

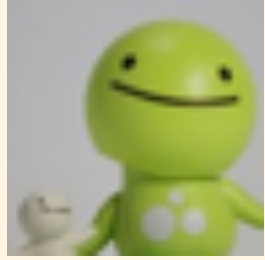
pingアスキーアート

2017年9月1日

JANOG BoF & LT Night #2

富士通株式会社

岩田 浩真



@kooshin, いわた こうしん

- **仕事 AS2510の近くで閉域網の運用**
- **趣味 おもしろネタの実装**
- **発表**
 - **JANOG 37.5 LT 痒いところに手が届くネットワークリソースの視覚化**
 - **JANOG 39 LT 『紙の手順書』でルータ設定を半自動化してみた with 二次元バーコードリーダー**

NWオペレータの皆様
日々のメンテや障害で
疲れていませんか??

オペレーションの合間に
ほっこり癒しが欲しい！



kooshin
@kooshin

pingすると「にゃーん」を返すサービス。
シスコルータから「ping ping.kooshin.net
repeat 1400」でOK

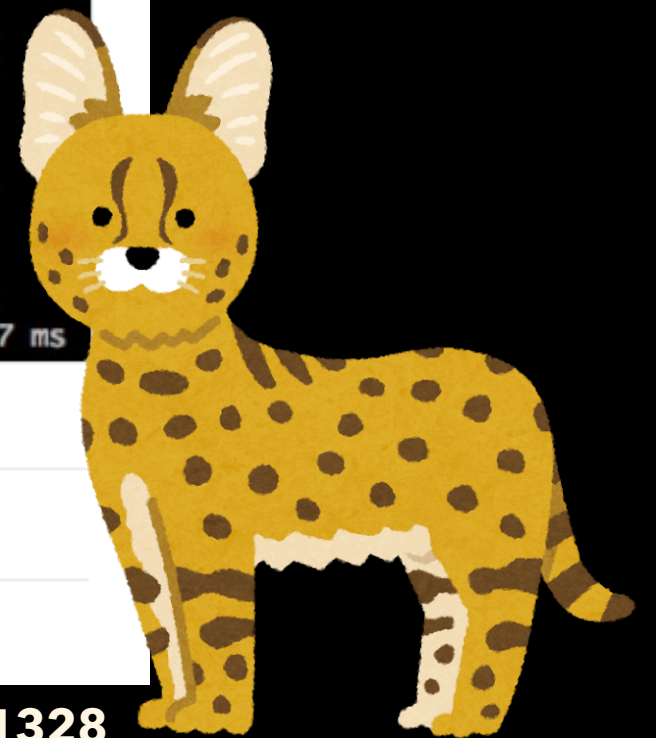
```
Router#ping ping.kooshin.net repeat 1400
Type escape sequence to abort.
Sending 1400, 100-byte ICMP Echos to 160.16.77.72, timeout is 2 seconds:
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!UU!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!UU!
!UU!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!UUU!
!UU!UUUUUUUU!!!!!!!!!!U!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!UU!!!!!!!!!!
!UU!UUUUUUUU!!!!!!!!!!U!UUUU!!!!!!!!!!!!!!!!!!!!!!!!!!!!UUU!!!!!!!!!!
!UU!!!!!!!!!!!!!!!!!!UU!UUU!!!!!!!!!!!!!!!!!!!!!!!!!!!!UU!!!!!!!!!!!!
!UU!!!!!!!!!!!!!!!!!!UUU!UUUUU!!!!!!!!!!!!!!!!!!!!!!!!!!UUU!!!!!!!!!!
!UU!!!!!!!!!!!!!!!!!!UUUUUUUUU!!!!!!!!UUUUUUUUUUUUUUUU!!!!!!!!!!UU!UU!
!UU!!!!!!!!!!!!!!!!!!UUUUUUU!!!!!!!!UU!UUUUUUUUUUUUUUUU!!!!!!!!!!UUUUU!
!UU!!!!!!!!!!!!!!!!!!UUUUUUU!!!!!!!!UU!!!!!!!!!!!!!!!!!!UUU!UU!!!!!!!!
!UUUU!UU!!!!!!!!!!U!UU!UUUUUU!!!!!!!!!!!!!!!!!!!!!!!!!!UUU!UU!UU!
!UUUU!UU!!!!!!!!!!UUUUUUUU!!!!!!!!!!!!!!!!!!!!!!!!!!UUU!UU!UU!UU!
!UUU!UUUUUUUU!!!!!!!!!!UU!!!!!!!!!!!!!!!!!!!!!!!!!!UU!UU!UU!UU!
!UUU!UUUUUUUU!!!!!!!!!!UU!!!!!!!!!!!!!!!!!!!!!!!!!!UUU!UU!UUUU!!
!!!!!!!!!!!!!!!!!!U!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!UUU!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 81 percent (1138/1400), round-trip min/avg/max = 1/4/17 ms
```

