

WebRTC HTTP-Based Session Negotiation Protocol (WHSNP)

Abstract

This document describes a streamlined HTTP-based protocol that allows clients to establish WebRTC sessions to media servers for either publishing or subscribing to media content.

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Introduction

WebRTC, as defined by the IETF RTCWEB working group, standardizes the data exchanged during the negotiation of a new session with JSEP ([RFC8829]), but does not mandate a specific transport mechanism for the signaling for that negotiation. This leads to challenges for interoperability between different WebRTC implementations and other barriers to adoption. In addition, the negotiation requires a number of round trips to establish a session. These round trips are typically used to negotiate codecs and session details.

One protocol, [WebRTC-HTTP ingestion protocol \(WHIP\)](#), simplifies the establishment of WebRTC sessions but is limited to publishing. Other protocols, such as [WHEP](#), have been developed that provide the egress side. These protocols call out the situations in which the lack of a standard protocol for WebRTC negotiation signaling can be problematic.

WHSNP covers all core requirements of WebRTC session negotiation using only one round trip to establish a session. Fields in its wire format map to the Session Description Protocol (SDP) definition in the WebRTC standard, with the full SDP in the body of the HTTP POST.

This document proposes an efficient HTTP-based protocol for establishing WebRTC communications that

- Allows WebRTC endpoints to publish to media servers or subscribe to content from media servers.
- Uses a uniform communication for both subscribing and publishing.
- Incorporates tokens that can contain capabilities to streamline negotiation.
- Can be used in both web browsers and native applications.
- Allows manual tuning.
- Is simple to implement.
- Can easily be extended while maintaining backwards compatibility, e.g. to support features such as DRM or time-shift.
- Is built on commonly-available standards such as HTTP and JSON.
- Is fully compliant with WebRTC and RTCWEB specifications.

Terminology

The key words "**MUST**", "**MUST NOT**", "**REQUIRED**", "**SHALL**", "**SHALL NOT**", "**SHOULD**", "**SHOULD NOT**", "**RECOMMENDED**", "**NOT RECOMMENDED**", "**MAY**", and "**OPTIONAL**" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

Media Server: WebRTC media server that establishes the media session with the WHSNP Client and either receives published media from the WHSNP Client (in the case of a WHSNP Publisher Client) or provides media to the WHSNP Client (in the case of a WHSNP Subscriber Client).

SDP: Session Description Protocol, as defined by WebRTC and in [RFC3264].

WHSNP Client: WebRTC media producer or consumer that acts as a client of a WHSNP Endpoint and either publishes media to or subscribes to media from a remote media server.

WHSNP Endpoint: Server receiving the initial request from the WHSNP client.

WHSNP Endpoint URI: The URI allocated to a specific purpose (such as publish or subscribe) and, in some cases, to a specific stream.

Overview

The WebRTC HTTP-Based Session Negotiation Protocol (WHSNP) Client uses an HTTP POST request to initiate a WebRTC session. The WHSNP Client provides an SDP offer and an initial set of ICE candidates to the WHSNP Endpoint. The WHSNP Endpoint provides independent URI paths for POSTs from WHSNP Clients; one for publishing and another for subscribing.

In response, the WHSNP Endpoint sends the WHSNP Client ICE candidates to be used when establishing a session to the Media Server. In the same response, the WHSNP Endpoint also sends either an SDP answer if the Client offer is acceptable, or an SDP with an offer created by the Endpoint.

WHSNP results in one of three outcomes:

- The WHSNP Client offer is used,
- The WHSNP Endpoint offer is used, or
- No offer is used and no session is established

The WHSNP Client uses the ICE candidates received from the WHSNP Endpoint to connect to a Media Server.

The same protocol is used for both publishing and subscribing. WHSNP Endpoints provide different WHSNP Endpoint URIs to differentiate between publishing and subscribing requests. When a WHSNP Client will both subscribe to a stream and publish a stream (e.g., in a use case such as chat), the WHSNP Client makes two separate calls to the WHSNP Endpoint, and two independent WHSNP sessions are created.

When the WHSNP Client offer is accepted by the WHSNP Endpoint, as shown in Figure 1, the response to the HTTP POST Client Config includes the SDP answer.

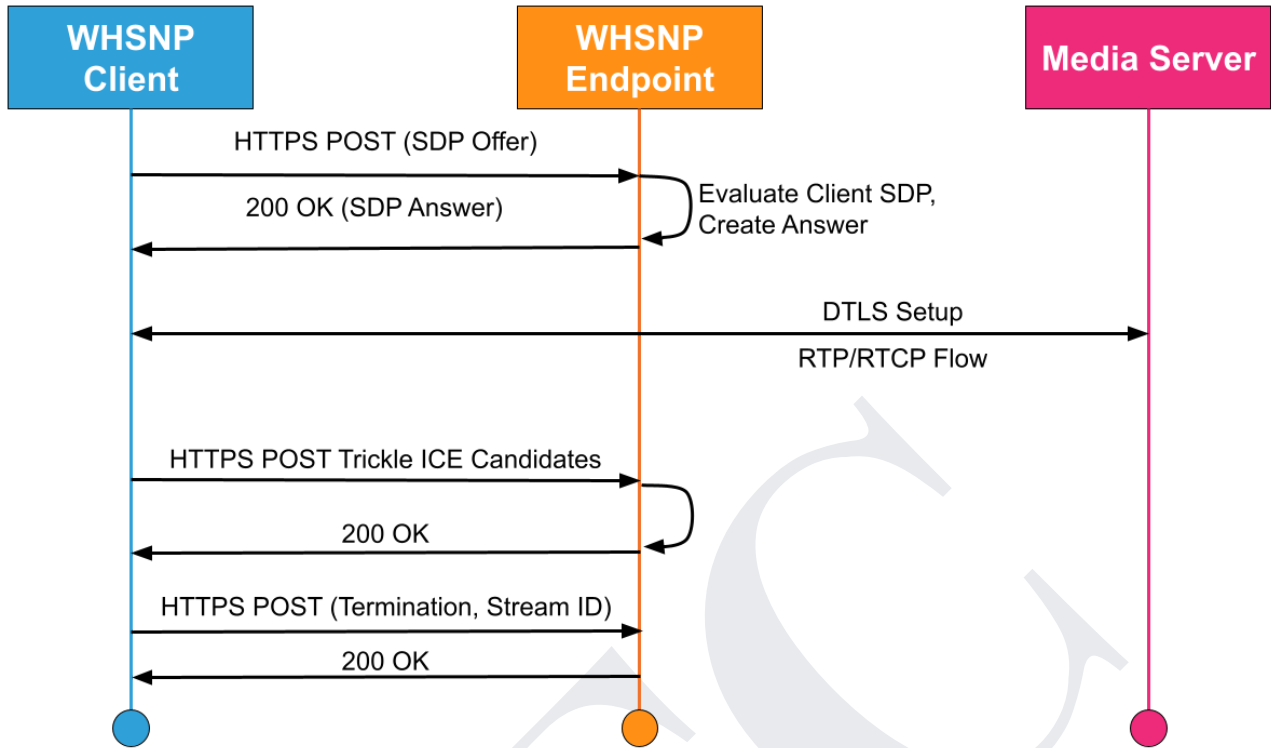


Figure 1: Typical WHSNP Session Setup and Teardown

When the initial Client offer is not acceptable to the WHSNP Endpoint, e.g., when using an older browser, the WHSNP Endpoint responds with its own offer, requiring the WHSNP Client to respond with an HTTP POST accepting the WHSNP Endpoint's offer. This is shown in Figure 2

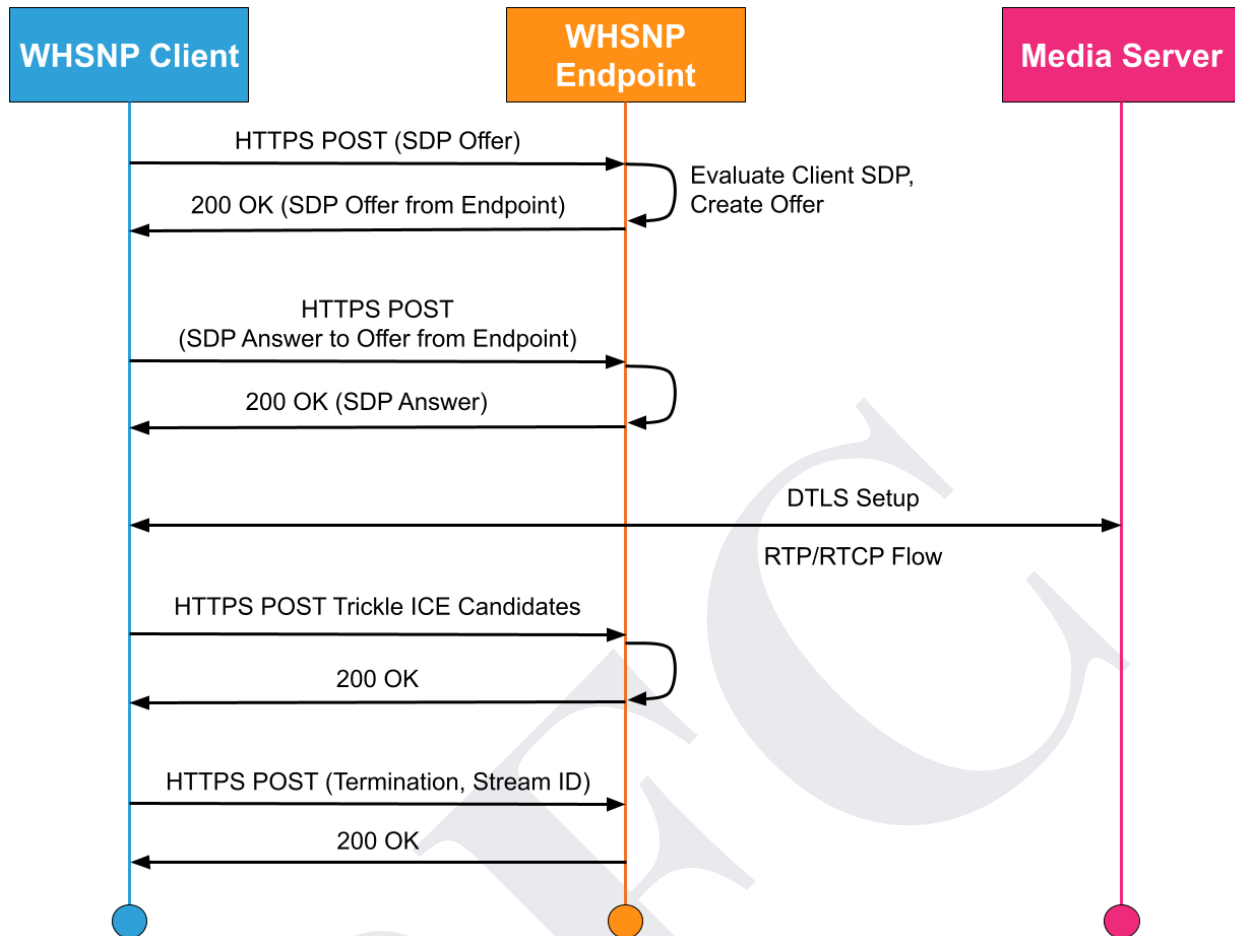


Figure 2: WHSNP Session Setup with WHSNP Endpoint Offer and Teardown

If the WHSNP Endpoint's offer is not accepted by the WHSNP Client, no session is established.

