

CPL: A Language for User Control of Internet Telephony Services

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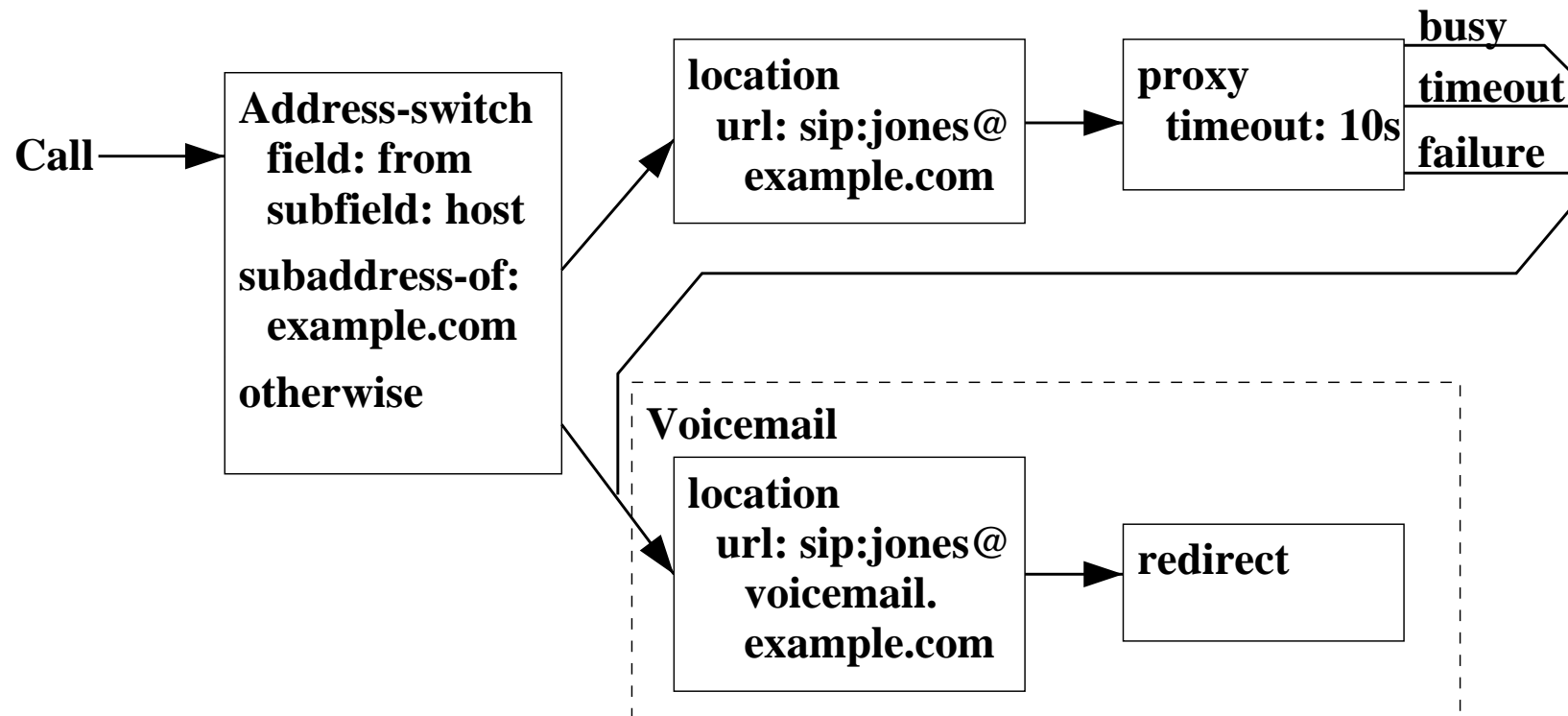
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Overview

- CPL allows users to describe and control Internet telephony services
- Creatable and editable both by humans and programs
- Safe to run on a server



Changes from previous version: overview

- Time handling completely re-worked: now matches iCal
- H.323 mappings
- XML and MIME types
- New string switches: language, display
- Enhancement of some nodes
- Clarifications, corrections, and more examples

Time Handling

- time-switch syntax changed from a syntax based on **crontab** to a syntax based on **iCal** (RFC 2445).
- Example: “every Sunday in January from 8:30:00 AM to 8:40:00 AM, and from and 9:30:00 AM to 9:40:00 AM, every other year.”

```
<time dtstart="19970105T083000" duration="10M"  
      freq="yearly" interval="2"  
      bymonth="1" byday="SU" byhour="8,9"  
      byminute="30">
```
- Makes it easy to create CPL scripts automatically from calendars. (Automatic “block calls during this meeting” functionality.)
- Very rich syntax. Already an IETF Proposed Standard.
- Complicated to evaluate. iCal people report interoperability difficulties, some bugs in the spec.

