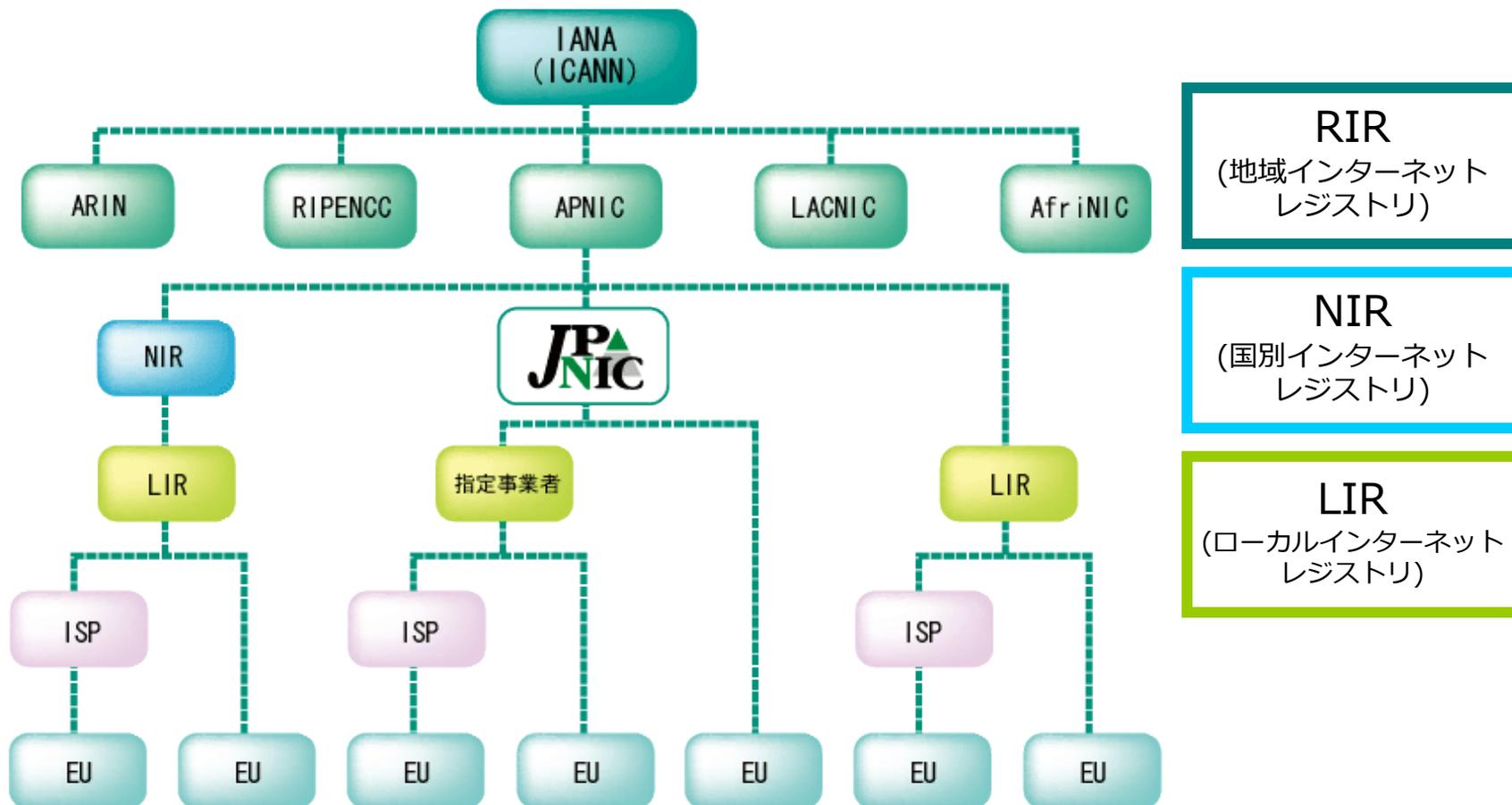


IPv6のGeoIPってどんな状況？ ～レジストリ登録情報～

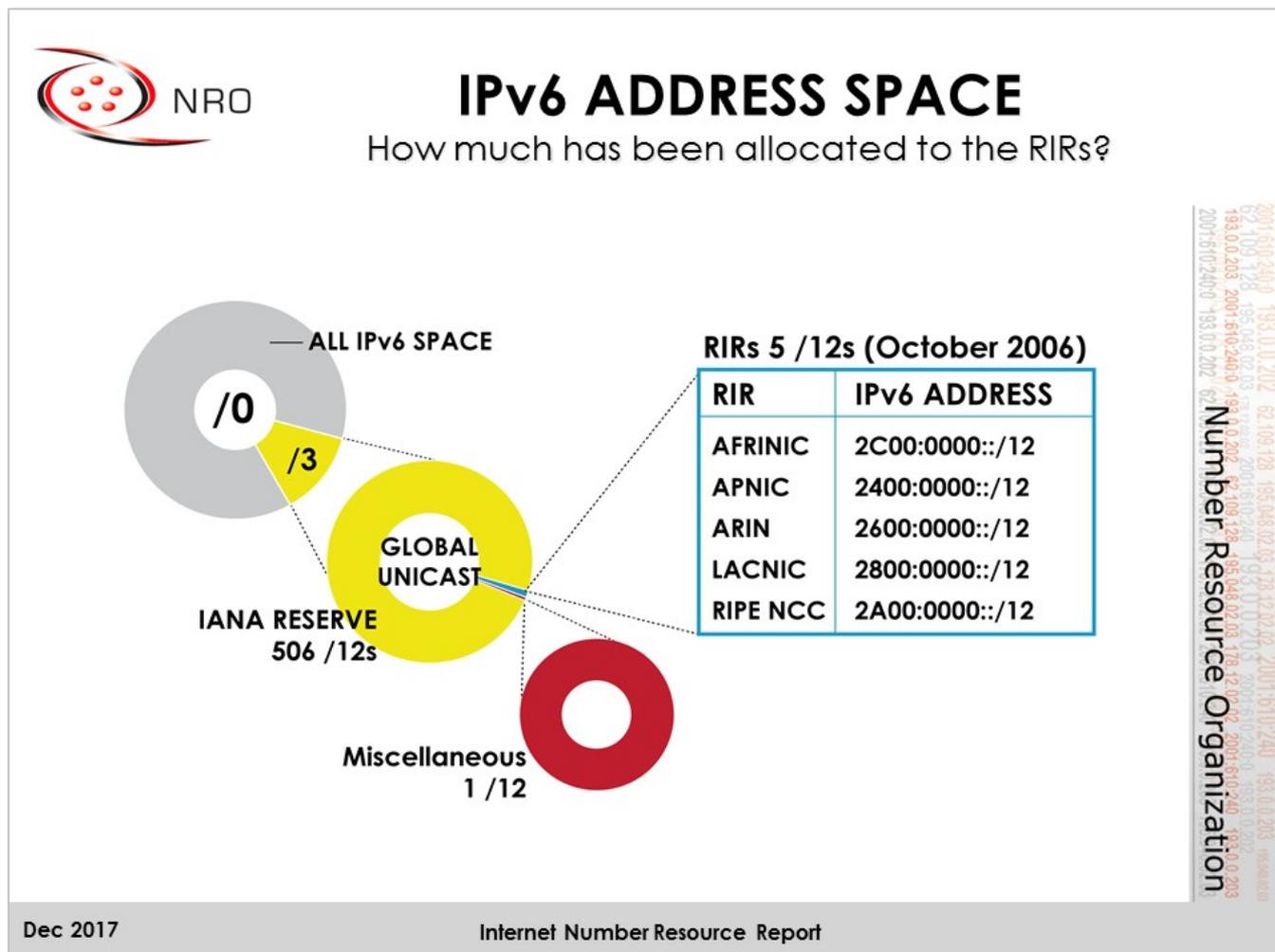
一般社団法人日本ネットワークインフォメーションセンター
川端宏生

おさらい：IPアドレス管理の構造



IANA(Internet Assinged Numbers Authority)は特定の地域に属することなく、全世界のIPアドレスの管理を行っている組織です。その配下に地域単位で管理を行うRIR(地域インターネットレジストリ)、NIR(国別インターネットレジストリ)、その下にLIR(ローカルインターネットレジストリ)と呼ばれるレジストリが存在し、IPアドレスの分配はこの管理階層に従って行われています。JPNICはアジア太平洋地域のRIRであるAPNIC(Asia Pacific Network Information Centre)からの委任により、NIR (国別インターネットレジストリ)として国内のIPアドレス管理を行っています。

IPv6アドレスの分配状況



Internet Number Status Reports(2018/02/12公開分)
<https://www.nro.net/statistics>

IANA(PTI)のIPv6アドレスリスト

IPv6 Global Unicast Address Assignments

Last Updated
2018-04-24

Registration Procedure(s)
Allocations to RIRs are made in line with the Global Policy published at <http://www.icann.org/en/resources/policy/global-addressing>. All other assignments require IETF Review.

Description
The allocation of Internet Protocol version 6 (IPv6) unicast address space is listed here. References to the various other registries detailing the use of the IPv6 address space can be found in the [IPv6 Address Space registry](#).