If a session is established, the media flows as described in the WebRTC protocol, from the WHSNP Client to the Media Server or vice versa, depending on whether the WHSNP Client is publishing or subscribing. No further SDP negotiation is supported, so if any tracks or streams need to be added or removed, the WHSNP negotiation starts over from the beginning. In other words, no "m=" sections can be added once the negotiation is complete.

Protocol Operation

WHSNP begins with a WHSNP Client generating an SDP Offer according to the JSEP rules [RFC8829] and initiating an exchange with a WHSNP Endpoint via an HTTP POST. The WHSNP Client MUST initiate the exchange. The WHSNP Endpoint is known to the WHSNP Client, e.g., by querying an associated service's server for a list of URIs of available endpoints. The WHSNP Client discovery of these WHSNP Endpoint URIs is outside the scope of WHSNP.

To ensure interoperability between WHSNP Clients and WHSNP Endpoints, at a minimum, the WHSNP Endpoint SHALL provide URIs that end with the following paths, where {streamId} is the streamId returned in the WHSNP Endpoint's response to a WHSNP Client's offer as described in this document:

- /subscribe
- /publish
- /{streamId}/description/remote
- /{streamId}/ice/candidates
- /{streamId}/destroy

The rest of the URI SHOULD include a vendor-defined prefix (e.g., <https://hostname.com/whsnp/>).

Initial Call from WHSNP Client

To establish a WHSNP session, a WHSNP Client SHALL generate an SDP Offer according to the JSEP rules [RFC8829]. The WHSNP Client SHOULD send all the capabilities it can offer in its SDP. For all WHSNP communications, the sessionDescription type SHALL be present and populated.

The WHSNP Client SHALL send its SDP using a content type of multipart/form-data that contains an SDP offer. The form data boundary SHALL meet the requirements of the multipart syntax as defined in section 4.1 of [RFC7578].

The WHSNP Client SHALL send its SDP in an HTTP POST to the appropriate WHSNP Endpoint URI. To receive content, the WHSNP Client SHALL send its SDP Offer to the WHSNP Endpoint URI for subscription. To publish content, the WHSNP Client SHALL send its SDP Offer to the WHSNP Endpoint URI for publishing.

The initial call from the WHSNP Client SHALL validate against the following schema. A full offer/answer example is shown in the [Examples](#) section.

```
Unset
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "type": "object",
  "properties": {
    "apiVersion": {
      "type": "integer"
    },
    "clientVersion": {
      "type": "string"
    },
    "bearerToken": {
      "type": "string"
    }
  }
}
```

```

    },
    "failureCount": {
      "type": "integer"
    },
    },
    "setRemoteDescription": {
      "type": "object",
      "properties": {
        "apiVersion": {
          "type": "integer"
        },
        },
        "sessionDescription": {
          "type": ["object", "null"],
          "properties": {
            "type": {
              "type": "string",
              "pattern": "offer"
            },
            },
            "sdp": {
              "type": "string"
            }
          },
          },
          "required": [
            "type",
            "sdp"
          ]
        }
      },
      "required": [
        "sessionDescription"
      ]
    },
    "createAnswerDescription": {
      "type": ["object", "null"],
      "properties": {
        "apiVersion": {
          "type": "integer"
        },
        },
        "options": {
          "type": "array"
        }
      }
    },
    },
    "options": {
      "type": "array",
      "items": {}
    },
    },
    "required": [
      "failureCount",
      "createAnswerDescription"
    ]
  ]

```

```
}
```

bearerToken: The WHSNP Client SHALL include a Bearer token in its POST. The Bearer Token MUST be present in either the body of the POST request or in the Authorization header.

The Bearer token MAY include an indication of capabilities that are not defined in the SDP. Generation of the Bearer token, its context and syntax, and distribution to the WHSNP Client, is outside the scope of this document..

The WHSNP Endpoint MUST accept a Bearer token in either the body of the POST request or in the Authorization header. If a request contains a Bearer token in both header and body, the WHSNP Endpoint MUST reject the entire request.

apiVersion and **clientVersion:** The WHSNP Client MAY include vendor-specific options, such as apiVersion and clientVersion, in the body of the call to the WHSNP Endpoint.

failureCount: The WHSNP Client SHALL include the failureCount in the body of the call.

setRemoteDescription: The WHSNP Client SHOULD include a setRemoteDescription in its initial call. When present, the WHSNP Client MUST include a "sessionDescription" type of "offer" and MUST populate "sdp" with its SDP offer in plain text (as per [WEBIDL](#)).

createAnswerDescription: The WHSNP Client MUST include a createAnswerDescription in its initial call.

WHSNP Endpoint Response to Initial Call

The WHSNP Endpoint SHOULD verify that the bearerToken contained in the call from the WHSNP Client is valid. The determination of validity is outside the scope of this document.

If using the initial offer from the Client, the WHSNP Endpoint sets setRemoteDescriptionResponse and createAnswerDescriptionResponse to the original Client offer SDP, and sets createofferDescriptionResponse to "null".

If not the using initial offer from the Client, the WHSNP Endpoint sets both setRemoteDescriptionResponse and createAnswerDescriptionResponse to "null" and sets createofferDescriptionResponse to its own offer SDP.

If the WHSNP Endpoint refuses the client's offer, it represents its own options in the HTTP body of its response. This indicates to the WHSNP Client that its offer has been rejected. The WHSNP Endpoint's offer will result in a slower workflow and should only be used for legacy support.

The WHSNP Endpoint SHALL return a "200 OK" response with a UTF-8 JSON-formatted body. The contents of the JSON body SHALL validate against the following schema.

Unset

```
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "type": "object",
  "properties": {
    "status": {
      "type": "string"
    },
    "streamId": {
      "type": "string"
    },
    "sharedSecret": {
      "type": "string"
    },
    "rtcConfiguration": {
      "type": "object",
      "properties": {
        "bundlePolicy": {
          "type": "null"
        },
        "iceCandidatePoolSize": {
          "type": "integer"
        },
        "iceServers": {
          "type": "array",
          "items": [
            {
              "type": "object",
              "properties": {
                "urls": {
                  "type": "array",
                  "items": [
                    {
                      "type": "string"
                    }
                  ]
                },
                "username": {
                  "type": ["string", "null"]
                },
                "credential": {
                  "type": ["string", "null"]
                }
              }
            }
          ]
        },
        "required": [
          "urls",
          "username",
          "credential"
        ]
      }
    }
  }
}
```

```

        ]
      }
    ]
  },
  "iceTransportPolicy": {
    "type": "string"
  },
  "peerIdentity": {
    "type": "null"
  },
  "rtcpMuxPolicy": {
    "type": "string"
  }
},
"required": [
  "bundlePolicy",
  "iceCandidatePoolSize",
  "iceServers",
  "iceTransportPolicy",
  "peerIdentity",
  "rtcpMuxPolicy"
]
},
"setRemoteDescriptionResponse": {
  "type": ["object", "null"],
  "properties": {
    "status": {
      "type": "string"
    },
    "sessionDescription": {
      "type": "object",
      "properties": {
        "type": {
          "type": "string",
          "pattern": "offer"
        },
        "sdp": {
          "type": "string"
        }
      }
    },
    "required": [
      "type",
      "sdp"
    ]
  }
},
"options": {
  "type": "array",
  "items": {}
}
},
"required": [

```

```

        "status",
        "sessionDescription",
        "options"
    ]
},
"createOfferDescriptionResponse": {
    "type": ["object", "null"],
    "properties": {
        "status": {
            "type": "string"
        },
        "sessionDescription": {
            "type": "object",
            "properties": {
                "type": {
                    "type": "string",
                    "pattern": "offer"
                },
                "sdp": {
                    "type": "string"
                }
            },
            "required": [
                "type",
                "sdp"
            ]
        },
        "options": {
            "type": "array",
            "items": {}
        }
    },
    "required": [
        "status",
        "sessionDescription",
        "options"
    ]
},
"createAnswerDescriptionResponse": {
    "type": ["object", "null"],
    "properties": {
        "status": {
            "type": "string"
        },
        "sessionDescription": {
            "type": "object",
            "properties": {
                "type": {
                    "type": "string",
                    "pattern": "answer"
                },
            },
        }
    }
}

```

```

        "sdp": {
            "type": "string"
        }
    },
    "required": [
        "type",
        "sdp"
    ]
},
"options": {
    "type": "array",
    "items": {}
}
},
"required": [
    "status",
    "sessionDescription",
    "options"
]
},
"lag": {
    "type": "integer"
},
"options": {
    "type": "array",
    "items": {}
}
},
"required": [
    "status",
    "streamId",
    "sharedSecret",
    "rtcConfiguration",
    "setRemoteDescriptionResponse",
    "createOfferDescriptionResponse",
    "createAnswerDescriptionResponse",
    "lag",
    "options"
]
}
}

```

status: The WHSNP Endpoint SHALL include the status (e.g., "ok") in its response.

streamId: The WHSNP Endpoint shall include a streamId in its response.

sharedSecret: The WHSNP Endpoint SHALL include a shared secret in its response. This sharedSecret is used to secure the rest of the calls between the WHSNP Endpoint and the WHSNP Client.

rtcConfiguration: The WHSNP Endpoint SHALL include an rtcConfiguration object in its response, as defined in 4.2 Configuration of [WEBRTC].

setRemoteDescriptionResponse: The WHSNP Endpoint SHALL include setRemoteDescriptionResponse in its response. If using the Client offer SDP, the WHSNP Endpoint SHALL populate this object with the SDP from the WHSNP Client in the sessionDescription and a type of "offer". The WHSNP Endpoint SHALL set this object to "null" if not using the SDP from the Client.

createOfferDescriptionResponse: The WHSNP Endpoint SHALL include createOfferDescriptionResponse in its response. If **not** the using Client offer SDP, the WHSNP Endpoint SHALL populate this object with its own SDP in the sessionDescription and a type of "offer". The WHSNP Endpoint SHALL set this object to "null" if using the SDP from the Client.

createAnswerDescriptionResponse: The WHSNP Endpoint SHALL include setRemoteDescriptionResponse in its response. If using the Client offer SDP, the WHSNP Endpoint SHALL populate this object with the SDP from the WHSNP Client in the sessionDescription and a type of "answer". The WHSNP Endpoint SHALL set this object to "null" if not using the SDP from the Client.

lag: The WHSNP Endpoint MAY include the lag in its response, indicating the delay present in the referenced content stream, in milliseconds.

options: The WHSNP Endpoint SHALL include an options array in its response. The array may be empty.

