TRICKLE ICE

TRICKLE ICE

draft-ietf-mmusic-trickle-ice

Emil Ivov, Eric Rescorla, Justin Uberti

90%

TRICKLE ICE

draft-ietf-mmusic-trickle-ice

Emil Ivov, Eric Rescorla, Justin Uberti

90%

draft-ivov-mmusic-trickle-ice-sip

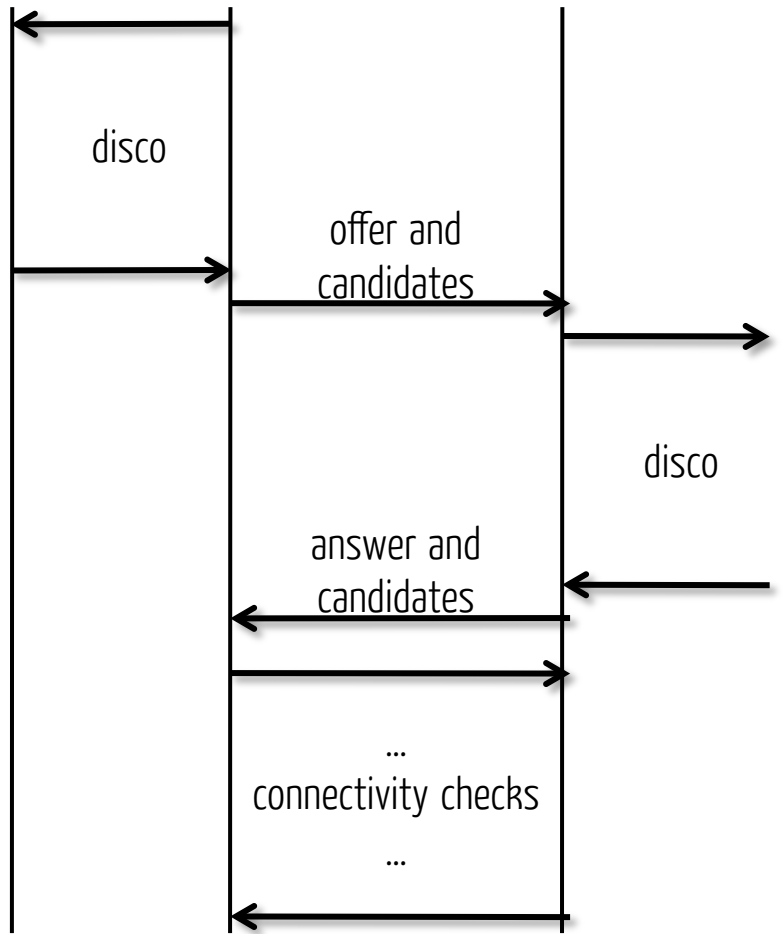Emil Ivov, Enrico Marocco, Christer Holmberg

60%

TRICKLE ICE

draft-ietf-mmusic-trickle-ice
Emil Ivov, Eric Rescorla, Justin Uberti

90%

draft-ivov-mmusic-trickle-ice-sip
Emil Ivov, Enrico Marocco, Christer Holmberg

60%

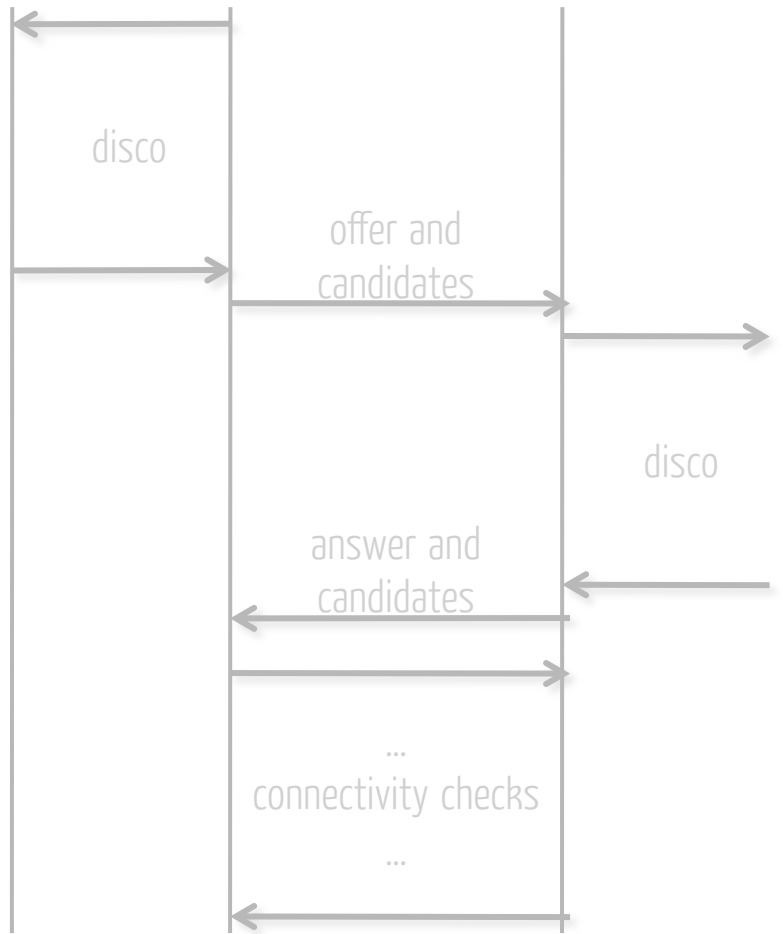## draft-ivov-disspatch-sdpfrag-03
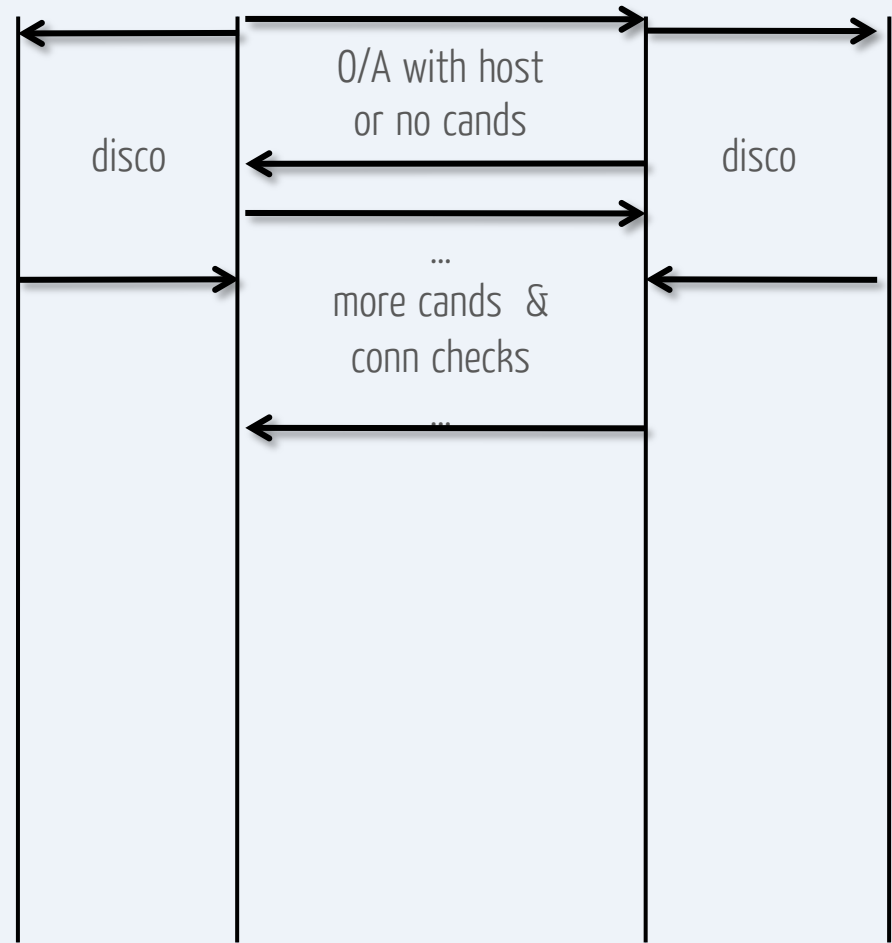**Emil Ivov, Adam Roach, Anyone Else?**

