

The Presence-Specific Static Dictionary  
for Signaling Compression (Sigcomp)

Status of This Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

Abstract

The Session Initiation Protocol (SIP) is a text-based protocol for initiating and managing communication sessions. The protocol is extended by the SIP-events notification framework to provide subscriptions and notifications of SIP events. One example of such event notification mechanism is presence, which is expressed in XML documents called presence documents. SIP can be compressed by using Signaling Compression (SigComp), which is enhanced by using the SIP/Session Description Protocol (SDP) dictionary to achieve better compression rates. However, the SIP/SDP dictionary is not able to increase the compression factor of (typically lengthy) presence documents. This memo defines the presence-specific static dictionary that SigComp can use in order to compress presence documents to achieve higher efficiency. The dictionary is compression-algorithm independent.

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## 1. Introduction

The Session Initiation Protocol (SIP) [4] is extended by the SIP-events framework [5] to provide subscriptions and notifications of SIP events. One example of such an event-notification mechanism is presence. The presence information is typically carried in Extensible Markup Language (XML) [22] documents that are compliant with a given XML schema [23]. The Presence Information Data Format (PIDF) [8] defines the format for the basic presence document that supplies presence information. Typically, PIDF is used in combination with other extensions to provide a richer user experience, among others: the Presence Data Model [10], Rich Presence Extensions to PIDF (RPID) [11], Contact Information in PIDF (CIPID) [12], the SIP Event Notification Extension for Resource Lists [19] and the SIP User Agent Capability Extensions to PIDF [20], or the Location Object in PIDF [16].

Typically, presence documents can contain large amounts of data. The size of this data is dependent on the number of presentities that a watcher is subscribed to and the amount of information supplied by the presentity. This can impose a problem in environments where resources are scarce (e.g., low bandwidth links with high latency) and the presence service is offered at low or no cost. This is the case, e.g., of some wireless networks and devices. It is reasonable to try to minimize the impact of bringing the presence service to wireless networks under these circumstances.

Work has been done to mitigate the impact of transferring large amounts of presence documents between endpoints. For example, the Partial PIDF [15] reduces the amount of data transferred between the endpoints.

On the other hand, the signaling compression mechanisms specified in the SigComp framework (RFC 3320) [2] provide a multiple compression/decompression algorithm framework to compress and decompress text-based protocols, such as SIP. When compression is used in SIP, the compression achieves its maximum rate once a few message exchanges have taken place. This is due to the fact that the first message the compressor sends to the decompressor is only partially compressed, as there is not a previously stored state to compress against. As the goal is to compress as much as possible, it seems sensible to investigate a mechanism to boost the compression rate from the first message.

RFC 3485 [7] defines a static dictionary for SIP [4] and SDP [9]. The dictionary is to be used in conjunction with SIP [4], SDP [9], and SigComp [2]. The static SIP/SDP dictionary constitutes a SigComp state that can be referenced in the first SIP message that the compressor sends out. The dictionary boosts the compression of SIP and SDP, but unfortunately does not have any effect in XML-based presence documents.

It sounds reasonable to define a presence-specific static dictionary that can be used in conjunction with SIP and Sigcomp. This dictionary can coexist with the static SIP/SDP dictionary defined in RFC 3485 [7]. Sigcomp endpoints will initially announce the availability of one or both dictionaries until the other end acknowledges that it has received the announcement.

Our initial simulations when developing this dictionary reveal that once the current mitigation mechanisms are applied (e.g., Sigcomp, partial notification, partial publication), a further compression factor of 10% can be achieved when Sigcomp uses the presence-specific static dictionary.

## 2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14, RFC 2119 [1] and indicate requirement levels for compliant implementations.

## 3. Design Considerations

The presence-specific static dictionary is a collection of well-known strings that appear in most of the presence documents used by SIP. The dictionary is not a comprehensive list of reserved words, but it includes many of the strings that appear in presence documents.

The presence static dictionary is unique and MAY be available in SigComp implementations for SIP that support the presence service. The dictionary is not intended to evolve as presence evolves. It is defined once, and it stays as is forever. This solves the problems of updating, upgrading, and finding out the dictionary that is supported at the remote end when several versions of the same dictionary coexist.

Appendix A contains the collection of strings that were contributed to the presence static dictionary. The appendix also includes references to the documents that define those strings.

While this appendix is of an informative nature, Section 4 gives the normative binary form of the presence-specific static dictionary. This is the dictionary that is included in the SigComp implementation. This dictionary has been formed from the collection of individual dictionaries given in Appendix A.

The input set is a collection of UTF-8 [6] encoded character strings. The appendix provides a table where each row represents an entry. Each entry contains the string that actually occurs in the dictionary, its priority (see below), its offset from the first octet and its length (both in hexadecimal), and one or more references that elucidate why this string is expected to occur in presence documents.

Note: Length in this document always refers to octets.

The columns in the table are described as follows:

String:

represents the UTF-8 string that is inserted into the dictionary. Note that the quotes (") are not part of the string itself.

Pr:

indicates the priority of this string within the dictionary. Some compression algorithms, such as DEFLATE [3], offer an increased efficiency when the most commonly used strings are located at the bottom of the dictionary. To facilitate generating a dictionary that has the most frequently occurring strings farther down at the bottom, we have decided to allocate a priority to each string in the dictionary. Priorities range from 1 to 5. A low value in the priority column (e.g., 1) indicates that we believe there is a high probability of finding the string in a presence document. A high value in the priority column (e.g., 5) indicates lower probability of finding the string in a presence document. This is typically the case for less frequent extensions or optional, infrequent XML elements or attributes.

**Off:**

indicates the hexadecimal offset of the entry with respect to the first octet in the dictionary. Note that several strings in the collections can share space in the dictionary if they exhibit suitable common substrings.

**Len:**

the length of the string in octets in hexadecimal.

**References:**

contains one or more references to the specification and the section within the specification where the string is defined. Note that the strings stored in the dictionary are case sensitive. (Again, the strings do not include the quotes ("), they are just shown here to increase the readability).