WHSNP Client Answer to WHSNP Endpoint Offer

Note: this WHSNP Client Answer is only needed when an offer was provided by the WHSNP Endpoint, as shown in Figure 2.

If the SDP Offer provided by the WHSNP Endpoint is not acceptable to the WHSNP Client, no session is established. In this case, the WHSNP Client SHOULD log the error and destroy the session as described in [Session End](#). The WHSNP Endpoint can use proprietary rules regarding the duration it will allow for the acceptance of its offer, after which time, the WHSNP Endpoint can be expected to destroy the artifacts associated with the negotiation (i.e., session and stream).

If the SDP Offer provided by the WHSNP Endpoint is acceptable to the WHSNP Client, the follow-up call from the WHSNP Client MUST answer the server's offer and MUST NOT repeat the Client's initial offer.

To accept the offer from the WHSNP Endpoint, the WHSNP Client SHALL send a POST call to the appropriate WHSNP Endpoint URI.

The WHSNP Client SHALL include a Request body in the POST with a content type of multipart/form-data.

The Request body of the call from the WHSNP Client SHALL validate against the following schema.

Unset

```
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "type": "object",
  "properties": {
    "apiVersion": {
      "type": "integer"
    },
    "clientVersion": {
      "type": "string"
    },
    "sharedSecret": {
      "type": "string"
    },
    "failureCount": {
      "type": "integer"
    },
    "sessionDescription": {
      "type": "object",
      "properties": {
        "type": {
          "type": "string",
          "pattern": "answer"
        },
        "sdp": {
          "type": "string"
        }
      },
      "required": [
        "type",
        "sdp"
      ]
    }
  },
  "required": [
    "sharedSecret",
    "failureCount",
    "sessionDescription"
  ]
}
```

sharedSecret: The WHSNP Client SHALL include the sharedSecret provided in the WHSNP server's response to the initial offer in the body of the call to the WHSNP Endpoint.

failureCount: The WHSNP Client SHALL include the failureCount in the body of the call to the WHSNP Endpoint.

sessionDescription: The WHSNP Client SHALL include a sessionDescription object with the type set to "answer", and an sdp that contains the stringified SDP that answers the WHSNP Endpoint's offer.

WHSNP Endpoint Response to Client

Note: this WHSNP Endpoint Response is only needed when an offer was provided by the WHSNP Endpoint, as shown in Figure 2.

When the WHSNP Endpoint receives a response from the WHSNP Client to the offer provided by the WHSNP Endpoint, the WHSNP Endpoint SHALL return a message containing JSON data that validates against the following schema.

If the SDP provided by the WHSNP Client does not answer the Endpoint's offer, no session is established. In this case, the WHSNP Endpoint SHOULD destroy the artifacts associated with the negotiation (i.e., session and stream). The WHSNP Client can use proprietary rules regarding the duration it will allow for the acceptance of its offer, after which time, the WHSNP Client SHOULD log the error and destroy the session as described in [Session End](#).

```
Unset
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "type": "object",
  "properties": {
    "status": {
      "type": "string"
    },
    "sessionDescription": {
      "type": "object",
      "properties": {
        "type": {
          "type": "string",
          "pattern": "answer"
        },
        "sdp": {
          "type": "string"
        }
      },
      "required": [
        "type",
        "sdp"
      ]
    },
    "options": {
      "type": "array",
      "items": [
        {
          "type": "string"
        }
      ]
    }
  },
  "required": [
    "status",
    "sessionDescription",
    "options"
  ]
}
```

```
"required": [
  "status",
  "sessionDescription",
  "options"
]
```

status: The WHSNP Endpoint SHALL include the status (e.g., "ok") in its response.

sessionDescription: The WHSNP Endpoint SHALL include a sessionDescription object with the type set to "answer", and an sdp that contains the stringified SDP that matches the SDP from the WHSNP Client.

options: The options JSON object SHALL be present and SHOULD contain "ice-candidates".

Session End

To end its session, the WHSNP Client SHALL send a POST call to the appropriate WHSNP Endpoint URI, ending in `/streamId/destroy`, where streamId is the stream ID provided in the WHSNP Endpoint's response to the initial offer.

The Request body of the POST from the WHSNP Client SHALL have a content type of `multipart/form-data`.

The termination call from the WHSNP Client SHALL validate against the following schema. An example of the request body for termination can be found in the [Examples](#) section.

```
Unset
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "type": "object",
  "properties": {
    "apiVersion": {
      "type": "integer"
    },
    "clientVersion": {
      "type": "string"
    },
    "sharedSecret": {
      "type": "string"
    },
    "reason": {
      "type": "string",
    },
  },
}
```

```
    "options": {
      "type": "array",
      "items": {}
    }
  },
  "required": [
    "sharedSecret",
    "reason",
    "options"
  ]
}
```

sharedSecret: The WHSNP Client SHALL include the sharedSecret provided in the WHSNP server's response to the initial offer.

reason: The WHSNP Client SHALL include a "reason" indicating the reason for termination, e.g., "client:termination".

options: The options JSON object SHALL be present.

To end a session, the Media Server SHALL follow the procedures described in [RFC7675] section 5.2 for immediate revocation of consent.

ICE and NAT Support

WHSNP supports ICE [RFC8445] by letting the server provide STUN and TURN candidates. Providing relevant STUN and TURN servers to enable all the permutations for ICE and NAT is a function of the vendor API. No configuration is needed on the Client.

The WHSNP Endpoint SHALL gather all the ICE candidates for the Media Server prior to sending its SDP Answer. The WHSNP Endpoint SHALL include the full list of Media Server ICE candidates in its SDP Answer.

The Client SHOULD support trickle ICE as per [RFC8840].

If sending trickle ICE candidates, the WHSNP Client SHALL send its additional candidates in a POST call to the appropriate WHSNP Endpoint URI, ending in

```
/streamId/ice/candidates
```

where *streamId* is the streamId returned in the WHSNP Endpoint's response to the WHSNP Client.

If a WHSNP Client sends trickle ICE candidates, it SHALL shall POST a call with a content type of multipart/form-data containing a JSON body. The contents of the JSON body SHALL validate against the following schema.

Unset

```
{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "type": "object",
  "properties": {
    "apiVersion": {
      "type": "integer"
    },
    "sharedSecret": {
      "type": "string"
    },
    "candidates": {
      "type": "array",
      "candidateList": [
        {
          "type": "object",
          "properties": {
            "candidate": {
              "type": "string"
            },
            "sdpMid": {
              "type": "string"
            },
            "sdpMLineIndex": {
              "type": "integer"
            },
            "usernameFragment": {
              "type": "string"
            }
          }
        }
      ],
      "required": [
        "candidate",
        "sdpMid",
        "sdpMLineIndex",
        "usernameFragment"
      ]
    },
    "discoveryCompleted": {
      "type": "boolean"
    },
    "options": {
      "type": "array",
      "items": {}
    }
  },
  "required": [
    "sharedSecret",
    "candidates",
    "discoveryCompleted",
    "options"
  ]
}
```

```
]
}
```

sharedSecret: The WHSNP Client SHALL include the sharedSecret that was provided in the WHSNP server's response to the initial offer.

candidates: The WHSNP Client SHALL include an array of candidates containing zero or more candidates and their associated data.

discoveryCompleted: The WHSNP Client shall include the discoveryCompleted boolean with a value of true if the candidate discovery is complete.

options: The options JSON object SHALL be present.

WebRTC Constraints

WHSNP does not support the "sendrecv" mode of WebRTC. No other constraints are placed on WebRTC.

Load Balancing and Redirections

To support load balancing and redirects, implementations MUST honor CNAME and HTTP redirects such as 307 Temporary Redirect accordingly.

STUN/TURN Server Configuration

Configuration for STUN and TURN servers SHALL be passed in the rtcConfiguration from the WHSNP Endpoint to the Client as part of the POST body as described in [WEBRTC].

Authentication and Authorization

A Bearer token is used for authentication and authorization. The WHSNP Client MUST include a Bearer token in its initial HTTP POST. The generation of Bearer tokens is outside the scope of this document, and the content and syntax of the token are vendor-specific.

The WHSNP Client SHALL include the sharedSecret provided by the WHSNP Endpoint in subsequent calls to the WHSNP Endpoint. The generation of the sharedSecret is outside the scope of this document, and the content and syntax of the token are vendor-specific.

Simulcast and Scalable Video Coding

Support for simulcast and scalable video coding are part of the SDP and are subject to support on both Media Server and Client implementations.

Protocol Extensions

WHSNP does not introduce signaling for support of future protocol extensions, as the structure of the WHSNP data in JSON inherently allows extensibility for additional data fields. WHSNP Endpoints and WHSNP Clients that do not recognize fields in the JSON MUST ignore the unrecognized fields.

For example, a "content protection" section could be added to the JSON to provide DRM information, including data such as DRM system ID and other DRM-specific information, as is done by [DASH], as shown in the example below:

Unset

```
"contentProtection": [{
  "schemeIdUri": "urn:uuid:d0ee2730-09b5-459f-8452-200e52
b37567",
  "value": "FirstDRM 2.0",
  "cencpssh":
"YmFzZTY0IGVuY29kZWQgY29udGVudHMgb2YgkXBzc2iSIGJveCB3a
XRoIHRoaXMgU3lzdGVtSUQ=",
  "authzurl": "https://example.com/tenants/5341/authorize
",
  "laur1": "https://example.com/AcquireLicense"
}, {
  "schemeIdUri": "urn:uuid:d0ee2730-09b5-459f-8452-200e52
b37567",
  "value": "SecondDRM 2.0",
  "cencpssh": "YmFzZTY0IGVuY29kZWQgY29udGVudHMgb2YgkXBzc2
iSIGJveCB3aXRoIHRoaXMgU3lzdGVtSUQ=",
  "authzurl": "https://example.com/tenants/5342/authorize
",
  "laur1": "https://example.com/AcquireLicense"
}
]
```

Where the JSON fields would be as described below:

schemeIdUri: UUID identifying the DRM as per https://dashif.org/identifiers/content_protection/
value: optional; human-readable DRM name and version
cencpssh: optional; initialization data for decryption (<https://www.w3.org/TR/eme-initdata-cenc/>)
authzurl: optional; URL of authorization server

laurl: optional; URL of license server

Likewise, a "manifest" section could be added to provide DASH and/or HLS manifests, or links where they can be obtained, to support use cases such as replay or time-shifted viewing.

Security Considerations

WHSNP uses HTTPS to preserve the WebRTC security model, as well as other architectural considerations described in [RFC8827] .

WHSNP implicitly ensures secure transport of media as encryption is mandatory in WebRTC.

IANA Considerations

WHSNP does not require any registration with IANA.