30%

Reminder: Vanilla ICE

STUN Server | Alice | Bob | STUN Server

disco

offer and candidates

disco

answer and candidates

...
connectivity checks
...

Vanilla ICE as per RFC 5245

Reminder: Vanilla ICE vs Trickle ICE

STUN Server   Alice   Bob   STUN Server   STUN Server   Alice   Bob   STUN Server

disco

offer and
candidates

disco

answer and
candidates

...
connectivity checks
...

O/A with host
or no cands

disco   disco

...
more cands &
conn checks
...

Vanilla ICE as per RFC 5245

Trickle ICE

STUN Server   Alice   Bob   STUN Server

disco

offer and candidates

disco

answer and candidates

...
connectivity checks
...

Vanilla ICE as per RFC 5245

STUN Server   Alice   Bob   STUN Server

O/A with host or no cands

disco   disco

...
more cands &
conn checks
...
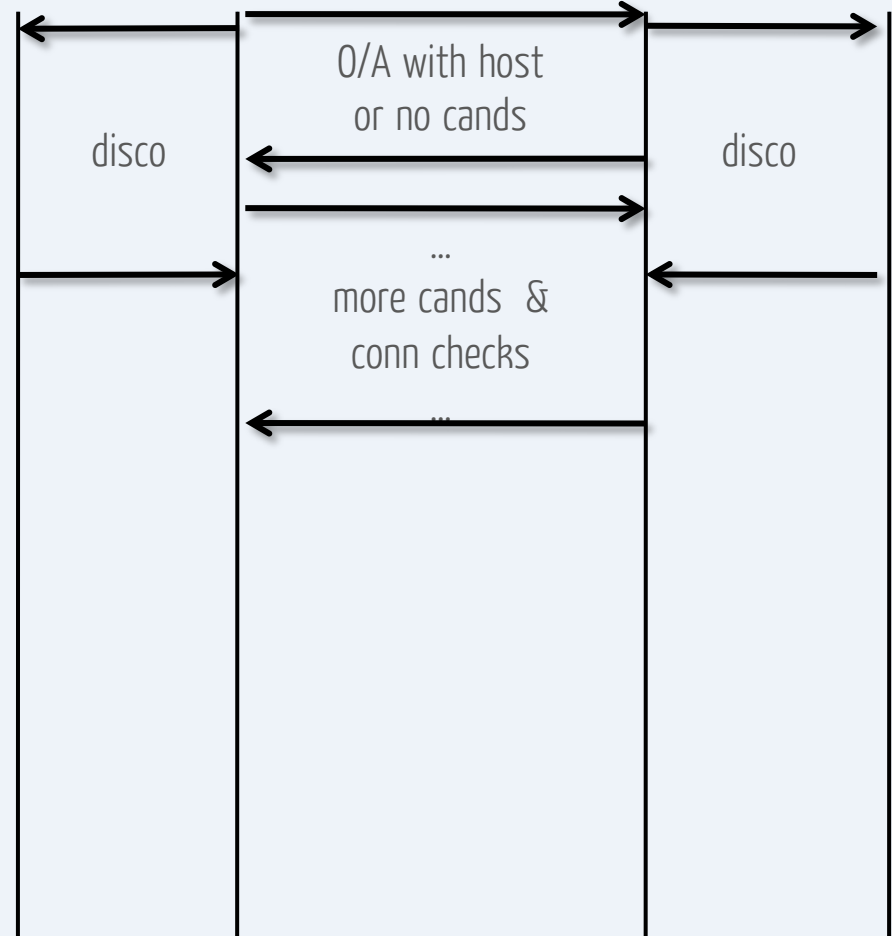
Trickle ICE

ONE MAJOR CHANGE SINCE LAST TIME

A's lists		Host/Host	Host/Srflx
	Str.Cmp	Foundation A1B1	Foundation A1B2
CheckList.1	Audio.1	A1:5000/B1:5000	A1:5000/B2:5000
	Audio.2	A1:5001/B1:5001	A1:5001/B2:5001
CheckList.2	Video.1	A1:5002/B1:5002	A1:5002/B2:5002
	Video.2	A1:5003/B1:5003	A1:5003/B2:5003

ONE MAJOR CHANGE SINCE LAST TIME

A's lists		Host/Host	Host/Srflx
	Str.Cmp	Foundation A1B1	Foundation A1B2
CheckList.1	Audio.1	A1:5000/B1:5000	A1:5000/B2:5000
	Audio.2	A1:5001/B1:5001	A1:5001/B2:5001
CheckList.2	Video.1	A1:5002/B1:5002	A1:5002/B2:5002
	Video.2	A1:5003/B1:5003	A1:5003/B2:5003

TRICKLE IN THAT ORDER

draft-ietf-mmusic-trickle-ice

Emil Ivov, Eric Rescorla, Justin Uberti

90%

I NEED REVIEWS!

draft-ietf-mmusic-trickle-ice

Emil Ivov, Eric Rescorla, Justin Uberti

90%

I NEED REVIEWS! **PRETTY PLEASE ?!**

draft-ivov-mmusic-trickle-ice-sip

Emil Ivov, Enrico Marocco, Christer Holmberg

60%

draft-ivov-disspatch-sdpfrag-03

Emil Ivov, Adam Roach, Anyone Else?

