

[MS-CONFPRO]:

Centralized Conference Control Protocol: Provisioning

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1 Introduction

This document specifies Centralized Conference Control Protocol Provisioning, which is an extension of the Centralized Conference Control protocol. This protocol extension is used by the protocol client application of a conference organizer to communicate with a managing component to create a conference and subsequently query, modify, and delete the conference.

Sections 1.5, 1.8, 1.9, 2, and 3 of this specification are normative. All other sections and examples in this specification are informative.

1.1 Glossary

This document uses the following terms:

200 OK: A response to indicate that the request has succeeded.

Audio/Video Multipoint Control Unit (AVMCU): A **Multipoint Control Unit (MCU)** that supports audio-video (AV) conferencing.

base64 encoding: A binary-to-text encoding scheme whereby an arbitrary sequence of bytes is converted to a sequence of printable ASCII characters, as described in [\[RFC4648\]](#).

certificate: A certificate is a collection of attributes and extensions that can be stored persistently. The set of attributes in a certificate can vary depending on the intended usage of the certificate. A certificate securely binds a public key to the entity that holds the corresponding private key. A certificate is commonly used for authentication and secure exchange of information on open networks, such as the Internet, extranets, and intranets. Certificates are digitally signed by the issuing certification authority (CA) and can be issued for a user, a computer, or a service. The most widely accepted format for certificates is defined by the ITU-T X.509 version 3 international standards. For more information about attributes and extensions, see [\[RFC3280\]](#) and [\[X509\]](#) sections 7 and 8.

conference: A Real-Time Transport Protocol (RTP) session that includes more than one **participant**.

conference URI (conference-URI): A **Session Initiation Protocol (SIP) URI** that uniquely identifies the **focus** of a conference.

Conference-Id: A string of printable ASCII characters that uniquely identifies a **conference**.

Content-Type header: A message header field whose value describes the type of data that is in the body of the message.

Coordinated Universal Time (UTC): A high-precision atomic time standard that approximately tracks Universal Time (UT). It is the basis for legal, civil time all over the Earth. Time zones around the world are expressed as positive and negative offsets from UTC. In this role, it is also referred to as Zulu time (Z) and Greenwich Mean Time (GMT). In these specifications, all references to UTC refer to the time at UTC-0 (or GMT).

Cryptographic Application Programming Interface (CAPI) or CryptoAPI: The Microsoft cryptographic application programming interface (API). An API that enables application developers to add authentication, encoding, and encryption to Windows-based applications.

federated user: An external user who possesses valid credentials with a federated partner and who therefore is treated as authenticated by a protocol server.

focus: A single user agent that maintains a dialog and **Session Initiation Protocol (SIP)** signaling relationship with each **participant**, implements conference policies, and ensures that each participant receives the media that comprise the tightly coupled **conference**.

Focus Factory: A component that is responsible for creating, managing, and deleting conferences.

fully qualified domain name (FQDN): In Active Directory, a fully qualified domain name (FQDN) that identifies a domain.

Hypertext Transfer Protocol (HTTP): An application-level protocol for distributed, collaborative, hypermedia information systems (text, graphic images, sound, video, and other multimedia files) on the World Wide Web.

in-band provisioning: A process in which a protocol client obtains configuration information from a protocol server.

lobby: A collection of objects that contains data about one or more participants who are waiting for the organizer or a presenter in a conference to admit participants to the conference.

MCU-Type: A literal that identifies all of the media types, such as audio-video, that are supported by a **Multipoint Control Unit (MCU)**.

Multipoint Control Unit (MCU): A server endpoint that offers mixing services for multiparty, multiuser conferencing. An MCU typically supports one or more media types, such as audio, video, and data.

organizer: The owner or creator of a meeting or appointment.

participant: A user who is participating in a **conference** or peer-to-peer call, or the object that is used to represent that user.

private key: One of a pair of keys used in public-key cryptography. The private key is kept secret and is used to decrypt data that has been encrypted with the corresponding public key. For an introduction to this concept, see [\[CRYPTO\]](#) section 1.8 and [\[IEEE1363\]](#) section 3.1.

public key: One of a pair of keys used in public-key cryptography. The public key is distributed freely and published as part of a digital certificate. For an introduction to this concept, see [\[CRYPTO\]](#) section 1.8 and [\[IEEE1363\]](#) section 3.1.

public switched telephone network (PSTN): Public switched telephone network is the voice-oriented public switched telephone network. It is circuit-switched, as opposed to the packet-switched networks.

Request-URI: A **URI** in an **HTTP** request message, as described in [\[RFC2616\]](#).

SERVICE: A method that is defined by **Session Initiation Protocol (SIP)** extensions and is used by an SIP client to request a service from a server.

Session Initiation Protocol (SIP): An application-layer control (signaling) protocol for creating, modifying, and terminating sessions with one or more participants. **SIP** is defined in [\[RFC3261\]](#).

SIP message: The data that is exchanged between **Session Initiation Protocol (SIP)** elements as part of the protocol. An SIP message is either a request or a response.

SIP request: A **Session Initiation Protocol (SIP)** message that is sent from a user agent client (UAC) to a user agent server (UAS) to call a specific operation.

SIP response: A **Session Initiation Protocol (SIP)** message that is sent from a user agent server (UAS) to a user agent client (UAC) to indicate the status of a request from the UAC to the UAS.

SIP response code: A three-digit code in a **Session Initiation Protocol (SIP)** message, as described in [\[RFC3261\]](#).

Transmission Control Protocol (TCP): A protocol used with the Internet Protocol (IP) to send data in the form of message units between computers over the Internet. TCP handles keeping track of the individual units of data (called packets) that a message is divided into for efficient routing through the Internet.

Transport Layer Security (TLS): A security protocol that supports confidentiality and integrity of messages in client and server applications communicating over open networks. TLS supports server and, optionally, client authentication by using X.509 certificates (as specified in [X509]). TLS is standardized in the IETF TLS working group.

Uniform Resource Identifier (URI): A string that identifies a resource. The URI is an addressing mechanism defined in Internet Engineering Task Force (IETF) Uniform Resource Identifier (URI): Generic Syntax [RFC3986].

UTF-8: A byte-oriented standard for encoding Unicode characters, defined in the Unicode standard. Unless specified otherwise, this term refers to the UTF-8 encoding form specified in [UNICODE5.0.0/2007] section 3.9.

Voice over IP (VoIP): The use of the Internet Protocol (IP) for transmitting voice communications. VoIP delivers digitized audio in packet form and can be used to transmit over intranets, extranets, and the Internet.

X.509: An ITU-T standard for public key infrastructure subsequently adapted by the IETF, as specified in [RFC3280].

XML: The Extensible Markup Language, as described in [XML1.0].

MAY, SHOULD, MUST, SHOULD NOT, MUST NOT: These terms (in all caps) are used as defined in [RFC2119]. All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](#).

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information.

[MS-CONFAV] Microsoft Corporation, "[Centralized Conference Control Protocol: Audio-Video Extensions](#)".

[MS-CONFBAS] Microsoft Corporation, "[Centralized Conference Control Protocol: Basic Architecture and Signaling](#)".

[MS-SIPAE] Microsoft Corporation, "[Session Initiation Protocol \(SIP\) Authentication Extensions](#)".

[MS-SIPRE] Microsoft Corporation, "[Session Initiation Protocol \(SIP\) Routing Extensions](#)".

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.rfc-editor.org/rfc/rfc2119.txt>

[RFC3261] Rosenberg, J., Schulzrinne, H., Camarillo, G., Johnston, A., Peterson, J., Sparks, R., Handley, M., and Schooler, E., "SIP: Session Initiation Protocol", RFC 3261, June 2002, <http://www.ietf.org/rfc/rfc3261.txt>

[RFC3852] Housley, R., "Cryptographic Message Syntax (CMS)", RFC 3852, July 2004, <http://www.ietf.org/rfc/rfc3852.txt>

[XML10] World Wide Web Consortium, "Extensible Markup Language (XML) 1.0 (Third Edition)", February 2004, <http://www.w3.org/TR/2004/REC-xml-20040204/>

1.2.2 Informative References

[MS-LCID] Microsoft Corporation, "[Windows Language Code Identifier \(LCID\) Reference](#)".

[MS-SIPREGE] Microsoft Corporation, "[Session Initiation Protocol \(SIP\) Registration Extensions](#)".

1.3 Overview

Organizers intending to invite **participants** into a **conference** first create the conference at a **Focus Factory**. The Focus Factory provides a **conference URI (conference-URI)** that is subsequently used to join the conference through the **focus**. This protocol specifies the mechanism by which a protocol client application interacts with the Focus Factory to create a new conference and additionally performs the following actions within the context of a specific organizer:

- Query for a list of created conferences that have not expired.
- Query for the details of a created conference.
- Modify the details of an existing conference.
- Delete an existing conference.
- Perform ancillary operations necessary to create a conference.

The distribution of the conference-URI to a participant is outside the scope of this protocol.

1.4 Relationship to Other Protocols

The conferencing architecture described in [\[MS-CONFBAS\]](#) section 1.3.1 depends on this protocol for provisioning **conferences**.

The **SERVICE SIP request** and its corresponding **SIP response** are used for transmitting **SIP messages**.

The message syntax for the content of the SIP messages is described in [\[XML10\]](#).

1.5 Prerequisites/Preconditions

To send messages to the **Focus Factory** using **SIP**, protocol client applications first obtain the Focus Factory **Uniform Resource Identifier (URI)**. This URI can be obtained by using the **in-band provisioning** mechanism described in [\[MS-SIPREGE\]](#) section 2.2.2 and [MS-SIPREGE] section 3.3.

This protocol assumes that **SIP requests** are authenticated as described in [\[MS-SIPAE\]](#).

1.6 Applicability Statement

This protocol is meant to be used in conjunction with the conferencing architecture described in [\[MS-CONFBAS\]](#) section 1.3.1.

1.7 Versioning and Capability Negotiation

This protocol covers versioning issues in the following areas:

- **Supported Transports:** This protocol can be implemented using **SIP** on top of **Transmission Control Protocol (TCP)**, and **Transport Layer Security (TLS)**, as discussed in section [2.1](#).
- **Capability Negotiation:** This protocol supports capability negotiation through the `getConferencingCapabilities` request specified in section [3.1.4.8](#). A protocol client application can also determine that it is interfacing with a **Focus Factory** that supports its version by issuing a test request to create a **conference**, as specified in section [3.1.4.1](#).

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

This protocol does not introduce a new transport to exchange messages. Messages are exchanged using SIP, as specified in [\[RFC3261\]](#) and transported over **TCP** or **TLS**.

2.2 Message Syntax

SIP messages used by this protocol can be categorized into two types – requests and responses. A request is sent from a protocol client application to the **Focus Factory** to perform an action, and a response is sent from the Focus Factory to the protocol client application as a result of receiving a request.

Each request is specified as the body of a **SERVICE SIP request**. Each response is specified as the body of a **SERVICE SIP response**. The body **MUST** be well-formed **XML** and **MUST** be encoded using **UTF-8**. The XML **MUST** conform to the XML Schemas specified in [\[MS-CONFAS\]](#) section 6.2 and [\[MS-CONFAS\]](#) section 6.3. Any element or attribute appearing in the XML that is not specified by this protocol **MUST** be ignored by all processing entities, as long as such elements or attributes continue to keep the XML conformant with the specified XML Schemas. Any entity appearing in the referenced XML schemas, but not explicitly mentioned in this protocol, **MUST NOT** be used. The hierarchy of XML elements is specified for each message. The element hierarchy specifies parent elements, child elements, and the order in which the elements appear. An element is specified exactly once unless tagged as (?), (+), or (*).

- (?) indicates an element that can appear zero or 1 time.
- (+) indicates an element that can appear 1 or more times.
- (*) indicates an element that can appear zero or more times.

SERVICE SIP requests and SIP responses have the following **SIP** fields set as indicated:

- The **Content-Type header** **MUST** contain "application/cccp+xml".
- The **From** header **MUST** contain the **Uniform Resource Identifier (URI)** of the organizer or the URI of the organizer's delegate.
- If the **From** Header has the URI of the organizer's delegate, there **SHOULD** [<1>](#) be a **p-session-on-behalf-of** header that equals the organizer's URI. The authorization logic when delegation is used is specified in [\[MS-SIPAE\]](#).
- The **To** header **MUST** contain the Focus Factory URI.
- The **Request-URI** **MUST** contain the Focus Factory URI.
- A SIP request **MUST NOT** contain any **Require** headers.
- A SIP request **MUST** contain a body.
- A SIP response **MUST** contain a body unless the **SIP response code** indicates a failure, in which case the body is optional.

Requests and responses operate on a common **conference** Data Model as specified in section 2.2.1. Requests use the message syntax defined in section [2.2.2](#) and responses use the message syntax defined in section [2.2.3](#).

2.2.1 Conference Data Model

[MS-CONFBAS] section 2.2.2 specifies an XML-based data model for describing **conferences**. This section provides an element hierarchy that specifies only the fields of that data model that the messages in this protocol operate on. The subsequent description specifies the interpretation of those fields as used in this protocol. Normative definitions for these XML elements are specified in [MS-CONFBAS] section 6.2 and [MS-CONFBAS] section 6.3.

All elements MUST belong to the namespace "urn:ietf:params:xml:ns:conference-info" unless explicitly stated to be in a different namespace or tagged as "(E)", indicating that they belong to an extension namespace. All attributes MUST belong to no namespace unless indicated as belonging to the extension namespace. The extension namespace MUST use the "http://schemas.microsoft.com/rtc/2005/08/confinfoextensions" **URI**.

Requests and responses can further restrict this data model. Any such restrictions are specified by their message syntaxes as needed.