CURL Examples

Subscribe

Offer

Unset

```
curl --location
'https://pcast.phenixrts.com/pcast/demo/whsnp/subscribe' \
--form
'jsonBody="{\"apiVersion\":7,\"clientVersion\":\"2023-02-03T18:19:51.912Z(2023.0.4)\",\"bearerToken\":\"DIGEST:eyJhcHBsaWNhdGlvbklkIjoiZGVtbyIsImRpZ2VzdCI6IiIwR1FYbVQyZEE0RnI2bFJxdm1jUTI0K21zUnhNYk1hSkVvUGtpbnhHbDVTMFdHbVkwcz29MeXhrM0J6d2w3bnhudmVNN2RyY0RCTDRiWU5KWdCdHlBPT0iLCJ0b2t1biI6IntcImV4cGlyZXNcIjoxOTk0MzY0MDYxMTE5LFwidXJpXCiI6XCJodHRwczovL3BjYXN0LnBoZW5peHJ0cy5jb21cIixcInJlcXVpcmVkVGFnXCI6XCJjaGFubmVsSWQ6dXMtbn9ydGh1YXN0I2RlbW8jcGh1bml4V2Vic2l0ZUR1bW9cIn0ifQ==\", \"failureCount\":0, \"httpRoundTripTime\":30, \"setRemoteDescription\":{\"apiVersion\":7, \"sessionDescription\":{\"type\"
```

```
:"offer",\sdp":\v=0\r\nno=- 5389210015308574687 2 IN IP4
127.0.0.1\r\nns=-\r\nnt=0 0\r\nna=group:BUNDLE 0
1\r\nna=extmap-allow-mixed\r\nna=msid-semantic:
WMS\r\nnm=audio 9 UDP/TLS/RTP/SAVPF 111 63 103 9 0 8 105 13 110
113 126\r\nnc=IN IP4 0.0.0.0\r\nna=rtcp:9 IN IP4
0.0.0.0\r\nna=ice-ufrag:AnY0\r\nna=ice-pwd:qTrjMQ5M3wFy0wjBU1Yw
1wZ5\r\nna=ice-options:trickle\r\nna=fingerprint:sha-256
69:BE:B4:90:E0:7B:53:B8:5C:A3:0B:06:59:96:C7:C0:69:CE:61:90:D3:ED
:7D:55:71:A7:36:AF:7C:6B:A0:26\r\nna=setup:actpass\r\nna=mid:0\
\r\nna=extmap:1
urn:ietf:params:rtp-hdrext:ssrc-audio-level\r\nna=extmap:2
http://www.webrtc.org/experiments/rtp-hdrext/abs-send-time\r\nna
=extmap:3
http://www.ietf.org/id/draft-holmer-rmcat-transport-wide-cc-exten
sions-01\r\nna=extmap:4
urn:ietf:params:rtp-hdrext:sdes:mid\r\nna=recvonly\r\nna=rtcp-m
ux\r\nna=rtpmap:111 opus/48000/2\r\nna=rtcp-fb:111
transport-cc\r\nna=fmtp:111
minptime=10;useinbandfec=1\r\nna=rtpmap:63
red/48000/2\r\nna=fmtp:63 111/111\r\nna=rtpmap:103
ISAC/16000\r\nna=rtpmap:9 G722/8000\r\nna=rtpmap:0
PCMU/8000\r\nna=rtpmap:8 PCMA/8000\r\nna=rtpmap:105
CN/16000\r\nna=rtpmap:13 CN/8000\r\nna=rtpmap:110
telephone-event/48000\r\nna=rtpmap:113
telephone-event/16000\r\nna=rtpmap:126
telephone-event/8000\r\nnm=video 9 UDP/TLS/RTP/SAVPF 96 97 98 99
100 101 102 125 104 124 106 107 108 109 127 35\r\nnc=IN IP4
0.0.0.0\r\nna=rtcp:9 IN IP4
0.0.0.0\r\nna=ice-ufrag:AnY0\r\nna=ice-pwd:qTrjMQ5M3wFy0wjBU1Yw
1wZ5\r\nna=ice-options:trickle\r\nna=fingerprint:sha-256
69:BE:B4:90:E0:7B:53:B8:5C:A3:0B:06:59:96:C7:C0:69:CE:61:90:D3:ED
:7D:55:71:A7:36:AF:7C:6B:A0:26\r\nna=setup:actpass\r\nna=mid:1\
\r\nna=extmap:14
urn:ietf:params:rtp-hdrext:toffset\r\nna=extmap:2
http://www.webrtc.org/experiments/rtp-hdrext/abs-send-time\r\nna
=extmap:13 urn:3gpp:video-orientation\r\nna=extmap:3
```

http://www.ietf.org/id/draft-holmer-rmcat-transport-wide-cc-extensions-01\\r\\na=extmap:5
http://www.webrtc.org/experiments/rtp-hdrext/payout-delay\\r\\na=extmap:6
http://www.webrtc.org/experiments/rtp-hdrext/video-content-type\\r\\na=extmap:7
http://www.webrtc.org/experiments/rtp-hdrext/video-timing\\r\\na=extmap:8
http://www.webrtc.org/experiments/rtp-hdrext/color-space\\r\\na=extmap:4 urn:ietf:params:rtp-hdrext:sdes:mid\\r\\na=extmap:10
urn:ietf:params:rtp-hdrext:sdes:rtp-stream-id\\r\\na=extmap:11
urn:ietf:params:rtp-hdrext:sdes:repaired-rtp-stream-id\\r\\na=recvonly\\r\\na=rtcp-mux\\r\\na=rtcp-rsize\\r\\na=rtpmap:96
H264/90000\\r\\na=rtcp-fb:96 goog-remb\\r\\na=rtcp-fb:96
transport-cc\\r\\na=rtcp-fb:96 ccm fir\\r\\na=rtcp-fb:96
nack\\r\\na=rtcp-fb:96 nack pli\\r\\na=fmtp:96
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=640c1f\\r\\na=rtpmap:97 rtx/90000\\r\\na=fmtp:97
apt=96\\r\\na=rtpmap:98 H264/90000\\r\\na=rtcp-fb:98
goog-remb\\r\\na=rtcp-fb:98 transport-cc\\r\\na=rtcp-fb:98 ccm
fir\\r\\na=rtcp-fb:98 nack\\r\\na=rtcp-fb:98 nack
pli\\r\\na=fmtp:98
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=42e01f\\r\\na=rtpmap:99 rtx/90000\\r\\na=fmtp:99
apt=98\\r\\na=rtpmap:100 H264/90000\\r\\na=rtcp-fb:100
goog-remb\\r\\na=rtcp-fb:100 transport-cc\\r\\na=rtcp-fb:100 ccm
fir\\r\\na=rtcp-fb:100 nack\\r\\na=rtcp-fb:100 nack
pli\\r\\na=fmtp:100
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=640c1f\\r\\na=rtpmap:101 rtx/90000\\r\\na=fmtp:101
apt=100\\r\\na=rtpmap:102 H264/90000\\r\\na=rtcp-fb:102
goog-remb\\r\\na=rtcp-fb:102 transport-cc\\r\\na=rtcp-fb:102 ccm
fir\\r\\na=rtcp-fb:102 nack\\r\\na=rtcp-fb:102 nack
pli\\r\\na=fmtp:102
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=42e01f\\r\\na=rtpmap:125 rtx/90000\\r\\na=fmtp:125

```
apt=102\\r\\na=rtpmap:104 VP8/90000\\r\\na=rtcp-fb:104
goog-remb\\r\\na=rtcp-fb:104 transport-cc\\r\\na=rtcp-fb:104 ccm
fir\\r\\na=rtcp-fb:104 nack\\r\\na=rtcp-fb:104 nack
pli\\r\\na=rtpmap:124 rtx/90000\\r\\na=fmtp:124
apt=104\\r\\na=rtpmap:106 VP9/90000\\r\\na=rtcp-fb:106
goog-remb\\r\\na=rtcp-fb:106 transport-cc\\r\\na=rtcp-fb:106 ccm
fir\\r\\na=rtcp-fb:106 nack\\r\\na=rtcp-fb:106 nack
pli\\r\\na=fmtp:106 profile-id=0\\r\\na=rtpmap:107
rtx/90000\\r\\na=fmtp:107 apt=106\\r\\na=rtpmap:108
red/90000\\r\\na=rtpmap:109 rtx/90000\\r\\na=fmtp:109
apt=108\\r\\na=rtpmap:127 ulpfec/90000\\r\\na=rtpmap:35
flexfec-03/90000\\r\\na=rtcp-fb:35 goog-remb\\r\\na=rtcp-fb:35
transport-cc\\r\\na=fmtp:35
repair-window=10000000\\r\\n"}},\\"createAnswerDescription\\":{\\"a
piVersion\\":7}}"
```

Answer

```
Unset
< HTTP/1.1 200 OK
< x-origination: Platform
< Access-Control-Allow-Origin: *
< Access-Control-Allow-Headers: Authorization, Origin, Range,
X-Requested-With, If-Modified-Since, Accept, Keep-Alive,
Cache-Control, Content-Type, DNT
< Access-Control-Allow-Methods: POST, GET, HEAD, OPTIONS, PUT,
DELETE
< Access-Control-Expose-Headers: Server, Range, Date,
Content-Disposition
< Access-Control-Max-Age: 86400
< Cache-Control: public, max-age=0, no-cache, no-store
< Content-Type: application/json; charset=utf-8
< Content-Length: 9077
```

```
< ETag: W/"2375-IJd9rINPLs+BFQPDETS2jpDqv00"
< X-Response-Time: 415.678196ms
< Vary: Accept-Encoding
< Date: Tue, 23 May 2023 18:28:55 GMT
< Connection: keep-alive
< Keep-Alive: timeout=660
<
{"status":"ok","streamId":"us-central#us-chicago-1-ad-1.fu6vWpCN.
20230523.PDXFwuAJ","sharedSecret":"DIGEST:eyJhcHBsaWNhdGlvbk1kIjoi
iZGVtbyIsImRpZ2VzdCI6IldyOXZSdi9uaC95bHB3Ym9DWTVrYk1EYzdDZVREqjRJ
d1dWZ2x3cFhhdWVsZ0RSeFpPVnpVeUl2M21BZFFvZUY4VitIZThTcDh50Tk5MXJYN
EVVWn13PT0iLCJ0b2t1biI6IntcInN0cmVhbUlkcXCI6XCJ1cy1jZW50cmFsI3VzLW
NoaWNhZ28tMS1hZC0xLmZ1NnZxcENOLjIwMjMwNTIzL1BEWEZ3dUFKXCIsXCJpbmN
0YW5jZVJvdXRlS2V5XCI6XCJ1bmljYXN0LnVzLWN1bnRyYWwudXMtY2hpY2Fnby0x
LWFkLTFEuZnU2dlldwQ05cIixcImV4cGlyZXNcIjoxNjg1NDcxMz1MDE1fsSJ9","rt
cConfiguration":{"bundlePolicy":null,"iceCandidatePoolSize":0,"ic
eServers":[{"urls":["stun:edge-ord-1-2n65vg.o.phenixrts.com:3478"
,"stun:stun4.l.google.com:19302"],"username":null,"credential":nu
ll},{"urls":["turn:edge-ord-1-2n65vg.o.phenixrts.com:443?transport=
tcp","turn:164.152.20.75:443?transport=tcp","turns:edge-ord-1-2
n65vg.o.phenixrts.com:443?transport=tcp","turns:edge-ord-1-2n65vg
.o.phenixrts.com:3478?transport=tcp","turns:164.152.20.75:443?tra
nsport=tcp"],"username":"uG0AeBSKJKYe5ZPL","credential":"A7RC4eBI
EagTU5laSjQpbYidhosbsR6i"}],"iceTransportPolicy":"all","peerIdent
ity":null,"rtcpMuxPolicy":"require"},"setRemoteDescriptionRespons
e":{"status":"ok","sessionDescription":{"type":"offer","sdp":"v=0
\r\no=- 5389210015308574687 2 IN IP4 127.0.0.1\r\ns=-\r\nnt=0
0\r\na=group:BUNDLE 0
1\r\na=extmap-allow-mixed\r\na=msid-semantic: WMS\r\nm=audio 9
UDP/TLS/RTP/SAVPF 111 63 103 9 0 8 105 13 110 113 126\r\nnc=IN IP4
0.0.0.0\r\na=rtcp:9 IN IP4
0.0.0.0\r\na=ice-frag:AnY0\r\na=ice-pwd:qTrjMQ5M3wFy0wjBU1Yw1wZ5
\r\na=ice-options:trickle\r\na=fingerprint:sha-256
69:BE:B4:90:E0:7B:53:B8:5C:A3:0B:06:59:96:C7:C0:69:CE:61:90:D3:ED
:7D:55:71:A7:36:AF:7C:6B:A0:26\r\na=setup:actpass\r\na=mid:0\r\na
=extmap:1
```