30%

CURRENT STATE AND CONSENSUS

STUN Server   Alice   Bob   TURN Server

disco   INVITE (Offer)

```
v=0
…
a=ice-options:trickle
a=ice-pwd:asd88fgpdd777uzjYhagZg
a=ice-ufrag:8hhY
m=audio 45664 RTP/AVP 0
a=rtpmap:0 PCMU/8000
a=candidate:1 1 UDP 2121 10.0.1.1 8998 typ host
a=candidate:2 1 UDP 1615 192.0.2.3 45664 typ srflx raddr
```
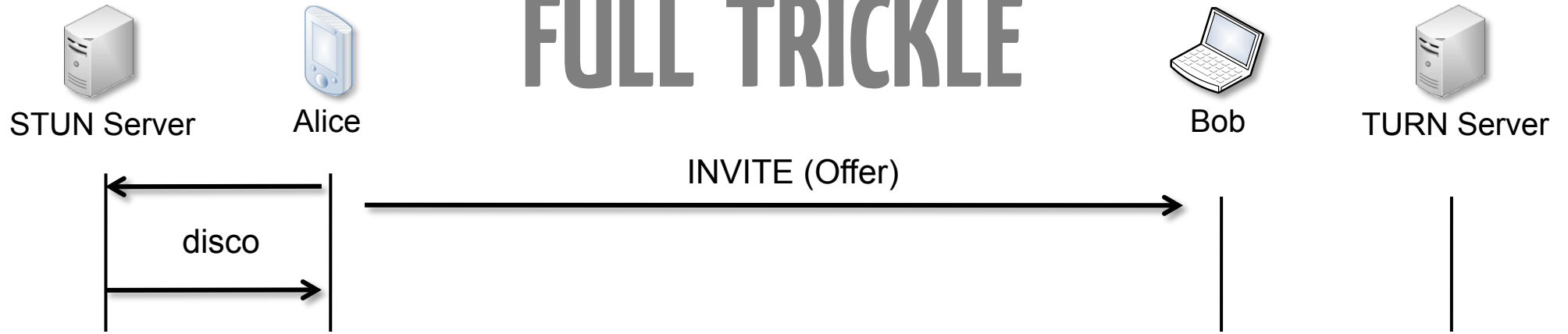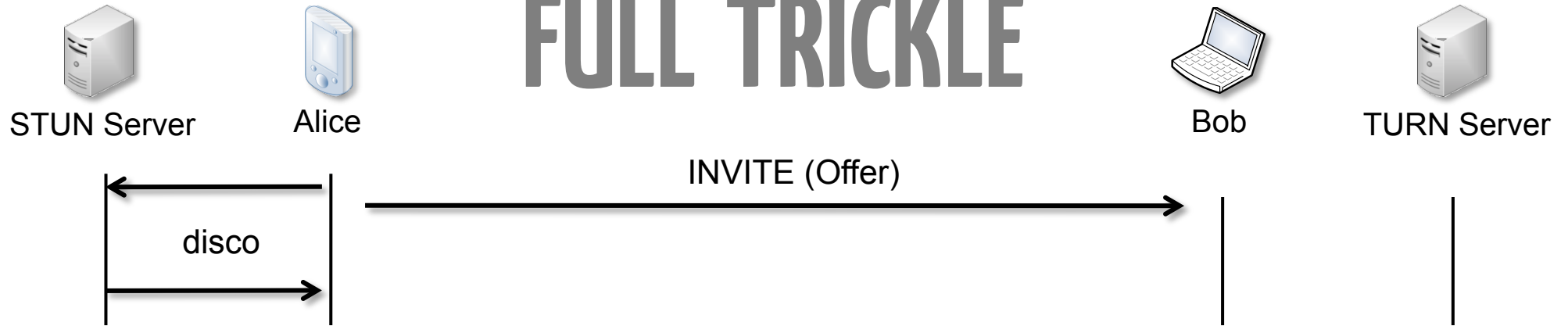
FULL TRICKLE

STUN Server   Alice   Bob   TURN Server

disco

INVITE (Offer)

FULL TRICKLE

STUN Server Alice Bob TURN Server

INVITE (Offer)

disco

```
v=0
…
c=IN IP6 ::
a=ice-options:trickle
a=ice-pwd:asd88fgpdd7
a=ice-ufrag:8hhY
m=audio 9 RTP/AVP 0 96
a=rtpmap:0 PCMU/8000
a=rtpmap:96 opus/48000/2
```

FULL TRICKLE

STUN Server   Alice   Bob   TURN Server
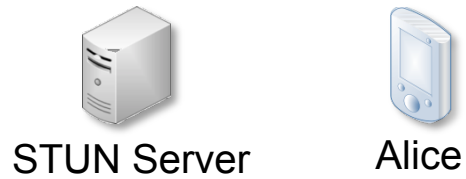
INVITE (Offer)

disco

```
v=0
…
c=IN IP6 ::
a=ice-options:trickle
a=ice-pwd:asd88fgpdd7
a=ice-ufrag:8hhY
m=audio 9 RTP/AVP 0 96
a=rtpmap:0 PCMU/8000
a=rtpmap:96 opus/48000/2
```