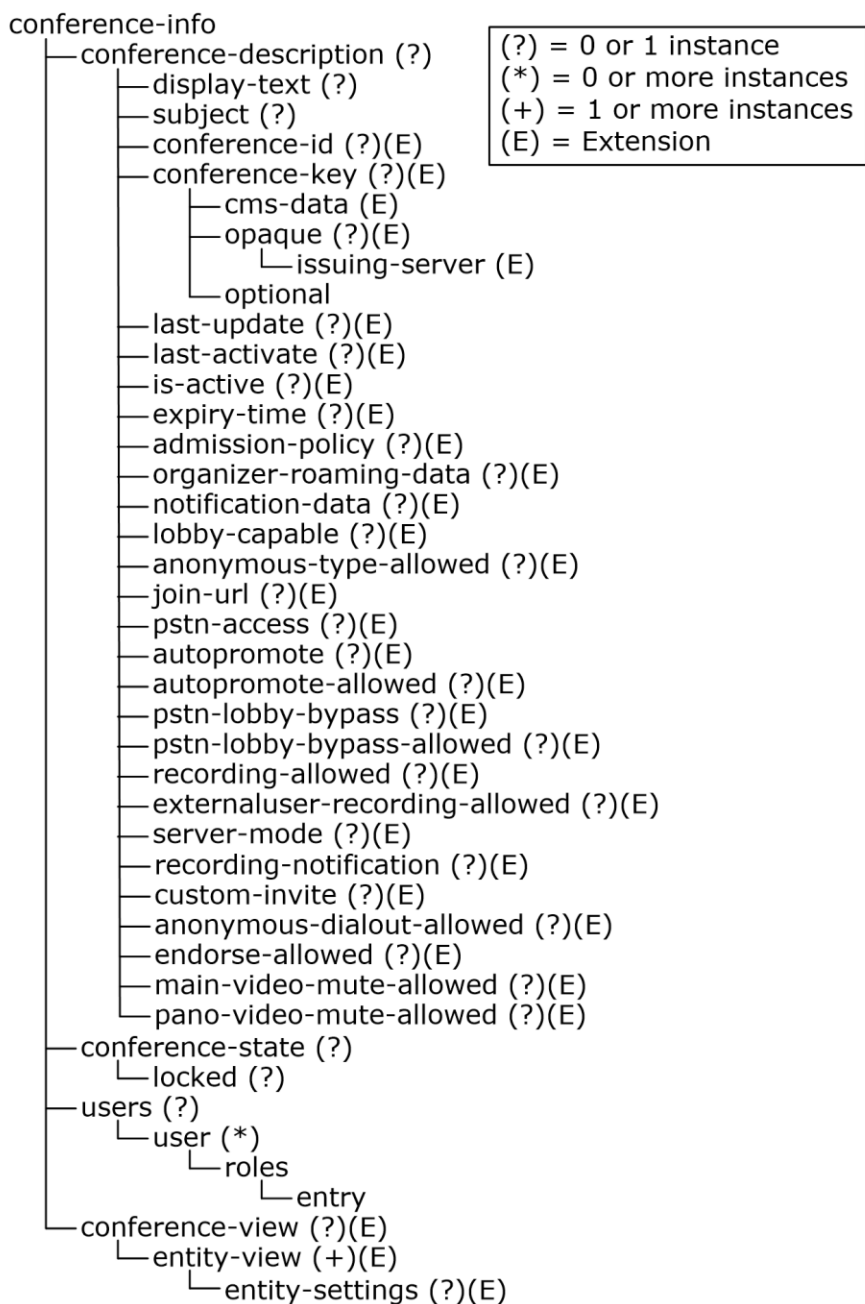


Figure 1: Conference entity hierarchy

2.2.1.1 conference-info Element

The **conference-info** element is the root element and MUST contain the following attribute:

- **entity:** This attribute MUST specify the **conference-URI** after the **conference** is created and MUST be set to an empty string before creation.

The **conference-info** element can contain the following attributes:

- **state:** This attribute MUST be either "full" or "partial". The value "full" indicates that the XML describing the conference contains all available conference data. The value "partial" indicates that the XML describing the conference only specifies a subset of all available conference data. When not specified, the value of this attribute MUST default to "full". The available conference data includes the entire current state of the conference as specified by the conference data model.
- **version:** This attribute MUST be set to a monotonically increasing non-negative integer starting at "1". Its value MUST be set to "1" when the conference is first created and MUST increase by 1 every time the conference is modified further. When not specified, the value of this attribute defaults to "1".

2.2.1.2 conference-description Element

The **conference-description** element specifies some basic properties for the **conference** using the following child elements. For details about the **conference-description** Extensions see [\[MS-CONFBAS\]](#) section 2.2.2.3.

display-text: This element is used to specify a description for the conference.

subject: This element is used to specify a subject of the conference.

conference-id: Every conference MUST be identifiable by a string that is unique among all conferences belonging to an **organizer**. Constraints on the length and value space of this string are implementation-specific. Implementations SHOULD allow for a minimum of 8 and a maximum of 32 alpha-numeric characters from the ASCII set.

conference-key: This element is deprecated.

last-update: This element specifies the **Coordinated Universal Time (UTC)** date and time when the conference was created or last modified. The format of this value is defined by the XML Schema **dateTime** data type. The **dateTime** data type is defined in the internet standard XML specifications [\[XML10\]](#) and its related specifications. This element is not required for request, but MUST be specified in responses.

last-activate: This element specifies the UTC date and time when the conference was last activated in the Focus Factory. The format of this value is defined by the XML Schema **dateTime** data type. This element appears only in responses. The **dateTime** data type is defined in the internet standard XML specifications [\[XML10\]](#) and its related specifications.

is-active: This element indicates whether the conference is active in the Focus Factory at the time this value is set. The format of this value is defined by the XML schema Boolean data type where the value can be either true or false. This element appears only in responses. If "true," the conference is active, if "false," the conference is not active.

expiry-time: This element indicates the UTC time after which the conference can be deleted by the Focus Factory. An implementation SHOULD enforce a constraint on how long a conference is available, but the exact value of that upper bound is specific to the implementation. The format of this value is defined by the XML schema **dateTime** data type. When not specified, the default value is specific to the implementation. The **dateTime** data type is defined in the internet standard XML specifications [\[XML10\]](#) and its related specifications.

admission-policy: This element specifies the types of **participants** that are allowed to join this conference and MUST contain one of the following values:

- "closedAuthenticated": All participants MUST be on the pre-set roster that is provided at conference-creation time. See section [2.2.1.4](#) for more details on how to specify the preset roster.

- "openAuthenticated": All participants MUST have an enterprise identity that is verified by the local enterprise or **federated users**.
- "anonymous": All participants with a verified enterprise identity or any user with a valid anonymous passcode are permitted into the conference.

organizer-roaming-data: This element MUST contain well-formed XML. The root element of this XML MUST NOT belong to the namespace of the containing **organizer-roaming-data** element. This XML is meant for protocol client applications to store arbitrary contextual data for the conference with the Focus Factory. The server doesn't run any business logic based on this data. It is purely used by the organizer to store and roam data. An implementation SHOULD enforce constraints on the size of this XML. Limits are defined by the implementation, but SHOULD allow at least 4,096 bytes (4 kilobytes).

notification-data: This element MUST contain well-formed XML. The root element of this XML MUST NOT belong to the namespace of the containing **notification-data** element. This XML is meant for protocol client applications to store arbitrary contextual data for the conference with the Focus Factory so that this data can later be provided to any participant joining the conference. The server doesn't run any business logic based on this data. It is purely used by the organizer to store and roam data to other participants in the meeting. An implementation SHOULD enforce constraints on the size of this XML. Limits are defined by the implementation, but SHOULD allow at least 4,096 bytes (4 kilobytes).

lobby-capable: This element is specified in [MS-CONFAS] section 2.2.2.3.

anonymous-type-allowed: This element is specified in [MS-CONFAS] section 2.2.2.3.

join-url: This element specifies the **HTTP** join URL for joining the meeting.

pstn-access: This element is specified in [MS-CONFAS] section 2.2.2.3.

autopromote: This element is an unsigned integer. The server interprets this value to indicate who needs to be promoted to presenters upon being admitted to the conference. People in the lobby, once moved into the meeting, also follow these rules. The currently defined bits are [<2>](#):

- None: 0x00000000 (the default)
- Everyone: 0x80000000 (bit 31)
- Company (Authenticated users): 0x00008000 (bit 15)

autopromote-allowed: This element is specified in [MS-CONFAS] section 2.2.2.3.

pstn-lobby-bypass: This element is a Boolean value. If "true," all the users, including external users, joining over the phone can join the conference without going to the lobby. If "false," they go to the lobby and wait for the organizer or presenter to bring them into the meeting [<3>](#). The term "external user" is defined in [\[MS-SIPRE\]](#).

pstn-lobby-bypass-allowed: This element is specified in [MS-CONFAS] section 2.2.2.3.

recording-allowed: This element is specified in [MS-CONFAS] section 2.2.2.3.

externaluser-recording-allowed: This element is specified in [MS-CONFAS] section 2.2.2.3.

server-mode: This element is deprecated. Irrespective of value specified the conference behavior would default to what was previously known as server mode 14. This is further defined in [MS-CONFAS] section 2.2.2.3.

- The created conference supports the lobby experience. Lobby-aware meeting participants placed in an "on-hold" state will wait to be admitted. More details on lobby and the "on-hold" state are specified in [MS-CONFAS].
- Application sharing is allowed only by users with the "presenter" role.

- Federated users are treated as anonymous users when applying admission-policy.
- All users except for the conference organizer, are placed in an on-hold state if they join while the conference is locked.

recording-notification: This element is specified in [MS-CONFBAS] section 2.2.2.3.

custom-invite: This element is specified in [MS-CONFBAS] section 2.2.2.3.

anonymous-dialout-allowed: This element is specified in [MS-CONFBAS] section 2.2.2.3.

endorse-allowed: This element is specified in [MS-CONFBAS] section 2.2.2.3.

main-video-mute-allowed: This element is specified in [MS-CONFBAS] section 2.2.2.3.

pano-video-mute-allowed: This element is specified in [MS-CONFBAS] section 2.2.2.3.

2.2.1.3 conference-state Element

The **conference-state** element can have a **locked** element, which is a Boolean value. If set to "true", all the **participants**, both attendees and presenters, in the meeting go to the **lobby** when they join the meeting. Once the **organizer** has joined, the participants can be explicitly moved from the lobby to the meeting by presenters. <4> If the value of **locked** element is set to "false", the meeting participants are moved to the meeting by presenters without being placed in the lobby. For more details of the conference-state element please see [\[MS-CONFBAS\]](#)

2.2.1.4 users Element

The **users** element specifies a list of **participants** and their roles in the **conference**. When a **users** element is specified, it MUST contain zero or more **user** child elements. The list of users MUST be definitive if the **admission-policy** element is "closedAuthenticated" because a user is not allowed to join the conference if not specified in this list. The **organizer** is implicitly included in this list by the **Focus Factory** and SHOULD NOT be specified in the message.

A **user** element MUST specify the following attribute:

- **entity:** The **SIP URI** of the participant being invited. This value MUST be unique among all **user** elements specified.

A **user** element MUST contain exactly one **roles** child element.

A **roles** element MUST contain exactly one **entry** child element:

- **entry:** The role to be assigned to the corresponding user. It MUST be either "presenter" or "attendee". For more details about the "presenter"/"attendee" privilege, see [\[MS-CONFBAS\]](#).

2.2.1.5 conference-view Element

The **conference-view** element specifies a list of **MCU-Types** to be allocated for the **conference**, as well as initial bootstrap information to be provided for each **Multipoint Control Unit (MCU)**.

Each MCU-Type is specified by an **entity-view** child element. An **entity-view** element MUST contain the following attribute:

- **entity:** The MCU-Type to be made available for the conference. The value MUST be one of the MCU-Types configured for the **Focus Factory**. For information about retrieving the configured MCU-Types, see section [2.2.2.7](#) and [2.2.2.8](#). This value MUST be unique among all **entity-view** elements specified.

An **entity-view** element can specify the following child element:

- **entity-settings:** This element MUST contain an XML fragment. Each top-level element of the XML fragment MUST NOT belong to the namespace of the containing **entity-settings** element. This XML fragment is stored by the Focus Factory and passed to the MCU of the corresponding MCU-Type when being bootstrapped for the conference by the **focus**. It is only passed back to clients as part of the **getConference** response from the Focus Factory. For more information about this response, see section [2.2.3.4](#). Implementations SHOULD enforce a limit on the size of the **entity-settings** fragment. The size limit is defined by the implementation, but all implementations MUST accept **entity-settings** of at least 2048 bytes, in **UTF-8** representation, to accommodate the formats for "audio-video", "meeting", and "phone-conf" MCU-Types defined later.

This protocol specifies the XML fragments for "audio-video", "meeting", and "phone-conf" MCU-Types.

An XML fragment MUST NOT be specified for the "chat" MCU-Type because this MCU-Type does not accept any bootstrap information.

For an "audio-video" MCU-Type, the XML fragment consists of one **settings** child element in the namespace "http://schemas.microsoft.com/rtc/2005/08/avconfinfoextensions". All child elements of this **settings** element MUST also belong to the same namespace. This **settings** element MUST use the following element hierarchy:

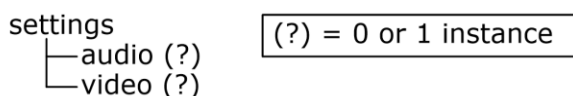


Figure 2: audio-video MCU-Type settings element hierarchy

- **audio:** This element MUST NOT specify any value. The existence of this element indicates that audio will be used in the conference. When not specified, the default is specific to the implementation.
- **video:** This element MUST NOT specify any value. The existence of this element indicates that video will be used in the conference. When not specified, the default is specific to the implementation.

For a "meeting" MCU-Type, the XML fragment consists of one **settings** child element in the namespace "http://schemas.microsoft.com/rtc/2005/08/dataconfinfoextensions". All child elements of this **settings** element MUST belong to the same namespace. This **settings** element MUST use the following element hierarchy:

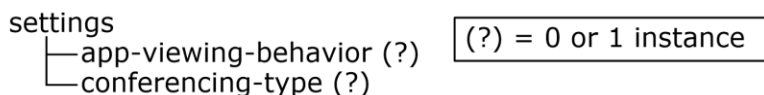


Figure 3: meeting MCU-Type settings element hierarchy

- **app-viewing-behavior:** This element contains a string value that specifies what form of application and desktop sharing to use for a conference. When a value is not specified, the default value is specific to the implementation. Valid values are as follows:
 - "disabled": Any form of application and desktop sharing is disabled for the conference.
 - "enableWithoutSharingControl": Application and desktop sharing are enabled without granting another **participant** any remote interactivity with the shared region.
 - "enableWithSharingOfOnlyASingleApplication": Application sharing is enabled but desktop sharing is not allowed. Another participant can be allowed to remotely interact with the shared region.