urn:ietf:params:rtp-hdrext:ssrc-audio-level\r\na=extmap:2
http://www.webrtc.org/experiments/rtp-hdrext/abs-send-time\r\na=extmap:3
http://www.ietf.org/id/draft-holmer-rmcat-transport-wide-cc-extensions-01\r\na=extmap:4
urn:ietf:params:rtp-hdrext:sdes:mid\r\na=recvonly\r\na=rtcp-mux\r\na=rtpmap:111 opus/48000/2\r\na=rtcp-fb:111
transport-cc\r\na=fmtp:111
minptime=10;useinbandfec=1\r\na=rtpmap:63
red/48000/2\r\na=fmtp:63 111/111\r\na=rtpmap:103
ISAC/16000\r\na=rtpmap:9 G722/8000\r\na=rtpmap:0
PCMU/8000\r\na=rtpmap:8 PCMA/8000\r\na=rtpmap:105
CN/16000\r\na=rtpmap:13 CN/8000\r\na=rtpmap:110
telephone-event/48000\r\na=rtpmap:113
telephone-event/16000\r\na=rtpmap:126
telephone-event/8000\r\nm=video 9 UDP/TLS/RTP/SAVPF 96 98 100 102
97 99 101 125 104 124 106 107 108 109 127
35\r\na=x-leaky-bucket\r\nnc=IN IP4 0.0.0.0\r\na=rtcp:9 IN IP4
0.0.0.0\r\na=ice-frag:Ay0\r\na=ice-pwd:qTrjMQ5M3wFy0wjBU1Yw1wZ5
\r\na=ice-options:trickle\r\na=fingerprint:sha-256
69:BE:B4:90:E0:7B:53:B8:5C:A3:0B:06:59:96:C7:C0:69:CE:61:90:D3:ED
:7D:55:71:A7:36:AF:7C:6B:A0:26\r\na=setup:actpass\r\na=mid:1\r\na
=extmap:14 urn:ietf:params:rtp-hdrext:toffset\r\na=extmap:2
http://www.webrtc.org/experiments/rtp-hdrext/abs-send-time\r\na=extmap:13 urn:3gpp:video-orientation\r\na=extmap:3
http://www.ietf.org/id/draft-holmer-rmcat-transport-wide-cc-extensions-01\r\na=extmap:5
http://www.webrtc.org/experiments/rtp-hdrext/playout-delay\r\na=extmap:6
http://www.webrtc.org/experiments/rtp-hdrext/video-content-type\r\na=extmap:7
http://www.webrtc.org/experiments/rtp-hdrext/video-timing\r\na=extmap:8
http://www.webrtc.org/experiments/rtp-hdrext/color-space\r\na=extmap:4 urn:ietf:params:rtp-hdrext:sdes:mid\r\na=extmap:10
urn:ietf:params:rtp-hdrext:sdes:rtp-stream-id\r\na=extmap:11

```
urn:ietf:params:rtp-hdrext:sdes:repaired-rtp-stream-id\r\nna=recvo  
nly\r\nna=rtcp-mux\r\nna=rtcp-rsize\r\nna=rtpmap:96  
H264/90000\r\nna=rtcp-fb:96 goog-remb\r\nna=rtcp-fb:96  
transport-cc\r\nna=rtcp-fb:96 ccm fir\r\nna=rtcp-fb:96  
nack\r\nna=rtcp-fb:96 nack pli\r\nna=fmtp:96  
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=6  
40c1f\r\nna=rtpmap:97 rtx/90000\r\nna=fmtp:97 apt=96\r\nna=rtpmap:98  
H264/90000\r\nna=rtcp-fb:98 goog-remb\r\nna=rtcp-fb:98  
transport-cc\r\nna=rtcp-fb:98 ccm fir\r\nna=rtcp-fb:98  
nack\r\nna=rtcp-fb:98 nack pli\r\nna=fmtp:98  
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=4  
2e01f\r\nna=rtpmap:99 rtx/90000\r\nna=fmtp:99  
apt=98\r\nna=rtpmap:100 H264/90000\r\nna=rtcp-fb:100  
goog-remb\r\nna=rtcp-fb:100 transport-cc\r\nna=rtcp-fb:100 ccm  
fir\r\nna=rtcp-fb:100 nack\r\nna=rtcp-fb:100 nack pli\r\nna=fmtp:100  
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=6  
40c1f\r\nna=rtpmap:101 rtx/90000\r\nna=fmtp:101  
apt=100\r\nna=rtpmap:102 H264/90000\r\nna=rtcp-fb:102  
goog-remb\r\nna=rtcp-fb:102 transport-cc\r\nna=rtcp-fb:102 ccm  
fir\r\nna=rtcp-fb:102 nack\r\nna=rtcp-fb:102 nack pli\r\nna=fmtp:102  
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=4  
2e01f\r\nna=rtpmap:125 rtx/90000\r\nna=fmtp:125  
apt=102\r\nna=rtpmap:104 VP8/90000\r\nna=rtcp-fb:104  
goog-remb\r\nna=rtcp-fb:104 transport-cc\r\nna=rtcp-fb:104 ccm  
fir\r\nna=rtcp-fb:104 nack\r\nna=rtcp-fb:104 nack  
pli\r\nna=rtpmap:124 rtx/90000\r\nna=fmtp:124  
apt=104\r\nna=rtpmap:106 VP9/90000\r\nna=rtcp-fb:106  
goog-remb\r\nna=rtcp-fb:106 transport-cc\r\nna=rtcp-fb:106 ccm  
fir\r\nna=rtcp-fb:106 nack\r\nna=rtcp-fb:106 nack pli\r\nna=fmtp:106  
profile-id=0\r\nna=rtpmap:107 rtx/90000\r\nna=fmtp:107  
apt=106\r\nna=rtpmap:108 red/90000\r\nna=rtpmap:109  
rtx/90000\r\nna=fmtp:109 apt=108\r\nna=rtpmap:127  
ulpfec/90000\r\nna=rtpmap:35 flexfec-03/90000\r\nna=rtcp-fb:35  
goog-remb\r\nna=rtcp-fb:35 transport-cc\r\nna=fmtp:35  
repair-window=10000000\r\nn"},"options":[]},"createOfferDescriptio  
nResponse":null,"createAnswerDescriptionResponse":{"status":"ok",
```

```
"sessionDescription":{"type":"answer","sdp":"v=0\no=- 1 2 IN IP4
0.0.0.0\ns=-\nt=0 0\na=fingerprint:sha-256
18:80:AF:06:04:04:CE:5A:64:A0:89:1F:33:A9:3B:E6:B2:F1:C0:14:7E:D0
:EA:CF:A6:C9:7E:47:47:CA:AF:30\na=group:BUNDLE 0
1\na=ice-options:trickle\na=msid-semantic:WMS
082eb9e6-e045-45b1-b37a-859b4e4c7190\na=tool:phenix
2023-05-18T23:47:08Z\na=ice-frag:jT5ahWGKky2hGY8W\na=ice-pwd:7W3
1LY7T3KgrrceFiaFztck10qP2IOV2\nm=audio 1 UDP/TLS/RTP/SAVPF 111 0
63\na=x-origin-tool:phenix
2018-06-15T05:34:01Z\na=x-sdp-origination:create-offer-or-answer\
nc=IN IP4 164.152.20.75\na=candidate:0 1 udp 2130379007
164.152.20.75 45492 typ host generation 0\na=sendonly\na=rtcp:9
IN IP4
0.0.0.0\na=ice-options:trickle\na=setup:active\na=mid:0\na=rtcp-m
ux\na=rtpmap:111 opus/48000/2\na=rtcp-fb:111
transport-cc\na=fmtp:111 minptime=10;useinbandfec=1\na=rtpmap:63
red/48000/2\na=fmtp:63 111/111\na=rtpmap:0
PCMU/8000\na=msid:082eb9e6-e045-45b1-b37a-859b4e4c7190
fc12c0d6-4cb8-4102-b4f9-39d2c14d6945\na=ssrc:284468517
cname:GQxpH2Sgplup7rhX\na=ssrc:284468517
msid:082eb9e6-e045-45b1-b37a-859b4e4c7190
fc12c0d6-4cb8-4102-b4f9-39d2c14d6945\na=ssrc:284468517
mslabel:082eb9e6-e045-45b1-b37a-859b4e4c7190\na=ssrc:284468517
label:fc12c0d6-4cb8-4102-b4f9-39d2c14d6945\na=extmap:1
urn:ietf:params:rtp-hdrext:ssrc-audio-level\na=extmap:3
http://www.webrtc.org/experiments/rtp-hdrext/abs-send-time\nm=vid
eo 2 UDP/TLS/RTP/SAVPF 96 98 100 102 104 106 108
127\na=x-leaky-bucket\na=x-origin-tool:phenix
2018-06-15T05:34:01Z\na=x-sdp-origination:create-offer-or-answer\
nc=IN IP4 164.152.20.75\na=candidate:0 1 udp 2130379008
164.152.20.75 45492 typ host generation 0\na=sendonly\na=rtcp:9
IN IP4
0.0.0.0\na=ice-options:trickle\na=setup:active\na=mid:1\na=rtcp-m
ux\na=rtcp-rsize\na=rtpmap:96 H264/90000\na=rtcp-fb:96
goog-remb\na=rtcp-fb:96 transport-cc\na=rtcp-fb:96 ccm
fir\na=rtcp-fb:96 nack\na=rtcp-fb:96 nack pli\na=fmtp:96
```

```
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=6
40c1f\na=rtpmap:98 H264/90000\na=rtcp-fb:98
goog-remb\na=rtcp-fb:98 transport-cc\na=rtcp-fb:98 ccm
fir\na=rtcp-fb:98 nack\na=rtcp-fb:98 nack pli\na=fmtp:98
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=4
2e01f\na=rtpmap:100 H264/90000\na=rtcp-fb:100
goog-remb\na=rtcp-fb:100 transport-cc\na=rtcp-fb:100 ccm
fir\na=rtcp-fb:100 nack\na=rtcp-fb:100 nack pli\na=fmtp:100
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=6
40c1f\na=rtpmap:102 H264/90000\na=rtcp-fb:102
goog-remb\na=rtcp-fb:102 transport-cc\na=rtcp-fb:102 ccm
fir\na=rtcp-fb:102 nack\na=rtcp-fb:102 nack pli\na=fmtp:102
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=4
2e01f\na=rtpmap:104 VP8/90000\na=rtcp-fb:104
goog-remb\na=rtcp-fb* Connection #0 to host
pcast-us-central.phenixrts.com left intact
:104 transport-cc\na=rtcp-fb:104 ccm fir\na=rtcp-fb:104
nack\na=rtcp-fb:104 nack pli\na=rtpmap:106
VP9/90000\na=rtcp-fb:106 goog-remb\na=rtcp-fb:106
transport-cc\na=rtcp-fb:106 ccm fir\na=rtcp-fb:106
nack\na=rtcp-fb:106 nack pli\na=fmtp:106
profile-id=0\na=rtpmap:108 red/90000\na=rtpmap:127
ulpfec/90000\na=msid:082eb9e6-e045-45b1-b37a-859b4e4c7190
5b675cf4-576f-4ce7-b08b-e87ee2d81ee5\na=ssrc:663074462
cname:GQxpH2Sgplup7rhX\na=ssrc:663074462
msid:082eb9e6-e045-45b1-b37a-859b4e4c7190
5b675cf4-576f-4ce7-b08b-e87ee2d81ee5\na=ssrc:663074462
mslabel:082eb9e6-e045-45b1-b37a-859b4e4c7190\na=ssrc:663074462
label:5b675cf4-576f-4ce7-b08b-e87ee2d81ee5\na=extmap:2
urn:ietf:params:rtp-hdrext:toffset\na=extmap:3
http://www.webrtc.org/experiments/rtp-hdrext/abs-send-time\na=ext
map:5
http://www.webrtc.org/experiments/rtp-hdrext/playout-delay\n"}, "o
ptions": [ ]}, "lag": 910709267, "options": [ ]}
```