Reference
[\[RFC7249\]](#)

Note
The assignable Global Unicast Address space is defined in [\[RFC3513\]](#) as the address block defined by the prefix 2000::/3. [\[RFC3513\]](#) was later obsoleted by [\[RFC4291\]](#). All address space in this block not listed in the table below is reserved by IANA for future allocation.

Available Formats
[CSV](#) [XML](#) [HTML](#) [Plain text](#)

Prefix	Designation	Date	WHOIS	RDAP	Status	Note
2001:0000::/23	IANA	1999-07-01	whois.iana.org		ALLOCATED	2001:0000::/23 is reserved for IETF Functions. [RFC4380]. 2001:1::/128 is reserved for Benchmarking. [RFC7450]. 2001:4:112::/48 is reserved for LISP. [RFC7954]. 2001:10::/28 is reserved for ORCHID. [RFC7954]. For complete registration information, see the IPv6 Special Registry .
2001:0200::/23	APNIC	1999-07-01				
2001:0400::/23	ARIN	1999-07-01				
2001:0600::/23	RIPE NCC	1999-07-01				
2001:0800::/23	RIPE NCC	2002-07-01				
2001:0a00::/23	RIPE NCC	2002-07-01				
2001:0c00::/23	APNIC	2002-07-01				2001:0c00::/32 reserved for Document Object Model. [RFC7954]. For complete registration information, see the IPv6 Special Registry .
2001:0e00::/23	APNIC	2003-01-01	whois.apnic.net	https://rdap.apnic.net/	ALLOCATED	
2001:1200::/23	LACNIC	2002-11-01	whois.lacnic.net	https://rdap.lacnic.net/rdap/	ALLOCATED	
2001:1400::/23	RIPE NCC	2003-02-01	whois.ripe.net	https://rdap.db.ripe.net/	ALLOCATED	
2001:1600::/23	RIPE NCC	2003-07-01	whois.ripe.net	https://rdap.db.ripe.net/	ALLOCATED	
2001:1800::/23	ARIN	2003-04-01	whois.arin.net	https://rdap.arin.net/registry	ALLOCATED	http://rdap.arin.net/registry
2001:1a00::/23	RIPE NCC	2004-01-01	whois.ripe.net	https://rdap.db.ripe.net/	ALLOCATED	
2001:1c00::/23	RIPE NCC	2004-05-04	whois.ripe.net	https://rdap.db.ripe.net/	ALLOCATED	
2001:2000::/20	RIPE NCC	2004-05-04	whois.ripe.net	https://rdap.db.ripe.net/	ALLOCATED	
2001:3000::/21	RIPE NCC	2004-05-04	whois.ripe.net	https://rdap.db.ripe.net/	ALLOCATED	
2001:3800::/22	RIPE NCC	2004-05-04	whois.ripe.net	https://rdap.db.ripe.net/	ALLOCATED	

