                   Indication of Conference Focus Support
         for the Centralized Conferencing Manipulation Protocol (CCMP)

Abstract

   The Centralized Conferencing Manipulation Protocol (CCMP) document
   (RFC 6503) defines a way for a client to discover a conference
   control server that supports CCMP. However, it does not define a way
   for a client involved in a conference to determine if the conference
   focus supports CCMP. This information would allow a CCMP-enabled
   client that joins a conference using SIP to also register for the
   Centralized Conferencing (XCON) conference event package and take
   advantage of CCMP operations on the conference.

   This document describes two mechanisms, depending upon the need of
   the User Agent (UA), to address the above limitation. The first
   mechanism uses the Call-Info header field, and the second mechanism
   defines a new value for the "purpose" header field parameter in the
   <service-uris> element in the SIP conferencing event package.

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1. Introduction

   RFC 5239 [RFC5239] defines a framework for Centralized Conferencing
   (XCON), which allows participants to exchange media in a centralized
   unicast conference. The framework also outlines a set of
   conferencing protocols for building advanced conferencing
   applications.

   The Centralized Conferencing Manipulation Protocol (CCMP) [RFC6503]
   allows authenticated and authorized users to create, manipulate, and
   delete conference objects. Operations on conferences include adding
   and removing participants and changing their roles, as well as adding
   and removing media streams and associated end points.

CCMP defines a way for an XCON-aware client to discover whether a conference control server supports CCMP. However, it does not define a way for a SIP client involved in a conference to determine if the conference focus [RFC4353] supports CCMP. Knowing that a focus supports CCMP would allow a SIP client (that is also XCON aware) that joins a conference using SIP-based conferencing [RFC4579] to also register for the XCON conference event package [RFC6502] and take advantage of CCMP operations on the conference.

This document describes two options to address the above limitation, depending on the need of the User Agent (UA). The first option uses the Call-Info [RFC3261] header, which is suitable for application servers that need to discover if a UA supports CCMP. The second option defines a new value for the "purpose" header field parameter in the <service-uris> element in the SIP conferencing event package [RFC4575] that is suitable for a UA that would typically subscribe to the conference event package.

Appendix A has a brief description of other options that we considered as possible solutions. Those other options were not selected, however, because the options described in this document better address the problem we are trying to solve.

1.1. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

2. Solutions

This section defines two mechanisms that can be used by a SIP UA to discover whether the conference that a client has joined, per the SIP signaling procedures defined in [RFC4579], supports CCMP. Specifically, the mechanisms allow the client to know that the URI representing the conference focus, as defined in [RFC4579], is an XCON-URI as defined in [RFC6501].

2.1. Call-Info

This approach uses the Call-Info header in various requests and responses.

The Call-Info header consists of two parts: a URI and a "purpose" header field parameter. The URI provides the XCON-URI of the conference focus, and a new value for the "purpose" header field parameter indicates that the conference focus supports CCMP.

While the XCON-URI by itself should be enough to indicate that the
conference focus supports CCMP, the "purpose" header field parameter
with a value of 'ccmp' provides an easier way for a UA that does not
use the conference event package to discover that the conference
focus supports CCMP, without parsing the URI.

The Call-Info header, with the XCON-URI and the "purpose" header
field parameter with the 'ccmp' value, can be used with any INVITE
request or response and with a response to an OPTIONS request.

This approach would be suitable for a UA, e.g., an application server
that acts as a Back-to-Back User Agent (B2BUA), that is interested in
discovering that a conference focus supports CCMP but does not use
the XCON conference event package [RFC6502]. In this case, the
application could use the OPTIONS request and discover CCMP support
from the response.

This approach would also be suitable for a conference focus that
initiates an INVITE request to a SIP UA to add a participant to a
conference, as it would allow the conference focus to indicate that
it supports CCMP with the INVITE request sent to the UA.

The advantage of this approach is the ability to discover that a
conference focus supports CCMP, without subscribing to the XCON event
package [RFC6502]. The disadvantage is the need, in some cases, for
an extra request, i.e., an additional OPTIONS request, to discover
that a conference focus supports CCMP.