ICE Candidates

Request

```
Unset
curl
'https://pcast-us-southwest.phenixrts.com/pcast/demo/whsnp/us-sou
thwest%23phx-ad-3.0XhpNTiZ.20230607.PDynnuvr/ice/candidates' \
-H 'Accept: */*' \
-H 'Accept-Language: en-US,en;q=0.9' \
-H 'Cache-Control: no-cache' \
-H 'Connection: keep-alive' \
-H 'Content-Type: multipart/form-data;
boundary=----WebKitFormBoundaryuEGA21nso00vXSWc' \
-H 'Pragma: no-cache' \
-H 'Referer: https://pcast.phenixrts.com/' \
-H 'Sec-Fetch-Dest: empty' \
-H 'Sec-Fetch-Mode: cors' \
-H 'Sec-Fetch-Site: same-site' \
-H 'User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64)
AppleWebKit/537.36 (KHTML, like Gecko) Chrome/114.0.0.0
Safari/537.36' \
-H 'sec-ch-ua: "Not.A/Brand";v="8", "Chromium";v="114", "Google
Chrome";v="114"' \
-H 'sec-ch-ua-mobile: ?0' \
-H 'sec-ch-ua-platform: "Windows"' \
--data-raw
$'-----WebKitFormBoundaryuEGA21nso00vXSWc\r\nContent-Disposition
: form-data;
name="jsonBody"\r\n\r\n{"apiVersion":6,"sharedSecret":"DIGEST:eyJ
hcHBsaWNhdGlvbklkIjoizGVtbyIsImRpZ2VzdCI6ImczWUIxUlhFTTFVOZHgyVjBJ
WURJeXZFVEZneGlVYkJKcGlWYnowWlBxYWdqa1VXT1owRDEzZmR2QVlJMWlqMTRkK
3Vnb3hQaVhSOTJ3MmJlVERlUzBBPT0iLCJ0b2t1biI6IntcInN0cmVhbUlkcXCI6XC
J1cy1zb3V0aHdlc3QjcGh4LWFKLTUuMFhocE5UaVouMjAyMzA2MDcuUER5bm51dnJ
cIixcImIuc3RhbmlUm91dGVlZlZlclIjpcInVuaWNhc3QudXMtc291dGh3ZXN0LnBo
eC1hZC0zLjBYaHBOVGlaXCIscXCI6ImVzXCI6MTY4Njc4MjU2NTg1Mn0ifQ=="
,"candidates":[{"candidate":"candidate:3168069675 1 udp
```

```
2122260223 172.30.96.1 63649 typ host generation 0 ufrag D0HL
network-id
1", "sdpMid": "0", "sdpMLineIndex": 0, "usernameFragment": "D0HL"}, {"ca
ndidate": "candidate:2417343482 1 udp 2122194687 10.36.100.193
63650 typ host generation 0 ufrag D0HL network-id
2", "sdpMid": "0", "sdpMLineIndex": 0, "usernameFragment": "D0HL"}, {"ca
ndidate": "candidate:1356244288 1 udp 2122129151 10.8.0.54 63651
typ host generation 0 ufrag D0HL network-id
3", "sdpMid": "0", "sdpMLineIndex": 0, "usernameFragment": "D0HL"}, {"ca
ndidate": "candidate:3168069675 1 udp 2122260223 172.30.96.1 63652
typ host generation 0 ufrag D0HL network-id
1", "sdpMid": "1", "sdpMLineIndex": 1, "usernameFragment": "D0HL"}, {"ca
ndidate": "candidate:2417343482 1 udp 2122194687 10.36.100.193
63653 typ host generation 0 ufrag D0HL network-id
2", "sdpMid": "1", "sdpMLineIndex": 1, "usernameFragment": "D0HL"}, {"ca
ndidate": "candidate:1356244288 1 udp 2122129151 10.8.0.54 63654
typ host generation 0 ufrag D0HL network-id
3", "sdpMid": "1", "sdpMLineIndex": 1, "usernameFragment": "D0HL"}, {"ca
ndidate": "candidate:1108950645 1 udp 1685987071 131.239.106.186
42732 typ srflx raddr 10.36.100.193 rport 63650 generation 0
ufrag D0HL network-id
2", "sdpMid": "0", "sdpMLineIndex": 0, "usernameFragment": "D0HL"}], "di
scoveryCompleted": true, "options": []}\r\n-----WebKitFormBoundaryu
EGA21nso00vXSWc--\r\n' \
--compressed
```

Publish

Request

```
Unset
curl -v --location
'https://pcast.phenixrts.com/pcast/myUriPath/whsnp/publish' \
```


PCMU/8000\r\nna=rtpmap:8 PCMA/8000\r\nna=rtpmap:105
CN/16000\r\nna=rtpmap:13 CN/8000\r\nna=rtpmap:110
telephone-event/48000\r\nna=rtpmap:113
telephone-event/16000\r\nna=rtpmap:126
telephone-event/8000\r\nna=ssrc:2585425598
cname:mPTRaoe0CE9uLqd+\r\nna=ssrc:2585425598 msid:-
0f394cff-d02e-41eb-a865-372089d920ce\r\nnm=video 9
UDP/TLS/RTP/SAVPF 96 97 98 99 100 101 102 125 104 124 106 107 108
109 127\r\nnc=IN IP4 0.0.0.0\r\nna=rtcp:9 IN IP4
0.0.0.0\r\nna=ice-frag:pY08\r\nna=ice-pwd:H383Xm0EiKKEiIwHXL4
C/aE\r\nna=ice-options:trickle\r\nna=fingerprint:sha-256
C4:92:BF:F6:3E:10:C3:C7:06:30:9F:A5:4C:4F:11:8F:3B:F7:1C:6B:17:6E
:20:09:82:35:78:FF:69:85:3A:4C\r\nna=setup:actpass\r\nna=mid:1\
\r\nna=extmap:14
urn:ietf:params:rtp-hdext:toffset\r\nna=extmap:2
http://www.webrtc.org/experiments/rtp-hdext/abs-send-time\r\nna
=extmap:13 urn:3gpp:video-orientation\r\nna=extmap:3
http://www.ietf.org/id/draft-holmer-rmcat-transport-wide-cc-exten
sions-01\r\nna=extmap:5
http://www.webrtc.org/experiments/rtp-hdext/playout-delay\r\nna
=extmap:6
http://www.webrtc.org/experiments/rtp-hdext/video-content-type\
\r\nna=extmap:7
http://www.webrtc.org/experiments/rtp-hdext/video-timing\r\nna=
extmap:8
http://www.webrtc.org/experiments/rtp-hdext/color-space\r\nna=e
xtmap:4 urn:ietf:params:rtp-hdext:sdes:mid\r\nna=extmap:10
urn:ietf:params:rtp-hdext:sdes:rtp-stream-id\r\nna=extmap:11
urn:ietf:params:rtp-hdext:sdes:repaired-rtp-stream-id\r\nna=sen
donly\r\nna=msid:-
865d6e74-2028-4c09-9814-4f6b7bf7bec8\r\nna=rtcp-mux\r\nna=rtcp-
rsize\r\nna=rtcp-fb:96 H264/90000\r\nna=rtcp-fb:96
goog-remb\r\nna=rtcp-fb:96 transport-cc\r\nna=rtcp-fb:96 ccm
fir\r\nna=rtcp-fb:96 nack\r\nna=rtcp-fb:96 nack
pli\r\nna=fmtp:96
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=6

```
40c1f\\r\\na=rtpmap:97 rtx/90000\\r\\na=fmtp:97
apt=96\\r\\na=rtpmap:98 H264/90000\\r\\na=rtcp-fb:98
goog-remb\\r\\na=rtcp-fb:98 transport-cc\\r\\na=rtcp-fb:98 ccm
fir\\r\\na=rtcp-fb:98 nack\\r\\na=rtcp-fb:98 nack
pli\\r\\na=fmtp:98
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=4
2e01f\\r\\na=rtpmap:99 rtx/90000\\r\\na=fmtp:99
apt=98\\r\\na=rtpmap:100 H264/90000\\r\\na=rtcp-fb:100
goog-remb\\r\\na=rtcp-fb:100 transport-cc\\r\\na=rtcp-fb:100 ccm
fir\\r\\na=rtcp-fb:100 nack\\r\\na=rtcp-fb:100 nack
pli\\r\\na=fmtp:100
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=6
40c1f\\r\\na=rtpmap:101 rtx/90000\\r\\na=fmtp:101
apt=100\\r\\na=rtpmap:102 H264/90000\\r\\na=rtcp-fb:102
goog-remb\\r\\na=rtcp-fb:102 transport-cc\\r\\na=rtcp-fb:102 ccm
fir\\r\\na=rtcp-fb:102 nack\\r\\na=rtcp-fb:102 nack
pli\\r\\na=fmtp:102
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=4
2e01f\\r\\na=rtpmap:125 rtx/90000\\r\\na=fmtp:125
apt=102\\r\\na=rtpmap:104 VP8/90000\\r\\na=rtcp-fb:104
goog-remb\\r\\na=rtcp-fb:104 transport-cc\\r\\na=rtcp-fb:104 ccm
fir\\r\\na=rtcp-fb:104 nack\\r\\na=rtcp-fb:104 nack
pli\\r\\na=rtpmap:124 rtx/90000\\r\\na=fmtp:124
apt=104\\r\\na=rtpmap:106 VP9/90000\\r\\na=rtcp-fb:106
goog-remb\\r\\na=rtcp-fb:106 transport-cc\\r\\na=rtcp-fb:106 ccm
fir\\r\\na=rtcp-fb:106 nack\\r\\na=rtcp-fb:106 nack
pli\\r\\na=fmtp:106 profile-id=0\\r\\na=rtpmap:107
rtx/90000\\r\\na=fmtp:107 apt=106\\r\\na=rtpmap:108
red/90000\\r\\na=rtpmap:109 rtx/90000\\r\\na=fmtp:109
apt=108\\r\\na=rtpmap:127 ulpfec/90000\\r\\na=ssrc-group:FID
1041010780 1097541650\\r\\na=ssrc:1041010780
cname:mPTRaoe0CE9uLqd+\\r\\na=ssrc:1041010780 msid:-
865d6e74-2028-4c09-9814-4f6b7bf7bec8\\r\\na=ssrc:1097541650
cname:mPTRaoe0CE9uLqd+\\r\\na=ssrc:1097541650 msid:-
865d6e74-2028-4c09-9814-4f6b7bf7bec8\\r\\n\\n"}},\\"createAnswerDesc
```

```
ription\":{\"streamId\":\"\", \"options\":[\"upload\"], \"apiVersion\":7}}
```