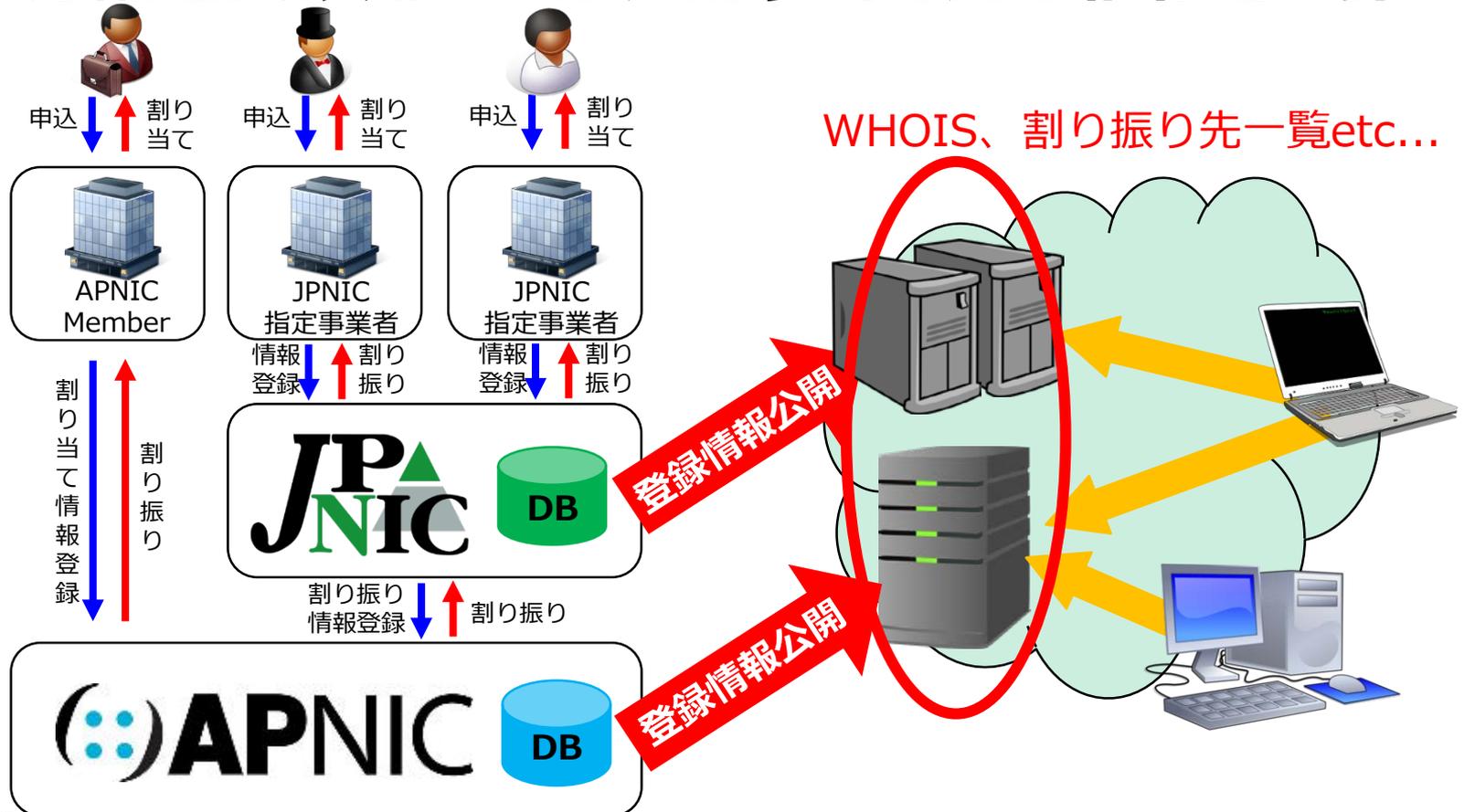
AFRINIC : アフリカ地域
APNIC : アジア太平洋地域
ARIN : 北米地域
RIPE NCC : ヨーロッパ・中東地域
LACNIC : 南米地域