- "enableWithFullSharing": Application and desktop sharing are enabled with the ability for other participants to remotely interact with the shared region.
- **conferencing-type**: A string value indicating the type of conferencing the MCU is being used for. Values are "presentation" or "collaboration". When not specified, the default value is specific to the implementation.

For a "phone-conf" MCU-Type, the XML fragment consists of one **settings** child element in the namespace "http://schemas.microsoft.com/rtc/2005/08/acpconfinfoextensions". All child elements of this **settings** element MUST also belong to the same namespace. This **settings** element MUST use the following element hierarchy:

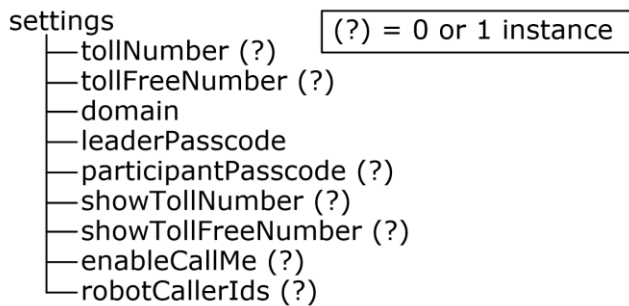


Figure 4: phone-conf MCU-Type settings element hierarchy

- **tollNumber**: A string value representing the telephone number for the phone conferencing provider. **tollNumber** or **tollFreeNumber** MUST be specified. The format of this string is specific to the phone conferencing provider being used.
- **tollFreeNumber**: A string value representing the toll-free telephone number for the phone conferencing provider. **tollNumber** or **tollFreeNumber** MUST be specified. The format of this string is specific to the phone conferencing provider being used.
- **domain**: A string value identifying the Internet domain of a phone conferencing provider.
- **leaderPasscode**: A string value representing the passcode to be entered by the **organizer** of the phone conference. The format of this string is specific to the phone conferencing provider being used.
- **participantPasscode**: A string value representing the passcode to be entered by participants dialing in to the phone conference. The format of this string is specific to the phone conferencing provider being used.
- **showTollNumber**: Indicates whether **tollNumber** is published to everyone in the conference. The format of this value conforms to the XML Schema Boolean data type where the value can be either true or false.
- **showTollFreeNumber**: Indicates whether **tollFreeNumber** is published to everyone in the conference. The format of this value conforms to the XML Schema Boolean data type where the value can be either true or false.
- **enableCallMe**: Indicates whether a participant in the conference is allowed to request the phone conferencing provider to make an outbound phone call to that participant's phone number. The format of this value conforms to the XML Schema Boolean data type where the value can be either true or false.
- **robotCallerIds**: A list of telephone numbers. A phone conferencing provider uses this list to identify callers that are not human and are considered a "robot". An example of a robot is an **Audio/Video Multipoint Control Unit (AVMCU)** that calls in to the phone conferencing provider

for bridging audio between callers to the phone conferencing system and participants connected to the AVMCU.

The **robotCallerIds** element can contain any number of **entry** child elements. Each **entry** child element MUST belong to the same namespace as **robotCallerIds**.

- **entry:** A string value representing a telephone number. The format of this string is specific to the phone conferencing provider being used.

2.2.2 Requests

A request MUST use the **request** root element. The **request** element and all child elements MUST belong to the namespace "urn:ietf:params:xml:ns:cccp" unless specified as belonging to an extension namespace. All attributes MUST belong to no namespace unless specified as belonging to the extension namespace. Elements and attributes belonging to the extension namespace MUST belong to the namespace "http://schemas.microsoft.com/rtc/2005/08/confinfoextensions".

The **request** element MUST contain the following attributes:

- **requestId:** MUST be set by the message sender to a non-negative integer that is unique among all requests from that sender.
- **from:** Specifies the source of the request and MUST be the same value as the **organizer URI**.
- **to:** Specifies the target of the request and MUST be the same value as the **SIP** URI contained in the **To** header of the enclosing **SIP request**.

The **request** element can contain the following attribute:

- **C3PVersion:** MUST be set to "1".

The **request** element MUST contain exactly one child element. The child element identifies the type of request. The different types of requests are subsequently defined.

2.2.2.1 addConference Request

An **addConference** request is used for creating a **conference** and is identified by a **request** element containing an **addConference** child element. The **addConference** child element MUST use the following element hierarchy:

```
addConference
└─conference-info
```

Figure 5: addConference request element hierarchy

The syntax for the **conference-info** element is defined in section [2.2.1](#). The following additional restrictions apply:

- The **entity** attribute of **conference-info** MUST be an empty string.
- The **state** attribute of **conference-info** MUST be set to "full", if specified.
- The **version** attribute MUST be set to "1", if specified.
- The **conference-id** element MUST be specified.
- The **conference-key** element
 - This element is deprecated and SHOULD NOT be specified anymore.

- The **pstn-access** element, if specified, indicates that **public switched telephone network (PSTN)** bridging is enabled<5>. PSTN bridging joins **Voice over IP (VoIP)** and PSTN dial-in audio channels so that all **participants** in a meeting can hear each other. More details on the PSTN bridging is beyond the scope of this specification.
- The **autopromote** element can be specified.
- The **server-mode** SHOULD NOT be specified.
- Static conferences are pre-created meetings on the server for which preset defaults are decided by the administrator. To create a static conference, send an **addConference** request. However, unlike regular meetings, no properties of the meeting are specified. Only the **conference-id** is given, along with the attribute **static**, which is a Boolean value in the **conference-info** element that tells the **Focus Factory** to make it a static meeting if "true"<6>. If set to "false" a non-static meeting is created.

2.2.2.2 modifyConference Request

A **modifyConference** request is used to modify the details of an existing **conference** and is identified by a **request** element containing a **modifyConference** child element. The **modifyConference** child element MUST use the following element hierarchy:

```

modifyConference
└─conference-info

```

Figure 6: modifyConference request element hierarchy

The syntax for the **conference-info** element is exactly as specified for the **addConference** request with the following additional restrictions:

- The version attribute MUST be set to the current version of the conference.

Note that static conferences cannot be modified because they are created on the server. The only operations that are allowed on static conferences are querying whether a static conference exists, creating a static conference, and deleting a static conference.

2.2.2.3 deleteConference Request

A **deleteConference** request is used to delete an existing **conference** and is identified by a **request** element containing a **deleteConference** child element. The **deleteConference** child element MUST use the following element hierarchy. To delete a static meeting, the client MUST send a **deleteConference** with static bit set.

```

deleteConference
└─conferenceKeys

```

Figure 7: deleteConference request element hierarchy

The **conferenceKeys** element indicates the conference to be deleted. This element MUST specify the following attributes:

- **conference-id**: This attribute is in the extension namespace and MUST be set to the **Conference-Id** of the conference to be deleted.
- **Static**: This attribute is an optional Boolean attribute that MUST be set to "true" to delete static conferences. For non-static conferences, the **static** attribute does not need to be specified.

2.2.2.4 getConference Request

A **getConference** request is used to obtain the details of an existing **conference** and is identified by a **request** element containing a **getConference** child element. The **getConference** child element MUST use the following element hierarchy

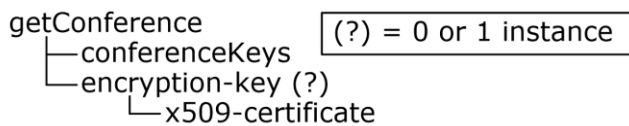


Figure 8: getConference request element hierarchy

The **conferenceKeys** element indicates the conference whose details are to be obtained. This element MUST specify the following attribute:

- **conference-id:** This attribute is in the extension namespace and MUST be set to the **Conference-Id** of the conference whose details are to be retrieved.

The **encryption-key** element, when specified, provides an **X.509 certificate** containing a public key. This element MUST specify the following child element:

- **x509-certificate:** The value of this element MUST be a string encoded with **base64 encoding**. The string MUST represent an X.509 certificate, MUST have a **public key** and MUST NOT have a **private key**.

2.2.2.5 getConferences Request

A **getConferences** request is used to obtain a list of **conferences** created by an **organizer** and is identified by a **request** element containing a **getConferences** child element. The **getConferences** element MUST have no child elements.

To locate the static conference, clients send a **getConferences** command with the **static** attribute, which is a Boolean value, set to "true". The **static** attribute is optional, with its default value being "false".

If the user sets static value as "true", the response of the command also has the **static** attribute set to "true", to reassure clients that the server is returning static conferences. <7>

If the **getConferences** request has **static** as "false", the response of the command also has the **static** attribute set to "false", to reassure clients that the server is returning non-static conferences. <8> .

2.2.2.6 getEncryptionKey Request

A **getEncryptionKey** request is used to obtain a **certificate** from the **Focus Factory** containing a public key. The public key is used for encrypting sensitive information to be sent to the Focus Factory. Encrypting sensitive information is necessary to ensure that any logging being performed by intermediate servers that exist between the protocol client application and the Focus Factory will not be able to decipher the sensitive information.

A **getEncryptionKey** request is identified by a **request** element containing a **getEncryptionKey** child element. The **getEncryptionKey** element MUST have no child elements.

2.2.2.7 getAvailableMcuTypes Request

A **getAvailableMcuTypes** request is used to obtain the **MCU-Types** available for use in a **conference** and is identified by a **request** element containing a **getAvailableMcuTypes** child

element. The **getAvailableMcuTypes** element MUST have no child elements. The **getAvailableMcuTypes** element SHOULD NOT include the **server-mode** attribute [<9>](#).

The **server-mode** attribute no longer affects which MCU-Types appear in the response. The behavior now defaults to what was previously known as server mode 14.

2.2.2.8 getConferencingCapabilities Request

This section follows the product behavior described in product behavior note [<10>](#).

A **getConferencingCapabilities** request is used to obtain information about the capabilities available for use in a **conference**, as well as available **MCU-Types**. It is identified by a request element containing a **getConferencingCapabilities** child element. The **getConferencingCapabilities** element MUST have no child elements. The **getConferencingCapabilities** element SHOULD NOT include the **server-mode** attribute [<11>](#).

The **server-mode** attribute is no longer affects which MCU-Types appear in the response. The behavior now defaults to what was previously known as server mode 14.

2.2.3 Responses

A response that is not a 400 SIP response MUST use the **response** root element. The **response** root element and all its child elements MUST belong to the namespace "urn:ietf:params:xml:ns:cccp" unless specified as belonging to an extension namespace. All attributes MUST belong to no namespace unless specified as belonging to the extension namespace. Elements and attributes belonging to an extension namespace MUST belong to the namespace "http://schemas.microsoft.com/rtc/2005/08/confinfoextensions", "http://schemas.microsoft.com/rtc/2008/12/confinfoextensions", or "http://schemas.microsoft.com/rtc/2005/08/cccpextensions".

The **response** element MUST contain the following attributes:

- **requestId**: MUST be set to the value obtained from the **requestId** attribute of the corresponding request.
- **from**: Specifies the source of the response and MUST be set to the value obtained from the **to** attribute of the corresponding request.
- **to**: Specifies the target of the response and MUST be set to the value obtained from the **from** attribute of the corresponding request.
- **code**: Indicates whether the corresponding request succeeded or failed and MUST be the string value "success" or "failure".

The **response** element can contain the following attribute:

- **C3PVersion**: MUST be set to "1".

The **response** element MUST contain exactly one child element. The child element identifies the type of response. The different types of responses are subsequently defined.

2.2.3.1 addConference Response

An **addConference** response indicates the status of the corresponding **addConference** request and is identified by a **response** element containing an **addConference** child element. The **addConference** child element MUST use the following element hierarchy:

addConference
└─conference-info (?) (?) = 0 or 1 instance

Figure 9: addConference response element hierarchy

The **addConference** element contains the following attribute:

- **Reason:** When the code attribute of the enclosing **response** element is "success", this attribute SHOULD NOT be used. When the code attribute of the enclosing **response** element is "failure", this attribute indicates the cause of the failure. The value of this attribute SHOULD be one of the following strings to specify the problem found in the corresponding request:
 - "anonymousUsersNotAllowed": The **organizer** is not authorized to create **conferences** with the admission policy set to "anonymous".
 - "conferenceExistsAlready": The specified **conference-id** element already exists for this organizer.
 - "entitySettingsTooLarge": The size of the XML in the **entity-settings** element exceeds the size allowed by the **Focus Factory**. The maximum size of the XML in the **entity-settings** element is implementation specific.
 - "federatedUsersNotAllowed": The organizer is not authorized to create conferences with **federated users** or the federation is not enabled.
 - "invalidAdmissionPolicy": The **admission-policy** element is missing.
 - "invalidConferenceId": The **conference-id** element does not follow the specified message syntax.
 - "invalidEncryptionKeyUsed": The **certificate** used for encrypting the conference key is stale.
 - "invalidExpiryTime": The **expiry-time** element does not follow the specified message syntax.
 - "invalidPasscode": The conference-key could not be decrypted or does not follow the specified message syntax. This reason attribute is also returned when the conference-key element is not specified. [<12>](#)
 - "invalidRole": The **roles** element does not follow the specified message syntax.
 - "invalidUserEntity": The **entity** attribute of the **user** element does not follow the specified message syntax.
 - "invalidVersion": The value of the **version** attribute of the **conference-info** element is not equal to the current version of the conference.
 - "maxConferencesExceeded": The organizer has exceeded the Focus Factory quota for the maximum number of conferences allowed. The maximum number of conferences is implementation specific.
 - "mcuTypeNotAvailable": The **MCU-Type** value specified by the **entity** attribute of each **entity-view** element in the **conference-view** element is not available. MCU-Type is specified in detail in [\[MS-CONFBAS\]](#).
 - "notificationDataTooLarge": The size of the XML in the **notification-data** element exceeds the size allowed by the Focus Factory. The maximum size of the XML in the **notification-data** element is implementation specific.

