



# IM and P Federation with Microsoft-Based Organizations

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## IM and P Federation with Microsoft-Based Organizations

Unlike the federations described elsewhere in this guide, these federations with Microsoft are SIP-based and not XMPP-based.

This section applies if you want to deploy an IM&P federation with an organization that uses Microsoft as its collaboration services solution. It enables users registered to Cisco Unified Communications Manager IM and Presence Service to exchange chat messages with Microsoft users in an external organization, via the Expressway. We illustrate an example deployment, the signaling connections, and some sample dial plan rules. For completeness, the diagrams illustrate multiple elements together, but in reality, most deployments will not have all the elements.

## Fundamentals of IMP Federation with Microsoft-Based Organizations

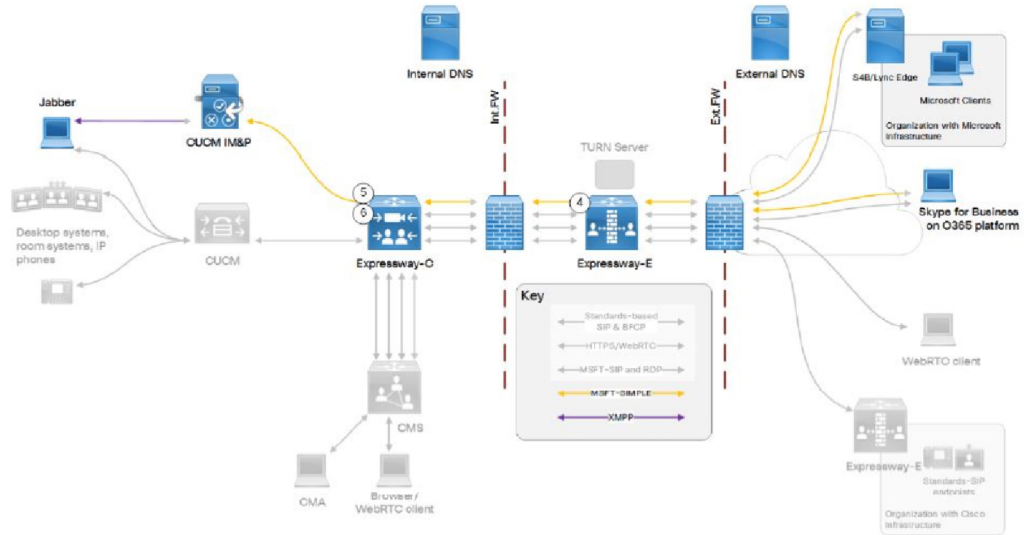
### Supported Systems IM and P through Microsoft

Expressway-E supports IM&P Federation with Microsoft, with the following products:

- Expressway X8.9 or later. X8.11.x or later is recommended.
- Cisco Unified Communications Manager IM and Presence Service 11.5(1)SU3 or later. 11.5(1)SU4 or later is recommended.
- Lync 2013 Server, Skype for Business Server, or Office 365. (We do not interoperate with “consumer” versions of Skype.)