12:30 - 2017年8月25日

1,145件のリツイート 952件のいいね



2 1,145 952



<https://twitter.com/kooshin/status/900923276049891328>

シスコルータで試そう！

ping pong.kooshin.net repeat 1400

IPv4/6: pong.kooshin.net
IPv4: pong4.kooshin.net
IPv6: pong6.kooshin.net

デモ動画



<https://youtu.be/nV2F4GX-7KQ>

シスコルータで
アスキーアート
描いてみました

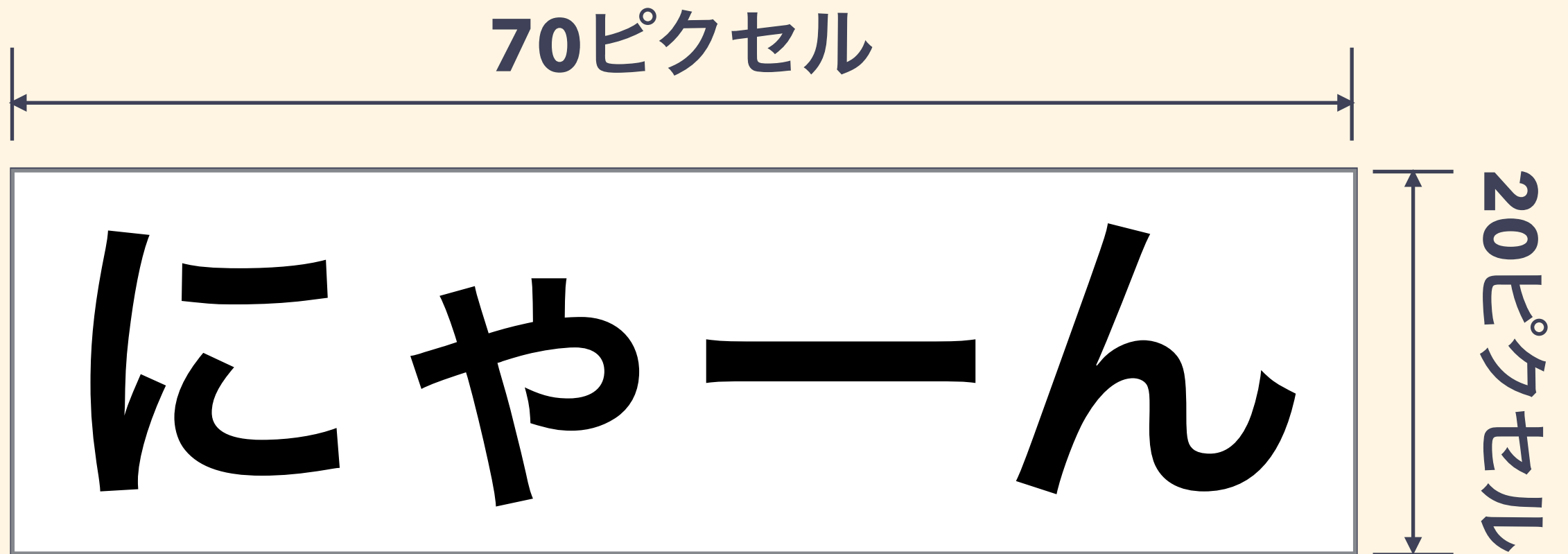
シスコルータのping

```
c1812j#ping pong4.kooshin.net repeat 210
Translating "pong4.kooshin.net"...domain server (192.168.88.1)

Type escape sequence to abort.
Sending 210, 100-byte ICMP Echos to 160.16.77.72, timeout is 2 seconds:
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (210/210), round-trip min/avg/max = 4/5/16 ms
c1812j#
```

