W3C ORTC Community Group Meeting

April 17, 2014 10:00am-11:30am PDT

W3C CG IPR Policy

- See the Community License Agreement for details.
- Goals are
  - Enable rapid spec development
  - Safe to implement via royalty-free commitments from participants+employers
  - Comfort for committers by limiting scope to OWN contributions
  - Transparency about who is making commitments
- How it works in practice
  - Anyone can post to public-ortc
  - CG members who have signed CLA can post to public-ortc-contrib
  - Editor should ensure that spec includes only “contributions”, CC-ing public-ortc-contrib makes that easier on the editor.

Welcome!

- Welcome to the 2nd meeting of the W3C ORTC Community Group!

  (renamed from “ORCA Community Group”)
- During this meeting, we hope to:
  - Bring you up to date on the status of the ORTC specification.
  - Discuss ORTC priorities
  - Make progress on outstanding issues.

About this Virtual Meeting

Information on the meeting

- Dial-in Number: 585-627-0587 PIN: 10059
- Link to Slides will be published on CG home page & ORTC.org

CG Chair

Robin Raymond, Chief Architect - Hookflash Inc.

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W3C ORTC Community Group Basics

- W3C ORTC CG website:
  - http://www.w3.org/community/ortc/
- Public mailing list: public-ortc@w3.org
  - Join Here - link on the right hand side
  - Non-members can post to this list.
  - Non-member contributions are problematic.
- Contributor's mailing list: public-ortc-contrib@w3.org
  - Join Here - link on the right hand side
  - Members only, preferred list for contributions to the specification.

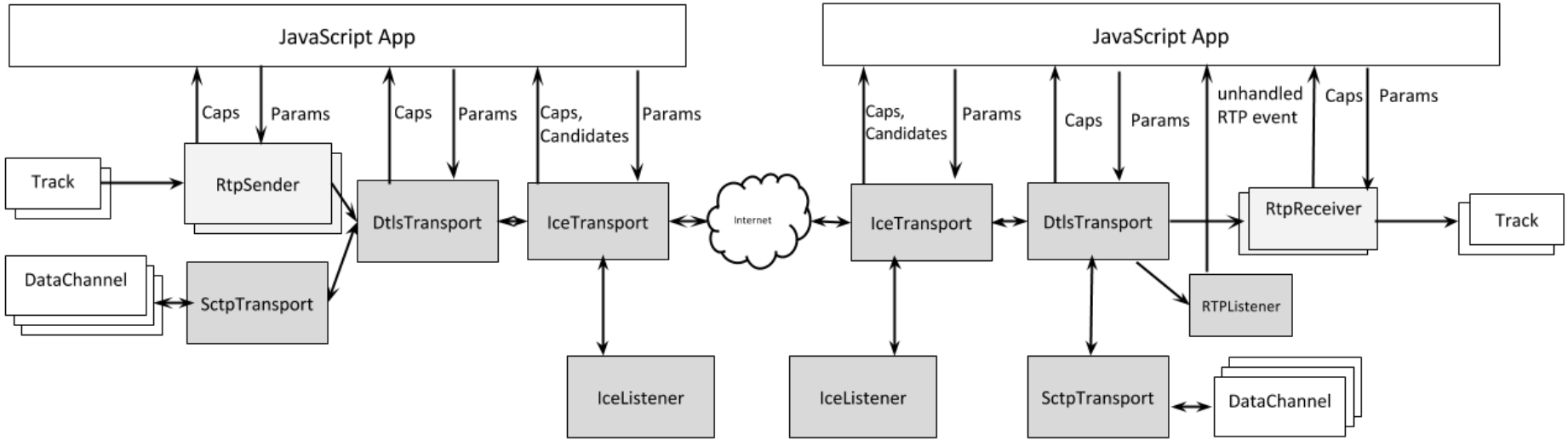
Associated Sites

- ORTC website: http://ortc.org/
  - Editor’s drafts, pointers to github repos, etc.
- ORTC API Issues List: https://github.com/openpeer/ortc/issues?state=open

The Way Forward

- ORTC Big Picture
- ORTC Value Proposition
- ORTC Goals
- Assessment of priorities for the future work

The (Revised) Big Picture



ORTC Main Value Proposition

Areas that provide clear value over 1.0:

- Granular / object level control over RTC behaviour without tying to a bigger state machine
- Not tied to a specific blob legacy format (SDP)
- Layering / simulcast with per-layer control