There are a few design considerations that require a bit more explanation:

- o Due to the fact that most compression algorithms have a break-even point around three or four characters, we have selected those static strings of characters that consist of four or more characters.
- o When a string appears as an XML element in an XML document, it is typically surrounded by the '<' and '>' signs, such as in '<foo>'. It would have been natural to include the '<' and '>' signs of the element in each input string. However, we made the decision to omit the '<' and '>' signs because then we can easily reuse the same string for start-tags (e.g., <foo>), start-tags that contain attributes (e.g., <foo attr="myattr">), empty-element tags (e.g., <foo/>), and end-tags (e.g., </foo>).
- o Whenever there is an enumerated string, the string does not contain quotes, following the same pattern as any other input string.
- o In a few cases, we have decided to split a string that appears a few times into a few substrings. This is the case of Uniform Resource Names (URNs) in the IETF address space, because this allows the dictionary to reuse the same substring in various URN strings.

#### 4. Binary Representation of the Presence-Specific Static Dictionary

This section contains the binary form of the presence-specific static dictionary that is loaded into SigComp as a state.

The binary SigComp dictionary is composed of two parts, the concatenation of which serves as the state value of the state item: A string subset, which contains all strings in the contributing collections as a substring (roughly ordered such that strings with low priority numbers occur at the end), and a table subset, which contains pairs of length and offset values for all the strings in the contributing collections. In each of these pairs, the length is stored as a one-byte value, and the offset is stored as a two-byte value that has had 1024 added to the offset (this allows direct referencing from the stored value if the dictionary state has been loaded at address 1024).

The intention is that all compression algorithms will be able to use the (or part of the) string subset, and some compression methods, notably those that are related to the LZ78 family, will also use the table in order to form an initial set of tokens for that compression method. The text below therefore gives examples for referencing both the table subset and the string subset of the dictionary state item.

As defined in Section 3.3.3 in the Signaling Compression specification [2], a SigComp state is characterized by a certain set of information. For the presence-specific static dictionary, the information in the following table, Table 2, fully characterizes the state item.

Note that the string subset of the dictionary can be accessed using:

```
STATE-ACCESS (%ps, 6, 0, 0x0955, %sa, 0),
```

and the table subset can be accessed using:

```
STATE-ACCESS (%ps, 6, 0x0955, 0x043E, %sa, 0),
```

where %ps points to Universal Decompressor Virtual Machine (UDVM) memory containing

```
0xd942297d0bb3
```

and %sa is the desired destination address in UDVM memory with UDVM byte copying rules applied.

If only a subset of the dictionary up to a specific priority is desired (e.g., to save UDVM space), the values for the third and fourth operand in these STATE-ACCESS instructions can be changed to:

Priorities desired	String offset	String length	Table offset	Table length
1 only	0x07AB	0x01AA	0x0955	0x0039
1..2	0x06BE	0x0297	0x0955	0x0066
1..3	0x035A	0x05FB	0x0955	0x013E
1..4	0x0254	0x0701	0x0955	0x01AA
1..5	0x0000	0x0955	0x0955	0x043E

Table 1: Priority Table

The state item consists of the following elements:

Name	Value
state_identifier	0xd942297d0bb38fc01d6741d6b3b48157ac8e1be0
state_length	0x0D93
state_address	0 (not relevant for the dictionary)
state_instruction	0 (not relevant for the dictionary)
minimum_access_length	6
h	
state_value	Representation of the table of Figure 1

Table 2: State Item Table

0000	636f	6e76	656e	7469	6f6e	2d63	656e	7465	convention-cente
0010	726d	696e	6174	6564	6570	7265	7373	6564	rminatedepressed
0020	6973	6775	7374	6564	696e	6475	7374	7269	isgustedindustri
0030	616c	6173	742d	696e	7075	743d	6875	6d69	alast-input=hum
0040	6c69	6174	6564	6f6d	6169	6e3d	6175	746f	liatedomain=auto
0050	6d6f	6269	6c65	6375	7269	6f75	7370	6972	mobilecuriouspir
0060	6974	732d	494e	4450	7365	6e64	2d6f	6e6c	its-INDPsend-onl
0070	7970	6174	6865	6174	6572	6573	746c	6573	ypatheaterestles
0080	736c	6565	7079	696e	2d70	6572	736f	6e61	sleepyin-persona
0090	6c6f	6e65	6c79	706c	6179	6675	6c6f	7765	lonelyplayfulowe
00A0	7274	6861	6e6e	6f79	6564	756e	636f	6d66	rthannoyeduncomf
00B0	6f72	7461	626c	6578	636c	7564	653d	636f	ortablexclude=co
00C0	6e66	7573	6564	7661	6361	7469	6f6e	636c	nfusedvacationcl
00D0	7562	7573	2d73	7461	7469	6f6e	6169	7263	ubus-stationairc
00E0	7261	6674	6869	7273	7479	636f	7572	6965	rafthirstycourie