Response

```
Unset
< HTTP/2 200
< x-origination: Platform
< access-control-allow-origin: *
< access-control-allow-headers: Authorization, Origin, Range,
X-Requested-With, If-Modified-Since, Accept, Keep-Alive,
Cache-Control, Content-Type, DNT
< access-control-allow-methods: POST, GET, HEAD, OPTIONS, PUT,
DELETE
< access-control-expose-headers: Server, Range, Date,
Content-Disposition
< access-control-max-age: 86400
< cache-control: public, max-age=0, no-cache, no-store
< content-type: application/json; charset=utf-8
< content-length: 9988
< etag: W/"2704-/M04+FRRiFbGxI3vbFAITKFykT4"
< x-response-time: 413.082874ms
< vary: Accept-Encoding
< date: Tue, 23 May 2023 18:41:06 GMT
< via: 1.1 google
< alt-svc: h3=":443"; ma=2592000, h3-29=":443"; ma=2592000
<
{"status":"ok", "streamId":"us-southwest#phx-ad-1.QqsuI8a5.2023052
3.PStxqyXI", "sharedSecret":"DIGEST:eyJhcHBsaWNhdGlvbk1kIjoicGh1bm
l4cnRzLmNvbS1iaWxsLndpc2hvb2IiImRpZ2VzdCI6InNRZW04TW5xT3N5UWU5Z2d
peXBQQUdaN0FoY0Y4dWNPdndYSTVvUzFtNnFabXlwNm1mRHRsd3ZRZEpoNWNmQUZl
dHQvZGFwV2k2QjJ5Rng2eEswN2VBPT0iLCJ0b2t1biI6IntcInN0cmVhbUlkXCI6X
CJ1cy1zb3V0aHdlc3QjcGh4LWFKLTEuUXFzdUk4YTUuMjAyMzA1MjMuUjU0eHF5WE
```

```
lcIixcImluc3RhbmNlUm91dGVlZXlcljpcInVuaWNhc3QudXMtc291dGh3ZXN0LnB
oeC1hZC0xLlFxc3VJOGExXCIsXCJleHBpcmVzXCI6MTY4NTQ3MjA2Njc4OH0ifQ==
", "rtcConfiguration": {"bundlePolicy": null, "iceCandidatePoolSize":
0, "iceServers": [{"urls": ["stun:edge-phx-1-3f3t09.o.phenixrts.com:
443", "stun:stun.l.google.com:19302"], "username": null, "credential"
: null}, {"urls": ["turn:edge-phx-1-3f3t09.o.phenixrts.com:443?trans
port=tcp", "turn:144.24.20.79:443?transport=tcp", "turns:edge-phx-1
-3f3t09.o.phenixrts.com:443?transport=tcp", "turns:edge-phx-1-3f3t
09.o.phenixrts.com:3478?transport=tcp", "turns:144.24.20.79:443?tr
ansport=tcp"], "username": "McWKEgBtcTFp7UCH", "credential": "AibPptC
mka6Gv7lQ5UMnrPGs9Y6enxiy"}], "iceTransportPolicy": "all", "peerIden
tity": null, "rtcpMuxPolicy": "require"}, "setRemoteDescriptionRespon
se": {"status": "ok", "sessionDescription": {"type": "offer", "sdp": "v=
0\r\no=- 6044486247753306454 2 IN IP4 127.0.0.1\r\ns=-\r\nnt=0
0\r\na=group:BUNDLE 0
1\r\na=extmap-allow-mixed\r\na=msid-semantic: WMS\r\nm=audio 9
UDP/TLS/RTP/SAVPF 111 63 103 9 0 8 105 13 110 113 126\r\nnc=IN IP4
0.0.0.0\r\na=rtcp:9 IN IP4
0.0.0.0\r\na=ice-ufrag:pY08\r\na=ice-pwd:H383Xm0EiKKEiIwHXLT4C/aE
\r\na=ice-options:trickle\r\na=fingerprint:sha-256
C4:92:BF:F6:3E:10:C3:C7:06:30:9F:A5:4C:4F:11:8F:3B:F7:1C:6B:17:6E
:20:09:82:35:78:FF:69:85:3A:4C\r\na=setup:actpass\r\na=mid:0\r\na
=extmap:1
urn:ietf:params:rtp-hdrex:src-audio-level\r\na=extmap:2
http://www.webrtc.org/experiments/rtp-hdrex/abs-send-time\r\na=e
xtmap:3
http://www.ietf.org/id/draft-holmer-rmcat-transport-wide-cc-exten
sions-01\r\na=extmap:4
urn:ietf:params:rtp-hdrex:sdes:mid\r\na=sendonly\r\na=msid:-
0f394cff-d02e-41eb-a865-372089d920ce\r\na=rtcp-mux\r\na=rtpmap:11
1 opus/48000/2\r\na=rtcp-fb:111 transport-cc\r\na=fmtp:111
minptime=10;useinbandfec=1\r\na=rtpmap:63
red/48000/2\r\na=fmtp:63 111/111\r\na=rtpmap:103
ISAC/16000\r\na=rtpmap:9 G722/8000\r\na=rtpmap:0
PCMU/8000\r\na=rtpmap:8 PCMA/8000\r\na=rtpmap:105
CN/16000\r\na=rtpmap:13 CN/8000\r\na=rtpmap:110
```

telephone-event/48000\r\na=rtpmap:113
telephone-event/16000\r\na=rtpmap:126
telephone-event/8000\r\na=ssrc:2585425598
cname:mPTRaoe0CE9uLqd+\r\na=ssrc:2585425598 msid:-
0f394cff-d02e-41eb-a865-372089d920ce\r\nnm=video 9
UDP/TLS/RTP/SAVPF 96 97 98 99 100 101 102 125 104 124 106 107 108
109 127\r\na=x-leaky-bucket\r\nnc=IN IP4 0.0.0.0\r\na=rtcp:9 IN
IP4
0.0.0.0\r\na=ice-frag:pY08\r\na=ice-pwd:H383Xm0EiKKEiIwHXL4C/aE
\r\na=ice-options:trickle\r\na=fingerprint:sha-256
C4:92:BF:F6:3E:10:C3:C7:06:30:9F:A5:4C:4F:11:8F:3B:F7:1C:6B:17:6E
:20:09:82:35:78:FF:69:85:3A:4C\r\na=setup:actpass\r\na=mid:1\r\na
=extmap:14 urn:ietf:params:rtp-hdext:toffset\r\na=extmap:2
http://www.webrtc.org/experiments/rtp-hdext/abs-send-time\r\na=e
xtmap:13 urn:3gpp:video-orientation\r\na=extmap:3
http://www.ietf.org/id/draft-holmer-rmcat-transport-wide-cc-exten
sions-01\r\na=extmap:5
http://www.webrtc.org/experiments/rtp-hdext/playout-delay\r\na=e
xtmap:6
http://www.webrtc.org/experiments/rtp-hdext/video-content-type\r
\r\na=extmap:7
http://www.webrtc.org/experiments/rtp-hdext/video-timing\r\na=ex
tmap:8
http://www.webrtc.org/experiments/rtp-hdext/color-space\r\na=ext
map:4 urn:ietf:params:rtp-hdext:sdes:mid\r\na=extmap:10
urn:ietf:params:rtp-hdext:sdes:rtp-stream-id\r\na=extmap:11
urn:ietf:params:rtp-hdext:sdes:repaired-rtp-stream-id\r\na=sendo
nly\r\na=msid:-
865d6e74-2028-4c09-9814-4f6b7bf7bec8\r\na=rtcp-mux\r\na=rtcp-rsiz
e\r\na=rtpmap:96 H264/90000\r\na=rtcp-fb:96
goog-remb\r\na=rtcp-fb:96 transport-cc\r\na=rtcp-fb:96 ccm
fir\r\na=rtcp-fb:96 nack\r\na=rtcp-fb:96 nack pli\r\na=fmtp:96
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=6
40c1f\r\na=rtpmap:97 rtx/90000\r\na=fmtp:97 apt=96\r\na=rtpmap:98
H264/90000\r\na=rtcp-fb:98 goog-remb\r\na=rtcp-fb:98
transport-cc\r\na=rtcp-fb:98 ccm fir\r\na=rtcp-fb:98

```
nack\r\na=rtcp-fb:98 nack pli\r\na=fmtp:98
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=4
2e01f\r\na=rtpmap:99 rtx/90000\r\na=fmtp:99
apt=98\r\na=rtpmap:100 H264/90000\r\na=rtcp-fb:100
goog-remb\r\na=rtcp-fb:100 transport-cc\r\na=rtcp-fb:100 ccm
fir\r\na=rtcp-fb:100 nack\r\na=rtcp-fb:100 nack pli\r\na=fmtp:100
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=6
40c1f\r\na=rtpmap:101 rtx/90000\r\na=fmtp:101
apt=100\r\na=rtpmap:102 H264/90000\r\na=rtcp-fb:102
goog-remb\r\na=rtcp-fb:102 transport-cc\r\na=rtcp-fb:102 ccm
fir\r\na=rtcp-fb:102 nack\r\na=rtcp-fb:102 nack pli\r\na=fmtp:102
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=4
2e01f\r\na=rtpmap:125 rtx/90000\r\na=fmtp:125
apt=102\r\na=rtpmap:104 VP8/90000\r\na=rtcp-fb:104
goog-remb\r\na=rtcp-fb:104 transport-cc\r\na=rtcp-fb:104 ccm
fir\r\na=rtcp-fb:104 nack\r\na=rtcp-fb:104 nack
pli\r\na=rtpmap:124 rtx/90000\r\na=fmtp:124
apt=104\r\na=rtpmap:106 VP9/90000\r\na=rtcp-fb:106
goog-remb\r\na=rtcp-fb:106 transport-cc\r\na=rtcp-fb:106 ccm
fir\r\na=rtcp-fb:106 nack\r\na=rtcp-fb:106 nack pli\r\na=fmtp:106
profile-id=0\r\na=rtpmap:107 rtx/90000\r\na=fmtp:107
apt=106\r\na=rtpmap:108 red/90000\r\na=rtpmap:109
rtx/90000\r\na=fmtp:109 apt=108\r\na=rtpmap:127
ulpfec/90000\r\na=ssrc-group:FID 1041010780
1097541650\r\na=ssrc:1041010780
cname:mPTRaoe0CE9uLqd+\r\na=ssrc:1041010780 msid:-
865d6e74-2028-4c09-9814-4f6b7bf7bec8\r\na=ssrc:1097541650
cname:mPTRaoe0CE9uLqd+\r\na=ssrc:1097541650 msid:-
865d6e74-2028-4c09-9814-4f6b7bf7bec8\r\n"}, "options": [], "create0
fferDescriptionResponse": null, "createAnswerDescriptionResponse": {
"status": "ok", "sessionDescription": {"type": "answer", "sdp": "v=0\no
=- 1 2 IN IP4 0.0.0.0\ns=-\nt=0 0\na=fingerprint:sha-256
18:80:AF:06:04:04:CE:5A:64:A0:89:1F:33:A9:3B:E6:B2:F1:C0:14:7E:D0
:EA:CF:A6:C9:7E:47:47:CA:AF:30\na=group:BUNDLE 0
1\na=ice-options:trickle\na=msid-semantic:WMS
c9c8362d-a04a-49fb-a774-1d192c74efdc\na=tool:phenix
```