# Signaling and Dial Plan

Figure 1: Outbound Signaling



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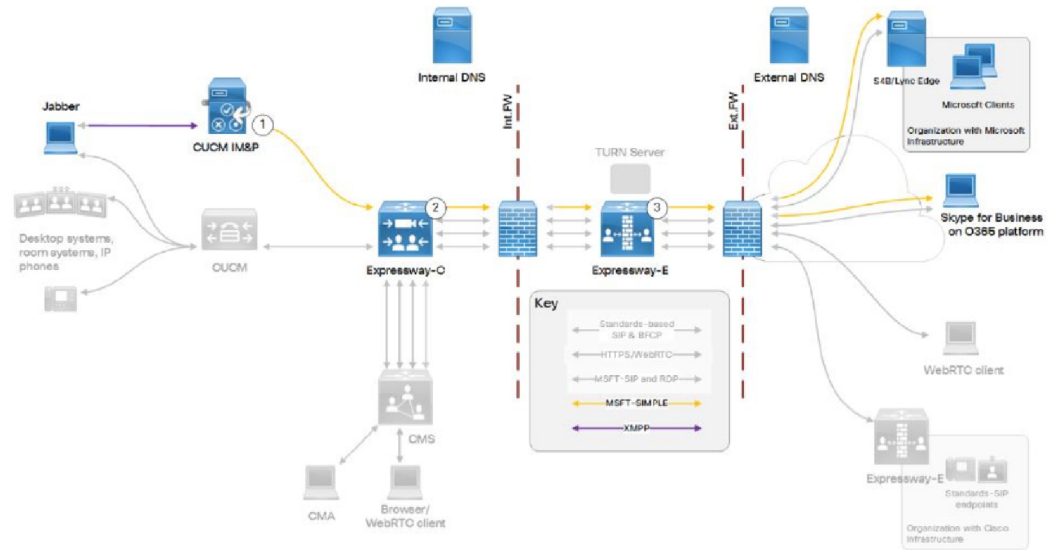
The table details the rules in a sample outbound dial plan.

Table 1: Sample Outbound Dial Plan Rules

Arrow #	Rule Hosted On	Rule Order/Priority	From	Pattern and Logic	To
1	Cisco Unified Communications Manager IM and Presence Service		Jabber	*@msexample.com	Static route to Expressway-C
2	Expressway-C		IM&P neighbor zone	Microsoft SIP IM&P for .*@msexample\com <b>On successful match</b> Stop	Traversal client zone
3	Expressway-E	Lowest priority rule = highest priority number	Traversal server zone	Microsoft SIP IM&P for Any alias <b>On successful match</b> Stop  This rule is required due to the way we handle <a href="#">More About Configuring Search Rules on Expressway.</a>	DNS zone

The figure illustrates Inbound Signaling.

Figure 2: Inbound Signaling



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The table details the rules in a sample inbound dial plan.

Table 2: Sample Inbound Dial Plan Rules

Arrow #	Rule Owner	Rule Order/Priority	From	Pattern and Logic	To
4	On Expressway-E		Default zone	Microsoft SIP IM&P for .*@ciscoexample.com <b>On successful match Stop</b>	Traversal server zone
5	On Expressway-C		Traversal client zone	Microsoft SIP IM&P for .*@ciscoexample.com <b>On successful match Stop</b>	IM&P neighbor zone
6	On Expressway-C		Traversal client zone	Microsoft SIP IM&P for .*IMP1-public\ciscoexample.com.* <b>On successful match Stop</b>  This rule is required due to the way we handle <a href="#">More About Configuring Search Rules on Expressway</a> .	IM&P neighbor zone

## Configuration Summary

This federation is based on TLS throughout.

### Process Summary for Microsoft Federation

1. On the IM and Presence Service:
  - a. As request messages for SIP federation are routed based on the FQDN, the FQDN of the routing IM and Presence Service node (publisher) must be publicly resolvable.
  - b. Turn on SIP Federation services for each IM and Presence cluster node (enable *Cisco XCP SIP Federation Connection Manager*).
  - c. Assign a DNS SRV record for IM and Presence, so that Microsoft entities can route traffic to the IM and Presence service through Expressway.
  - d. Add a Federated domain entry for each Microsoft domain that you want to federate with (use the *OCS/Lync/S4B* integration type).
  - e. Create a static route that points to the Expressway-C for all traffic matching each federated domain. For example, to route all traffic for *msexample.com*, use the format `.com.msexample.*`. Define TLS as the protocol, the next hop as the FQDN or IP address of the Expressway-C, the next hop port as 5061, and the route type as Domain.
  - f. Add Expressway as a TLS peer subject, and then configure a TLS Context to include the new peer subject.
  - g. Add inbound access control list (ACL) entries for each Expressway-C server IP address, so that the IM and Presence Service accepts unsolicited traffic from those IP addresses without authentication. For multicluster deployments, do this on each IM and Presence cluster.
  - h. Restart the Cisco XCP Router.  
  