00F0	7265	6a65	6374	6564	6869	7374	696e	666f	rejectedhistinfo
0100	6666	6963	6572	656d	6f76	653d	6172	656e	fficerremove=aren
0110	6162	6c65	643d	5245	4645	5245	4749	5354	abled=REFEREGIST
0120	4552	7761	6974	696e	6772	756d	7079	7072	ERwaitingrumpypr
0130	6566	6978	3d68	616c	6672	6569	6768	746d	efix=halfreightm
0140	6561	6e67	7279	5355	4253	4352	4942	4570	eangrySUBSCRIBEp
0150	726f	7661	7469	6f6e	696e	636c	7564	653d	rovationinclude=
0160	6170	7072	6f76	6564	686f	6c69	6461	7975	approvedholidayu
0170	6e6b	6e6f	776e	7061	726b	696e	674d	4553	nknownparkingMES
0180	5341	4745	776f	7272	6965	6468	756d	626c	SAGEworriedhumbl
0190	6564	6169	7270	6f72	7461	7368	616d	6564	edairportashamed
01A0	706c	6179	696e	6750	5542	4c49	5348	6875	playingPUBLISHshu
01B0	6e67	7279	6372	616e	6b79	616d	617a	6564	ngrycrankyamazed
01C0	6166	7261	6964	5550	4441	5445	4e4f	5449	afraidUPDATENOTI
01D0	4659	494e	5649	5445	4341	4e43	454c	6672	FYINVITECANCELfr
01E0	6965	6e64	706f	7374	616c	6661	6d69	6c79	iendpostalfamily
01F0	7072	6973	6f6e	696e	5f61	7765	6272	6176	prisonin_awebrav
0200	6571	7569	6574	626f	7265	6450	5241	434b	equietboredPRACK
0210	7072	6f75	6466	6978	6564	686f	7465	6c68	proudfixedhotelh
0220	6170	7079	6361	6665	6369	643d	6261	6e6b	appycafeacid=bank
0230	6d69	6e3d	6177	6179	6d61	783d	6d65	616c	min=awaymax=meal
0240	6275	7379	776f	726b	7572	6e3d	636f	6c64	busyworkurn=cold
0250	6875	7274	6a65	616c	6f75	7370	6972	6974	hurtjealouspirit
0260	732d	7573	6572	2d70	726f	676f	7665	726e	s-user-progovern
0270	6d65	6e74	7261	696e	2d73	7461	7469	6f6e	mentrain-station
0280	6f72	6566	6572	7375	6273	6372	6962	6566	orefersubscribef
0290	6f72	6574	7261	6e73	6d69	7373	696f	6e2d	oretransmission-
02A0	616c	6c6f	7765	6475	7261	7469	6f6e	2d73	alloweduration-s
02B0	7562	7363	7269	6265	643d	6869	6768	6572	ubscribed=higher
02C0	7468	616e	7869	6f75	7365	7276	6963	652d	thanxiouservice-
02D0	6465	7363	7269	7074	696f	6e3d	6272	6561	description=brea
02E0	6b66	6173	7461	6469	756d	7367	2d74	616b	kfastadiumsg-tak
02F0	6572	656d	6f72	7365	6675	6c6c	3a63	6976	eremorsefull:civ
0300	6963	4c6f	636f	6e66	6572	656e	6365	7175	icLoconferencequ
0310	616c	7374	7265	7373	6564	7761	7465	7263	alstressedwaterc
0320	7261	6674	6572	616e	6765	3a62	6173	6963	rafterange:basic
0330	506f	6c69	6379	636c	6563	6f75	6e74	7279	Polycyclecountry
0340	6368	616e	6765	6475	6e74	696c	3d61	6464	changeduntil=add
0350	6564	7572	693d	7768	6174	7065	726d	616e	eduri=whatperman
0360	656e	742d	6162	7365	6e63	656d	6261	7272	ent-absencembarr
0370	6173	7365	6465	6163	7469	7661	7465	6469	assedactivatededi
0380	7374	7261	6374	6564	696e	6e65	7276	6f75	stractedinnervou
0390	7365	6c66	696c	7465	7265	6c69	6576	6564	selfilterrelieved
03A0	666c	6972	7461	7469	6f75	7361	6765	2d72	flirtatiousage-r
03B0	756c	6573	6572	7663	6170	7370	6865	7265	uleservcapsphere
03C0	6769	7374	7261	7469	6f6e	2d73	7461	7465	gistration-state
03D0	3d62	6172	7269	6e67	2d73	7461	7465	7874	=barring-statext
03E0	6572	6e61	6c2d	7275	6c65	7365	7469	6d65	ernal-rulesetime

03F0	2d6f	6666	7365	7464	6961	6c6f	6769	6e5f	-offsetdialogin_
0400	6c6f	7665	7272	6964	696e	672d	7769	6c6c	loverriding-will
0410	696e	676e	6573	7370	6563	7461	746f	7265	ingnesspectatore
0420	7369	6465	6e63	6576	656e	742d	7061	636b	sidencevent-pack
0430	6167	6573	7570	6572	7669	736f	7265	7374	agesupervisorest
0440	6175	7261	6e74	7275	636b	706c	6d6f	6269	aurantruckplmobi
0450	6c69	7479	6a6f	696e	6170	7072	6f70	7269	lityjoinappropri
0460	6174	6576	656e	746c	6973	7465	6572	696e	ateventlisteerin
0470	6769	7665	7570	7269	6e63	6970	616c	616e	giveuprincipalan
0480	6775	6167	6573	6368	656d	6573	7361	6765	guageschemessage
0490	2d73	756d	6d61	7279	706c	6163	652d	6f66	-summaryplace-of
04A0	2d77	6f72	7368	6970	6c61	6365	2d74	7970	-worshipplace-typ
04B0	653d	3a74	696d	6564	2d73	7461	7475	732d	e=:timed-status-
04C0	6963	6f6e	7374	7275	6374	696f	6e65	7574	iconstructioneut
04D0	7261	6c49	4e46	4f50	5449	4f4e	5369	656d	ralINFOPTIONSiem
04E0	656e	732d	5254	502d	5374	6174	7365	7276	ens-RTP-Statserv
04F0	6963	652d	6964	6c65	2d74	6872	6573	686f	ice-idle-thresho
0500	6c64	3d70	7562	6c69	632d	7472	616e	7370	ld=public-transp
0510	6f72	746f	6f62	7269	6768	7472	6967	6765	ortoobrighttrigge
0520	7265	736f	7572	6365	3d3a	6765	6f70	7269	resource=:geopri
0530	7631	3030	7265	6c61	7469	6f6e	7368	6970	v100relationship
0540	6f63	2d73	6574	7469	6e67	7375	7270	7269	oc-settingsurpri
0550	7365	6461	726b	7572	6e3a	6f6d	613a	786d	sedarkurn:oma:xml
0560	6c3a	7072	733a	7069	6466	3a6f	6d61	2d70	l:prs:pidf:oma-p
0570	7265	7365	6e74	6174	696f	6e6f	6973	793a	resentationnoisy:
0580	7369	6d70	6c65	2d66	696c	7465	722d	7365	simple-filter-se
0590	7469	6d65	6f75	7464	6f6f	7273	6368	6f6f	timeoutdoorschoo
05A0	6c70	6172	7469	616c	6f63	6174	696f	6e2d	lpartiallocation-
05B0	696e	666f	726d	6174	696f	6e61	6d65	6574	informationameet
05C0	696e	6763	616c	6d65	7468	6f64	7374	6f72	ingcalmethodstor
05D0	6574	656e	7469	6f6e	2d65	7870	6972	793a	etention-expiry:
05E0	7761	7463	6865	7269	6e66	6f66	6665	6e64	watcherinfoffend
05F0	6564	636f	6e74	726f	6c6f	6f6b	696e	672d	edcontrolooking-
0600	666f	722d	776f	726b	696e	6777	6174	6368	for-workingwatch
0610	6572	2d6c	6973	7472	6565	7470	6c61	6365	er-listreetplace
0620	2d69	7366	6f63	7573	6f75	6e64	6572	7761	-isfocusunderwa
0630	7968	6f6d	6570	6167	6570	7269	7661	6379	yhomepageprivacy
0640	7761	7265	686f	7573	6572	2d69	6e70	7574	warehouse-input
0650	7261	7665	6c62	6f74	6865	7265	6365	6976	ravelbothereceiv
0660	652d	6f6e	6c79	3a72	6c6d	696e	7661	6c75	e-only:rlminvalu
0670	653d	3a63	6170	736c	6565	7069	6e67	7569	e=:capsleepingui
0680	6c74	7969	6e76	696e	6369	626c	6576	656e	ltyinvincibleleven
0690	743d	6d6f	6f64	7970	6163	6b61	6765	3d70	t=moodypackage=p
06A0	7269	6f72	6974	7976	6964	656f	6672	6f6d	riorityvideofrom
06B0	3d61	7564	696f	6361	7264	706f	733d	6175	=audiocardpos=au
06C0	746f	6d61	7461	7070	6c69	6361	7469	6f6e	tomatapplication
06D0	6f74	7375	7070	6f72	7465	6465	7669	6365	otsupportedevice
06E0	4944	696d	7072	6573	7365	6469	7361	7070	IDimpressedisapp

