

Partial Offer / Partial Answer

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Refresher: Mechanism Overview

- Send just media sections (m= lines) to add/remove/modify streams rather than whole SDP.
- The goal is reducing (and, in certain cases, eliminating) glare.
- Media sections are identified by their MID
 - New MIDs are new sections
 - Existing MIDs correspond to stream removal (port = 0) or stream modification (port > 0)

Open Issue 1: Handling Groups

- Format is currently defined to be a single o= line followed by one or more m= sections (i.e., contain no session-level attributes)
- RFC5888 a=group lines appear at session level
- Including group lines in partial descriptions increases the possibility of glare significantly
- At a bare minimum, this must work properly for BUNDLE. It would ideally work for other groups (LS, FID, etc.)

Open Issue 1: Handling Groups

- First option: Fix only for BUNDLE by implicitly managing bundle membership by port numbers (lines with same port = same bundle group)
 - Pro: Very simple, requires no new syntax
 - Con: Requires full offer/answer to handle any other kind of group

Open Issue 1: Handling Groups

- Second option: Define identification semantics for RFC 5888 groups and include group-line identity in media section.
 - Suboption A: consider groups ordered, and identify group by ordinal
 - Suboption B: identify group by minimal subset of members necessary to uniquely identify it
- Pros: Generally works for all groups
- Cons: Requires introduction of elements in media sections that are valid in partial descriptions, nonsense in full descriptions

Open Issue 1: Handling Groups

- Third option: Scrap RFC 5888 altogether and design a new grouping mechanism
 - Pros: Allows us to address known shortcomings of existing mechanism
 - Cons: Not backwards compatible

Open Issue 1: Recommendation

- Second option, suboption B

Original session:

```
v=0
o=- 289083124...
c=IN IP4 192.0.2.1
t=0 0
a=group:LS ABC DEF
m=audio 30000 RTP/AVP 0
a=mid:ABC
m=video 30002 RTP/AVP 31
a=mid:DEF
```

...plus partial offer:

```
o=- 289083125...
m=video 30004 RTP/AVP 31
a=mid:GHI
a=add-group:ABC
```

...results in final session:

```
v=0
o=- 289083125...
c=IN IP4 192.0.2.1
t=0 0
a=group:LS ABC DEF GHI
m=audio 30000 RTP/AVP 0
a=mid:ABC
m=video 30002 RTP/AVP 31
a=mid:DEF
m=video 30004 RTP/AVP 31
a=mid:GHI
```

Open Issue 1a: New Groups

- Regardless of the preceding approach, we may want to define a means for creating a new group in a partial offer.
- This seems to be comfortably covered by allowing an a=group attribute between the o= line and the first m= line, but only if the group is brand new.
- Recommendation: Specify this as allowed.

Open Issue 2: Multiple Changes

- Current text allows only one “change” at a time
 - “Add” and “remove” can be grouped together in arbitrarily large partial descriptions
- The rationale here is that since we’re taking extraordinary steps to avoid glare, it would be nonsensical to increase the glare surface by including multiple streams at once
- On the other hand, nothing in the processing precludes having multiple changes, so we could allow it with an appropriate implementor warning.
 - Although we would have to modify processing to check for change-related glare on all media sections before any other processing began

Open Issue 2: Recommendation

- Revise document to allow multiple media section changes in a single partial offer, but add strong warning about increased chance of glare.

Open Issue 3: Multiple Outstanding Offers

- Currently prohibited due to complexity of resolving media section ordering when incoming offers happen at the same time
- Does anyone have a use case that would be frustrated by this?
- Recommendation: Keep as-is (only allow one outstanding partial offer at a time).

Open Issue 4: Overlapping media section “add” with one side rejecting the partial offer

- What?
- Send a partial offer adding media sections A, M, and Z.
- Receive a partial offer adding media sections F and S.
- Send a partial answer accepting media sections F and S
- New sections are now known to be in the order A, F, M, S, Z
- Receive protocol-level rejection of the partial offer we sent (with A, M, and Z)
- We now need to change our local view of the session to remove A, M, and Z.
- Recommendation: Media lines are not sorted, are not applied to session while any partial offers (sent or received) are pending.

Ambiguity 1: Changing Bundle Port

- What if a media line is added to a BUNDLE but has a different port than the rest of the sections in that BUNDLE?
 - Really, this shouldn't matter, since only the first line in a bundle affects the port.
 - But we want to be clear about intention.
- Recommendation: Prohibit this. If the BUNDLE port needs to be changed, that's cause for a full offer/answer.

Ambiguity 2: Reordering

- The various glare resolution procedures assume that messages will arrive in-order
 - SIP doesn't guarantee this inherently, but this guarantee can be overlaid on top of existing mechanisms.
- Tolerating reordering would complicate mechanism significantly.
- Recommendation: Clarify that in-order delivery of signaling messages is prerequisite for using this mechanism.

Bikeshed Color Choice 1: MIDs

- We need some way to guarantee that MIDs don't collide
- Current draft uses long, random strings
 - Probably don't need to be so long: current document uses ~202 bits of randomness.
- If there's some way to own a prefix for creation of MIDs, we don't need to worry about randomness
 - Have ideas? Send text.