VANILLA ICE AGENTS WOULDN'T APPROVE

neither would RFC3264 UAs

FULL TRICKLE

STUN Server   Alice   Bob   TURN Server
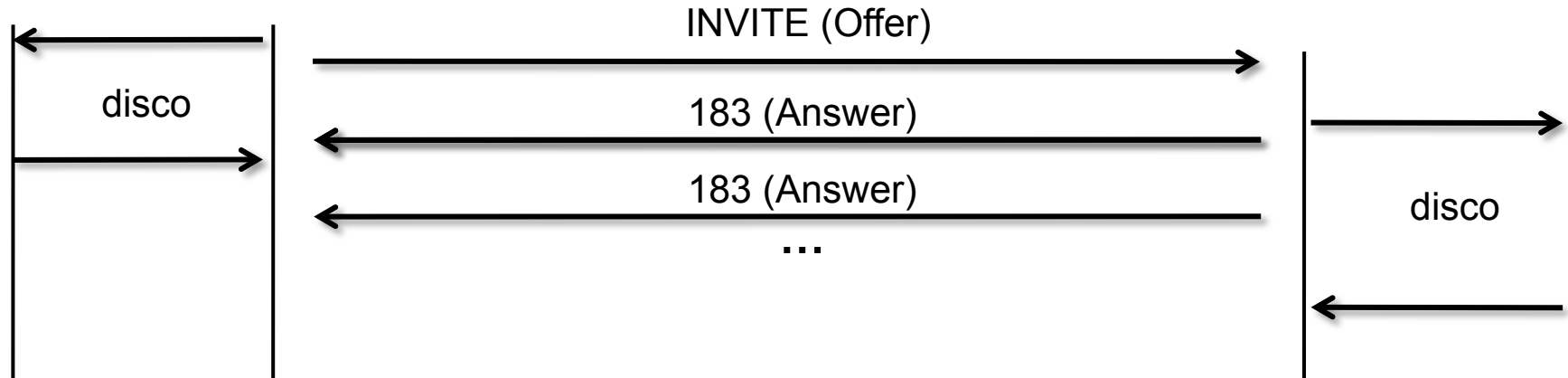
INVITE (Offer)

disco

trickle support has been confirmed in a previous O/A

trickle support discovered with RFC3840 and GRUU

trickle support has been forced through configuration
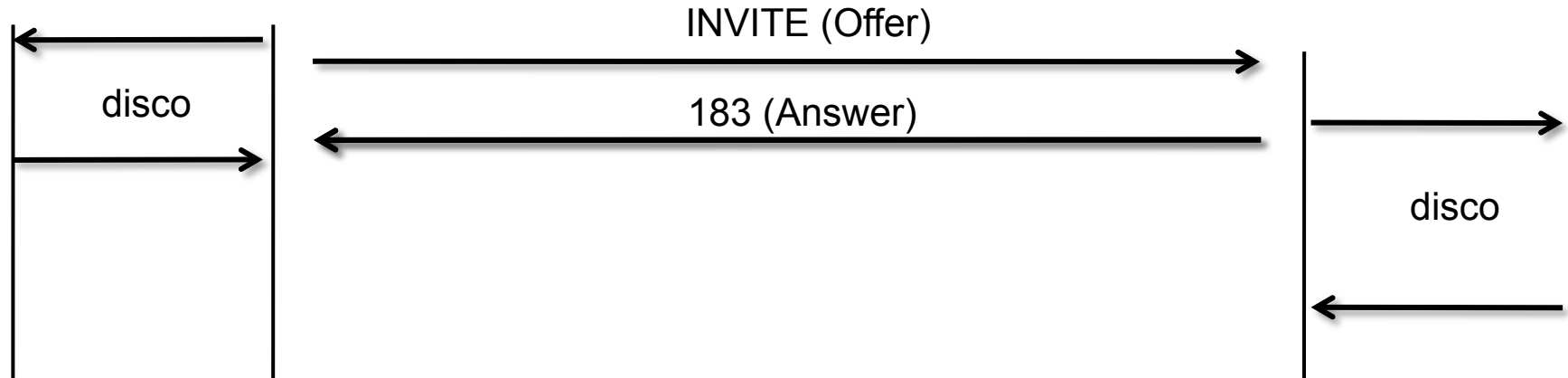
STUN Server   Alice   Bob   TURN Server

INVITE (Offer)

disco

183 (Answer)

disco

```
v=0
…
c=IN IP4 192.0.2.3
a=ice-options:trickle
a=ice-pwd:dsa99de8fqp
a=ice-ufrag:9abW
m=audio 35888 RTP/AVP 0 96
a=rtpmap:0 PCMU/8000
a=rtpmap:96 opus/48000/2
```

STUN Server   Alice   Bob   TURN Server

INVITE (Offer)

disco

183 (Answer)

183 (Answer)

disco

...

```
v=0
…
c=IN IP4 192.0.2.3
a=ice-options:trickle
a=ice-pwd:dsa99de8fqp
a=ice-ufrag:9abW
m=audio 35888 RTP/AVP 0 96
a=rtpmap:0 PCMU/8000
a=rtpmap:96 opus/48000/2
```
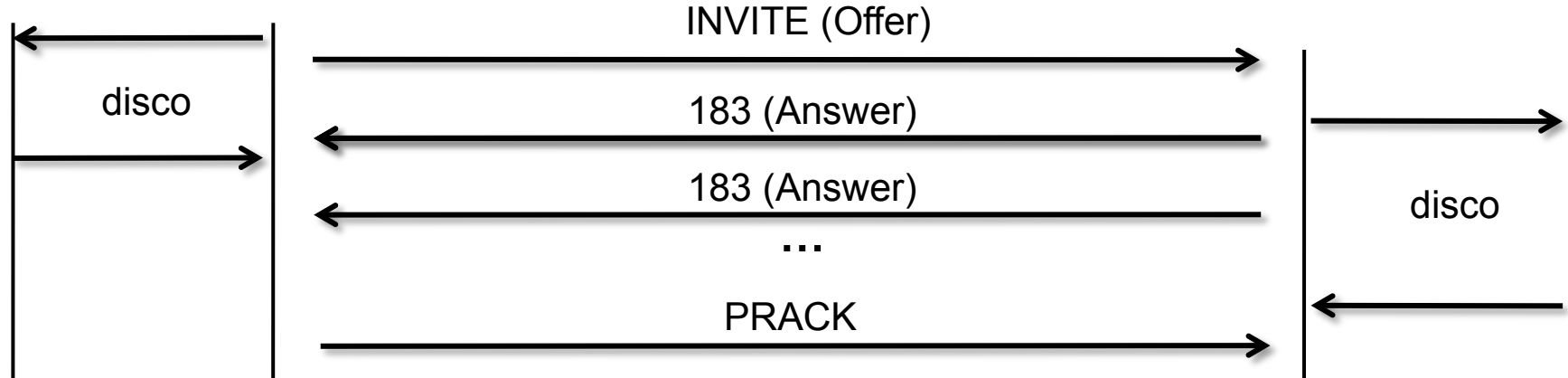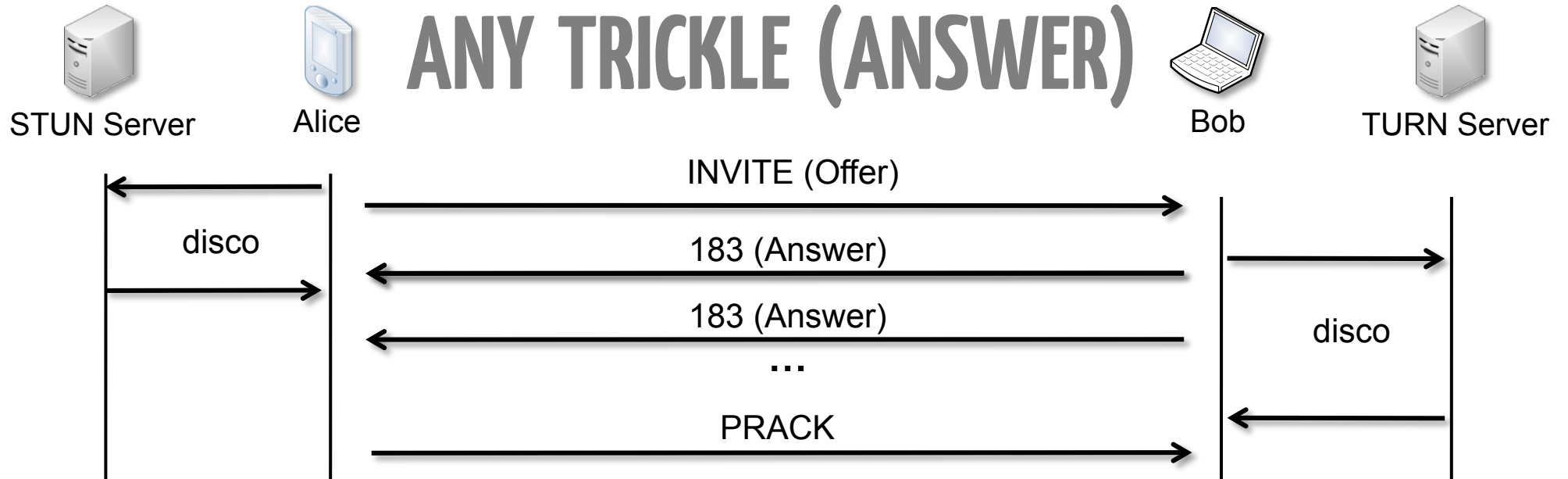
ANY TRICKLE (ANSWER)