06F0	6f69	6e74	6564	6e6f	7465	2d77	656c	6c69	ointednote-welli
0700	6272	6172	793a	6461	7461	2d6d	6f64	656c	brary:data-model
0710	6563	7472	6f6e	6963	6976	6963	4164	6472	ectronicivicAddr
0720	6573	7361	7263	6173	7469	636f	6e74	656e	essarcasticconten
0730	7465	6469	6e64	6967	6e61	6e74	696d	6572	tedindignantimer
0740	6570	6c61	6365	7368	6f63	6b65	6463	6c61	eplaceshockedcla
0750	7373	6973	7461	6e74	696d	6573	7461	6d70	ssistantimestamp
0760	726f	7669	6465	642d	6279	3a63	6970	6964	rovided-by:cipid
0770	662d	6675	6c6c	5374	6174	653d	6163	746f	f-fullState=acto
0780	7265	6d6f	7665	6462	7573	696e	6573	7365	removedbusinesse
0790	7269	6f75	7365	6c3d	3a73	6368	656d	6178	riousel=:schemax
07A0	7661	6c75	653d	3a72	7069	6475	726e	3a69	value=:rpidurn:i
07B0	6574	663a	7061	7261	6d73	3a78	6d6c	2d70	etf:params:xml-p
07C0	6174	6368	2d6f	7073	6563	2d61	6772	6565	atch-opsec-agree
07D0	6172	6c79	2d73	6573	7369	6f6e	2d70	6174	arly-session-pat
07E0	6963	6970	6174	696f	6e2d	7468	652d	7068	icipation-the-ph
07F0	6f6e	6574	776f	726b	2d61	7661	696c	6162	onetwork-availab
0800	696c	6974	7970	6572	666f	726d	616e	6365	ilityperformance
0810	7863	6974	6564	7072	6563	6f6e	6469	7469	xcitedpreconditi
0820	6f6e	6f72	6573	6f75	7263	652d	7072	696f	onoresource-prio
0830	7269	7479	3d66	616c	7365	7276	6963	652d	rity=falservice-
0840	636c	6173	7372	6f6f	6d75	7374	556e	6465	classroommustUnde
0850	7273	7461	6e64	6973	706c	6179	2d6e	616d	rstandisplay-nam
0860	653d	696e	7374	616e	6365	7874	656e	7369	e=instancextensi
0870	6f6e	732d	6269	6e64	696e	6773	6470	2d61	ons-bindingsdp-a
0880	6e61	7474	656e	6461	6e74	7275	653a	7069	nattendantrue:pi
0890	6466	2d64	6966	6672	7573	7472	6174	6564	df-diffrustrated
08A0	7570	6c65	7870	6972	6174	696f	6e3d	636f	uplexpiration=co
08B0	6e74	6163	7469	7669	7469	6573	686f	7070	ntactivitieshopp
08C0	696e	672d	6172	6561	736f	6e3d	6170	706f	ing-areason=appo
08D0	696e	746d	656e	7469	7479	3d61	7373	6f63	intmentity=assoc
08E0	6961	7465	6e63	6f64	696e	673d	696e	7465	iatencoding=inte
08F0	7265	7374	6564	6576	6361	7073	7461	7475	restedevcapstatu
0900	733d	6163	7469	7665	7273	696f	6e3d	7769	s=activerversion=wi
0910	6e66	6f70	656e	6469	6e67	696e	2d74	7261	nfopendingin-tra
0920	6e73	6974	7570	6c65	686f	7370	6974	616c	nsituplehospital
0930	616e	673d	3c3f	786d	6c6e	733d	7369	636b	ang=<?xmlns=sick
0940	7072	6573	656e	6365	5554	462d	383f	3e63	presenceUTF-8?>c
0950	6c6f	7365	6405	0d34	080d	0609	0ce3	070d	losed..4.....
0960	4806	0d36	130b	ab05	0965	070c	d408	0d40	H..6.....e.....@
0970	050d	2305	0c35	070c	ae05	0d2f	0608	b905	..#..5...../.....
0980	072b	040d	1206	0d4f	090c	2c04	0c89	040a	..+.....O.....
0990	f609	0b57	0b0b	0508	0ada	060a	da06	0489	...W.....
09A0	050b	a604	0b94	0605	0507	0b3f	0e0b	ba07	.....?.....
09B0	0b98	0a0c	8d09	0b6d	090c	8e0e	0c48	0a0c	.....m.....H..
09C0	b21d	0956	0d0c	3806	07ba	0b08	b90b	07ec	...V..8.....
09D0	060d	020a	0a46	0408	f406	0b6a	040a	b60c	.....F.....j....
09E0	0c55	080a	3104	0a92	080a	1b05	0ab1	0408	.U..1.....