- "organizerRoamingDataTooLarge": The size of the XML in the **organizer-roaming-data** element exceeds the size allowed by the Focus Factory. The maximum size of the XML in the **organizer-roaming-data** element is implementation specific.
- "maxStaticMeetingsExceeded": The number of static meetings created exceeds the size allowed. Note that there can only be one static meeting per user.
- "invalidStaticMeetingRequest": The static meeting request does not follow the specified message syntax.
- "invalidAutopromoteValue": The value for **autopromote** is not supported by the server.
- "pstnLobbyBypassNotAllowed": The user is not allowed to create conferences where **PSTN** users can bypass the **lobby**.
- "pstnBridgeNotEnabled": The user attempted to create a conference with **pstn-access** specified but is not allowed to create PSTN conferences.
- "pstnMeetingIdCannotBeSpecified": The **pstn-access** element does not follow the specified message syntax as specified in [MS-CONFBAS].
- "otherFailure": The cause of the failure is not clearly established. This reason MUST be used when a failure is not caused by one of the other reasons outlined here (for example, if it is caused by memory exhaustion on the server). It SHOULD NOT be used if another reason describes the failure.

The **conference-info** element MUST be specified when the **code** attribute of the enclosing **response** element is "success" and MUST NOT be specified when the **code** attribute is "failure". The syntax for the **conference-info** element is defined in section [2.2.1](#). The following additional restrictions apply to the **conference-info** element:

- The entity attribute MUST be the **conference-URI**.
- The state attribute MUST be specified and set to "partial".
- The version attribute MUST be specified and set to "1".
- The conference-description child elements SHOULD [<13>](#) be specified.

2.2.3.2 modifyConference Response

A **modifyConference** response indicates the status of the corresponding **modifyConference** request and is identified by a **response** element containing a **modifyConference** child element. The **modifyConference** child element MUST use the following element hierarchy:

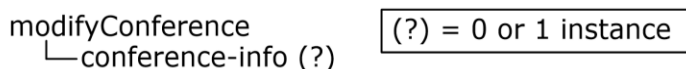


Figure 10: modifyConference response element hierarchy

The syntax for the **modifyConference** element and its **conference-info** child element is exactly as defined for the **addConference** response with the additional restriction that the **version** attribute MUST be set to the current version of the **conference**. Also the **reason** attribute SHOULD be the string "conferenceDoesNotExist" when the conference being modified does not exist at the **Focus Factory**.

2.2.3.3 deleteConference Response

A **deleteConference** response indicates the status of the corresponding **deleteConference** request and is identified by a **response** element containing a **deleteConference** child element. The **deleteConference** element SHOULD have no child elements.

The **deleteConference** element can contain the following attribute:

- **reason:** When the **code** attribute of the enclosing **response** element is "success", this attribute SHOULD NOT be used. When the **code** attribute of the enclosing **response** element is "failure", this attribute indicates the cause of the failure. The value of this attribute SHOULD be one of the following strings to specify the problem found in the corresponding request:
 - "conferenceDoesNotExist": The **conference** being deleted does not exist at the **Focus Factory**.
 - "staticFlagDoesntMatch": An attempt was made to delete a static meeting without setting the **static** attribute to "true" or an attempt was made to delete a non-static meeting with the **static** attribute set to "true".
 - "otherFailure": The cause of the failure is not clearly established. This reason MUST be used when a failure is not caused by one of the other reasons outlined here (for example, if it is caused by memory exhaustion on the server). It SHOULD NOT be used if another reason describes the failure.

2.2.3.4 getConference Response

A **getConference** response indicates the status of the corresponding **getConference** request and returns the requested details. A **getConference** response is identified by a **response** element containing a **getConference** child element. The **getConference** child element MUST use the following element hierarchy:

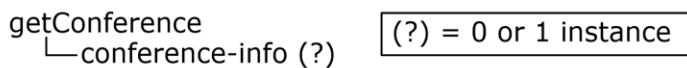


Figure 11: getConference response element hierarchy

The **getConference** element can contain the following attribute:

- **reason:** When the **code** attribute of the enclosing **response** element is "success", this attribute SHOULD NOT be used. When the code attribute of the enclosing **response** element is "failure", this attribute indicates the cause of the failure. The value of this attribute SHOULD be one of the following strings to specify the problem found in the corresponding request:
 - "conferenceDoesNotExist": The **conference** does not exist at the **Focus Factory**.
 - "invalidEncryptionKey": The specified **encryption-key** cannot be used.
 - "otherFailure": The cause of the failure is not clearly established. This reason MUST be used when a failure is not caused by one of the other reasons outlined here (for example, if it is caused by memory exhaustion on the server). It SHOULD NOT be used if another reason describes the failure.

The **conference-info** element MUST be specified when the **code** attribute of the enclosing **response** element is "success" and MUST NOT be specified when the **code** attribute is "failure". The syntax for the **conference-info** element is defined in section [2.2.1](#). The following additional restrictions apply to the **conference-info** element:

- The **entity** attribute MUST be set to the **conference-URI**.

- The **state** attribute MUST be specified and set to "full".
- The **version** attribute MUST be specified and set to the current version of the conference.
- The **last-activate** element SHOULD be specified if the conference has ever been activated by a **participant**. It SHOULD NOT be specified, otherwise.
- The **is-active** element SHOULD be specified when the value is "true". It SHOULD NOT be specified otherwise.
- The **organizer-roaming-data** and **notification-data** elements MUST be specified if those elements were present in the conference creation request. They MUST NOT be specified otherwise.

2.2.3.5 getConferences Response

A **getConferences** response indicates the status of the corresponding **getConferences** request and returns the list of **conferences** created by the **organizer** that sent the request. A **getConferences** response is identified by a **response** element containing a **getConferences** child element. The **getConferences** child element MUST use the following element hierarchy:

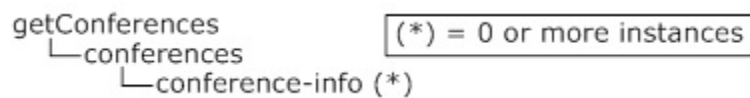


Figure 12: getConferences response element hierarchy

The **getConferences** element can contain the following attribute:

- **reason:** When the **code** attribute of the enclosing **response** element is "success", this attribute SHOULD NOT be used. When the **code** attribute of the enclosing **response** element is "failure", this attribute indicates the cause of the failure. The value of this attribute SHOULD be one of the following strings to specify the problem found in the corresponding request:
 - "otherFailure": The cause of the failure is not clearly established (for example, if it is caused by memory exhaustion on the server). It SHOULD NOT be used if another reason describes the failure.

The **conferences** element contains **conference-info** child elements, one for each conference. The syntax for each **conference-info** element is defined in section [2.2.1](#). The following additional restrictions apply to the **conference-info** element:

- The **entity** attribute MUST be set to the **conference-URI**.
- The **state** attribute MUST be specified and set to "partial".
- The **version** attribute MUST be specified and set to the current version of the conference.
- The **conference-id**, **admission-policy** elements of **conference-description** MUST be specified.

2.2.3.6 getEncryptionKey Response

A **getEncryptionKey** response indicates the status of the corresponding **getEncryptionKey** request and returns the **Focus Factory certificate** containing a public key for encryption. A **getEncryptionKey** response is identified by a **response** element containing a **getEncryptionKey** child element. The **getEncryptionKey** child element MUST use the following element hierarchy:

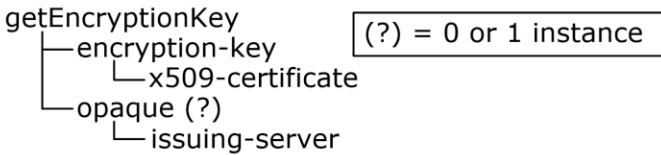


Figure 13: getEncryptionKey response element hierarchy

The **getEncryptionKey** element can contain the following attribute:

- **reason:** When the **code** attribute of the enclosing **response** element is "success", this attribute SHOULD NOT be used. When the **code** attribute of the enclosing **response** element is "failure", this attribute indicates the cause of the failure. The value of this attribute SHOULD be one of the following strings to specify the problem found in the corresponding request:
 - "otherFailure": The cause of the failure is not clearly established (for example, if it is caused by memory exhaustion on the server). It SHOULD NOT be used if another reason describes the failure.

The **getEncryptionKey** element MUST contain an **encryption-key** child element and can contain an **opaque** element, both of which are in the extension namespace.

The **encryption-key** element provides an **X.509** certificate containing a public key. This element MUST specify the following child element:

- **x509-certificate:** The value of this element MUST be a string encoded with **base64 encoding**. The string MUST represent an X.509 certificate with only a public key and no private key.

The **opaque** element contains information that is specific to a Focus Factory and MUST NOT be interpreted by a protocol client application. This element contains the following child element:

- **issuing-server:** This element contains a string value that specifies the **FQDN** of the server issuing the public key for encrypting the **conference** key.

2.2.3.7 getAvailableMcuTypes Response

A **getAvailableMcuTypes** response indicates the status of the corresponding **getAvailableMcuTypes** request and returns the list of **MCU-Types** available at the **Focus Factory**. A **getAvailableMcuTypes** response is identified by a **response** element containing a **getAvailableMcuTypes** child element. The **getAvailableMcuTypes** child element MUST use the following element hierarchy:



Figure 14: getAvailableMcuTypes response element hierarchy

The **getAvailableMcuTypes** element can contain the following attribute:

- **reason:** When the **code** attribute of the enclosing **response** element is "success", this attribute SHOULD NOT be used. When the **code** attribute of the enclosing **response** element is "failure", this attribute indicates the cause of the failure. The value of this attribute SHOULD be one of the following strings to specify the problem found in the corresponding request:
 - "otherFailure": The cause of the failure is not clearly established (for example, if it is caused by memory exhaustion on the server). It SHOULD NOT be used if another reason describes the failure.

The **getAvailableMcuTypes** element MUST contain an **mcu-types** child element. An **mcu-types** element contains zero or more **mcuType** elements.

mcuType: A string value that represents a type of MCU that can be used in a **conference**. The **mcuType** has the same value space as the **purpose** subelement of the **conf-uris**. [MS-CONFBAS] section 2.2.2.4 specifies the allowed values. This list MUST NOT include the **mcuType** "meeting" <14>.

2.2.3.8 getConferencingCapabilities Response

This section follows the product behavior described in product behavior note <15>.

A **getConferencingCapabilities** response indicates the status of the corresponding **getConferencingCapabilities** request and returns conferencing capabilities for the **Focus Factory** along with a list of **MCU-Types** available at the Focus Factory. A **getConferencingCapabilities** response is identified by a **response** element containing a **getConferencingCapabilities** child element. The **getConferencingCapabilities** child element MUST use the following element hierarchy.

```

getConferencingCapabilities
|
|-- Mcu-types
|   |--McuType (*)
|-- pstn-bridging (?)
|   |--enabled
|   |--access-numbers (?)
|       |--internal-url (?)
|       |--external-url (?)
|       |--region (*)
|           |--access-number (*)
|               |--language (*)
|               |--number
|               |--toll-free
|       |--default-region (?)
|--conference-key-optional (?)
|--anonymous-scheduling (?)
|--default-admission-policy (?)
|--schedule-locked ?)(E)
|--autopromote-allowed ?)(E)
|--default-autopromote ?)(E)
|--pstn-lobby-bypass-allowed ?)(E)
|--static-meeting-limit ?)(E)
|--default-meeting-static ?)(E)
|--recording-allowed ?)(E)
|--externaluser-recording-allowed ?)(E)
|--schedule-key-optional ?)(E)
|--default-entry-exit-announcements ?)(E)
|--custom-invite ?)(E)
|   |--logo-url ?)(E)
|   |--legal-url ?)(E)
|   |--help-url ?)(E)
|   |--custom-footer-text ?)(E)
|--endorse-allowed ?)(E)
|--main-video-mute-allowed ?)(E)
|--pano-video-mute-allowed ?)(E)
|--im-mute-allowed ?)(E)
|--questions-and-answers-allowed ?)(E)
|--in-room-user-notification-supported ?)(E)

```

(?) = 0 or 1 instance
 (*) = 0 or more instances
 E = Extension

Figure 15: getConferencingCapabilities element hierarchy

The **getConferencingCapabilities** element can contain **reason** and **capability-version** attributes.

- **reason:** When the **code** attribute of the enclosing **response** element is "success", this attribute SHOULD NOT be used. When the **code** attribute of the enclosing **response** element is "failure", this attribute indicates the cause of the failure. The value of this attribute SHOULD be one of the following strings to specify the problem found in the corresponding request:
 - "otherFailure": The cause of the failure is not clearly established (for example, if it is caused by memory exhaustion on the server). It SHOULD NOT be used if another reason describes the failure.
- **capability-version:** A non-negative integer value specifying the set of capabilities advertised in this response. When the **code** attribute of the enclosing **response** element is "success", this attribute SHOULD be used. A Focus Factory compliant to this revision of this protocol SHOULD specify 0 when this attribute is used. The **capability-version** is not used when the **code** attribute of the enclosing **response** element is not "success".

The **getConferencingCapabilities** element MUST contain an **mcu-types** child element and an **anonymous-scheduling** element and can contain all of the other child elements. An **mcu-types** element contains zero or more **mcuType** elements.