ORTC Goals

- Support RFCs / functionality / capabilities already in WebRTC 1.0
- Basic ORTC 1.0 API to start, improve later as problem space / requirements are understood
- Clear API rule sets and behaviours for clear implementation guidelines
- Cover reasonable set of CG use cases (e.g. mobility, simulcasting, layering)

High Priority Issues

- ICE TCP
- ICE restart
- ICE candidate gather policy
- ICE freezing
- API modeling (eg. factory vs ctor)
- RTP simulcast /layering
- Demux / latching rules for RtcRtpReceiver
- Stats
- Error handling

Nice to Haves

- ICE candidate packaging
- ICE candidate flushing
- ICE mobility
- RTP contributing sources

Out of Scope for ORTC 1

- ICE candidate priority changing
- ICE aggressive changing knob
- ICE warmth

TBD

- ICE Pacing
- Run-time Changing capabilities
- Special case codec parameters

ORTC 1.0 Criteria

- Already supported in WebRTC 1.0
- API usability
- Problem space / use cases well defined
- Needed for compatibility
- Provides clear value proposition for web developers / applications

Questions for the CG

- Do you agree with the stated goals?
- Do you agree with the priorities outlined?

Editor’s Draft Changes

12 April 2014 Editor’s draft:

- http://ortc.org/wp-content/uploads/2014/04/ortc.html

Changes since 13 February 2014 Editor’s draft:

- Support for control of quality, resolution, framerate and layering, as described in Issue 31.
- More support for RTP and codec parameters, as described in Issue 33.
- ICE issues [ICE TCP (41), acquisition of local candidates (43), onlocalcandidate definition (44), gather policy (47)] addressed.
- RTPListener object added, as described in Issue 32.
- Initial stab at a Stats API, as requested in Issue 46.
- Support for contributing sources added, as requested in Issue 27.
- Default values added in some cases, to partially address Issue 39.
- Various NITs fixed, as requested in Issues 34, 37, 38.

Questions for the CG

- Is the CG generally OK with the direction in which the Editor’s draft is headed?
- Do you have questions about general aspects of the spec?

Coming Attractions

- Broken up "big proposal"
  - layering/simulcast by itself (posted to ortc mail list)
    - https://github.com/openpeer/ortc/issues/61
  - quality knobs stuff by itself (posted to ortc mail list)
    - https://github.com/openpeer/ortc/issues/62
- Ideas for non-muxed RTCP
- Minor DataChannel cleanup (posted to mail list)
    - https://github.com/openpeer/ortc/issues/60

Issues For Discussion Today

- Stats
- ICE TCP
- ICE Gather Policy
- ICE Freezing
- Factory Method Pattern

Stats

- Concept reused from WebRTC 1.0.
- Stats returned are within the context of what each object tracks, no difference otherwise.
- Include the existing stats from http://www.w3.org/2011/04/webrtc/wiki/Stats

- Do we need any additional stats? Use cases?
  - For Receiver/Sender: draft-singh-xrblock-webrtc-additional-stats
  - Anything for DtlsTransport, IceTransport and SctpTransport?

ICE TCP Proposal (Active / Passive)

- At IETF 89, consensus was to require ICE-TCP support (RFC 6544).
- Added TCP candidate type:

```
enum RTCIceProtocol {
    "udp",
    "tcp"
};
```

- Offered TCP candidates “passive” or “active”

```
enum RTCIceTcpType {
    "active",
    "passive"
};
```

ICE Gather Policy

- Added from WebRTC 1.0:

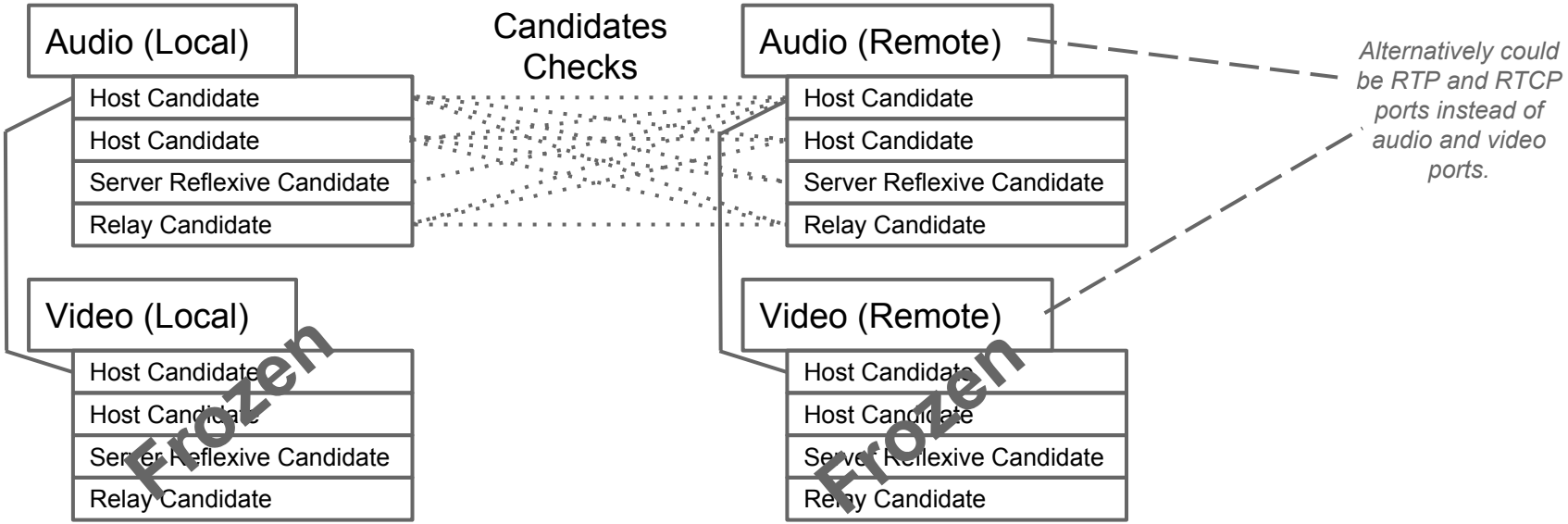
```
enum RTCIceGatherPolicy {
    "all",
    "nohost",
    "relayonly"
};
```

Does this address the needs of the CG?

Use cases?

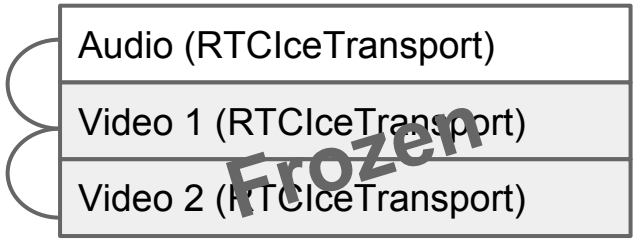
ICE Freezing

- Needed for RTP vs RTCP non-muxed
- Needed for audio / video candidate searches



ICE Freezing Implicit vs Explicit

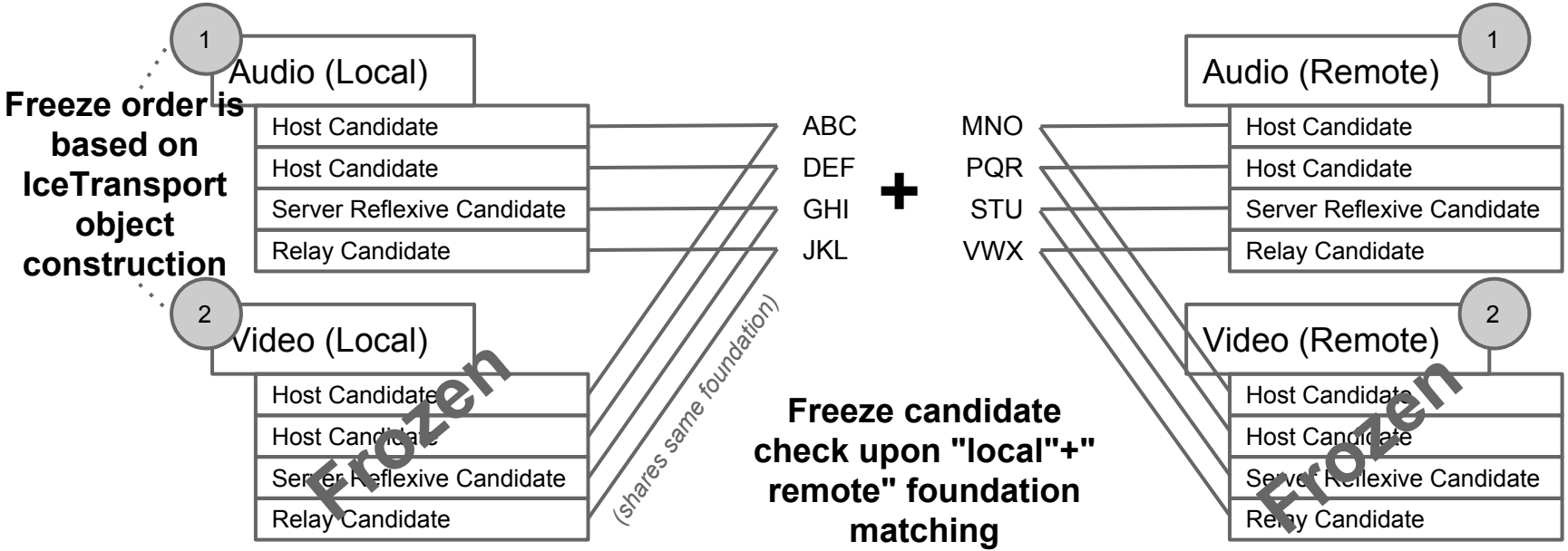
- How is relationship between RTCIceTransport candidates known?