09F0	c005	0a27	050a	a705	0aac	040a	ba04	07dc	...'
0A00	0508	ad0a	0929	0a08	a705	0a56	050b	4d07	.....).....V..M.
0A10	092a	0d09	a70b	07a9	0609	c60b	0b5f	0c09	.*....._..
0A20	df0b	09e0	0607	cb0c	0a0b	0909	2008	0a97	.....
0A30	0709	e007	0cfb	060a	8c0e	097f	0a09	870b	.....
0A40	0c71	0a0c	7106	0793	050a	6604	0867	0409	.q..q.....f..g..
0A50	ba08	0920	0a0b	7205	0a72	0807	b30b	0ac5	... ..r..r.....
0A60	0709	f207	0889	0408	ad08	0abe	060c	9f0b	.....
0A70	06d0	0e08	2608	0a9f	0709	c60a	0c69	0708	....&.....i..
0A80	8505	0b7c	070a	390c	0934	070a	2109	087d	... .9..4..!..}
0A90	070c	f50b	0ca3	1406	a60d	08b2	0c07	2a0c	.....*
0AA0	08b3	0407	5607	091a	0407	5207	0740	0507	....V.....R..@..
0AB0	4d07	0b80	0607	4716	0691	080c	6210	09cf	M.....G.....b...
0AC0	1007	dd09	0af6	0906	fc0c	0b17	0707	3904	.....9.
0AD0	06f8	0709	a106	068d	0507	2104	0a55	090a	.....!..U..
0AE0	d20c	0acf	1306	c80a	08ec	070d	060b	080c	.....
0AF0	140b	d512	07be	0d07	d116	0801	140b	f106	.....
0B00	05b4	0704	5609	0417	0c0a	ea09	041f	0a07	....V.....
0B10	7e0b	076a	070c	0f0b	07a0	0a0c	9606	0528	~..j.....(
0B20	060a	7d05	061f	0705	8b0a	043c	0605	ae04	..}.....<....
0B30	0650	090a	e206	05f6	0707	fd09	0b33	0a0c	.P.....3..
0B40	ec0a	0a83	0706	5406	0490	0405	3f05	0a92	.....T.....?...
0B50	0707	8a07	08cc	0809	ea07	0496	0506	1008	.....
0B60	0798	0a06	f108	0479	090b	2207	0b8e	070b	.....y..".
0B70	4604	0d3c	0604	8008	0712	0909	4a07	04e3	F.<.....J...
0B80	0705	8405	097a	0506	0109	0912	0409	520d	.....z.....R.
0B90	04aa	0d08	5608	04dc	0705	9205	050c	0a04	....V.....
0BA0	4c04	062c	0b04	d104	0624	090c	4004	04ce	L.,.....\$.@...
0BB0	0c08	c111	0400	0507	340a	066a	080d	2805	.....4..j..(.
0BC0	061a	0a04	2807	0afe	0604	ff08	0994	0705	....(.....
0BD0	7610	0898	0605	f006	0903	1009	0309	081e	v.....
0BE0	0a08	3c06	099b	0d0c	bb07	06e3	0509	cc06	.<.....
0BF0	0a15	0704	7305	0673	0d06	7305	0845	080a	....s..s..s..E..
0C00	2909	0a40	0507	1a0a	071a	090b	4f09	0cdb	)..@.....O...
0C10	0605	ea06	05de	0a04	0e0a	0b0e	0906	8608	.....
0C20	0560	0b07	7409	054f	0804	f007	0990	0608	..'.t..O.....
0C30	700a	0c21	0705	6f0b	0ccc	0407	9007	04ea	p..!..o.....
0C40	0a08	3304	0634	0906	dc04	0640	0705	2e04	..3..4.....@....
0C50	0648	0607	8707	0568	0a0d	1a07	0445	0705	.H.....h.....E..
0C60	0508	050e	0805	5808	04b6	1009	f804	063c	.....X.....<
0C70	0709	bc0c	06d0	0c0b	e704	0644	040a	310b	.....D..1.
0C80	0c05	0406	2811	075a	070c	c507	05a0	0c09	....(..Z.....
0C90	6f08	0cbb	080a	7609	0816	0808	6906	05e4	o.....v.....i...
0CA0	0904	8607	0538	060a	4f08	04c6	0f08	f40b	.....8..O.....
0CB0	0431	070a	0407	08a1	0d0c	5506	05c0	0605	.1.....U.....
0CC0	ba05	0541	080b	8708	0489	0405	350c	0a5a	...A.....5..Z
0CD0	0904	6809	049c	0a06	ba06	070d	0507	2509	..h.....%.
0CE0	0b9d	090a	6906	0a6c	0406	3804	0630	070d	....i..l..8..0..

```

0CF0 1308 084c 0506 1506 0450 0a07 0406 07f7 ...L.....P.....
0D00 0408 490f 0889 0c09 3f05 0681 1108 dc0d ..I.....?.....
0D10 045c 1106 5a05 0d0e 0605 d804 08d3 0605 .\e..Z.....
0D20 d207 057d 0605 cc07 08d6 0506 0b07 05a7 ...}.....
0D30 0505 1608 051a 0905 4606 05c6 0609 310d .....F.....1.
0D40 0bcf 0908 6208 04f8 0408 540a 067f 0404 ...b.....T.....
0D50 710c 0c16 0405 2e08 0b3f 110c 2308 0c7b q.....?..#...{
0D60 090b c707 07f6 050b 3b09 0875 090c 8109 ...../..u....
0D70 06e9 0b09 b007 0522 0704 a307 06c2 0705 ....."......
0D80 9905 0606 0505 fc04 09c3 0406 4c08 04be .....L...
0D90 090b 2a ..*

```

Figure 1: Binary Representation of the Dictionary

## 5. Security Considerations

This document defines a presence-specific static dictionary for the Sigcomp framework [2]. Therefore, the security considerations of RFC 3320 [2] apply. This memo does not introduce any known additional security risk.

## 6. Acknowledgements

The author would like to thank Miraj Mostafa, Pekka Pessi, and Catalin Ionescu for their persistent convincing arguments to demonstrate the benefit of this dictionary. Thanks to Carsten Bormann and Adam Roach for providing assistance with the software that automatically generates the binary dictionary. Adam Roach, Cristian Constantin, and Avshalom Houri, and Krisztian Kiss reviewed the document and provided helpful comments.