- **mcuType:** A string value that represents a type of **MCU** that can be used in a **conference**. The **mcuType** element has the same value space as the **purpose** subelement of the **conf-uris** element. For specification of the allowed values, see [\[MS-CONFAS\]](#) section 2.2.2.4. This list MUST NOT include the **mcuType** "meeting"<16>.

anonymous-scheduling: A Boolean value that represents whether the Focus Factory can create conferences with the "anonymous" value for **admission-policy**. For details of the **admission-policy**, see section [2.2.1.2](#). If the value is **true**, the Focus Factory MUST allow "anonymous" as a value for **admission-policy**. If **false**, the Focus Factory MUST NOT allow "anonymous" as a value for **admission-policy**.

conference-key-optional: This field is deprecated and SHOULD NOT be used.

default-admission-policy: This value specifies an admission-policy that clients SHOULD use as the default when creating a new conference. It can be overridden by user input.

schedule-locked: A Boolean value that, if **true**, indicates that the client can schedule locked meetings.<17> If **false**, indicates that the client cannot schedule locked meetings.

schedule-key-optional: This field is deprecated and SHOULD NOT be used.

recording-allowed: A Boolean value that represents whether recording is allowed for the conference.<18> If **true**, recording is allowed, else if **false**, it is not allowed.

externaluser-recording-allowed: A Boolean value that, if **false**, indicates that an external user cannot record during the conference. If **true**, indicates that an external user can record during the conference. This value is applicable only if **recording-allowed** is **true**.<19> The term "external user" is defined in [\[MS-SIPRE\]](#).

autopromote-allowed: An unsigned integer that indicates the supported levels of people who can be automatically escalated to presenter when they join the meeting. This value is a bitmask. Bits with value 1 in the binary representation of the number indicate classes of **participants** who are escalated in this manner. If a particular bit is set, all less significant bits defined SHOULD also be set. Bits not defined by this specification are reserved for future use and MUST be 0. The allowed masks are as follows:<20>

- None: 0x00000000 (as default)

- Everyone: 0x80000000 (bit 31)
- Company (Authenticated users): 0x00008000 (bit 15)

default-autopromote: An unsigned integer that indicates what the default autopromote value is if it is not specified in **addConference** or **modifyConference**. The bit mask values are the same as those specified for **autopromote-allowed**.<21>

pstn-lobby-bypass-allowed: A Boolean that indicates whether the server supports **PSTN** users bypassing the **lobby** when they join the meeting. If the value is **true**, the client can enable this bypass. If **false**, the client cannot enable this bypass.<22>

static-meeting-limit: This is an integer value that indicates the number of static meetings the user can have. The maximum value is 1.<23>

default-meeting-static: This Boolean value indicates whether the default meeting type is static. If this value is **true**, the client uses the same preexisting static meeting coordinates in all meeting invites. If this value is **false**, by default, the client creates a new meeting. How to create a conference is described in section 3.1.4.1.<24>

default-entry-exit-announcements: This Boolean value indicates the recommended default that the client uses for the entry-exit announcement feature when creating a meeting. If this value is **true**, the client will, by default, turn on the entry-exit announcement feature when scheduling meetings. If **false**, the client will turn off the entry-exit announcement feature. End-user or client can always choose a non-default value for this feature.<25> If the entry-exit announcement feature is enabled, the announcement will be played to all participants of the conference when a participant enters or exits the conference.

The **pstn-bridging** element MUST contain the following child elements:

- **enabled:** A Boolean value that indicates whether the server supports PSTN bridging. If **true**, the PSTN bridging is supported, else if **false**, it is not supported.
- **access-numbers:** A container for links and access numbers related to dial-in from the PSTN. It SHOULD contain the following child elements:
 - **internal-url:** A **Hypertext Transfer Protocol (HTTP)** link to a location where clients can get more information about the PSTN bridging numbers available to them if they are in the corporate network.
 - **external-url:** An HTTP link to a location where clients can get more information about the PSTN bridging numbers available to them if they are outside of the corporate network.
 - **region:** A group of access numbers applicable in the same geographic region. A region MUST contain the name attribute, which is a string giving a name for the region. A region MUST contain the following child elements:
 - **access-number:** An individual access number for PSTN access. An access-number MUST contain the following elements:
 - **language:** A representation of a language that the access number can interact with users in. The first language listed SHOULD indicate the default language used by the access number. A language MUST have a tag attribute that gives the identity of the language, as a value in the XML schema type for language. It MUST also have an **lcid** attribute, which gives the language as an unsigned integer, in the value space defined by [\[MS-LCID\]](#).
 - **number:** A string value giving a human readable phone number at which the access number can be reached.
 - **toll-free:** A Boolean value that indicates if the access number is toll-free.

- **default-region:** A string value giving the client a hint about which region of access numbers to emphasize in a user interface. This value SHOULD equal the **name** of the **region** that most closely matches the user's usual physical locale.

custom-invite: The **custom-invite** element MAY contain the following child elements: [<26>](#)

- **logo-url:** An HTTP link to a location where clients can get a logo to render for the customized invite. [<27>](#)
- **legal-url:** An HTTP link that clients can render for legal information for the customized invite. [<28>](#)
- **help-url:** An HTTP link that clients can render for help information for the customized invite. [<29>](#)
- **settings-url:** An HTTP link that clients can render to display link to user settings page for the customized invite. [<30>](#)
- **custom-footer-text:** A string value that clients can use to render a custom footer for the customized invite. [<31>](#)

endorse-allowed: Specifies whether the server hosting the conference allows the use of the Endorse User command defined in [MS-CONFBAS] section 2.2.3.5. [<32>](#)

main-video-mute-allowed: Specifies whether the server hosting the conference allows scheduling conferences that specify hard mute of the main video, defined in [MS-CONFAV] section 6.2. [<33>](#)

pano-video-mute-allowed: Specifies whether the server hosting the conference allows scheduling conferences that specify hard mute of the panoramic video, defined in [MS-CONFAV] section 6.2. [<34>](#)

im-mute-allowed: Specifies whether the server hosting the conference will allow a conference presenter to mute instant messaging in the conference.

questions-and-answers-allowed: Specifies whether the server hosting the conference supports the questions and answers feature.

in-room-user-notification-supported: Specifies whether the server hosting the conference supports the in-room user notification feature.

3 Protocol Details

3.1 Client Details

This section documents protocol client application details.

3.1.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

Outstanding Request Queue (ORQ): A list of request IDs, one for each request sent to the **Focus Factory** for which a response has not yet been received.

3.1.2 Timers

Request Timer: A type of timer, an instance of which is associated with each request ID in the ORQ. It SHOULD go off 32 seconds after the request is placed in the ORQ.

3.1.3 Initialization

Before any requests can be sent to the **Focus Factory** an implementation MUST obtain the **organizer SIP URI** and Focus Factory URI because those values are necessary for constructing requests.

3.1.4 Higher-Layer Triggered Events

3.1.4.1 Create a Conference

When an **organizer** intends to create a **conference**, the protocol client application MUST use the following steps:

1. Create a unique **Conference-Id** for this organizer.
2. Send an **addConference** request using the steps specified in section [3.1.7.1](#) and wait for an **addConference** response.

When an organizer intends to create a static conference, the protocol client application MUST use the following steps:

1. Check if the static conference is already created by doing a GetConferences call with the **static** attribute set to "true".
2. If the static conference exists, use the conference-id returned in the response to do a GetConference call to get the details of the static meeting.
3. If the static meeting does not exist, do an **addConference** call with **static** set to "true" to create a static meeting.

3.1.4.2 Modify a Conference

When an **organizer** intends to modify a **conference**, the protocol client application MUST use the following steps:

1. Obtain all current details of the conference using the steps in section [3.1.4.5](#).
2. Obtain the current version of the conference from the current conference details.
3. Ensure that the version of the conference specified by the higher layer equals the current version. If it does not, stop processing, provide the higher layer the current conference details, and have the higher layer reissue the request. Version mismatches can happen when the organizer uses the protocol client application from multiple locations and all locations have not synchronized to the latest version.
4. Perform the same steps as those used to create a conference in section [3.1.4.1](#) with the following exceptions:
5. Send a **modifyConference** request instead of an **addConference** request.
6. Set the **version** attribute of **conference-info** to the value obtained in Step 2.
7. Wait for a **modifyConference** response.

3.1.4.3 Delete a Conference

When an **organizer** intends to delete a **conference**, the protocol client application MUST send a **deleteConference** request using the steps specified in section [3.1.7.1](#) and wait for a **deleteConference** response.

To delete a static conference, make sure that the optional **static** attribute is set to "true" in the delete request.

3.1.4.4 Query for a List of Conferences

To obtain a list of the **conferences** of an **organizer**, the protocol client application MUST send a **getConferences** request using the steps specified in section [3.1.7.1](#) and wait for a **getConferences** response.

To obtain information about the static conference of an organizer, the protocol client MUST send a **getConferences** request with the **static** attribute set to "true" and wait for the response.

3.1.4.5 Query for the Details of a Conference

To obtain the details of an existing **conference** of an **organizer**, the protocol client application MUST use the following steps:

1. Create a self-signed **certificate** as a string encoded with **base64 encoding** containing the certificate formatted as specified in section [3.1.7.3](#), using the Cryptographic Message Syntax as specified in [\[RFC3852\]](#).
2. Create an appropriate **getConference** request, as specified in section [2.2.2.4](#).
3. Assign the self-signed certificate to the **x509-certificate** child element of the **encryption-key** element.
4. Send a **getConference** request using the steps specified in section [3.1.7.1](#) and wait for a **getConference** response.

Optionally, if the organizer does not need to obtain the **conference-key**, a **getConference** request can be issued without passing a self-signed certificate, thus avoiding step 1 and step 3.

3.1.4.6 Obtain an Encryption key

When an **organizer** intends to get the encryption key of the conference, the protocol client application MUST send a **getEncryptionKey** request using the steps specified in section [3.1.7.1](#) and wait for a **getEncryptionKey** response.

3.1.4.7 Obtain a List of MCU-Types

When creating a **conference**, an **organizer** can explicitly specify the **MCU-Types** to be made available for the conference and, optionally, any MCU-specific settings. Before such a conference can be created, the client application MUST first retrieve the list of MCU-Types available from the **Focus Factory**. This list is obtained by sending a **getAvailableMcuTypes** request using the steps specified in section [3.1.7.1](#) and waiting for a **getAvailableMcuTypes** response, or by sending a **getConferencingCapabilities** request [<35>](#) using the steps specified in section [3.1.7.1](#) and waiting for a **getConferencingCapabilities** response.

The application SHOULD NOT indicate the **server-mode** it intends to schedule a conference in, so that appropriate MCU-Types are returned [<36>](#), as specified in section [2.2.3.7](#).

3.1.4.8 Obtain Focus Factory Capabilities

This section follows the product behavior described in product behavior note [<37>](#).

When creating a **conference**, the protocol client application can discover the capabilities of the **Focus Factory**. The capabilities of the Focus Factory are obtained by sending a **getConferencingCapabilities** request using the steps specified in section [3.1.7.1](#) and waiting for a **getConferencingCapabilities** response.

The application SHOULD NOT indicate the **server-mode** it intends to schedule a conference in, so that appropriate MCU-Types are returned [<38>](#), as specified in section [2.2.3.8](#).

3.1.5 Message Processing Events and Sequencing Rules

3.1.5.1 Processing a SIP Response

A **200 OK SIP response code** indicates that the request was successfully processed by the **Focus Factory**. Any other response code indicates that the Focus Factory failed to process the request. When the response code is 200 OK, the body of the **SIP response** MUST be set. For any other response code, the body of the SIP response can be set. If the body is not set, return the failure SIP response code to the higher layer. When the body is set it MUST be one of the messages specified in section [2.2.3](#). The subsequent section specifies how such a response is processed.

3.1.5.2 Processing a Response

A protocol client application SHOULD use the following steps when processing a response:

1. Retrieve the body of the **SIP response** and parse to verify that it is well-formed XML.
2. Validate that the root element of the XML conforms to the response message syntax specified in section [2.2.3](#).
3. Retrieve the value of the **requestId** attribute from the **response** element. Verify and remove the specified **requestId** from the ORQ.
4. Identify the type of response by comparing the child element of the **response** element to the list of valid responses specified in section [2.2.3](#) and validate that the XML conforms to the message syntax for that response type.

If any of the preceding steps fail, stop further processing and notify the higher layer that the corresponding **SIP request** failed.

Record whether the corresponding request succeeded or failed by reading the **code** attribute of the **response** element.

The processing of each type of response is specified in subsequent sections of this protocol.

3.1.5.3 Processing an addConference Response

A protocol client application SHOULD use the following when processing an **addConference** response:

- If the response indicated failure, obtain the cause by reading the **reason** attribute from the **addConference** element, stop further processing, and indicate failure and return the reason to the higher layer.
- If the response indicated success, read the **conference-URI** from the **entity** attribute of the **addConference** element, return it to the higher layer, and indicate that the corresponding request succeeded.

3.1.5.4 Processing a modifyConference Response

A protocol client application SHOULD use the exact same steps as those specified in section [3.1.5.3](#) for processing an **addConference** response, with the exception that it references the **modifyConference** element instead of the **addConference** element wherever specified.

3.1.5.5 Processing a deleteConference Response

A protocol client application SHOULD use the following when processing a **deleteConference** response:

- If the response indicated failure, obtain the cause by reading the **reason** attribute from the **deleteConference** element, stop further processing, and indicate failure and return the reason to the higher layer.
- If the response indicated success, return success to the higher layer.

3.1.5.6 Processing a getConference Response

A protocol client application SHOULD use the following when processing a **getConference** response:

- If the response indicated failure, obtain the cause by reading the **reason** attribute from the **getConference** element, stop further processing, and indicate failure and return the reason to the higher layer.
- If the response indicated success, if a self-signed **certificate** was specified in the corresponding request and an encrypted **conference-key** is specified in the response, obtain the decrypted string by using the locally stored private key for the self-signed certificate sent in the corresponding **getConference** request. Return success to the higher layer along with the details retrieved from the **getConference** response.

3.1.5.7 Processing a getConferences Response

A protocol client application SHOULD use the following when processing a **getConferences** response:

- If the response indicated failure, obtain the cause by reading the **reason** attribute from the **getConferences** element, stop further processing, and indicate failure and return the reason to the higher layer.
- If the response indicated success, return success to the higher layer, along with the list of **conferences** obtained from the **getConferences** response.

3.1.5.8 Processing a getEncryptionKey Response

A protocol client application SHOULD use the following when processing a **getEncryptionKey** response:

- If the response indicated failure, obtain the cause by reading the **reason** attribute from the **getEncryptionKey** element, stop further processing, and indicate failure and return the reason to the higher layer.
- If the response indicated success, return success to the higher layer along with the values retrieved from the **encryption-key** element of the **getEncryptionKey** response.