<https://www.iana.org/assignments/ipv6-unicast-address-assignments/ipv6-unicast-address-assignments.xhtml>



割り振り／割り当てと分配先情報

- 管理組織(レジストリ)は分配先の情報を登録
- 分配を受けたISPは、割り当て先の情報を登録



WHOIS①

● APNIC/JPNICが登録する割り振り情報の例

● 契約情報に基づいて登録

https://www.apnic.net/about-apnic/whois_search/

```
inet6num:      2001:dc2::/32
netname:       JPNIC-NET-JP-20030529
descr:         Japan Network Information Center
country:       JP
admin-c:       JNIC1-AP
tech-c:        JNIC1-AP
mnt-by:        MAINT-JPNIC
remarks:       JPNIC Allocation Block
remarks:       Authoritative information
remarks:       allocations made from with
remarks:       queried at whois.nic.ad.jp
remarks:       output query whois -h who
remarks:       *****
remarks:       Network Information: [ネットワーク情報]
remarks:       For abuse/any contacts reg [IPネットワークアドレス]
remarks:       please refer to the contac [ネットワーク名]
remarks:       object displayed down belo [組織名]
remarks:       ***** [Organization]
status:         ASSIGNED PORTABLE [管理者連絡窓口]
last-modified: 2008-09-04T06:49:18Z [技術連絡担当者]
source:         APNIC [Abuse]
                [ネームサーバ]
                [ネームサーバ]
                [割振り年月日]
                [最終更新]
```

http://whois.nic.ad.jp/cgi-bin/whois_gw

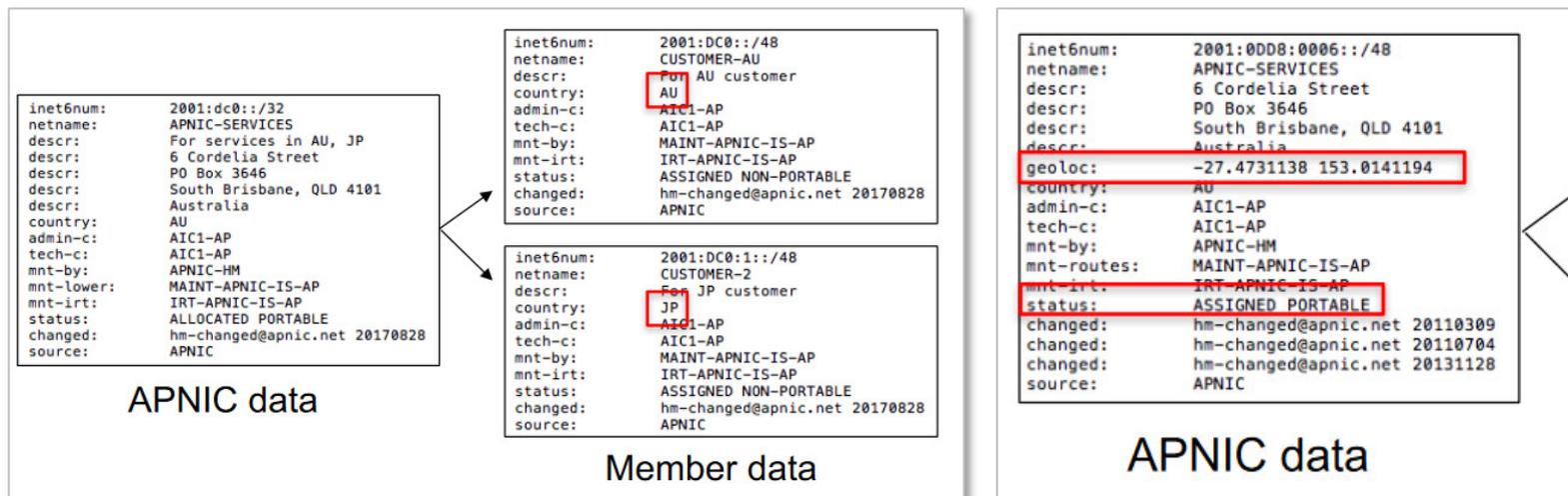
```
[ JPNIC database provides information regarding IP address and ASN. It
[ is restricted to network administration purposes. For further inform
[ use 'whois -h whois.nic.ad.jp help'. To only display English output,
[ add '/e' at the end of command, e.g. 'whois -h whois.nic.ad.jp xxx/e
```

```
[ IPネットワークアドレス] 2001:0dc2::/32
[ ネットワーク名] JPNIC-NET-JP-20030529
[ 組織名] 一般社団法人日本ネットワークインフォメ
[ Organization] Japan Network Information Center
[ 管理者連絡窓口] HH11825JP
[ 技術連絡担当者] JP00000038
[ Abuse] hostmaster@nic.ad.jp
[ ネームサーバ] ns3.nic.ad.jp
[ ネームサーバ] ns5.nic.ad.jp
[ 割振り年月日] 2003/05/29
[ 最終更新] 2016/12/02 16:38:03(JST)
```

