

世界から見た JPNICの登録情報

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JPNICのデータを世界にどう見せるか

- 参照側システムが賢いので比較的大丈夫
 - 逆引きDNS(RDNS)
 - RPKI
- 知名度が高くてなんとかなってる(将来は知らん)
 - JPIRR
- ある意味混迷
 - WHOIS
 - RDAP

JPNIC WHOISの英語対応

- JNNIC WHOISに' /e' をつけて検索すると出てくる
- その他、JPNIC DBの英語版をAPNICに複製
 - APNICが問い合わせを受けた時に「Source: JPNIC」で応答
- 落とし穴1：全てが複製されているわけではない
- 落とし穴2：もはやみんなremarks読まないって
- 落とし穴3：クライアント実装によって色々違う
- 落とし穴4：歴史的資源と移転…

問題意識

- 番号資源のWHOIS登録情報を参照できない場合がある
 - 世界にいる普通の人
 - 使っているのは標準コマンド
- 自動化への障壁になる
 - レコードを探すために必要な事前知識が多すぎる
 - 運用コストが高い

MacOS – OpenBSD由来なWHOIS

- WHOISから得られた参照を追いかける
- APNICに複製された英語版の情報を応答
 - それ以外にも関連情報多すぎ

```
maz — 80x24
% Information related to '210.130.0.0 - 210.130.255.255'

inetnum:      210.130.0.0 - 210.130.255.255
netname:      IIJ-CIDR-BLK-JP
descr:        Internet Initiative Japan Inc.
remarks:      Email address for spam or abuse complaints : abuse-contact@iij.d.jp
country:      JP
admin-c:      JP00010080
tech-c:       JP00010080
remarks:      This information has been partially mirrored by APNIC from JPNIC. To obtain more specific information, please use the JPNIC WHOIS Gateway at
remarks:      http://www.nic.ad.jp/en/db/whois/en-gateway.html or
remarks:      whois.nic.ad.jp for WHOIS client. (The WHOIS client defaults to Japanese output, use the /e switch for English output)
last-modified: 2014-08-01T02:16:00Z
source:       JPNIC

% This query was served by the APNIC Whois Service version 1.88.25 (WHOIS-JP1)

maz@pro2019 ~ %
```