3.1.5.9 Processing a getAvailableMcuTypes Response

A protocol client application SHOULD use the following processing a **getAvailableMcuTypes** response:

- If the response indicated failure, obtain the cause by reading the **reason** attribute from the **getAvailableMcuTypes** element, stop further processing, and indicate failure and return the reason to the higher layer.
- If the response indicated success, return success to the higher layer along with the list of **MCU-Types** obtained from the **mcu-types** element of the **getAvailableMcuTypes** response.

3.1.5.10 Processing a getConferencingCapabilities Response

This section follows the product behavior described in product behavior note [<39>](#).

A protocol client application SHOULD use the following when processing a **getConferencingCapabilities** response:

- If the response indicated failure, obtain the cause by reading the **reason** attribute from the **getConferencingCapabilities** element, stop further processing, and indicate failure and return the reason to the higher layer.
- If the response indicated success, return success to the higher layer, along with the anonymous scheduling capability flag obtained from the **anonymous-scheduling** child element of the **getConferencingCapabilities** element, and the list of **MCU-Types** obtained from the **mcu-types** child element of the **getConferencingCapabilities** element.

3.1.6 Timer Events

When a Request Timer goes off, if no **SIP response** for the associated request ID was received in that time interval, the corresponding request ID SHOULD be removed from the ORQ and the higher layer SHOULD be notified that the corresponding request timed out. If a SIP response was received for the associated request ID, do nothing.

3.1.7 Other Local Events

3.1.7.1 Send a Request

To send a request, the following steps SHOULD be followed:

1. Create an appropriate request using the message syntax specified for that request in section [2.2.2](#).
2. Send the request.
3. Store the **requestId** from the corresponding request in the ORQ.

3.1.7.2 Obtain a Focus Factory Certificate for Encryption

To obtain the **Focus Factory certificate** for encryption, the protocol client application MUST send a **getEncryptionKey** request using the steps specified in section [3.1.7.1](#) and wait for a **getEncryptionKey** response.

3.1.7.3 Create a Self-signed Certificate

The protocol client application SHOULD use any available **Cryptographic Application Programming Interface (CAPI) or CryptoAPI** on the local computer to create a self-signed **certificate**. The returned certificate MUST contain only the public key. The private key MUST be stored safely for later decryption.

3.2 Focus Factory Details

3.2.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

Conference Table: Stores a list of **conferences** indexed by the pair (**organizer, Conference-Id**). For each conference, it stores all fields specified in the Conference Data Model from section [2.2.1](#).

MCU Table: Stores a list of MCUs that are indexed by their **MCU-Types**.

Focus Factory Certificate: A **certificate** used for encrypting data sent from the protocol client application to the **Focus Factory**.

3.2.2 Timers

Conference Expiration Timer: A timer that SHOULD fire periodically at an implementation-specific interval.

3.2.3 Initialization

Initialize the **Focus Factory certificate** to a certificate configured for use by the Focus Factory.

3.2.4 Higher-Layer Triggered Events

None.

3.2.5 Message Processing Events and Sequencing Rules

3.2.5.1 Processing a SIP Request

The **Focus Factory** SHOULD take the following steps when processing any **SIP request**:

1. Retrieve the body of the SIP request and parse it to verify that it is well-formed XML.
2. Validate that the root element of the XML conforms to the request message syntax specified in section [2.2.2](#).
3. Identify the type of request by comparing the child element of the **request** element to the list of valid requests specified in section 2.2.2 and validate that the XML conforms to the message syntax for that request type.

If any of the steps in the previous procedure fail, stop further processing and return a 400 **SIP response code** with no body.

The processing of each of type of request is specified in subsequent sections of the protocol. In the following section, a success response means the response with "success" code attribute, and a failure response is the response with "failure" code attribute.

3.2.5.2 Processing an addConference Request

The **Focus Factory** SHOULD use the following steps when processing an **addConference** request:

1. Authorize the user for creating a **conference** with the specified admission policy. How to authorize a user is implementation specific.
2. If the **conference-key** element is specified and if the value specified in the containing **issuing-server** element is not for the server currently processing this request, verify that the specified server is a valid server and forward the request to that server.
3. If the **conference-key** element is specified, decrypt the specified conference key using the private key of the Focus Factory **certificate**.
4. If a **conference-view** element is present, validate the **mcuType** value specified in each **entity-view** element against the list of available **MCU-Types**.
5. Authorize the **entity** attribute of each **user** element to verify that the **organizer** is allowed to invite these **participants**. The procedure for authorizing a user is implementation specific.
6. Verify that the size of the XML contained within **notification-data**, **organizer-roaming-data**, and **entity-settings** does not exceed the configured maximum storage size.
7. Verify that the organizer has not reached his quota of the maximum number of conferences the organizer is allowed to have at any point in time.
8. Validate that the specified **Conference-Id** is not already in use by an existing conference for the sending organizer.
9. Create an entry in the Conference Table with **version** "1" and all other details retrieved from the **addConference** request, and send a "success" **addConference** response.

If any of the steps in the previous procedure fail, stop processing and send a failure **addConference** response with an appropriate **reason** attribute. Values for the reason attribute are specified in section [2.2.3.1](#).

3.2.5.3 Processing a modifyConference Request

The **Focus Factory** SHOULD use the same steps as those specified in section [3.2.5.2](#) for processing an **addConference** request, with the following exceptions:

- Send a **modifyConference** response anywhere an **addConference** response is mentioned.
- In the previous procedure, change step 8 to validate that a **conference** with the specified **Conference-Id** exists for the sending **organizer**, to verify that the value of the **version** attribute from the **conference-info** element equals the value stored in the Conference Table for the specified conference.
- In the previous procedure, change step 9 to replace the existing entry in the Conference Table with an entry with **version** one higher than the existing version and all other details taken from the **modifyConference** request, and send a "success" **modifyConference** response.

Values for the reason attribute in the response are specified in section [2.2.3.2](#).

3.2.5.4 Processing a deleteConference Request

The **Focus Factory** SHOULD use the following steps when processing a **deleteConference** request:

1. Validate that a **conference** with the specified **Conference-Id** exists for the sending **organizer**.
2. If the conference is currently active, communicate with the **focus** to deactivate the conference.
3. Remove the conference entry for the specified organizer and Conference-Id.
4. Send a success **deleteConference** response.

If any of the previous steps fail, stop processing and send a "failure" **deleteConference** response with an appropriate **reason** attribute. Values for the reason attribute are specified in section [2.2.3.3](#).

3.2.5.5 Processing a getConference Request

The **Focus Factory** SHOULD use the following steps when processing a **getConference** request:

1. Validate that a **conference** with the specified **Conference-Id** exists for the sending **organizer**.
2. Retrieve the details for the specified organizer and Conference-Id from the Conference Table to populate a **getConference** response. If an **encryption-key** is specified, and a **conference-key** exists for the conference, encrypt the **conference-key** using the public key from the specified **x509-certificate** and include it in the **getConference** response.
3. Send a "success" **getConference** response.

If any of the previous steps fail, stop processing and send a "failure" **getConference** response with an appropriate **reason** attribute. Values for the reason attribute are specified in section [2.2.3.4](#).

3.2.5.6 Processing a getConferences Request

The **Focus Factory** SHOULD retrieve the list of **conferences** and associated conference data for the specified **organizer** from the Conference Table to populate and send a "success" **getConferences** response.

If the previous procedure fails, stop processing and send a "failure" **getConferences** response with an appropriate **reason** attribute. Values for the reason attribute are specified in section [2.2.3.5](#).

3.2.5.7 Processing a **getEncryptionKey** Request

The **Focus Factory** SHOULD use the Focus Factory **certificate** to construct and send a **getEncryptionKey** response.

If the previous procedure fails, stop processing and send a failure **getEncryptionKey** response with an appropriate **reason** attribute. Values for the reason attribute are specified in section [2.2.3.6](#).

3.2.5.8 Processing a **getAvailableMcuTypes** Request

The **Focus Factory** SHOULD retrieve the list of **MCU-Types** available for serving **conferences** to populate and send a **getAvailableMcuTypes** response.

If the previous procedure fails, stop processing and send a "failure" **getAvailableMcuTypes** response with an appropriate **reason** attribute. Values for the reason attribute are specified in section [2.2.3.7](#).

The returned list MUST NOT contain the value "meeting" [<40>](#).

3.2.5.9 Processing a **getConferencingCapabilities** Request

The **Focus Factory** SHOULD [<41>](#) retrieve the list of **MCU** types available for serving **conferences** and the anonymous scheduling capability, and use this information to populate and send a **getConferencingCapabilities** response.

If the previous procedure fails, stop processing and send a "failure" **getConferencingCapabilities** response with an appropriate **reason** attribute. Values for the reason attribute are specified in section [2.2.3.8](#).

The returned list MUST NOT contain the value "meeting" [<42>](#).

3.2.6 Timer Events

3.2.6.1 Conference Expired

When the Conference Expiration Timer fires, the **Focus Factory** SHOULD find any **conference** in the Conference Table with an expiry-time that has passed with an added implementation-specific buffer and, if the conference is not active, delete the entry for that conference from the Conference Table.

3.2.7 Other Local Events

None.

4 Protocol Examples

4.1 Create a Conference

The following example is an **addConference** request from a protocol client application to the **Focus Factory**.

```
SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 72d6a36a36784cf58e7e7abla51deca2
CSeq: 1 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...
<request xmlns="urn:ietf:params:xml:ns:cccp"
xmlns:mscp="http://schemas.microsoft.com/rtc/2005/08/cccpextensions" C3PVersion="1"
to="sip:mhakim2@clientsemain.rtmp.selfhost.corp.microsoft.com;gruu;opaque=app:conf:focusfacto
ry" from="sip:mhakim2@clientsemain.rtmp.selfhost.corp.microsoft.com" requestId="68537848">
  <addConference>
    <ci:conference-info xmlns:ci="urn:ietf:params:xml:ns:conference-info" entity=""
xmlns:msci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">
      <ci:conference-description>
        <msci:conference-id>TPDD8VYG</msci:conference-id>
        <msci:admission-policy>openAuthenticated</msci:admission-policy>
        <cis:separator xmlns:cis="urn:ietf:params:xml:ns:conference-info-separator">
</cis:separator>
        <msci:pstn-access>
</msci:pstn-access>
        <cis:separator xmlns:cis="urn:ietf:params:xml:ns:conference-info-separator">
</cis:separator>
        <msci:autopromote>2147483648</msci:autopromote>
        <msci:pstn-lobby-bypass>true</msci:pstn-lobby-bypass>
      </ci:conference-description>
      <ci:conference-state>
        <locked xmlns="urn:ietf:params:xml:ns:conference-info">false</locked>
      </ci:conference-state>
      <msci:conference-view>
        <msci:entity-view entity="chat" />
        <msci:entity-view entity="audio-video" />
        <msci:entity-view entity="applicationsharing" />
        <msci:entity-view entity="data-conf" />
      </msci:conference-view>
    </ci:conference-info>
  </addConference>
</request>
```

The following example is a successful **addConference** response from a Focus Factory to a protocol client application.

```
SIP/2.0 200 OK
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 72d6a36a36784cf58e7e7abla51deca2
CSeq: 1 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<response C3PVersion="1"
requestId="1"
from="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
to="sip:alice@contoso.com"
code="success"
xmlns="urn:ietf:params:xml:ns:cccp">
  <addConference>
```

```

    <conference-info
      entity="sip:alice@contoso.com;gruu;opaque=app:conf:focus:id:SDFBSD12"
      state="partial"
      version="1"
      xmlns="urn:ietf:params:xml:ns:conference-info"/>
  </addConference>
</response>

```

The following example is a "failure" **addConference** response from a Focus Factory to a protocol client application.

```

SIP/2.0 403 anonymousUsersNotAllowed
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 72d6a36a36784cf58e7e7ab1a51deca2
CSeq: 1 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<response C3PVersion="1"
  requestId="1"
  from="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  to="sip:alice@contoso.com"
  code="failure"
  xmlns="urn:ietf:params:xml:ns:cccp">
  <addConference reason="anonymousUsersNotAllowed"/>
</response>

```

The following example is an **addConference** request to create a static meeting.

```

<addConference>
  <ci:conference-info xmlns:ci="urn:ietf:params:xml:ns:conference-info" entity=""
    xmlns:msci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions"
    static="true">
    <ci:conference-description>
      <msci:conference-id>WJ7UVUYO</msci:conference-id>
    </ci:conference-description>
  </ci:conference-info>
</addConference>

```

4.2 Modify a Conference

The following example is a **modifyConference** request from a client application to the **Focus Factory**.

```

SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 4del49885e5a4c598e64520a708c4739
CSeq: 2 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<request C3PVersion="1"
  requestId="2"
  from="sip:alice@contoso.com"
  to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  xmlns="urn:ietf:params:xml:ns:cccp"
  xmlns:msci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">
  <modifyConference>
    <conference-info entity=""

```

```

        version="1"
        xmlns="urn:ietf:params:xml:ns:conference-info">
<conference-description>
  <subject>Conference subject 2</subject>
  <msci:conference-id>SDFBSD12</msci:conference-id>
  <msci:expiry-time>2006-01-10T17:11:47Z</msci:expiry-time>
  <msci:admission-policy>openAuthenticated</msci:admission-policy>
  <msci:organizer-roaming-data>
    <AnyOrganizerXml/>
  </msci:organizer-roaming-data>
  <msci:notification-data>
    <AnyParticipantXml/>
  </msci:notification-data>
</conference-description>
<users>
  <user entity="sip:bob@contoso.com">
    <roles>
      <entry>presenter</entry>
    </roles>
  </user>
</users>
<msci:conference-view>
  <msci:entity-view entity="chat"/>
  <msci:entity-view entity="meeting">
    <msci:entity-settings>
      <settings
        xmlns="http://schemas.microsoft.com/rtc/2005/08/dataconfinfoextensions">
        <app-viewing-behavior>enableWithFullSharing</app-viewing-behavior>
        <conferencing-type>collaboration</conferencing-type>
      </settings>
    </msci:entity-settings>
  </msci:entity-view>
</msci:conference-view>
</conference-info>
</modifyConference>
</request>