STUN Server   Alice   Bob   TURN Server

INVITE (Offer)

disco

183 (Answer)

183 (Answer)

disco

...

PRACK

ANY TRICKLE (ANSWER)

STUN Server   Alice   Bob   TURN Server

INVITE (Offer)

disco

183 (Answer)

183 (Answer)

disco

...

PRACK

SERIOUSLY?
AGAIN WITH THE PRACK?

ANY TRICKLE (ANSWER)

STUN Server   Alice   Bob   TURN Server

INVITE (Offer)

disco

183 (Answer)

183 (Answer)

disco

...

INFO (more cands / end-of-candidates)
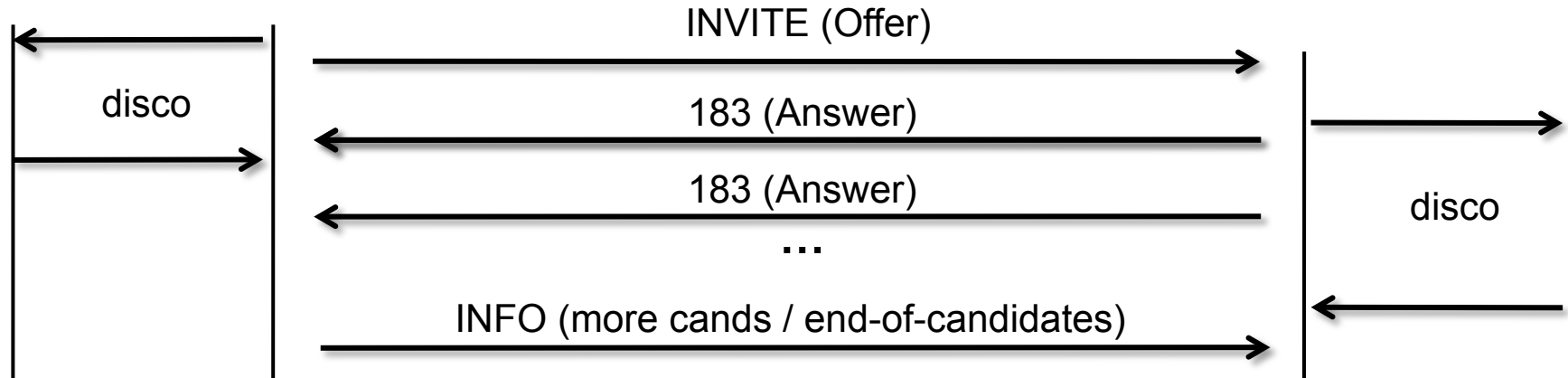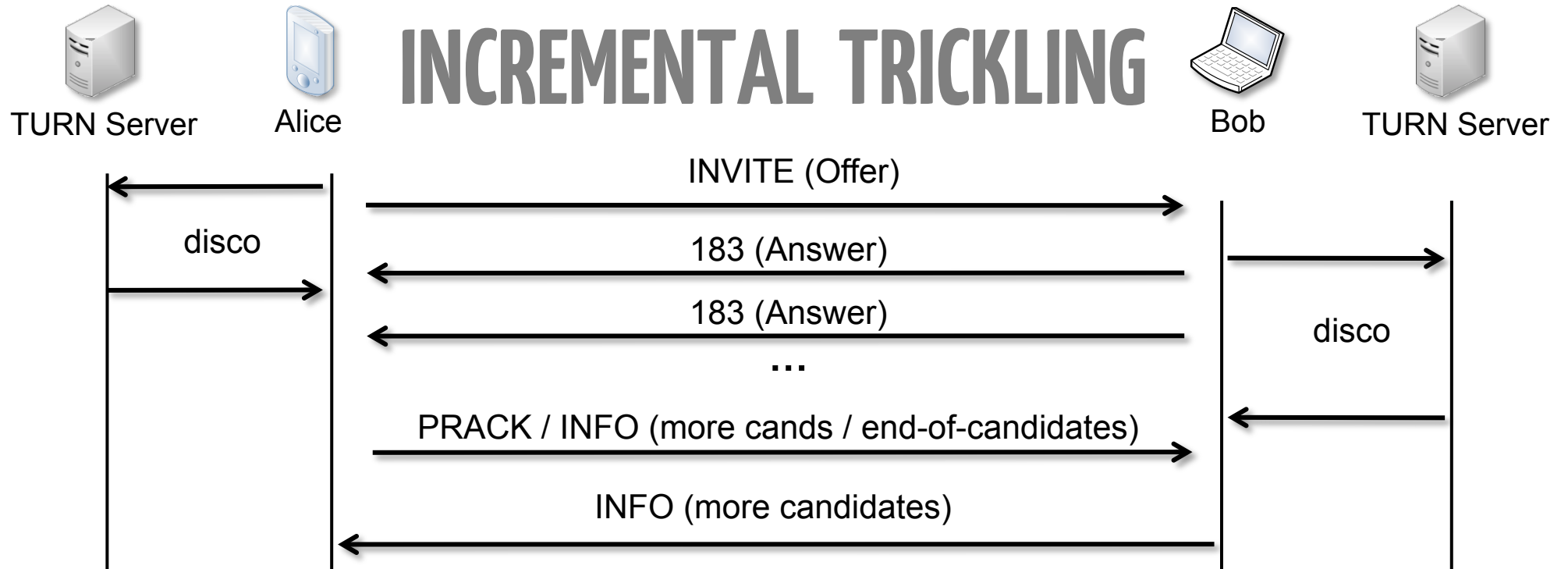
ACK

```
INFO sip:bob@example.com SIP/2.0
...
Info-Package: trickle-ice
Content-Type: application/sdpfrag
Content-Disposition: Info-Package
Content-Length: ...

a=end-of-candidates
```