For detailed information about this process, see the [Interdomain Federation Guide for the IM and Presence Service, Release 12.5\(1\)](#) on Cisco.com - or the relevant guide for your software version if you are running an earlier version.
2. Configure Expressway for federation with Microsoft:
  - a. On Expressway-C, configure a neighbor zone to the IM and Presence Service cluster. The Expressway-C zone configuration must point to the IM and Presence Service port for TLS Peer Authentication. By default, port 5062. (To confirm the relevant port - on Cisco Unified CM IM and Presence Administration, go to **System > Application Listeners** and navigate to **Default Cisco SIP Proxy TLS Listener - Peer Auth.**)
  - b. Configure search rules to route NOTIFY messages (see below).
  - c. Disable the Presence Server. Go to **Applications > Presence** and set **SIP SIMPLE Presence Server** to *Off*. In multicluster Expressway deployments, you need a neighbor zone and search rules for each cluster.
3. Exchange certificates between the various servers in your federation deployment. For details, see the “Exchange Certificates” section of the *Interdomain Federation Guide for the IM and Presence Service*.

## More About Configuring Search Rules on Expressway

Usually NOTIFY messages do not need special routing consideration because they're in the same dialog as SUBSCRIBE messages sent between clients to request presence status and should follow the same route. However, Expressway does not hold information about SUBSCRIBE dialogs, so you need specific search rules to route the NOTIFY messages.

### Process Summary

To create search rules, go to **Configuration > Dial Plan > Search Rules** and select **New**.

- **Outbound rule:** From X8.11.x, outbound NOTIFY messages are handled like any other SIP message. So, the outbound rule on Expressway-E needs to match the following (of course broader rules may be implemented, such as Traffic type = *All Sip Variants*):
  - Traffic type = *Microsoft IM and Presence*
  - Mode = *Any Alias*
  - Target = *DNS Zone* (Expressway-E)
- **Inbound rule:** You need an inbound search rule (on Cisco Expressway-C) to match on the **Federation Routing IM/P FQDN** of the IM and Presence Service cluster. This cluster-wide SIP proxy parameter is configured on the IM and Presence Service publisher at **System > Service Parameters > SelectPublisher > Cisco SIP Proxy > Federation Routing Parameters**. Here we use the example value **IMP1-public.ciscoexample.com** for the Federation Routing IM/P FQDN of the cluster.

Also create a DNS A record so that Expressway-C can resolve the Federation Routing IM/P FQDN. This DNS A record must *not* have a pointer record (PTR) associated with it.

### Dial Plan Summary

#### On the Expressway-E:

- Search rule to route Microsoft SIP IM&P for `.*@msexample\com` from traversal server zone to DNS zone.
- Search rule to route Microsoft SIP IM&P for `.*@ciscoexample\com` from default zone to traversal server zone.

#### On the Expressway-C:

- Search rule to route Microsoft SIP IM&P for the named federation domain `.*@msexample\com` from IM&P neighbor zone to traversal client zone.
- Search rule to route Microsoft SIP IM&P for local domain `.*@ciscoexample\com` from traversal client zone to IM&P neighbor zone.
- Our architecture requires this rule for presence: search rule to route Microsoft SIP IM&P from traversal client zone to IM&P neighbor zone. The rule must match a regular expression that includes the SIP Proxy service parameter **Federation Routing IM/P FQDN**, configured in the target IM and Presence Service cluster.

For example, use `.*IMP1-public\ciscoexample\com.*` to match presence traffic for the FQDN given above.