幅70文字 高さ自在のキャンバス

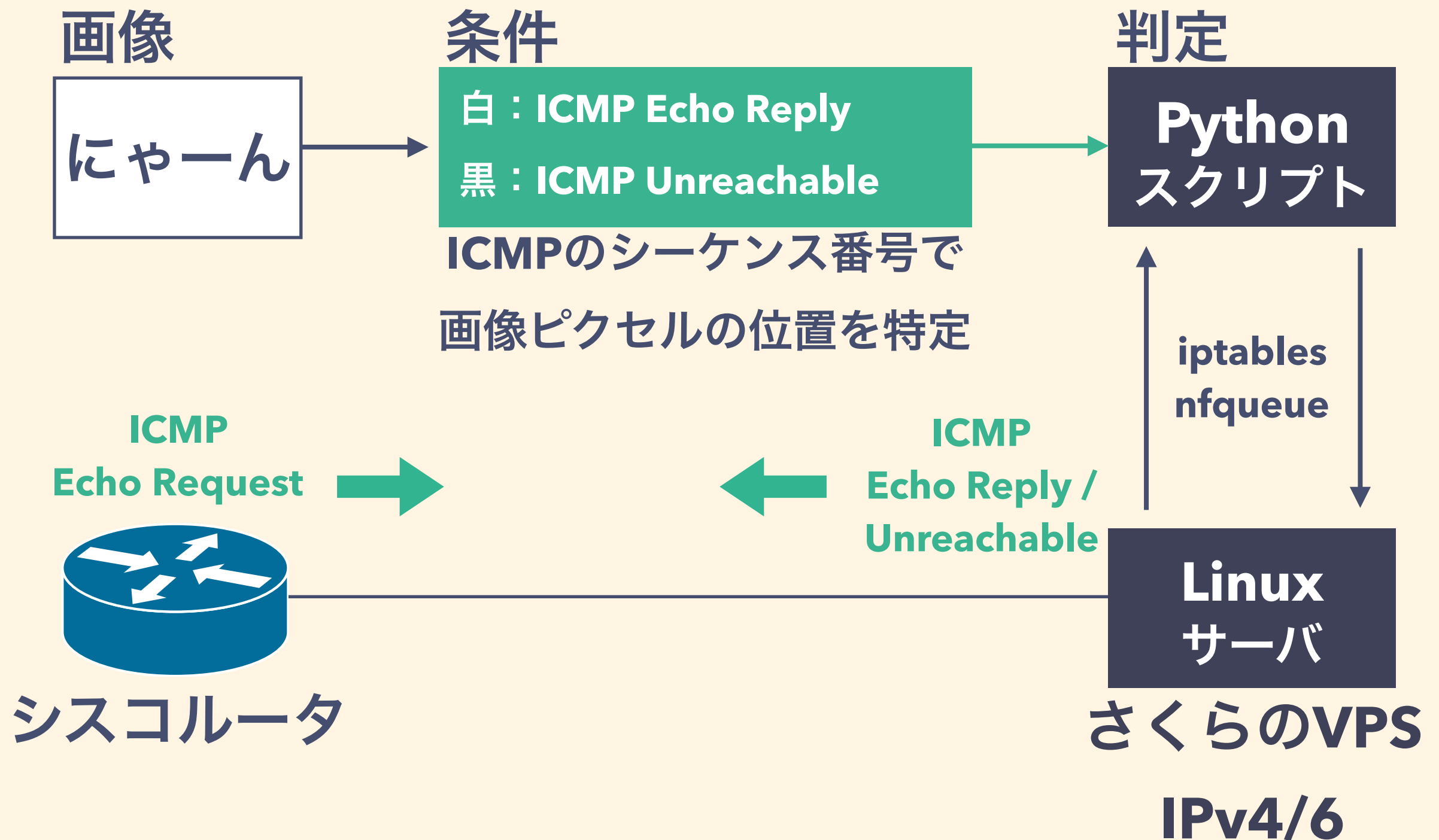
描く画像



$70 \times 20 = 1400$ ピクセル

=> ping 1400回分

全体構成



pythonスクリプト

- v4/6で各50行程度
- OpenCVで画像二値化
- NetfilterQueueで
ICMPパケットを受信
- scapyでICMPパケット
解析・生成

```
#!/usr/bin/env python
import os
import sys
import cv2
import numpy as np
from scapy.all import *
from netfilterqueue import NetfilterQueue

def icmpv6_unreachable(pkt):
    ether = Ether()
    ether.src = "*送信元のMACアドレス"
    ether.dst = "*上位ルータのMACアドレス"

    ipv6 = IPv6()
    ipv6.src = pkt.dst
    ipv6.dst = pkt.src
    icmpv6 = ICMPv6DestUnreach()
    sendp(ether/ipv6/icmpv6/str(pkt)[:128], verbose=False, iface='*送信元インタフェース')

def process_icmpv6(pkt):
    packet = IPv6(pkt.get_payload())
    icmpv6 = packet[ICMPv6EchoRequest]
    if LINES[icmpv6.seq % len(LINES)] == 0:
        pkt.drop()
        icmpv6_unreachable(packet)
    else:
        pkt.accept()

def setup_image(filename):
    im_gray = cv2.imread(filename, 0)
    ret, rows = cv2.threshold(im_gray, 127, 1, cv2.THRESH_BINARY)
    lines = rows.flat
    return lines

if __name__ == "__main__":
    imgfile = os.path.dirname(__file__) + '/nyan.png'
    LINES = setup_image(imgfile)

    nfqueue = NetfilterQueue()
    nfqueue.bind(2, process_icmpv6)

    try:
        nfqueue.run()
    except KeyboardInterrupt:
        print('')

    nfqueue.unbind()
```

シスコルータで癒しを！

ping pong.kooshin.net repeat 1400

IPv4/6: pong.kooshin.net
IPv4: pong4.kooshin.net
IPv6: pong6.kooshin.net

デモ動画



<https://youtu.be/nV2F4GX-7KQ>