INCREMENTAL TRICKLING

TURN Server   Alice   Bob   TURN Server

INVITE (Offer)

disco

183 (Answer)

183 (Answer)

disco

...

PRACK / INFO (more cands / end-of-candidates)

INFO (more candidates)

```
INFO sip:alice@example.com SIP/2.0
...
Content-Type: application/sdpfrag

a=candidate:2207823 1 udp 2113937151 192.168.1.148 57599 typ host
```

TURN Server   Alice   Bob   TURN Server

INVITE (Offer)

disco

183 (Answer)

183 (Answer)

disco

...

PRACK / INFO (more cands / end-of-candidates)

INFO (more candidates)
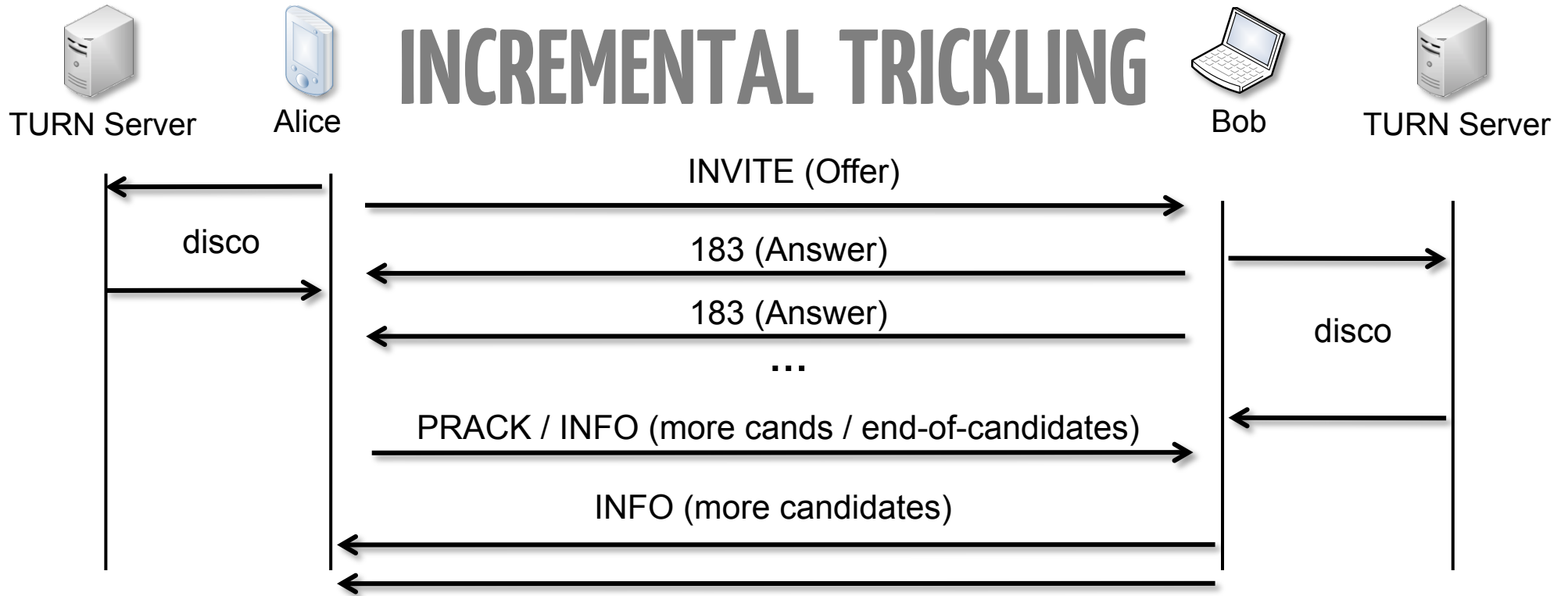
```
INFO sip:alice@example.com SIP/2.0
...
Content-Type: application/sdpfrag

a=candidate:2207823 1 udp 2113937151 192.168.1.148 57599 typ host
a=candidate:4782591 1 udp 1845501695 86.177.14.166 57599 typ srflx
a=candidate:3973020 1 udp 16785151 192.158.30.23 50673 typ relay
```

TURN Server   Alice   Bob   TURN Server

INVITE (Offer)

disco

183 (Answer)

183 (Answer)