## Appendix A. Input Strings to the Presence-Specific Static Dictionary

String	Pr	Off	Len	References
=====	==	====	====	=====
"<?xml "	1	0934	0005	
"version="	1	0906	0008	
"encoding="	1	08E3	0009	
"UTF-8?>"	1	0948	0007	
"xmlns="	1	0936	0006	
"urn:ietf:params:xml "	1	07AB	0013	[8] 4.4 [10] 5.1 [11] 5 [12] 5 [13] 5 [14] 9 [15] 7 [17] 6 [18] 7 [19] 5.1 [20] 3.2, 3.3
":pidf"	1	0565	0005	[8] 4.4 [10] 5.1 [11] 5 [12] 5 [13] 5 [20] 3.2, 3.3
"entity="	1	08D4	0007	[8] 4.4, [15] 7
"presence"	1	0940	0008	[8] 4.4 [20] 3.2.14
"tuple"	1	0923	0005	[8] 4.4
"note"	2	06F6	0004	[8] 4.4 [10] 5.1 [11] 5 [13] 5
"contact"	1	08AE	0007	[8] 4.4
"timestamp"	2	0757	0009	[8] 4.4 [10] 5.1
"status"	1	04B9	0006	[8] 4.4
"basic"	1	032B	0005	[8] 4.4 [13] 5 [21]
"open"	1	0912	0004	[8] 4.4, [21]
"closed"	1	094F	0006	[8] 4.4, [21]
"priority="	1	082C	0009	[8] 4.4
"mustUnderstand"	3	0848	000E	[8] 4.4
"true"	1	0889	0004	[8] 4.4 [16] 2.2.5 [18] 7

			[19] 5.1
			[20] 3.2, 3.3
"false"	1 0835 0005	[8] 4.4	
		[16] 2.2.5	
		[18] 7	
		[19] 5.1	
		[20] 3.2, 3.3	
":data-model"	2 0705 000B	[10] 5.1	
"deviceID"	2 06DA 0008	[10] 5.1	
"device"	2 06DA 0006	[10] 5.1	
"person"	2 0089 0006	[10] 5.1	
":rpid"	2 07A6 0005	[11] 5	
"activities"	3 08B2 000A	[11] 5	
"unknown"	5 016F 0007	[11] 5	
"appointment"	5 08CC 000B	[11] 5	
"away"	5 0234 0004	[11] 5	
"breakfast"	5 02DC 0009	[11] 5	
"busy"	5 0240 0004	[11] 5	
"dinner"	5 0387 0006	[11] 5	
"holiday"	5 0168 0007	[11] 5	
"in-transit"	5 091A 000A	[11] 5	
"looking-for-work"	5 05F8 0010	[11] 5	
"meal"	5 023C 0004	[11] 5	
"meeting"	5 05BC 0007	[11] 5	
"on-the-phone"	5 07E7 000C	[11] 5	
"performance"	5 0805 000B	[11] 5	
"permanent-absence"	5 035A 0011	[11] 5	
"playing"	5 01A0 0007	[11] 5	
"presentation"	5 056F 000C	[11] 5	
"shopping"	5 08BB 0008	[11] 5	
"sleeping"	5 0676 0008	[11] 5	
"spectator"	5 0416 0009	[11] 5	
"steering"	5 0469 0008	[11] 5	
"travel"	5 064F 0006	[11] 5	
"vacation"	5 00C6 0008	[11] 5	
"working"	5 0604 0007	[11] 5	
"worship"	5 04A1 0007	[11] 5	
"other"	3 0656 0005	[11] 5	
"class"	3 074D 0005	[11] 5	
		[20] 3.2	
"afraid"	5 01C0 0006	[11] 5	
"amazed"	5 01BA 0006	[11] 5	
"angry"	5 0141 0005	[11] 5	
"annoyed"	5 00A3 0007	[11] 5	
"anxious"	5 02C2 0007	[11] 5	
"ashamed"	5 0199 0007	[11] 5	
"bored"	5 0206 0005	[11] 5	
"brave"	5 01FC 0005	[11] 5	

"calm"	5	05C3	0004	[11]	5
"cold"	5	024C	0004	[11]	5
"confused"	5	00BE	0008	[11]	5
"contented"	5	072A	0009	[11]	5
"cranky"	5	01B4	0006	[11]	5
"curious"	5	0056	0007	[11]	5
"depressed"	5	0017	0009	[11]	5
"disappointed"	5	06EA	000C	[11]	5
"disgusted"	5	001F	0009	[11]	5
"distracted"	5	037E	000A	[11]	5
"embarrassed"	5	036A	000B	[11]	5
"excited"	5	080F	0007	[11]	5
"flirtatious"	5	03A0	000B	[11]	5
"frustrated"	5	0896	000A	[11]	5
"grumpy"	5	0128	0006	[11]	5
"guilty"	5	067D	0006	[11]	5
"happy"	5	021F	0005	[11]	5
"humbled"	5	018B	0007	[11]	5
"humiliated"	5	003C	000A	[11]	5
"hungry"	5	01AE	0006	[11]	5
"hurt"	5	0250	0004	[11]	5
"impressed"	5	06E2	0009	[11]	5
"in_awe"	5	01F6	0006	[11]	5
"in_love"	5	03FD	0007	[11]	5
"indignant"	5	0733	0009	[11]	5
"interested"	5	08EC	000A	[11]	5
"invincible"	5	0683	000A	[11]	5
"jealous"	5	0254	0007	[11]	5
"lonely"	5	0090	0006	[11]	5
"mean"	5	013F	0004	[11]	5
"moody"	5	0692	0005	[11]	5
"nervous"	5	038A	0007	[11]	5
"neutral"	5	04CC	0007	[11]	5
"offended"	5	05EA	0008	[11]	5
"playful"	5	0096	0007	[11]	5
"proud"	5	0210	0005	[11]	5
"relieved"	5	0398	0008	[11]	5
"remorseful"	5	02F1	000A	[11]	5
"restless"	5	0079	0008	[11]	5
"sarcastic"	5	0722	0009	[11]	5
"serious"	5	078E	0007	[11]	5
"shocked"	5	0746	0007	[11]	5
"sick"	5	093C	0004	[11]	5
"sleepy"	5	0080	0006	[11]	5
"stressed"	5	0312	0008	[11]	5
"surprised"	5	054A	0009	[11]	5
"thirsty"	5	00E3	0007	[11]	5
"worried"	5	0184	0007	[11]	5