ICE Freezing Implicitly

Each candidate has a unique “foundation” based on:

- type (e.g. host vs server reflexive)
- base IP
- connecting server IP (relay only)



ICE Freezing Explicit

- Relationships expressed in code:

```
function initiate(signaller) {
    var iceOptions = ...;
    var iceAudio = new RTCIceTransport(RTCIceRole.controlling, iceOptions);
    var iceVideo1 = new RTCIceTransport(iceAudio, RTCIceRole.controlling, iceOptions);
    var iceVideo2 = new RTCIceTransport(iceVideo1, RTCIceRole.controlling, iceOptions);
}
```

- Can we do implicit relationships?
- Does it cover all needed use cases?
- Do we need explicit RTCIceTransport relationships?

Factory Method Pattern

Pros

- Instantiate abstract interfaces
- Meaningful method signatures: *SomeObject createWithFoo(...)*
- Easier to add singletons / static helper methods
- Better encapsulation
- Weak coupling
- Possible to add customization hooks

Cons

- “new” is clearly creating a specific object type
- Consistency with other API(s)? which? Do we care?
- More methods inside interface vs outside in ctor

Factory Method Pattern Works like ctor

```
[Constructor(
                RTCIceRole role,
                optional RTCIceListener iceListener
                ),
 Constructor(
                RTCIceRole role,
                RTCIceOptions options
                )]
interface RTCIceTransport {
   readonly    attribute RTCIceRole          role;
   readonly    attribute RTCIceTransportState state;

   [...]
};
```

VS

```
interface RTCIceTransport {
   readonly    attribute RTCIceRole          role;
   readonly    attribute RTCIceTransportState state;

  static RTCIceTransport create(
                                RTCIceRole role,
                                optional RTCIceListener iceListener
                                );
  static RTCIceTransport create(
                                RTCIceRole role,
                                RTCIceOptions options
                                );

   [...]
};
```

```
function initiate(signaller) {
 var iceOptions = ...;
 var ice = new RTCIceTransport(RTCIceRole.controlling,
iceOptions);
}
```

```
function initiate(signaller) {
 var iceOptions = ...;
 var ice = RTCIceTransport.create(RTCIceRole.controlling,
iceOptions);
}
```

Allows For Meaningful Method Name Signatures

```
[Constructor(
                RTCDataTransport transport,
                RTCDataChannelParameters params)]
interface RTCDataChannel : EventTarget {
    readonly attribute RTCDataTransport transport;
    readonly attribute RTCDataChannelParameters parameters;

    //...
};
```

```
interface RTCDataChannel : EventTarget {
    readonly attribute RTCDataTransport transport;
    readonly attribute RTCDataChannelParameters parameters;

    static RTCDataChannel open(
                                RTCDataTransport transport,
                                RTCDataChannelParameters params
                                );


    //...
};
```

VS

```
function initiate(transport) {
 var params = ...;
 var channel = new RTCDataChannel(transport, params);
}
```

```
function initiate(transport) {
 var params = ...;
 var channel = RTCDataChannel.open(transport, params);
}
```

Instantiate Default Derived Interface Types

```
interface RTCDataTransport {

}

[Constructor(RTCDtlsTransport transport)]
interface RTCSctpTransport : RTCDataTransport {

  // ...
}
```

```
function initiate(transport) {
 var channel = new RTCSctpTransport(transport);
}
```

VS

```
interface RTCDataTransport {

   static RTCDataTransport create(RTCDtlsTransport transport);

}

interface RTCSctpTransport : RTCDataTransport {

  // ...
}
```

```
function initiate(transport) {
 var channel = RTCDataTransport.create(transport);
}
```

Thank you

Special thanks to:

Bernard Aboba - Microsoft

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Justin Uberti - Google

Peter Thatcher - Google

Martin Thomson - Self

Robin Raymond - Hookflash

Erik Lagerway - Hookflash

For More Information

ORTC Community Group

http://www.w3.org/community/ortc/

ORTC website

http://ortc.org