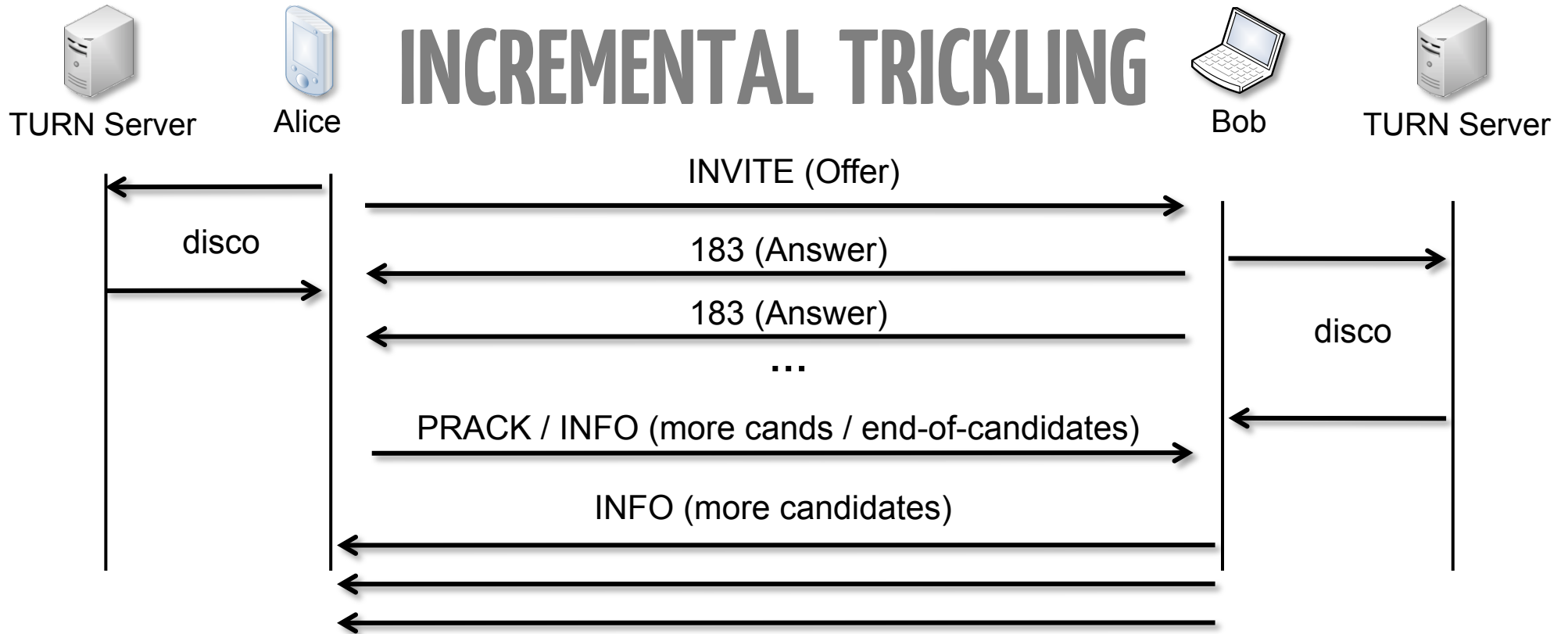disco

...

PRACK / INFO (more cands / end-of-candidates)

INFO (more candidates)

```
INFO sip:alice@example.com SIP/2.0
...
Content-Type: application/sdpfrag

a=candidate:2207823 1 udp 2113937151 192.168.1.148 57599 typ host
a=candidate:4782591 1 udp 1845501695 86.177.14.166 57599 typ srflx
a=candidate:3973020 1 udp 16785151 192.158.30.23 50673 typ relay
a=candidate:3973028 1 udp 33562367 192.158.30.23 61506 typ relay
```
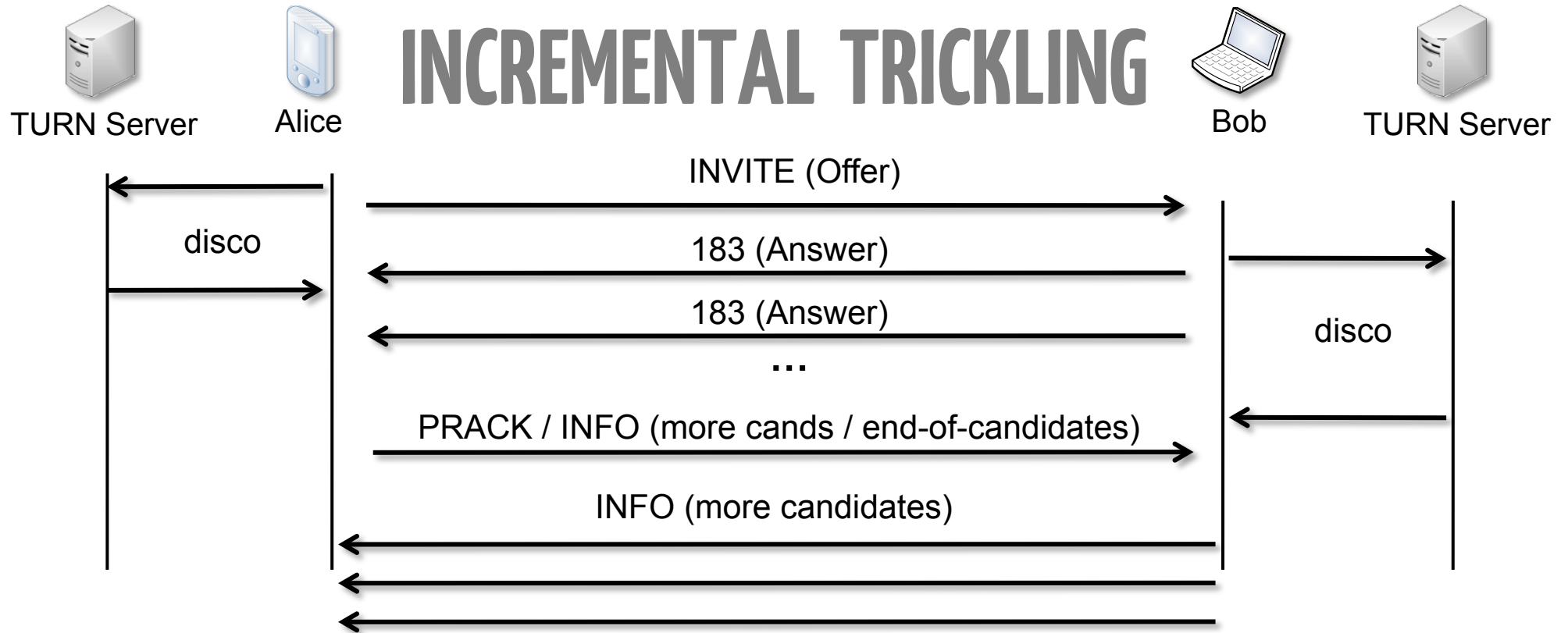
INCREMENTAL TRICKLING

TURN Server   Alice   Bob   TURN Server

INVITE (Offer)

disco

183 (Answer)

183 (Answer)

disco

...

