SIP Tel URI Support

Cisco Unified Border Element (SP Edition) supports Tel Uniform Resource Identifier (tel URI) in Session Initiation Protocol (SIP) messages, permitting SIP users to set up calls from a SIP IP-phone or SIP User Agent Application to an endpoint in the Public Switched Telephone Network (PSTN). The addition of tel URI to the SIP URI method of connection greatly increases the functionality of Cisco Unified Border Element (SP Edition). SIP can use the tel URI anywhere a URI is allowed, for example, as a Request-URI, along with SIP and SIP URIs.

Note For Cisco IOS XE Release 2.4 and later, this feature is supported in the unified model.

Cisco Unified Border Element (SP Edition) was formerly known as Integrated Session Border Controller and may be commonly referred to in this document as the session border controller (SBC).

Feature History for SIP Tel URI Support

Release	Modification
Cisco IOS XE Release 2.4	This feature was introduced on the Cisco IOS XR along with support for the unified model.

Contents

This module contains the following sections:

Restrictions for SIP Tel URI Support

The following is a list of restrictions for SIP tel URI support:

- Cisco Unified Border Element (SP Edition) usually rewrites the domain-name part of the SIP **Request-URI** header to the configured signaling peer address and port for the outbound adjacency. For example,

  ```
  sip:1234567@remote.com
  ```

  becomes

```
sip:1234567@1.2.3.4:5060
```

- However, in the case of tel URIs, Cisco Unified Border Element (SP Edition) does not rewrite the domain name (since this is only an optional parameter, which is rarely present), but it rewrites the Carrier Identification Code (CIC) parameter and/or the destination directory number to ensure correct onwards routing.
- Cisco Unified Border Element (SP Edition) rejects tel URIs exceeding 160 bytes in length.
- Cisco Unified Border Element (SP Edition) ignores any parameters on the tel URI, except for the CIC parameter. All other parameters are treated as an opaque string and forwarded unchanged. As a result, the "phone-context" parameter of the local-scope tel URIs is not inspected, and the URI is routed purely based on the initial number.

Information About SIP Tel URI Support

Local and Global Tel URIs

A tel URI can either be global or local. Global tel URIs are globally unique. Local tel URIs are only valid within a specific local context. For this reason, all local tel URIs must contain the phone-context parameter to specify the context in which they are valid.

The following are examples of global and local tel URIs, respectively.

```
tel:+358-555-1234567
```

Note The separator characters, such as '-' are valid in tel URIs.

```
tel:1234567;phone-context=+358-555
```

This URI locates the endpoint with the directory number **1234567** in the context **358-555**.

Note Although the combination of local tel URI and phone-context parameter forms a globally unique identifier, attaching a local tel URI's phone-context parameter to the tel URI does not necessarily produce a global tel URI. See section 5.1.5 of RFC 3966 for more information.

Tel URI Versus SIP URI

A SIP URI consists of a username and host domain name. A SIP URI uniquely identifies a SIP subscriber but does not necessarily resolve to one particular endpoint on a network. For example,

```
sip:john@cisco.com
```

It is also possible to use a directory number as a SIP username and an IP address and port in place of the host domain name. In this case, a SIP URI can uniquely identify an endpoint on a network. For example,

```
sip:1234567@192.167.1.1:5060
```

Local tel URIs may or may not contain a domain name in the phone-context parameter. For example,

```
tel: 1234567;phone-context=cisco.com
```

The Carrier Identification Code Parameter

A Carrier Identification Code (CIC) is a three- or four-digit number used to identify the carrier network in which the destination endpoint of a call is located. It is used by network devices to determine how a call request should be routed between carrier networks. The CIC is often used to specify which carrier network is the current freephone service provider for a freephone number. The current carrier for a given freephone number can be determined by looking up a freephone database.

Tel URIs can include carrier identification codes. For example,

```
tel: +1-800-234-5678;cic=2345
```

indicates that the carrier that has been assigned the **CIC 2345** is currently the service provider for the freephone number, **1-800-234-5678**.

When a network device receives a call request with a tel URI containing a CIC parameter, it will try to route the request according to the value of the CIC parameter. If it cannot route the request, it must decide whether to reject it or continue, ignoring the CIC parameter. If the CIC parameter matches the CIC of the carrier network in which the network device is located, it should route the request based on its local routing policy and strip out the CIC parameter before forwarding the request.

Note Cisco Unified Border Element (SP Edition) must be explicitly configured to map a CIC value to **0000** in order to strip it out of outbound requests.