## Detailed Examples of Search Rules

Name	Py	Pcl	SIP variant	Source	RMBA? <sup>1</sup>	Mode	Pattern type	Pattern string	Behavior	On match	Target
IMP Public to IMP	20	SIP	MS IM&P	Any	No	Alias pattern match	Regex	*imp1-public\uc\local*	Leave	Stop	IMP
uc.local MSIMP to IMP	20	SIP	MS IM&P	Any	No	Alias pattern match	Regex	*@uc\local.*	Leave	Stop	IMP

<sup>1</sup> RMBA? = Request must be authenticated?

## DNS Summary

This section provides summary information and examples about DNS records for this federation.

### External DNS Records

The external DNS needs to be configured with the records required for your deployment. This table contains some example records that may apply:

**Table 3: DNS Configuration Summary**

Purpose	Record type	Example entry	Port	Resolves to target
Resolve Expressway-E cluster FQDN to peer IP addresses.	A/AAAA	<b>expe.example.com</b>	NA	Public IP address of one Expressway-E cluster peer.  Create one record for each peer in the Expressway-E cluster (Up to 6 records).
Discover destination for calls to third party Microsoft infrastructure domain(outside of your control, but needs to be there for federation to succeed).	SRV	<b>_sipfederationtls._tcp.msb2bexample.com.</b>	5061	Public address of Microsoft Skype for Business Edge server / cluster

Purpose	Record type	Example entry	Port	Resolves to target
Discover user destination for calls from third party Microsoft infrastructure domain.	SRV	<code>_sipfederationtls._tcp.example.com.</code>	5061	FQDN of Skype for Business Edge. For example, <code>s4be.example.com</code>

## Limitations Related to DNS

### DNS Load Balancing by Microsoft Skype for Business (also applies to Microsoft Lync Server)

Microsoft Skype for Business does not attempt to use DNS SRV load balancing when routing calls or messages to federated domains. The Microsoft Skype for Business Edge servers always choose the DNS SRV record with the lowest priority and highest weight and ignore all others. When the priorities and weights are equal, they choose one and ignore all others.

Microsoft best practices recommend that you configure round-robin A/AAAA record load balancing, using the A record `sip.domain.com`. That is, the DNS SRV record for SIP federation should have only one entry that targets a single round-robin A/AAAA record that includes all of your Expressway-E cluster peers.

For example,

- Create the SRV record `_sipfederationtls._tcp.ciscoexample.com.` with a single entry targeting `sip.ciscoexample.com`
- Create an A/AAAA record for `sip.ciscoexample.com` that targets either the public IP address of the Expressway-E, or multiple A/AAAA records for round-robin service of all the Expressway-E peers in the cluster.

### Domain Namespace Compatibility for Microsoft Skype for Business (also applies to Microsoft Lync Server)

Microsoft Skype for Business requires the federated edge servers to be in the same DNS namespace (domain/subdomain) as the federated SIP domain. Otherwise federation will fail without additional configuration on the Skype for Business servers. We recommend that the DNS SRV records for SIP federation resolve to a target in the same DNS namespace, so that open SIP federation will work from the Microsoft side without additional configuration.

For example, if you intend to federate Microsoft infrastructure with the domain `exp.ciscoexample.com`, you will create the SRV record `_sipfederationtls._tcp.exp.ciscoexample.com.` The target of that DNS SRV must be an A/AAAA record in the subdomain `exp.ciscoexample.com` (such as `sip.exp.ciscoexample.com`). If the DNS SRV target is outside that namespace, such as `sip.ciscoexample.com`, the Microsoft side will not allow the connection.

## Internal DNS Records

If you can split your DNS to give different results internally, then we recommend that you create different records for the following purposes. These records must be resolvable by Expressway-C.

*Table 4: DNS Configuration Summary*

<b>Purpose</b>	<b>Record type</b>	<b>Example entry</b>	<b>Resolves to</b>
For Expressway-C to resolve the Federation Routing IM/P FQDN of the IM and Presence Service cluster.	A	<b>IMP1-public.ciscoexample.com</b>	IP address of the IM and Presence Service publisher