maz@iij.ad.jp

```
maz — 80x92
[maz@pro2019 ~ %] whois -S 210.130.0.0/16
% IANA WHOIS server
% for more information on IANA, visit http://www.iana.org
% This query returned 1 object

refer:        whois.apnic.net

inetnum:      210.0.0.0 - 210.255.255.255
organisation: APNIC
status:       ALLOCATED

whois:        whois.apnic.net

changed:      1996-06
source:       IANA

# whois.apnic.net

% [whois.apnic.net]
% Whois data copyright terms http://www.apnic.net/db/copyright.html
% Information related to '210.128.0.0 - 210.135.255.255'
% Abuse contact for '210.128.0.0 - 210.135.255.255' is 'hostmaster@nic.ad.jp'

inetnum:      210.128.0.0 - 210.135.255.255
netname:      JPNIC-MET-JP
descr:        Japan Network Information Center
country:      JP
admin-c:      JNIC1-AP
tech-c:       JNIC1-AP
remarks:      JPNIC Allocation Block
remarks:      Authoritative information regarding assignments and allocations made from within this block can also be queried at whois.nic.ad.jp. To obtain an English output query whois -h whois.nic.ad.jp x.x.x.x/e
mnt-by:       MAINT-JPNIC
mnt-irt:      IRT-JPNIC-JP
status:       ALLOCATED PORTABLE
last-modified: 2015-12-01T22:31:45Z
source:       APNIC

irt:          IRT-JPNIC-JP
address:      Uchikanda 05 Bldg 4F, 2-12-6 Uchi-Kanda
address:      Chiyoda-ku, Tokyo 101-0047, Japan
e-mail:       hostmaster@nic.ad.jp
abuse-mailbox: hostmaster@nic.ad.jp
phone:        +81-3-5297-2311
fax-no:       +81-3-5297-2312
admin-c:      JNIC1-AP
tech-c:       JNIC1-AP
auth:        # Filtered
remarks:      hostmaster@nic.ad.jp was validated on 2020-07-23
mnt-by:       MAINT-JPNIC
last-modified: 2022-06-14T04:26:58Z
source:       APNIC

role:         Japan Network Information Center
address:      Uchikanda 05 Bldg 4F, 2-12-6 Uchi-Kanda
address:      Chiyoda-ku, Tokyo 101-0047, Japan
country:      JP
phone:        +81-3-5297-2311
fax-no:       +81-3-5297-2312
e-mail:       hostmaster@nic.ad.jp
admin-c:      JNIC1-AP
tech-c:       JES3-AP
nic-hdl:      JNIC1-AP
mnt-by:       MAINT-JPNIC
last-modified: 2022-01-05T03:04:02Z
source:       APNIC

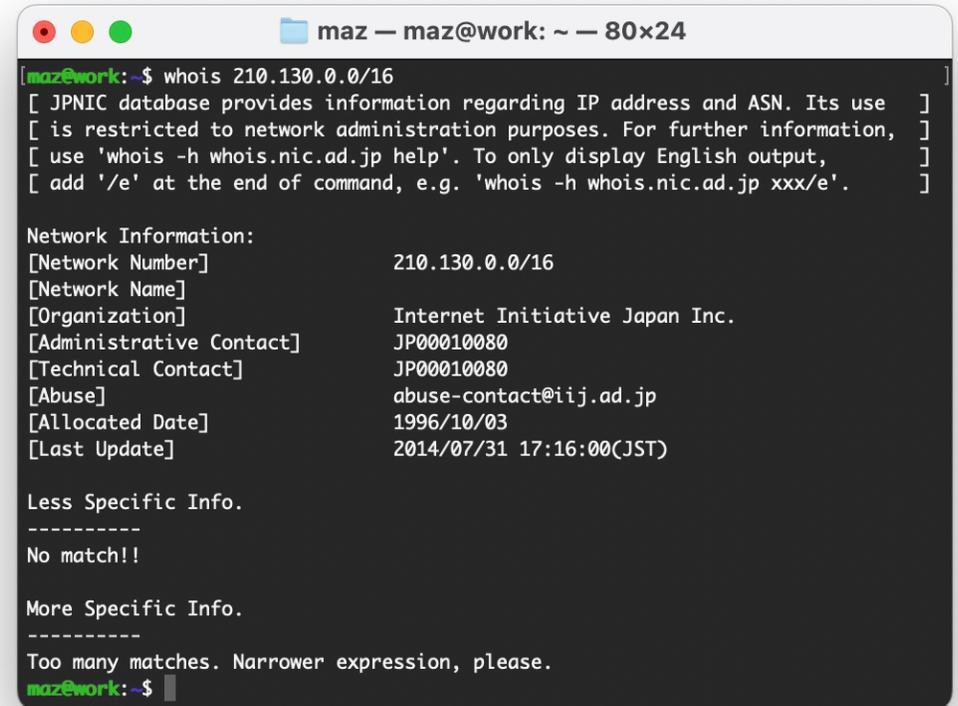
% Information related to '210.130.0.0 - 210.130.255.255'

inetnum:      210.130.0.0 - 210.130.255.255
netname:      IIJ-CIDR-BLK-JP
descr:        Internet Initiative Japan Inc.
remarks:      Email address for spam or abuse complaints : abuse-contact@iij.d.jp
country:      JP
admin-c:      JP00010080
tech-c:       JP00010080
remarks:      This information has been partially mirrored by APNIC from JPNIC. To obtain more specific information, please use the JPNIC WHOIS Gateway at
remarks:      http://www.nic.ad.jp/en/db/whois/en-gateway.html or
remarks:      whois.nic.ad.jp for WHOIS client. (The WHOIS client defaults to Japanese output, use the /e switch for English output)
last-modified: 2014-08-01T02:16:00Z
source:       JPNIC

% This query was served by the APNIC Whois Service version 1.88.25 (WHOIS-JP3)
```