PRACK / INFO (more cands / end-of-candidates)
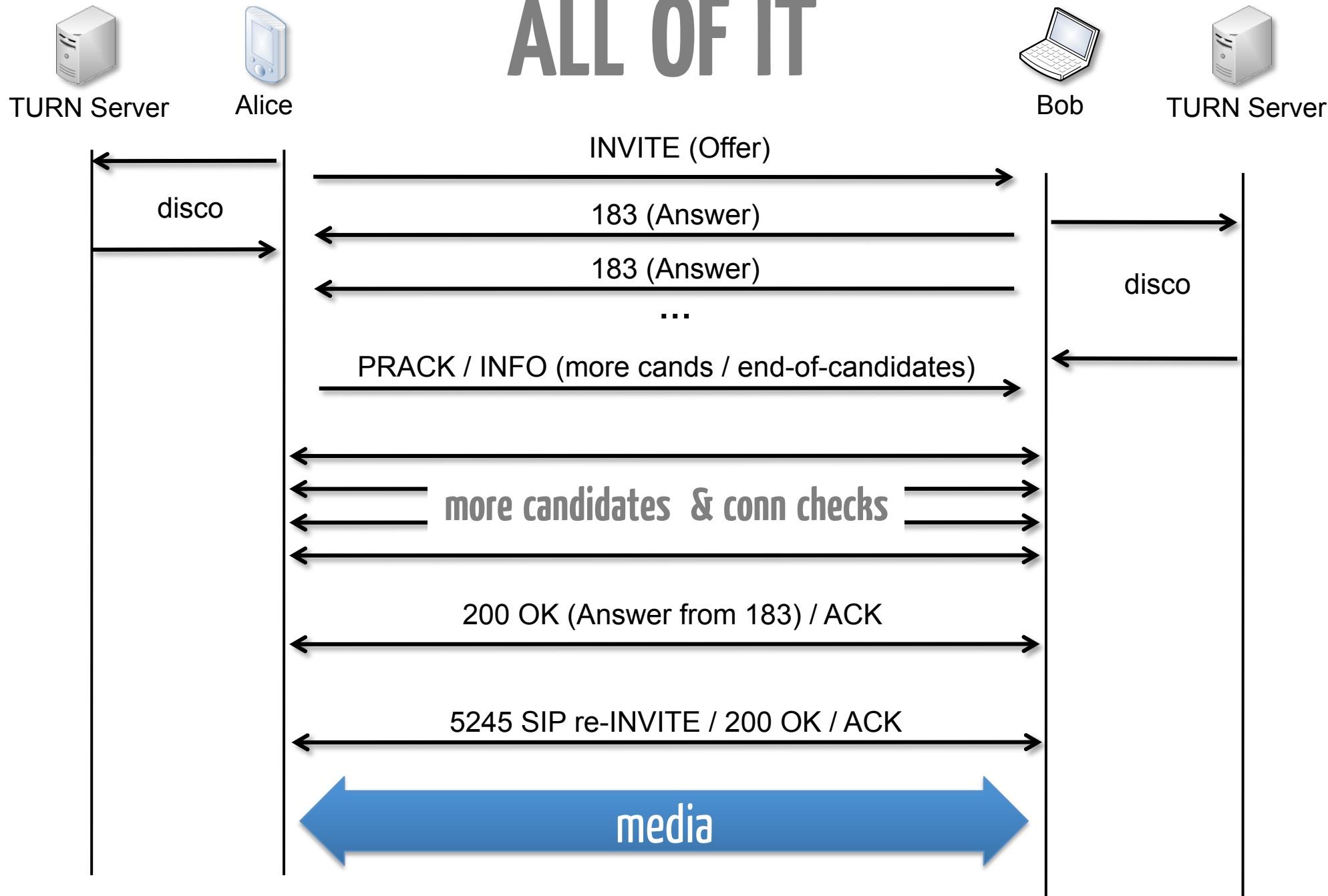
INFO (more candidates)

NOW WE DON'T HAVE TO CARE ABOUT MISORDERED INFOs

```
a=candidate:2207823 1 udp 2113937151 192.168.1.148 57599 typ host
a=candidate:4782591 1 udp 1845501695 86.177.14.166 57599 typ srflx
a=candidate:3973020 1 udp 16785151 192.158.30.23 50673 typ relay
a=candidate:3973028 1 udp 33562367 192.158.30.23 61506 typ relay
```

ALL OF IT

TURN Server   Alice   Bob   TURN Server

INVITE (Offer)

disco

183 (Answer)

183 (Answer)

disco

...

PRACK / INFO (more cands / end-of-candidates)

more candidates & conn checks

200 OK (Answer from 183) / ACK

5245 SIP re-INVITE / 200 OK / ACK

media

draft-ivov-mmusic-trickle-ice-sip

Emil Ivov, Enrico Marocco, Christer Holmberg

60%

DOES THIS SOUND REMOTELY REASONABLE?

draft-ivov-mmusic-trickle-ice-sip

Emil Ivov, Enrico Marocco, Christer Holmberg

60%

DOES THIS SOUND REMOTELY REASONABLE?

(REMINDER: THIS IS **STILL** AN INDIVIDUAL DRAFT!)

application/sdpfrag

```
INFO sip:alice@example.com SIP/2.0
...
Info-Package: trickle-ice
Content-Type: application/sdpfrag
Content-Disposition: Info-Package
Content-Length: ...

a=mid:1
a=candidate:1 1 UDP 1658497328 192.168.100.33 5000 typ host
a=candidate:2 1 UDP 1658497328 96.1.2.3 5000 typ srflx
a=mid:2
a=candidate:2 1 UDP 1658497328 96.1.2.3 5002 typ srflx
a=end-of-candidates
```

draft-ivov-disspatch-sdpfrag-03
Emil Ivov, Adam Roach, Anyone Else?

30%

draft-ivov-disspatch-sdpfrag-03
Emil Ivov, Adam Roach, Anyone Else?

30%

Content-Type: application/sdpfrag

```
a=mid:1
a=candidate:1 1 UDP 165 1.18.10.33 5000 typ host
a=candidate:2 1 UDP 168 91.21.2.3 5000 typ srflx
a=mid:2
a=candidate:2 1 UDP 164 96.11.2.3 5002 typ srflx
a=end-of-candidates
```

draft-ivov-disspatch-sdpfrag-03
Emil Ivov, Adam Roach, Anyone Else?

30%

Content-Type: application/sdpfrag
means: any syntactically valid line of SDP
any combination of such lines in no particular order

draft-ivov-disspatch-sdpfrag-03
Emil Ivov, Adam Roach, Anyone Else?

`30%`

Content-Type: application/sdpfrag

means: any syntactically valid line of SDP

any combination of such lines in no particular order

no semantics;   similar to: message/sipfrag (RFC3420)