Syntax of time node: details

Attribute	Meaning
dtstart	Start of interval (RFC 2445 DATE-TIME)
dtend	End of interval (RFC 2445 DATE-TIME)
duration	Length of interval (RFC 2445 DURATION)
freq	Frequency of recurrence (one of “secondly”, “minutely”, “hourly”, “daily”, “weekly”, “monthly”, or “yearly”)
interval	How often the recurrence repeats
until	Bound of recurrence (RFC 2445 DATE-TIME)
count	Number of occurrences of recurrence
bysecond	List of seconds within a minute
byminute	List of minutes within an hour
byhour	List of hours of the day
byday	List of days of the week
bymonthday	List of days of the month
byyearday	List of days of the year
byweekno	List of weeks of the year
bymonth	List of months of the year
wkst	First day of week
bysetpos	List of values within set of events specified

Further time change: time zones

- Time zones also derived from RFC 2445.
- `time-switch` nodes have two new attributes:
 - tzid** Time Zone Identifier: server-local or from a to-be-defined IANA registry.
 - tzurl** Time Zone URL: reference to a RFC 2445 VTIMEZONE.

```
<time-switch tzid="America/New-York"  
  tzurl="http://tz.example.com/America/New-York">
```
- VTIMEZONE is basically the same (semantic) rules as new time definition.
- Work is (slowly) in progress to create an IANA iCal timezone registry based on the Olson TZ database.
- `timezone` ancillary tag has now been eliminated from CPL as unnecessary.

H.323 bindings: address types

- Mappings defined for H.323 address types.
- H.323 has addresses both in Q.931 part and H.323 UUIE part. Not clear which one takes precedence; but server should use same rules for CPL as it uses for routing.

address field	H.323 SETUP UUIE	Q.931 SETUP IE
origin	sourceAddress	callingPartyNumber
destination	destinationAddress	calledPartyNumber
original-destination	—	redirectedNumber

Specific H.323 mappings

- H.323 alias addresses have ~ 8 different possible formats.
- Define mappings for each of these into CPL address subfields.

alias-type	user	host	port	tel	display
dialedDigits, partyNumber, mobileUIM, Q.931IE	*			*	
url-ID (h323 URL scheme)	*	*	*		
url-ID (other URL scheme)		(Same as for SIP)			
email-ID	*	*			
transport-ID		*	*		
h323-ID					*

H.323 bindings: address subfields

- Also define new **alias-type** address subfield for H.323 servers.
- One address can have several aliases defined; pick the one the server would use for routing. (Spec says “first”: will change.)
- h323-ID is different: unformatted UTF-8. Use this for “display” field, regardless of where it appears in alias list.
- This is based on H.323v4, to be published in November; introduces h323 URL scheme. Is this a problem for last call?
- Q.931 display IE: see later slide.

Other H.323 address bindings

- URLs specified literally in location tags are mapped to url-ID addresses.
 - Do we need some way of mapping other alias types?
 - In particular, should tel: URIs be handled specially?

MIME Registration

- Added MIME registration section
- Media type `application/cpl+xml`.
- Conforms to format of XML types in `draft-murata-xml-06.txt`.
- Parameters, considerations, file extensions, contact information, etc.: see draft.

XML parameters

- Specified XML public identifier “-//IETF//DTD RFC_{xxxx} CPL 1.0//EN”.
- Specified XML namespace “<http://www.ietf.org/internet-drafts/draft-ietf-iptel-cpl-02.txt>”. To be “<http://www.rfc-editor.org/rfc/rfcxxxx.txt>” when we go to RFC.
- Will clarify: CPL extensions should be marked with separate XML namespaces.

New string-switch fields

- New string-switch field language: language caller wants to receive.
 - Corresponds to H.323 language UUIE and SIP Accept-Language header.
 - Both use RFC 1766!
 - string-switch not ideal for this, but close enough.
- display field: corresponds to Q.931 display IE
 - H.323 spec: “The purpose of the Display information element is to supply display information that may be displayed by the user.”
 - However, the de-facto usage is for it to be the name of the caller.
 - Should this IE therefore be mapped instead to the display subfield of the origin address?

Changes to location nodes

- Documented attribute `clear` of location and lookup nodes. Clears the existing location set before adding new locations.
 - Previously mentioned in DTD, but omitted from main text of spec.
 - Is this really necessary, given `remove-location location="*"`?
- Changed output behavior on missing outputs of lookup nodes. Now works like all other parts of the spec: a missing output means to use the default server behavior.

Changes to proxy and redirect nodes

- Added output redirection to proxy nodes. Intended to be taken on, e.g., a SIP 3xx response. Adds newly-reported locations to the location set.
- Added parameter **permanent** to redirect nodes. Intended to distinguish between SIP 301 Moved Permanently and 302 Moved Temporarily.

Other changes

- Weakened server support for scripts that do not conform to the DTD from SHOULD to MAY.
- Clarifications
- More examples
- DTD updated

TODO and Proposed enhancements

- Add `q` parameter to location nodes.
- The draft asserts that H.323 has no equivalent of SIP Caller Preferences & Caller Capabilities. This needs to be verified.
- Clarify how extensions should work: XML namespaces, new tags, outputs, attributes. Give examples of possible extensions: media gateways, administrative policy.
- People have complained about the default timeout value for proxy being dependent on whether it has a `no-answer` output (20s if so, otherwise “a reasonably long period of time.”) Is this worth changing?
- I’d still like better names than “actions,” “sub-actions,” and “top-level actions.”
- Need **lots** more example scripts.
- Others?