Multi-protocol consideration of getnameinfo(

draft-itojun-ipv6-getnameinfo-multiproto-01.txt

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Outline

- getnameinfo() makes assumption on transport layer protocol
  - there are only TCP and UDP
  - (in service name reverse-lookup)
- The assumption does not hold any longer
- We need to fix the API
- Strategy:
  - Gather comment here
  - Send the doc to POSIX guys, and publish as an Informational RFC

getnameinfo() assumption

- assumes that TCP and UDP are the only transport protocols
  - getnameinfo(sa, salen, 0, NULL, p, sizeof(p), 0);
  - -> getservbyport(port, "tcp")
  - getnameinfo(sa, salen, 0, NULL, p, sizeof(p), NI_DGRAM);
  - -> getservbyport(port, "udp")
- assumes one-by-one mapping between socket type and protocol
  - "DGRAM" means "udp", otherwise "tcp"

Assumption does not hold

- There are new transport protocols coming
  - STREAM: SCTP, (TCP)
  - DGRAM: DCCP, SCTP, (UDP)
  - SEQPACKET: SCTP
- getnameinfo() could be used for non-Internet binary-to-string conversion
  - (let us put it aside for now)

Proposal

- Define bitmask for each protocol

```
#define NI_TCP  0x100
#define NI_UDP  0x200
#define NI_DCCP 0x400
#define NI_SCTP 0x800
```

- Only one bit allowed on a call - otherwise EAI_BADFLAGS
- Source/binary-level backward compatibility
  - 0 (i.e. no bit specified) means NI_TCP
  - NI_DGRAM means NI_UDP

ToDo

- Is the design correct?
  - Did not choose NI_STREAM/DGRAM/SEQPACKET as there's no one-by-one mapping between protocol and socket type
- How should we handle non-Internet cases?
  - Examples are wanted!
- Gather comments, update draft
- Send it to POSIX guys
- Publish as an Informational RFC
- Send comments to: ipv6 wg list, or itojun@iijlab.net