2023-05-18T23:47:08Z\na=ice-frag:yDrSTVMaSC6Hcph5\na=ice-pwd:PmV
rwRjFcR6uEtcPgS5vuRfZAdmqMbKA\nm=audio 1 UDP/TLS/RTP/SAVPF 111 63
0\na=x-sdp-origination:create-offer-or-answer\nc=IN IP4
144.24.20.79\na=candidate:0 1 udp 2130379007 144.24.20.79 29391
typ host generation 0\na=recvonly\na=rtcp:9 IN IP4
0.0.0.0\na=ice-options:trickle\na=setup:active\na=mid:0\na=rtcp-m
ux\na=rtpmap:111 opus/48000/2\na=rtcp-fb:111
transport-cc\na=fmtp:111 minptime=10;useinbandfec=1\na=rtpmap:63
red/48000/2\na=fmtp:63 111/111\na=rtpmap:0 PCMU/8000\na=msid:-
0f394cff-d02e-41eb-a865-372089d920ce\na=ssrc:2585425598
cname:mPTRaoe0CE9uLqd+\na=extmap:1
urn:ietf:params:rtp-hdrext:ssrc-audio-level\na=extmap:3
http://www.webrtc.org/experiments/rtp-hdrext/abs-send-time\na=x-r
tp-discontinuity-monitor:*
action=warn;minimumPercentRtpTimestampSkew=0.05;minimumRtpTimesta
mpSkew=50;maximumRtpTimestampSkew=1000;movingWindowSize=2000;mini
mumNumberOfSamples=3;maximumNumberOfSamples=20\nm=video 2
UDP/TLS/RTP/SAVPF 96 98 100 102 104 106 108
127\na=x-leaky-bucket\na=x-sdp-origination:create-offer-or-answer
\nc=IN IP4 144.24.20.79\na=candidate:0 1 udp 2130379008
144.24.20.79 29391 typ host generation 0\na=recvonly\na=rtcp:9 IN
IP4
0.0.0.0\na=ice-options:trickle\na=setup:active\na=mid:1\na=rtcp-m
ux\na=rtcp-rsize\na=rtpmap:96 H264/90000\na=rtcp-fb:96
goog-remb\na=rtcp-fb:96 transport-cc\na=rtcp-fb:96 ccm
fir\na=rtcp-fb:96 nack\na=rtcp-fb:96 nack pli\na=rtpmap:98
H264/90000\na=rtcp-fb:98 goog-remb\na=rtcp-fb:98
transport-cc\na=rtcp-fb:98 ccm fir\na=rtcp-fb:98
nack\na=rtcp-fb:98 nack pli\na=rtpmap:100
H264/90000\na=rtcp-fb:100 goog-remb\na=rtcp-fb:100
transport-cc\na=rtcp-fb:100 ccm fir\na=rtcp-fb:100
nack\na=rtcp-fb:100 nack pli\na=rtpmap:102
H264/90000\na=rtcp-fb:102 goog-remb\na=rtcp-fb:102
transport-cc\na=rtcp-fb:102 ccm fir\na=rtcp-fb:102
nack\na=rtcp-fb:102 nack pli\na=rtpmap:104
VP8/90000\na=rtcp-fb:104 goog-remb\na=rtcp-fb:104

```
transport-cc\na=rtcp-fb:104 ccm fir\na=rtcp-fb:104
nack\na=rtcp-fb:104 nack pli\na=rtpmap:106
VP9/90000\na=rtcp-fb:106 goo* Connection #0 to host
pcast.phenixrts.com left intact
g-remb\na=rtcp-fb:106 transport-cc\na=rtcp-fb:106 ccm
fir\na=rtcp-fb:106 nack\na=rtcp-fb:106 nack pli\na=rtpmap:108
red/90000\na=rtpmap:127 ulpfec/90000\na=ssrc-group:FID 1041010780
1097541650\na=msid:-
865d6e74-2028-4c09-9814-4f6b7bf7bec8\na=ssrc:1041010780
cname:mPTRaoe0CE9uLqd+\na=ssrc:1097541650
cname:mPTRaoe0CE9uLqd+\na=extmap:2
urn:ietf:params:rtp-hdrext:toffset\na=extmap:3
http://www.webrtc.org/experiments/rtp-hdrext/abs-send-time\na=ext
map:5
http://www.webrtc.org/experiments/rtp-hdrext/playout-delay\nb=AS:
1600\nb=TIAS:1600000\na=fmtp:96
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=6
40c1f;x-google-start-bitrate=800;x-google-max-bitrate=1600;x-goog
le-min-bitrate=30\na=fmtp:98
level-asymmetry-allowed=1;packetization-mode=1;profile-level-id=4
2e01f;x-google-start-bitrate=800;x-google-max-bitrate=1600;x-goog
le-min-bitrate=30\na=fmtp:100
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=6
40c1f;x-google-start-bitrate=800;x-google-max-bitrate=1600;x-goog
le-min-bitrate=30\na=fmtp:102
level-asymmetry-allowed=1;packetization-mode=0;profile-level-id=4
2e01f;x-google-start-bitrate=800;x-google-max-bitrate=1600;x-goog
le-min-bitrate=30\na=fmtp:104
x-google-start-bitrate=800;x-google-max-bitrate=1600;x-google-min
-bitrate=30\na=fmtp:106
profile-id=0;x-google-start-bitrate=800;x-google-max-bitrate=1600
;x-google-min-bitrate=30\na=fmtp:108
x-google-start-bitrate=800;x-google-max-bitrate=1600;x-google-min
-bitrate=30\na=fmtp:127
x-google-start-bitrate=800;x-google-max-bitrate=1600;x-google-min
-bitrate=30\na=x-rtp-discontinuity-monitor:*
```

```
action=warn;minimumPercentRtpTimestampSkew=0.05;minimumRtpTimestampSkew=50;maximumRtpTimestampSkew=1000;movingWindowSize=2000;minimumNumberOfSamples=3;maximumNumberOfSamples=20\n"}, "options": []}, "lag":0, "options": []}%
```

Termination

Request

Unset

```
curl -v --location  
'https://pcast.phenixrts.com/pcast/demo/whsnp/us-northeast%23us-a  
shburn-ad-3.7YJm9vRD.20230501.PDS2qtV1/destroy' \  
--form 'jsonBody="{  
  \"apiVersion\": 7,  
  \"sharedSecret\":  
  \"DIGEST:eyJhcHBsaWNhdG1vbklkIjoiZGVtbyIsImRpZ2VzdCI6ImZQVGx6SUFG  
OF14aEtRM3FmcGhJZG9qZmR5SUtabUdRc1lpTG0za1p2UDkzK2lKRm9DMUZ3YTd3d  
UN1amxYK2c4cnJaSEZVbXJVNmUyOHFHZ3hRakNRPT0iLCJ0b2t1biI6IntcInN0cm  
VhbUlkcXCI6XCJ1cy1ub3J0aGVhc3QjdXMtYXNoYnVybi1hZC0zLjdZSm05d1JELjI  
wMjMwNTAxL1BEUzJxdFYxXCIsXCJpbmN0YW5jZVJvdXR1S2V5XCI6XCJ1bm1jYXN0  
LnVzLW5vcnRoZWZzdC51cy1hc2hidXJuLWFKLTMuN1lKbTl2UkRcIixcImV4cGlyZ  
XNcIjoxNjgzNTcxNzYzMDM4fSJ9\",  
  \"reason\": \"client:termination\",  
  \"options\": []  
}"'  
}
```

Response

Unset

```
< HTTP/2 200
```

```
< x-origination: Platform
< access-control-allow-origin: *
< access-control-allow-headers: Authorization, Origin, Range,
X-Requested-With, If-Modified-Since, Accept, Keep-Alive,
Cache-Control, Content-Type, DNT
< access-control-allow-methods: POST, GET, HEAD, OPTIONS, PUT,
DELETE
< access-control-expose-headers: Server, Range, Date,
Content-Disposition
< access-control-max-age: 86400
< cache-control: public, max-age=0, no-cache, no-store
< content-type: application/json; charset=utf-8
< content-length: 15
< etag: W/"f-VaSQ4oDUiZblZNAEkkN+sX+q3Sg"
< x-response-time: 78.323589ms
< vary: Accept-Encoding
< date: Mon, 01 May 2023 18:50:47 GMT
< via: 1.1 google
< alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000
<
* Connection #0 to host pcast.phenixrts.com left intact
{"status":"ok"}
```

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