2.2. Service URI Purpose

This approach defines an additional URI 'purpose' of 'ccmp'
associated with a <service-uris> element in the SIP conferencing
event package. The XCON-URI for the conference is included in the
'uri' element, per the following example:

```
<service-uris>
  <entry>
    <uri>XCON:conf1@example.com</uri>
    <purpose>ccmp</purpose>
  </entry>
</service-uris>
```

The advantage of this approach is that it uses an existing mechanism
for extending the <purpose> field of the <service-uris> element in
the conferencing event package [RFC4353]. The disadvantage is that
it requires the client to subscribe to the conference event package.

This approach would be suitable for a SIP UA that would typically subscribe to the conference event package. Knowing that a conference supports CCMP allows a SIP UA that is XCON aware to make use of the CCMP operations and allows it to subscribe to the XCON event package [RFC6502] to get additional information related to the conference.

3. Overall Process

CCMP capability is discovered using the two methods described in Section 2. The order in which the two methods are tried depends on whether an implementation subscribes to the conference event package by default.

A UA implementation that subscribes to the conference event package can examine the conference description to see if a URI with <purpose>ccmp</purpose> is specified (Section 2.2). An implementation that does not subscribe to the conference event package can perform an OPTIONS query when connecting to the conference server. UAs MUST NOT attempt both methods with the same server.

Conference servers MUST reflect the same information using both discovery channels. A server MUST indicate CCMP support through the conference event package if and only if it indicates support through the Call-Info header in OPTIONS responses. This prevents the need for UAs to try both methods.

4. Security Considerations

This document defines no new headers or data elements; it reuses existing headers and data elements. CCMP already allows a client the ability to discover if a conference server supports CCMP, using a DNS mechanism as defined in [RFC6503] Section 12.4.

Thus, the solution options defined in this document do not introduce any new security threats.

5. IANA Considerations

5.1. Call-Info Purpose Registration

This specification adds a new predefined value "ccmp" for the
"purpose" header field parameter of the Call-Info header field. This
modifies the registry header field parameters and parameter values by
adding this RFC as a reference to the line for header field
"Call-Info" and parameter name "purpose":

   Header Field: Call-Info

   Parameter Name: purpose

   Predefined Values: yes

   Reference: [RFC3261] [RFC5367] [RFC6910] [RFC6993] [RFC7082]

5.2. URI Purpose Registration

This specification adds a new predefined value "ccmp" to the "URI
Purposes" subregistry, which defines XML elements to be encoded in
the conference event package [RFC4575].

This modifies the registry as follows:

   Value: ccmp

   Description: The URI can be used to indicate that the conference
               focus supports CCMP.

   Reference: [RFC7082]

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Appendix A. Other Approaches Considered

   The following two options were considered as possible solutions but
   were not selected because the options described in this document
   better address the problem we are trying to solve.

A.1. Feature Tag

   This approach defines a feature parameter 'ccmp' to indicate that a
   SIP dialog belongs to a conference that supports CCMP. The use of
   feature parameters in Contact header fields to describe the
   characteristics and capabilities of a UA is described in the User
   Agent Capabilities document [RFC3840].

   The conference focus behavior regarding the handling of the 'ccmp'
   feature is the same as the behavior for the handling of the 'isfocus'
   feature parameter. In session establishment, a conference focus MUST
   include the 'ccmp' feature parameter in the Contact header field
   unless the conference focus wishes to hide the fact that it is a
   conference focus.

   The advantages of this approach are a one-step discovery of the
   conference focus and its support for the 'ccmp' feature and the fact
   that it can be used in response to an OPTIONS request, and that it
   enables the discovery of the 'ccmp' capability by any network element
   that does not need the conference event package. The disadvantage is
   the definition of a new feature parameter.

A.2. Conference URI Purpose

   This approach defines an additional URI 'purpose' of 'ccmp'
   associated with a 'conf-uris' element in the SIP conferencing event
   package.

   ccmp: Indicates that the conference focus represented by this URI
      supports 'ccmp'; this in turn allows a client to use CCMP to
      manipulate the conference. This URI MUST be an XCON-URI as
      defined in the XCON data model specification [RFC6501].

      <conf-uris>
        <entry>
          <uri>XCON:conf1@example.com</uri>
          <display-text>whatever</display-text>
          <purpose>ccmp</purpose>
        </entry>
      </conf-uris>

The advantage of the SIP conference event package options is the use
of an existing mechanism for extending the <purpose> field of the
<service-uris> or <conf-uris> elements. The disadvantage is the
requirement that the client register for the conference event
package.

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