WHOIS②

● APNICメンバーが登録する情報の例

- 割り当て先組織に関する情報とあわせて、IPアドレスの利用場所や割り当て先組織の所在国などを登録
- APNICから直接割り当てのケースで、ユーザが情報を別途登録できない場合には、geoloc:属性で対応(ごく少数)



APNIC44での発表資料より

Vivek Nigam氏(APNIC) : Geolocation Information update

<https://conference.apnic.net/44/program/schedule/#/day/7/apnic-services>

分配先の一覧@JPNIC

- JPNICが管理を行っているIPv6アドレス一覧
 - APNICから、日本のAPNICメンバーに割り振り／割り当てを行ったIPv6アドレスは含みません

2001:240::/32	2001:df2:fc00::/48	2401:a240::/32	2404:200::/32
2001:258::/32	2001:df3:6500::/48	2401:a380::/32	2404:a00::/32
2001:260::/32	2001:df3:a700::/48	2401:a500::/32	2404:1900::/32
2001:268::/32	2001:df3:bc00::/48	2401:ad00::/32	2404:1b00::/32
2001:278::/32	2001:df4:b400::/48	2401:af80::/32	2404:2680::/32
2001:298::/32	2001:df5:2c00::/48	2401:bd00::/32	2404:2d00::/32
2001:2a0::/32	2001:df5:6400::/48	2401:bf00::/32	2404:3200::/32
2001:2a8::/32	2001:df6:6000::/48	2401:c800::/32	2404:5100::/32
2001:2c0::/32	2001:df6:8000::/48	2401:cbc0::/32	2404:5200::/32
2001:2c8::/32	2001:df6:a000::/48	2401:d500::/32	2404:7200::/32
2001:2e8::/32	2001:df7:4800::/43	2401:d700::/32	2404:7900::/32
2001:2f0::/32	2001:df7:5600::/48	2401:d900::/32	2404:7a00::/32
2001:2f8::/32	2001:df7:7800::/48	2401:dbc0::/32	2404:7a80::/29
2001:300::/32	2001:df7:a800::/48	2401:dc40::/32	2404:8200::/32
2001:308::/32	2001:e40::/32	2401:dd40::/32	2404:8e00::/32
2001:310::/32	2001:e41::/32	2401:e300::/32	2404:8e01::/32
2001:318::/32	2001:e42::/31	2401:e700::/32	2404:9000::/32
2001:338::/32	2001:e44::/30	2401:efc0::/32	2404:9200::/32
2001:340::/32	2001:e58::/32	2401:f100::/32	2404:a600::/32
2001:348::/32	2001:e90::/32	2401:f280::/32	2404:c700::/32
2001:350::/32	2001:f08::/32	2401:f800::/32	2404:ca00::/32
2001:358::/32	2001:f58::/32	2402:700::/32	2404:cb00::/32