```

The following example is a **modifyConference** request from a client application to the Focus Factory.

```

SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 4de149885e5a4c598e64520a708c4739
CSeq: 2 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<request C3PVersion="1"
  requestId="2"
  from="sip:alice@contoso.com"
  to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  xmlns="urn:ietf:params:xml:ns:cccp"
  xmlns:msci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">
  <modifyConference>
    <ci:conference-info xmlns:ci="urn:ietf:params:xml:ns:conference-info" entity=""
      xmlns:msci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions" version="2"
      static="false">
      <ci:conference-description>
        <ci:subject>test</ci:subject>
        <msci:conference-id>WJ7UVUYO</msci:conference-id>
        <msci:expiry-time>2010-03-01T15:00:00Z</msci:expiry-time>
        <msci:admission-policy>closedAuthenticated</msci:admission-policy>
        <msci:notification-data>
          <conference-origin>scheduled</conference-origin>
        </msci:notification-data>
        <ci:separator xmlns:ci="urn:ietf:params:xml:ns:conference-info-separator">
          </ci:separator>

```

```

    <msci:pstn-access>
  </msci:pstn-access>
  <cis:separator xmlns:cis="urn:ietf:params:xml:ns:conference-info-separator">
</cis:separator>
  <msci:autopromote>0</msci:autopromote>
  <msci:pstn-lobby-bypass>>false</msci:pstn-lobby-bypass>
</ci:conference-description>
<ci:conference-state>
  <locked xmlns="urn:ietf:params:xml:ns:conference-info">>false</locked>
</ci:conference-state>
<ci:users>
  <ci:user entity="sip:mhakim@fabrikam.com">
    <ci:roles>
      <ci:entry>presenter</ci:entry>
    </ci:roles>
  </ci:user>
</ci:users>
<msci:conference-view>
  <msci:entity-view entity="chat" />
  <msci:entity-view entity="audio-video">
    <msci:entity-settings>
      <msci:mediaFiltersRules>
        <msci:mayModifyOwnFilters>
          <msci:role>attendee</msci:role>
          <msci:value>>false</msci:value>
        </msci:mayModifyOwnFilters>
        <msci:initialFilters>
          <msci:role>attendee</msci:role>
          <msci:ingressFilter>block</msci:ingressFilter>
        </msci:initialFilters>
      </msci:mediaFiltersRules>
    </msci:entity-settings>
  </msci:entity-view>
  <msci:entity-view entity="applicationsharing" />
  <msci:entity-view entity="data-conf">
    <msci:entity-settings>
      <msdata:settings
xmlns:msdata="http://schemas.microsoft.com/rtc/2005/08/dataconfinfoextensions">
        <msdata:app-viewing-behavior>enableWithFullSharing</msdata:app-viewing-
behavior>
        <msdata:conferencing-type>collaboration</msdata:conferencing-type>
      </msdata:settings>
    </msci:entity-settings>
  </msci:entity-view>
</msci:conference-view>
</ci:conference-info>
</modifyConference>
</request>

```

The following example is a successful **modifyConference** response from a Focus Factory to a client application.

```

SIP/2.0 200 OK
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 4de149885e5a4c598e64520a708c4739
CSeq: 2 SERVICE
Content-Type: application/cv+xml
...Other SIP headers...

<response C3PVersion="1"
  requestId="2"
  from="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  to="sip:alice@contoso.com"
  code="success"
  xmlns="urn:ietf:params:xml:ns:cv+xml">
  <modifyConference>

```

```

    <conference-info
      entity="sip:alice@contoso.com;gruu;opaque=app:conf:focus:id:SDFBSD12"
      state="partial"
      version="2"
      xmlns="urn:ietf:params:xml:ns:conference-info"/>
  </modifyConference>
</response>

```

The following example is a "failure" **modifyConference** response from a Focus Factory to a protocol client application.

```

SIP/2.0 400 invalidConferenceId
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 4de149885e5a4c598e64520a708c4739
CSeq: 2 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<response C3PVersion="1"
  requestId="2"
  from="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  to="sip:alice@contoso.com"
  code="failure"
  xmlns="urn:ietf:params:xml:ns:cccp">
  <modifyConference reason="invalidConferenceId"/>
</response>

```

4.3 Delete a Conference

The following example is a **deleteConference** request from a protocol client application to the **Focus Factory**.

```

SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 8cb3cfd3d8384f59adeb1b3e5c237d84
CSeq: 3 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<request C3PVersion="1"
  requestId="3"
  from="sip:alice@contoso.com"
  to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  xmlns="urn:ietf:params:xml:ns:cccp"
  xmlns:misci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">
  <deleteConference>
    <conferenceKeys misci:conference-id="BGSDFJ12"/>
  </deleteConference>
</request>

```

The following example is a successful **deleteConference** response from a Focus Factory to a protocol client application.

```

SIP/2.0 200 OK
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 8cb3cfd3d8384f59adeb1b3e5c237d84
CSeq: 3 SERVICE
Content-Type: application/cccp+xml

```

```

...Other SIP headers...

<response C3PVersion="1"
  requestId="3"
  from="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  to="sip:alice@contoso.com"
  code="success"
  xmlns="urn:ietf:params:xml:ns:cccp">
  <deleteConference/>
</response>

```

The following example is a failure **deleteConference** response from a Focus Factory to a protocol client application.

```

SIP/2.0 404 conferenceDoesNotExist
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 8cb3cfd3d8384f59adeb1b3e5c237d84
CSeq: 3 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<response C3PVersion="1"
  requestId="3"
  from="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  to="sip:alice@contoso.com"
  code="failure"
  xmlns="urn:ietf:params:xml:ns:cccp">
  <deleteConference reason="conferenceDoesNotExist"/>
</response>

```

4.4 Query for a List of Conferences

The following example is a **getConferences** request from a protocol client application to the **Focus Factory**.

```

SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 11615b2791ae491a9c121d1d554a3e67
CSeq: 4 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<request C3PVersion="1"
  requestId="4"
  from="sip:alice@contoso.com"
  to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  xmlns="urn:ietf:params:xml:ns:cccp">
  <getConferences/>
</request>

```

The following example is a **getConferences** response from a Focus Factory to a protocol client application.

```

SIP/2.0 200 OK
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 11615b2791ae491a9c121d1d554a3e67
CSeq: 4 SERVICE
Content-Type: application/cccp+xml

```

...Other SIP headers...

```
<response C3PVersion="1"
  requestId="4"
  from="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  to="sip:alice@contoso.com"
  code="success"
  xmlns="urn:ietf:params:xml:ns:cccp"
  xmlns:msci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">
  <getConferences>
    <conferences>
      <conference-info
        entity="sip:alice@contoso.com;gruu;opaque=app:conf:focus:id:SDFBSD12"
        state="partial"
        xmlns="urn:ietf:params:xml:ns:conference-info">
        <conference-description>
          <subject>Conference subject 2</subject>
          <msci:conference-id>SDFBSD12</msci:conference-id>
          <msci:admission-policy>openAuthenticated</msci:admission-policy>
        </conference-description>
      </conference-info>
      <conference-info
        entity="sip:alice@contoso.com;gruu; opaque=app:conf:focus:id:JASDFD2A"
        state="partial"
        xmlns="urn:ietf:params:xml:ns:conference-info">
        <conference-description>
          <subject>Conference subject</subject>
          <msci:conference-id>JASDFD2A</msci:conference-id>
          <msci:admission-policy>anonymous</msci:admission-policy>
        </conference-description>
      </conference-info>
    </conferences>
  </getConferences>
</response>
```

The following example is a **getConferences** request to get the static meeting.

```
<request xmlns="urn:ietf:params:xml:ns:cccp"
  xmlns:mscp="http://schemas.microsoft.com/rtc/2005/08/cccpextensions" C3PVersion="1" to="sip:
  alice@contoso.com;gruu;opaque=app:conf:focusfactory" from=" alice@contoso.com"
  requestId="161651504">
  <getConferences static="true" />
</request>
```

The response to the preceding call is as follows.

```
<getConferences static="true">
  <conferences>
    <conference-info xmlns="urn:ietf:params:xml:ns:conference-info" entity="sip:
    alice@contoso.com;gruu;opaque=app:conf:focus:id:I5TQBR7J" state="partial" version="471">
      <conference-description>
        <conference-id
          xmlns="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">I5TQBR7J</conference-id>
          <admission-policy
            xmlns="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">openAuthenticated</admission-policy>
        </conference-description>
        <conference-state>
          <locked>>false</locked>
        </conference-state>
      </conference-info>
    </conferences>
```

```
</getConferences>
```

4.5 Query for the Details of a Conference

The following example is a **getConference** request from a protocol client application to the **Focus Factory**.

```
SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 5a27d6b1a82f4668be39db975d6fe184
CSeq: 5 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<request C3PVersion="1"
  requestId="5"
  from="sip:alice@contoso.com"
  to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  xmlns="urn:ietf:params:xml:ns:cccp"
  xmlns:msci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">
  <getConference>
    <conferenceKeys msci:conference-id="SDFBSD12"/>
  <msci:encryption-key>
    <msci:x509-certificate>123213789BC234D</msci:x509-certificate>
  </msci:encryption-key>
  </getConference>
</request>
```

The following example is a **getConference** response from a Focus Factory to a protocol client application.

```
SIP/2.0 200 OK
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 5a27d6b1a82f4668be39db975d6fe184
CSeq: 5 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<response C3PVersion="1"
  requestId="5"
  from="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  to="sip:alice@contoso.com"
  code="success"
  xmlns="urn:ietf:params:xml:ns:cccp"
  xmlns:msci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">
  <getConference>
    <conference-info entity=""
      version="2"
      xmlns="urn:ietf:params:xml:ns:conference-info">
      <conference-description>
        <subject>Conference subject 2</subject>
        <msci:conference-id>SDFBSD12</msci:conference-id>
        <msci:expiry-time>2006-01-10T17:11:47Z</msci:expiry-time>
        <msci:admission-policy>openAuthenticated</msci:admission-policy>
        <msci:organizer-roaming-data>
          <AnyOrganizerXml/>
        </msci:organizer-roaming-data>
        <msci:notification-data>
          <AnyParticipantXml/>
        </msci:notification-data>
      </conference-description>
    </conference-info>
  </getConference>
</response>
```



```

<users>
  <user entity="sip:bob@contoso.com">
    <roles>
      <entry>presenter</entry>
    </roles>
  </user>
</users>
<msci:conference-view>
  <msci:entity-view entity="chat"/>
  <msci:entity-view entity="meeting">
    <msci:entity-settings>
      <settings
        xmlns="http://schemas.microsoft.com/rtc/2005/08/dataconfinfoextensions">
        <app-viewing-behavior>enableWithFullSharing</app-viewing-behavior>
        <conferencing-type>collaboration</conferencing-type>
      </settings>
    </msci:entity-settings>
  </msci:entity-view>
</msci:conference-view>
</conference-info>
</getConference>
</response>

```

4.6 Obtaining an Encryption Key

The following example is a **getEncryptionKey** request from a protocol client application to the **Focus Factory**.

```

SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: e71edff2fd924af389cd334ba827049b
CSeq: 6 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<request C3PVersion="1"
  requestId="6"
  from="sip:alice@contoso.com"
  to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  xmlns="urn:ietf:params:xml:ns:cccp">
  <getEncryptionKey/>
</request>

```

The following example is a **getEncryptionKey** response from a Focus Factory to a protocol client application.

```

SIP/2.0 200 OK
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: e71edff2fd924af389cd334ba827049b
CSeq: 6 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<response C3PVersion="1"
  requestId="6"
  from="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  to="sip:alice@contoso.com"
  code="success"
  xmlns="urn:ietf:params:xml:ns:cccp"
  xmlns:msci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">
  <getEncryptionKey>

```

```

<msci:encryption-key>
  <msci:x509-certificate>123213789BC234D</msci:x509-certificate>
</msci:encryption-key>
<msci:opaque>
  <msci:issuing-server>server.contoso.com</msci:issuing-server>
</msci:opaque>
  </getEncryptionKey>
</response>

```

4.7 Obtaining a List of MCU-Types

The following example is a **getAvailableMcuTypes** request from a protocol client application to the **Focus Factory**.

```

SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 65a46bb0b6604f4b8bc3f47b3f225c46
CSeq: 7 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<request C3PVersion="1"
  requestId="7"
  from="sip:alice@contoso.com"
  to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  xmlns="urn:ietf:params:xml:ns:cccp">
  <getAvailableMcuTypes/>
</request>

```

The following example is a **getAvailableMcuTypes** response from a Focus Factory to a protocol client application.

```

SIP/2.0 200 OK
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 65a46bb0b6604f4b8bc3f47b3f225c46
CSeq: 7 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<response C3PVersion="1"
  requestId="7"
  from="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  to="sip:alice@contoso.com"
  code="success"
  xmlns="urn:ietf:params:xml:ns:cccp">
  <getAvailableMcuTypes>
    <mcu-types>
      <mcuType>audio-video</mcuType>
      <mcuType>chat</mcuType>
      <mcuType>meeting</mcuType>
      <mcuType>phone-conf</mcuType>
    </mcu-types>
  </getAvailableMcuTypes>
</response>

```

4.8 Obtaining Focus Factory Capabilities

This section follows the product behavior described in product behavior note.