Debian bookworm – WHOIS 5.5.17

- IPアドレスブロック毎など、資源分配に応じた問い合わせ先を事前に持っている
 - すごいね
 - 移転はそんなに追っかけていない



```
maz@work:~$ whois 210.130.0.0/16
[ JPNIC database provides information regarding IP address and ASN. Its use ]
[ is restricted to network administration purposes. For further information, ]
[ 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'. ]

Network Information:
[Network Number]          210.130.0.0/16
[Network Name]
[Organization]            Internet Initiative Japan Inc.
[Administrative Contact]  JP00010080
[Technical Contact]       JP00010080
[Abuse]                   abuse-contact@iij.ad.jp
[Allocated Date]         1996/10/03
[Last Update]             2014/07/31 17:16:00(JST)

Less Specific Info.
-----
No match!!

More Specific Info.
-----
Too many matches. Narrower expression, please.
maz@work:~$
```

場合分け

1. 最近の分配

- APNICにも英語版複製(source: JPNIC)がある

2. 歴史的番号資源

- APNICには個別の英語版複製がない → JPNICが資源保持者に見える
- 事前に知っていればJPNICに問い合わせできる
 - https://github.com/rfc1036/whois/blob/next/ip_del_list
- 資源移転すると最近の分配 (1)と同じ扱いになる

3. 海外から移転した番号資源

- APNICにも英語版複製(source: JPNIC)がある
- 大抵のクライアントはAPNICの英語版複製で満足

共通の課題

- 連絡先として `hostmaster@nic.ad.jp` が見えがち
 - JPNIC担当分の資源には「IRT-JPNIC-JP」を登録
 - この連絡先が `hostmaster@nic.ad.jp`
 - APNIC WHOISでは自動的に以下を応答
 - `% Abuse contact for 'xxx' is 'hostmaster@nic.ad.jp'`
- **ほんとの連絡先が見えないんだよねえ**
 - JPNICハンドルまではわかる
 - 知らない人はここから連絡先に辿り着けない

```
maz — 80x92
[maz@pro2019 ~] % whois -S 210.130.0.0/16
% IANA WHOIS server
% for more information on IANA, visit http://www.iana.org
% This query returned 1 object

refer:      whois.apnic.net

inetnum:    210.0.0.0 - 210.255.255.255
organisation: APNIC
status:     ALLOCATED

whois:      whois.apnic.net

changed:    1996-06
source:     IANA

# whois.apnic.net

% [whois.apnic.net]
% Whois data copyright terms    http://www.apnic.net/db/dbcopyright.html
% Information related to '210.128.0.0 - 210.135.255.255'
% Abuse contact for '210.128.0.0 - 210.135.255.255' is 'hostmaster@nic.ad.jp'

inetnum:    210.128.0.0 - 210.135.255.255
netname:    JPNIC-NET-JP
descr:      Japan Network Information Center
country:    JP
admin-c:    JNIC1-AP
tech-c:     JNIC1-AP
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
mnt-by:     IRT-JPNIC-JP
mnt-irt:    IRT-JPNIC-JP
status:     ALLOCATED PORTABLE
last-modified: 2015-12-01T22:31:45Z
source:     APNIC

irt:        IRT-JPNIC-JP
address:    Uchikanda 05 Bldg 4F, 2-12-6 Uchi-Kanda
address:    Chiyoda-ku, Tokyo 101-0047, Japan
e-mail:     hostmaster@nic.ad.jp
abuse-mailbox: hostmaster@nic.ad.jp
phone:      +81-3-5297-2311
fax-no:     +81-3-5297-2312
admin-c:    JNIC1-AP
tech-c:     JNIC1-AP
auth:      # Filtered
remarks:    hostmaster@nic.ad.jp was validated on 2020-07-23
mnt-by:     MAINT-JPNIC
last-modified: 2022-06-14T04:26:58Z
source:     APNIC

role:       Japan Network Information Center
address:    Uchikanda 05 Bldg 4F, 2-12-6 Uchi-Kanda
address:    Chiyoda-ku, Tokyo 101-0047, Japan
country:    JP
phone:      +81-3-5297-2311
fax-no:     +81-3-5297-2312
e-mail:     hostmaster@nic.ad.jp
admin-c:    JNIC1-AP
tech-c:     JES3-AP
nic-hdl:    JNIC1-AP
mnt-by:     MAINT-JPNIC
last-modified: 2022-01-05T03:04:02Z
source:     APNIC

% Information related to '210.130.0.0 - 210.130.255.255'

inetnum:    210.130.0.0 - 210.130.255.255
netname:    IJ-CIDR-BLK-JP
descr:      Internet Initiative Japan Inc.
remarks:    Email address for spam or abuse complaints : abuse-contact@ij.a
d.jp
country:    JP
admin-c:    JP00010000
tech-c:     JP00010000
remarks:    This information has been partially mirrored by APNIC from
remarks:    JPNIC. To obtain more specific information, please use the
remarks:    JPNIC WHOIS Gateway at
remarks:    http://www.nic.ad.jp/en/db/whois/en-gateway.html or
remarks:    whois.nic.ad.jp for WHOIS client. (The WHOIS client
remarks:    defaults to Japanese output, use the /e switch for English
remarks:    output)
last-modified: 2014-08-01T02:16:00Z
source:     JPNIC

% This query was served by the APNIC Whois Service version 1.88.25 (WHOIS-JP3)
```