"mood"	3	0692	0004	[11]	5
"place-is"	3	061B	0008	[11]	5
"audio"	3	06B1	0005	[11]	5
				[20]	3.2
"noisy"	5	057A	0005	[11]	5
"quiet"	5	0201	0005	[11]	5
"video"	3	06A7	0005	[11]	5
				[20]	3.2
"toobright"	5	0512	0009	[11]	5
"dark"	5	0552	0004	[11]	5
"text"	3	03DC	0004	[11]	5
				[20]	3.2
"uncomfortable"	5	00AA	000D	[11]	5
"inappropriate"	5	0456	000D	[11]	5
"place-type"	3	04A7	000A	[11]	5
"aircraft"	5	00DC	0008	[11]	5
"airport"	5	0192	0007	[11]	5
"arena"	5	010C	0005	[11]	5
"automobile"	5	004C	000A	[11]	5
"bank"	5	022C	0004	[11]	5
"bus-station"	5	00D1	000B	[11]	5
"cafe"	5	0224	0004	[11]	5
"classroom"	5	0840	0009	[11]	5
"club"	5	00CE	0004	[11]	5
"construction"	5	04C1	000C	[11]	5
"convention-center"	5	0000	0011	[11]	5
"cycle"	5	0334	0005	[11]	5
"government"	5	026A	000A	[11]	5
"hospital"	5	0928	0008	[11]	5
"hotel"	5	021A	0005	[11]	5
"industrial"	5	0028	000A	[11]	5
"library"	5	06FE	0007	[11]	5
"office"	5	00FF	0006	[11]	5
"outdoors"	5	0594	0008	[11]	5
"parking"	5	0176	0007	[11]	5
"place-of-worship"	5	0498	0010	[11]	5
"prison"	5	01F0	0006	[11]	5
"public"	5	0503	0006	[11]	5
"public-transport"	5	0503	0010	[11]	5
"residence"	5	041E	0009	[11]	5
"restaurant"	5	043C	000A	[11]	5
"school"	5	059B	0006	[11]	5
"shopping-area"	5	08BB	000D	[11]	5
"stadium"	5	02E3	0007	[11]	5
"store"	5	05CC	0005	[11]	5
"street"	5	0615	0006	[11]	5
"theater"	5	0073	0007	[11]	5
"train"	5	0273	0005	[11]	5

"train-station"	5	0273	000D	[11]	5
"truck"	5	0445	0005	[11]	5
"underway"	5	0629	0008	[11]	5
"warehouse"	5	0640	0009	[11]	5
"water"	5	031A	0005	[11]	5
"watercraft"	5	031A	000A	[11]	5
"privacy"	3	0639	0007	[11]	5
				[20]	3.2.17
"relationship"	3	0534	000C	[11]	5
"assistant"	5	074F	0009	[11]	5
"associate"	5	08DB	0009	[11]	5
"family"	5	01EA	0006	[11]	5
"friend"	5	01DE	0006	[11]	5
"self"	5	0390	0004	[11]	5
"supervisor"	5	0433	000A	[11]	5
"courier"	5	00EA	0007	[11]	5
"electronic"	5	070E	000A	[11]	5
"freight"	5	0138	0007	[11]	5
"in-person"	5	0086	0009	[11]	5
"postal"	5	01E4	0006	[11]	5
"service-class"	3	0838	000D	[11]	5
"sphere"	3	03BA	0006	[11]	5
"home"	5	0631	0004	[11]	5
"work"	5	0244	0004	[11]	5
"status-icon"	3	04B9	000B	[11]	5
"time-offset"	3	03EC	000B	[11]	5
"description="	5	02D0	000C	[11]	5
"user-input"	3	0646	000A	[11]	5
"active"	3	0902	0006	[11]	5
				[17]	6
				[19]	5.1
				[21]	
"idle"	3	04F4	0004	[11]	5
"idle-threshold="	5	04F4	000F	[11]	5
"last-input="	5	0031	000B	[11]	5
":cipid"	3	076A	0006	[12]	5
"card"	3	06B6	0004	[12]	5
"display-name"	3	0855	000C	[12]	5
"homepage"	3	0631	0008	[12]	5
"icon"	3	04C0	0004	[12]	5
"sound"	3	0627	0005	[12]	5
":timed-status"	4	04B2	000D	[13]	5
"timed-status"	4	04B3	000C	[13]	5
"from="	3	06AC	0005	[10]	5.1
				[11]	5
				[13]	5
				[18]	7
"until="	4	0347	0006	[10]	5.1

			[11]	5
			[13]	5
" :schema "	2	0798 0007	[14]	9
" :xml-patch-ops "	2	07BA 000E	[14]	9
"replace"	2	073F 0007	[14]	9
"remove"	2	0105 0006	[14]	9
"sel="	2	0794 0004	[14]	9
"pos="	3	06BA 0004	[14]	9
"type="	3	04AD 0005	[14]	9, [18] 7
"before"	4	028D 0006	[14]	9
"after"	4	0321 0005	[14]	9
"both"	4	0655 0004	[14]	9
" :pidf-diff "	2	088D 000A	[15]	7
"pidf-diff"	2	088E 0009	[15]	7
"pidf-full"	2	076D 0009	[15]	7
" :geopriv10 "	3	0529 000A	[16]	2.2.5
" :basicPolicy "	4	032A 000C	[16]	2.2.5
"geopriv"	3	052A 0007	[16]	2.2.5
"location-info"	3	05A7 000D	[16]	2.2.5
"usage-rules"	3	03A9 000B	[16]	2.2.5
"method"	3	05C6 0006	[16]	2.2.5
"provided-by"	3	075F 000B	[16]	2.2.5
"retransmission-allowed"	4	0291 0016	[16]	2.2.5
"retention-expiry"	4	05CF 0010	[16]	2.2.5
"external-ruleset"	4	03DD 0010	[16]	2.2.5
"note-well"	4	06F6 0009	[16]	2.2.5
" :civicLoc "	4	02FC 0009	[16]	2.2.5
"civicAddress"	4	0717 000C	[16]	2.2.5
"country"	4	0339 0007	[16]	2.2.5
" :watcherinfo "	3	05DF 000C	[17]	6
"watcherinfo"	3	05E0 000B	[17]	6
"state="	3	03CB 0006	[17]	6
			[19]	5.1
"full"	4	02F8 0004	[17]	6 [20] 3.2.12
"partial"	4	05A1 0007	[17]	6
"watcher-list"	3	060B 000C	[17]	6
"resource="	3	0520 0009	[17]	6
"package="	3	0697 0008	[17]	6, [18] 7
"watcher"	3	05E0 0007	[17]	6
"display-name="	5	0855 000D	[17]	6
"status="	3	08FB 0007	[17]	6
"pending"	5	0913 0007	[17]	6
			[19]	5.1
"waiting"	5	0122 0007	[17]	6
"terminated"	5	000E 000A	[17]	6
			[19]	5.1
			[21]	
"event="	3	068C 0006	[17]	6