The following example is a **getConferencingCapabilities** request from a protocol client application to the **Focus Factory**.

```
SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: <sip:alice@contoso.com>;tag=9351ecc992;epid=a66ef73c
To: <sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory>
Call-ID: e17bd575b39c4441a859dd87ca546c4b
CSeq: 5 SERVICE
Max-Forwards: 70
Content-Type: application/cccp+xml
...Other SIP headers...

<request requestId="1" from="sip:alice@contoso.com"
to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
xmlns="urn:ietf:params:xml:ns:cccp">
  <getConferencingCapabilities/>
</request>
```

The following example is a **getConferencingCapabilities** response from a Focus Factory to a protocol client application.

```
SIP/2.0 200 OK
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 65a46bb0b6604f4b8bc3f47b3f225c46
CSeq: 7 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<response C3PVersion="1" requestId="1"
from=sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory
to="sip:alice@contoso.com" code="success" xmlns="urn:ietf:params:xml:ns:cccp">
  <getConferencingCapabilities capability-version="0">
    <mcu-types>
      <mcuType>audiovideo</mcuType>
      <mcuType>meeting</mcuType>
      <mcuType>chat</mcuType>
      <mcuType>phone-conf</mcuType>
      <mcuType>applicationsharing</mcuType>
    </mcu-types>
    <anonymous-scheduling>true</anonymous-scheduling>
  </getConferencingCapabilities></response>
```

The following example is a **getConferencingCapabilities** request from a protocol client application to the Focus Factory.

```
SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 65a46bb0b6604f4b8bc3f47b3f225c46
CSeq: 7 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<request requestId="1" from="sip:alice@contoso.com"
to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
xmlns="urn:ietf:params:xml:ns:cccp">
  <getConferencingCapabilities/>
</request>
```

The following example is a **getConferencingCapabilities** response from a Focus Factory to a protocol client application.

```
SIP/2.0 200 OK
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 65a46bb0b6604f4b8bc3f47b3f225c46
CSeq: 7 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<response C3PVersion="1" requestId="1"
from=sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory to="sip:alice@contoso.com"
code="success" xmlns="urn:ietf:params:xml:ns:cccp"
xmlns:misci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions"
xmlns:misci2="http://schemas.microsoft.com/rtc/2008/12/confinfoextensions"
xmlns:mscp="http://schemas.microsoft.com/rtc/2005/08/cccpextensions">
  <getConferencingCapabilities capability-version="0">
    <mcu-types>
      <mcuType>applicationsharing</mcuType>
      <mcuType>audio-video</mcuType>
      <mcuType>data-conf</mcuType>
      <mcuType>chat</mcuType>
      <mcuType>phone-conf</mcuType>
    </mcu-types>
    <pstn-bridging>
      <enabled>>true</enabled>
      <access-numbers>
        <misci:internal-
url>https://tk5ucdfpl01.exchange.corp.microsoft.com:443/Dialin</misci:internal-url>
        <misci:external-url>https://lslm84.meet.microsoft.com:443/Dialin</misci:external-url>
        <misci:region name="Redmond">
          <misci:access-number>
            <misci:language tag="en-US" lcid="1033" />
            <misci:language tag="de-DE" lcid="1031" />
            <misci:language tag="fr-FR" lcid="1036" />
            <misci:number>425-707-0001</misci:number>
            <misci:toll-free>true</misci:toll-free>
          </misci:access-number>
          <misci:access-number>
            <misci:language tag="en-US" lcid="1033" />
            <misci:number>425-707-0002</misci:number>
          </misci:access-number>
          <misci:access-number>
            <misci:language tag="fr-FR" lcid="1036" />
            <misci:language tag="en-US" lcid="1033" />
            <misci:language tag="de-DE" lcid="1031" />
            <misci:number>425-707-9999</misci:number>
          </misci:access-number>
        </misci:region>
        <misci2:default-region>Redmond</misci2:default-region>
      </access-numbers>
    </pstn-bridging>
    <conference-key-optional>true</conference-key-optional>
    <anonymous-scheduling>true</anonymous-scheduling>
    <default-admission-policy>anonymous</default-admission-policy>
    <cis:separator />
    <mscp:schedule-locked>true</mscp:schedule-locked>
    <misci:autopromote-allowed>2147516416</misci:autopromote-allowed>
    <mscp:default-autopromote>32768</mscp:default-autopromote>
    <misci:pstn-lobby-bypass-allowed>true</misci:pstn-lobby-bypass-allowed>
    <mscp:static-meeting-limit>1</mscp:static-meeting-limit>
    <mscp:default-meeting-static>true</mscp:default-meeting-static>
    <misci:recording-allowed>true</misci:recording-allowed>
    <misci:externaluser-recording-allowed>false</misci:externaluser-recording-allowed>
    <misci:default-entry-exit-announcements>false</misci:default-entry-exit-announcements>
  </getConferencingCapabilities>
</response>
```

The following example is a **getConferencingCapabilities** request from a protocol client application to the Focus Factory.

```
SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 65a46bb0b6604f4b8bc3f47b3f225c46
CSeq: 7 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<request requestId="1" from="sip:alice@contoso.com"
to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
xmlns="urn:ietf:params:xml:ns:cccp">
  <getConferencingCapabilities/>
</request>
```

The following example is a **getConferencingCapabilities** response from a Focus Factory to a protocol client application.

```
SIP/2.0 200 OK
From: sip:alice@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
Call-ID: 65a46bb0b6604f4b8bc3f47b3f225c46
CSeq: 7 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<response C3PVersion="1" requestId="1"
from=sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory to="sip:alice@contoso.com"
code="success" xmlns="urn:ietf:params:xml:ns:cccp"
xmlns:mhci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions"
xmlns:mhci2="http://schemas.microsoft.com/rtc/2008/12/confinfoextensions"
xmlns:mhcp="http://schemas.microsoft.com/rtc/2005/08/cccpextensions">
  <getConferencingCapabilities capability-version="0">
    <mcu-types>
      <mcuType>applicationsharing</mcuType>
      <mcuType>audio-video</mcuType>
      <mcuType>data-conf</mcuType>
      <mcuType>chat</mcuType>
      <mcuType>phone-conf</mcuType>
    </mcu-types>
    <pstn-bridging>
      <enabled>true</enabled>
      <access-numbers>
        <mhci:internal-
url>https://tk5ucdfpl01.exchange.corp.microsoft.com:443/Dialin</mhci:internal-url>
        <mhci:external-url>https://lslm84.meet.microsoft.com:443/Dialin</mhci:external-url>
        <mhci:region name="Redmond">
          <mhci:access-number>
            <mhci:language tag="en-US" lcid="1033" />
            <mhci:language tag="de-DE" lcid="1031" />
            <mhci:language tag="fr-FR" lcid="1036" />
            <mhci:number>425-707-0001</mhci:number>
          </mhci:access-number>
          <mhci:access-number>
            <mhci:language tag="en-US" lcid="1033" />
            <mhci:number>425-707-0002</mhci:number>
          </mhci:access-number>
          <mhci:access-number>
            <mhci:language tag="fr-FR" lcid="1036" />
            <mhci:language tag="en-US" lcid="1033" />
            <mhci:language tag="de-DE" lcid="1031" />
            <mhci:number>425-707-9999</mhci:number>
          </mhci:access-number>
        </mhci:region>
      </access-numbers>
    </pstn-bridging>
  </getConferencingCapabilities>
</response>
```

```

    <msci:default-region>Redmond</msci:default-region>
  </access-numbers>
</pstn-bridging>
<conference-key-optional>true</conference-key-optional>
<anonymous-scheduling>true</anonymous-scheduling>
<default-admission-policy>anonymous</default-admission-policy>
<cis:separator />
<mscp:schedule-locked>true</mscp:schedule-locked>
<msci:autopromote-allowed>2147516416</msci:autopromote-allowed>
<mscp:default-autopromote>32768</mscp:default-autopromote>
<msci:pstn-lobby-bypass-allowed>true</msci:pstn-lobby-bypass-allowed>
<mscp:static-meeting-limit>1</mscp:static-meeting-limit>
<mscp:default-meeting-static>true</mscp:default-meeting-static>
<msci:recording-allowed>true</msci:recording-allowed>
<msci:externaluser-recording-allowed>>false</msci:externaluser-recording-allowed>
<msci:default-entry-exit-announcements>>false</msci:default-entry-exit-announcements>
<cis:separator />
<msci:custom-invite>
  <msci:logo-url>http://sample-logo-url.microsoft.com/sample.jpg</msci:logo-url>
  <msci:legal-url>http://sample-legal-url.microsoft.com</msci:legal-url>
  <msci:help-url>http://sample-help-url.microsoft.com</msci:help-url>
  <msci:settings-url>http://sample-settings-url.microsoft.com</msci:settings-url>
  <msci:custom-footer-text>Thank you for using Lync.</msci:custom-footer-text>
</msci:custom-invite>
<msci:endorse-allowed>true</msci:endorse-allowed>
<msci:main-video-mute-allowed>true</msci:main-video-mute-allowed>
<msci:pano-video-mute-allowed>true</msci:pano-video-mute-allowed>
<cis:separator/>
<msci:im-mute-allowed>true</msci:im-mute-allowed>
<msci:questions-and-answers-allowed>true</msci:questions-and-answers-allowed>
</getConferencingCapabilities>
</response>

```

4.9 Delegation Request

The following example is an **addConference** request from a protocol client application to the **Focus Factory** using delegation. In this example, bob@contoso.com is sending an **addConference** request on behalf of alice@contoso.com.

```

SERVICE sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory SIP/2.0
From: sip:bob@contoso.com;tag=f7588dc66124429ab736;epid=1
To: sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory;tag=ccb81c3509
p-session-on-behalf-of: sip:alice@contoso.com
Call-ID: 72d6a36a36784cf58e7e7ab1a51deca2
CSeq: 1 SERVICE
Content-Type: application/cccp+xml
...Other SIP headers...

<request C3PVersion="1"
  requestId="1"
  from="sip:alice@contoso.com"
  to="sip:alice@contoso.com;gruu;opaque=app:conf:focusfactory"
  xmlns="urn:iETF:params:xml:ns:cccp"
  xmlns:msci="http://schemas.microsoft.com/rtc/2005/08/confinfoextensions">
  <addConference>
    <conference-info entity=""
      xmlns="urn:iETF:params:xml:ns:conference-info">
      <conference-description>
        <subject>Conference subject</subject>
        <msci:conference-id>SDFBSD12</msci:conference-id>
        <msci:expiry-time>2006-01-10T17:11:47Z</msci:expiry-time>
        <msci:admission-policy>anonymous</msci:admission-policy>
        <msci:organizer-roaming-data>
          <AnyOrganizerXml/>
        </msci:organizer-roaming-data>
        <msci:notification-data>

```

```

    <AnyParticipantXml/>
  </msci:notification-data>
</conference-description>
<users>
  <user entity="sip:bob@contoso.com">
    <roles>
      <entry>presenter</entry>
    </roles>
  </user>
  <user entity="sip:jack@fabrikam.com">
    <roles>
      <entry>attendee</entry>
    </roles>
  </user>
</users>
<msci:conference-view>
  <msci:entity-view entity="phone-conf">
    <msci:entity-settings>
      <settings xmlns="
http://schemas.microsoft.com/rtc/2005/08/acpconinfoextensions">
        <tollNumber>+1-4255550101</tollNumber>
        <tollFreeNumber>+1-8661111111</tollFreeNumber>
        <domain>conferencing.company.com</domain>
        <leaderPasscode>654321</leaderPasscode>
        <participantPasscode>70344101</participantPasscode>
        <showTollNumber>true</showTollNumber>
        <showTollFreeNumber>true</showTollFreeNumber>
        <enableCallMe>true</enableCallMe>
        <robotCallerIds>
          <entry>+1-4255550100</entry>
          <entry>+1-4255550101</entry>
          <entry>+1-4255550102</entry>
        </robotCallerIds>
      </settings>
    </msci:entity-settings>
  </msci:entity-view>
</msci:conference-view>
</conference-info>
</addConference>
</request>

```

5 Security

5.1 Security Considerations for Implementers

None.

5.2 Index of Security Parameters

None.

6 Appendix A: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include updates to those products.

- Microsoft Office Communications Server 2007
- Microsoft Office Communications Server 2007 R2
- Microsoft Office Communicator 2007
- Microsoft Office Communicator 2007 R2
- Microsoft Lync Server 2010
- Microsoft Lync 2010
- Microsoft Lync Server 2013
- Microsoft Lync Client 2013/Skype for Business
- Microsoft Skype for Business 2016
- Microsoft Skype for Business Server 2015
- Microsoft Skype for Business 2019
- Microsoft Skype for Business Server 2019

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms "SHOULD" or "SHOULD NOT" implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term "MAY" implies that the product does not follow the prescription.

[<1> Section 2.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported. Required for all other products.

[<2> Section 2.2.1.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

[<3> Section 2.2.1.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

[<4> Section 2.2.1.3](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

[<5> Section 2.2.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

[<6> Section 2.2.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

[<7> Section 2.2.2.5](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

<8> [Section 2.2.2.5](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

<9> [Section 2.2.2.7](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

<10> [Section 2.2.2.8](#): Office Communications Server 2007, Office Communicator 2007: This behavior is not supported.

<11> [Section 2.2.2.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

<12> [Section 2.2.3.1](#): When starting Lync Server 2010, success is returned in this case.

<13> [Section 2.2.3.1](#): Versions prior to Lync 2010 do not specify any child elements.

<14> [Section 2.2.3.7](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

<15> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007: This behavior is not supported.

<16> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

<17> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported

<18> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported

<19> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported

<20> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported

<21> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported

<22> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported

<23> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported

<24> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported

<25> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported

<26> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This behavior is not supported

<27> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This behavior is not supported

<28> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This behavior is not supported

<29> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This behavior is not supported

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<31> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This behavior is not supported

<32> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This behavior is not supported

<33> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This behavior is not supported

<34> [Section 2.2.3.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This behavior is not supported

<35> [Section 3.1.4.7](#): Office Communications Server 2007, Office Communicator 2007: This behavior is not supported.

<36> [Section 3.1.4.7](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

<37> [Section 3.1.4.8](#): Office Communications Server 2007, Office Communicator 2007: This behavior is not supported.

<38> [Section 3.1.4.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

<39> [Section 3.1.5.10](#): Office Communications Server 2007, Office Communicator 2007: This behavior is not supported.

<40> [Section 3.2.5.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

<41> [Section 3.2.5.9](#): Office Communications Server 2007, Office Communicator 2007: This behavior is not supported.

<42> [Section 3.2.5.9](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This behavior is not supported.

7 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

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