<https://www.nic.ad.jp/ja/dns/ipv6-addr-block.html>

分配先の一覧@APNIC

- APNICから直接割り振り/割り当てを行ったアドレスの一覧を公開
 - APNICメンバーへの割り振り後に、メンバーが割り当てた情報は含まず

```
apnic | CN | ipv6 | 2001:da9:: | 32 | 20050203 | allocated
apnic | CN | ipv6 | 2001:daa:: | 32 | 20050207 | a
apnic | AU | ipv6 | 2001:db0:: | 32 | 20031112 | a
apnic | AU | ipv6 | 2001:dc0:: | 32 | 20030124 | a
apnic | TW | ipv6 | 2001:dc1:: | 32 | 20030531 | a
apnic | JP | ipv6 | 2001:dc2:: | 32 | 20030529 | a
apnic | JP | ipv6 | 2001:dc3:: | 32 | 20030619 | a
apnic | JP | ipv6 | 2001:dc4:: | 32 | 20031117 | a
```

<ftp://ftp.apnic.net/public/stats/apnic/delegated-apnic-latest>

```
inet6num: 2001:dc2::/32
netname: JPNIC-NET-JP-20030529
descr: Japan Network Information Center
country: JP
admin-c: JPNIC1-AP
tech-c: JPNIC1-AP
mnt-by: MAINT-JPNIC
remarks: JPNIC Allocation Block
remarks: Authoritative information regarding assignments and
remarks: allocations made from within this block can also be
remarks: queried at whois.nic.ad.jp. To obtain an English
remarks: output query whois -h whois.nic.ad.jp x.x.x.x/e
remarks: *****
remarks: For abuse/any contacts regarding this address range,
remarks: please refer to the contacts listed on the inet6num
remarks: object displayed down below, or look up JPNIC Whois.
remarks: *****
status: ASSIGNED PORTABLE
last-modified: 2008-09-04T06:49:18Z
source: APNIC
```

LACNICでのポリシー提案(LAC-2018-03)

LACNIC : 中南米地域のIPアドレス・AS番号割り当てを管理するRIR

- メンバーからエンドユーザ等への割り当ても含めて、割り当て国に関する情報も一覧で公開

The screenshot shows the LACNIC website interface for a policy proposal. At the top, there is a header with the LACNIC logo and a navigation bar with links: 'Submit a Proposal', 'List of Proposals', 'Upload a Proposal', and 'Recover Link for Editing'. Below the header, the title 'IP-Based Geolocation' is displayed. A table provides key details: Original Language (Español), Date Published (26/02/2018), Last Modified (14/02/2018), Last Call for Comments Period (01/05/2018 - 31/05/2018), Date Ratified (26/06/2018), and Implementation Date (Does not apply). The status is 'Ratified'. A legend for the pie chart shows: In favor = 9 (blue), Neutral = 1 (red), and Against = 4 (green). The pie chart shows a large blue section (9), a smaller green section (4), and a very small red section (1).

Original Language	Español	Date Published	26/02/2018	Last Modified	14/02/2018
Last Call for Comments Period	01/05/2018 - 31/05/2018	Date Ratified	26/06/2018	Implementation Date	Does not apply
Status	Ratified	Download	TXT PDF XML DOCX		
See other versions	1.0 (compare)				

Authors
Name: Jorge Lam
Email: jorge.lam@centurylink.com
Organization: CenturyLink

General opinion

- In favor = 9
- Neutral = 1
- Against = 4

<https://politicas.lacnic.net/politicas/detail/id/LAC-2018-3?language=en>

- 現在、LACNIC事務局による実装待ちの状態
- 他地域でも同様の提案がなされるかは不明

ご清聴ありがとうございました！



JPNICブログ：

聞けそうで聞けないIPアドレスとAS番号の話
~よくあるお問い合わせから~

<https://blog.nic.ad.jp/blog/inquiry-ipas/>