ハハハ、RDAPが全てを救うと言ったが
あれは、嘘だ。

- APNICにあるJPNIC WHOIS英語版複製が応答されている状態
 - 歴史的番号資源はJPNICが保持者に見える (例:133.0.0.0/8)
 - 連絡先(Entity)の基本はIRT-JPNIC-JPとJNIC-AP (JPNIC連絡先が二つ)
- うまく探せても連絡先(Entity)はちょっと不思議
 - 登録者の連絡先とJPNICの二つ、合計三つあるように見える
 - なお登録者の情報はJPNICハンドル
 - 一応JPNIC WHOISのURL付きだけど
- 結果、RDAPでも連絡先はよくわからず、やっぱり
hostmaster@nic.ad.jp が連絡先に見えちゃう

こんな感じ

```
maz — maz@work: ~ — 103x29

Remark:
  Title: description
  Description: Internet Initiative Japan Inc.
Remark:
  Title: remarks
  Description: Email address for spam or abuse complaints : abuse-contact@ij.ad.jp
Entity:
  Handle: JP00010080
  Link: http://whois.nic.ad.jp/cgi-bin/whois_gw?key=JP00010080/e
  Link: http://whois.nic.ad.jp/cgi-bin/whois_gw?key=JP00010080
  Role: administrative
  Role: technical
Entity:
  Handle: IRT-JPNIC-JP
  Remark:
    Title: remarks
    Description: hostmaster@nic.ad.jp was validated on 2020-07-23
  Link: https://jpnrc.rdap.apnic.net/entity/IRT-JPNIC-JP
  Event:
    Action: last changed
    Date: 2022-06-14T04:26:58Z
  Role: abuse
  vCard Version: 4.0
  vCard Name: IRT-JPNIC-JP
  vCard Tel: +81-3-5297-2311
  vCard Fax: +81-3-5297-2312
Entity:
  Handle: JNIC1-AP
  Link: https://jpnrc.rdap.apnic.net/entity/JNIC1-AP
```

```
maz — maz@work: ~ — 80x80

[maz@work: ~]$ rdap 133.110.0.0/16
RDAP from Registry:
IP Network:
  Handle: 133.110.0.0 - 133.110.255.255
  Start Address: 133.110.0.0
  End Address: 133.110.255.255
  IP Version: v4
  Name: IJJ-CIDR-BLK-JP
  Country: JP
  Status: active
  Port43: whois.apnic.net
  Notice:
    Title: Source
    Description: Objects returned came from source
    Description: JPNIC
  Notice:
    Title: Terms and Conditions
    Description: This is the APNIC WHOIS Database query service. The objects are
in RDAP format.
    Description: This information has been partially mirrored by APNIC from JPNIC
C. To obtain more specific information, please use the JPNIC WHOIS Gateway at ht
tp://www.nic.ad.jp/en/db/whois/en-gateway.html or whois.nic.ad.jp for WHOIS clie
nt. (The WHOIS client defaults to Japanese output, use the /e switch for English
output)
    Link: http://www.apnic.net/db/dbcopyright.html
  Notice:
    Title: Whois Inaccuracy Reporting
    Description: If you see inaccuracies in the results, please visit:
    Link: https://www.apnic.net/manage-ip/using-whois/abuse-and-spamming/invalid
-contact-form
  Remark:
    Title: description
    Description: Internet Initiative Japan Inc.
  Remark:
    Title: remarks
    Description: Email address for spam or abuse complaints : abuse-contact@ij.
ad.jp
  Entity:
    Handle: JP00010080
    Link: http://whois.nic.ad.jp/cgi-bin/whois_gw?key=JP00010080/e
    Link: http://whois.nic.ad.jp/cgi-bin/whois_gw?key=JP00010080
    Role: administrative
    Role: technical
  Entity:
    Handle: IRT-JPNIC-JP
    Remark:
      Title: remarks
      Description: hostmaster@nic.ad.jp was validated on 2020-07-23
    Link: https://jpnrc.rdap.apnic.net/entity/IRT-JPNIC-JP
    Event:
      Action: last changed
      Date: 2022-06-14T04:26:58Z
    Role: abuse
    vCard Version: 4.0
    vCard Name: IRT-JPNIC-JP
    vCard Tel: +81-3-5297-2311
    vCard Fax: +81-3-5297-2312
  Entity:
    Handle: JNIC1-AP
    Link: https://jpnrc.rdap.apnic.net/entity/JNIC1-AP
    Event:
      Action: last changed
      Date: 2022-01-05T03:04:02Z
    Role: administrative
    Role: technical
    vCard Version: 4.0
    vCard Name: Japan Network Information Center
    vCard Tel: +81-3-5297-2311
    vCard Fax: +81-3-5297-2312
  Link: https://jpnrc.rdap.apnic.net/ip/133.110.0.0/16
  Link: https://netox.apnic.net/search/133.110.0.0%2F16?utm_source=rdap&utm_medi
um=result&utm_campaign=rdap_result
  Event:
    Action: last changed
    Date: 2019-01-09T22:14:19Z
  cidr0_cidrs:
    v4prefix: 133.110.0.0
    length: 16
maz@work: ~$
```

つまり、課題の整理

- 歴史的IPアドレス
 - 知らないと、JPNICが資源保持者に見える
- 担当者の連絡先をどう見せるか
 - 現状JPNICハンドルが見える
 - JPNICハンドルにどうアクセスさせるか
 - RDAPだとWHOISへのURL付き
 - 自動化とは仲が悪い
 - 知らないと、JPNICも連絡先に見える

付録

<https://github.com/rfc1036/whois/blob/next/whois.c>

- JPNIC WHOIS対策

- AS番号は「AS <番号>」に変換
- LANGが日本語じゃなくて/eを忘れてそうなら「/e」を追加

- ARIN WHOIS対策

- prefix検索には「r + =」を先頭に追加
- IPアドレス検索には「n +」先頭に追加

付録

BSD系 WHOISクライアント

- ARINとRIPEのWHOISサーバ対策？
 - コメント部分を自動削除
 - 「-S」つけると全て見える
- 標準ではARIN WHOISで複数マッチした結果を「+」flagで展開表示すると二つ目以降の情報が見えなくなる
 - なお、ARINサーバへの問い合わせには自動で「+」flagをつけてるけど「-S」つけると「+」が自動でつかなくなるマジック

今後の展開

- WHOISはおいておいて、ひとまずRDAPに注力？
 - 方向性としてはあり、利用者まだ少ないけど
 - どうせ共通のDB使ってるので、一緒に解決できる（できない）のかも
- NIR共通の問題でもあるので、NIR間で調整の場を持つ？
 - やっといた方がいい。情報登録はそれぞれ異なっている
- JANOGとかで聞いてみる？
 - 問題を広く知ってもらっておくのはありかも