"subscribe"	5	0286	0009	[17]	6
"approved"	5	0160	0008	[17]	6
"deactivated"	5	0374	000B	[17]	6
"provation"	5	014F	0009	[17]	6
"rejected"	5	00F0	0008	[17]	6
"timeout"	5	0590	0007	[17]	6
"giveup"	5	0470	0006	[17]	6
"noresource"	5	0821	000A	[17]	6
"expiration="	4	08A3	000B	[17]	6
"duration-subscribed="	4	02A6	0014	[17]	6
"lang="	1	092F	0005	[10]	5.1
				[16]	2.2.5
				[17]	6
				[19]	5.1
":simple-filter"	3	057F	000E	[18]	7
"filter-set"	3	0587	000A	[18]	7
"ns-bindings"	3	0871	000B	[18]	7
"ns-binding"	3	0871	000A	[18]	7
"filter"	3	0393	0006	[18]	7
"prefix="	5	012E	0007	[18]	7
"urn="	5	0248	0004	[18]	7
"what"	4	0356	0004	[18]	7
"trigger"	4	051A	0007	[18]	7
"uri="	4	0352	0004	[18]	7
				[19]	5.1
"domain="	5	0045	0007	[18]	7
"remove="	5	0105	0007	[18]	7
"enabled="	5	010E	0008	[18]	7
"include="	5	0158	0008	[18]	7
"exclude="	5	00B6	0008	[18]	7
"changed"	4	0340	0007	[18]	7
"added"	4	034D	0005	[18]	7
"removed"	4	0780	0007	[18]	7
":rlmi"	3	0666	0005	[19]	5.1
"list"	3	0467	0004	[19]	5.1
"name"	3	05BA	0004	[19]	5.1
"resource"	3	0520	0008	[19]	5.1
"fullState="	3	0772	000A	[19]	5.1
"cid="	5	0228	0004	[19]	5.1
"instance"	4	0862	0008	[19]	5.1
"reason="	5	08C5	0007	[19]	5.1
":caps"	3	0672	0005	[20]	3.2, 3.3
"servcaps"	3	03B3	0008	[20]	3.2
"application"	3	06C5	000B	[20]	3.2
"control"	3	05F2	0007	[20]	3.2
"message"	3	0489	0007	[20]	3.2
"type"	3	04AD	0004	[20]	3.2
"automata"	3	06BE	0008	[20]	3.2

"duplex"	3	089F	0006	[20]	3.2
"description"	3	02D0	000B	[20]	3.2, 3.3
				[21]	
"event-packages"	3	0426	000E	[20]	3.2
"priority"	3	069F	0008	[20]	3.2, 3.3
"methods"	3	05C6	0007	[20]	3.2
"extensions"	3	0869	000A	[20]	3.2
"schemes"	3	0485	0007	[20]	3.2
"actor"	3	077C	0005	[20]	3.2
"isfocus"	3	0621	0007	[20]	3.2
"languages"	3	047D	0009	[20]	3.2
"supported"	4	06D2	0009	[20]	3.2, 3.3
"notsupported"	4	06CF	000C	[20]	3.2, 3.3
"business"	5	0787	0008	[20]	3.2.11
"personal"	5	0089	0008	[20]	3.2.11
"half"	5	0135	0004	[20]	3.2.12
"receive-only"	5	065A	000C	[20]	3.2.12
"send-only"	5	0068	0009	[20]	3.2.12
"lowerthan"	5	009C	0009	[20]	3.2, 3.3
"higherthan"	5	02BA	000A	[20]	3.2, 3.3
"equals"	5	030D	0006	[20]	3.2, 3.3
"range"	5	0325	0005	[20]	3.2, 3.3
"maxvalue="	5	079D	0009	[20]	3.2, 3.3
"minvalue="	5	0669	0009	[20]	3.2, 3.3
"value="	5	066C	0006	[20]	3.2, 3.3
"max="	5	0238	0004	[20]	3.2, 3.3
"min="	5	0230	0004	[20]	3.2, 3.3
"devcaps"	3	08F5	0007	[20]	3.3
"mobility"	5	044C	0008	[20]	3.3
"fixed"	5	0215	0005	[20]	3.3.2
"mobile"	5	0050	0006	[20]	3.3.2
"conference"	5	0304	000A	[20]	3.2.14
"dialog"	5	03F7	0006	[20]	3.2.14
"kplm"	5	0449	0004	[20]	3.2.14
"message-summary"	5	0489	000F	[20]	3.2.14
"poc-settings"	5	053F	000C	[20]	3.2.14
"refer"	5	0281	0005	[20]	3.2.14
"Siemens-RTP-Stats"	5	04DC	0011	[20]	3.2.14
"spirits-INDPs"	5	005C	000D	[20]	3.2.14
"spirits-user-prog"	5	025A	0011	[20]	3.2.14
"winfo"	5	090E	0005	[20]	3.2.14
"CANCEL"	5	01D8	0006	[20]	3.2.16
"INFO"	5	04D3	0004	[20]	3.2.16
"INVITE"	5	01D2	0006	[20]	3.2.16
"MESSAGE"	5	017D	0007	[20]	3.2.16
"NOTIFY"	5	01CC	0006	[20]	3.2.16
"OPTIONS"	5	04D6	0007	[20]	3.2.16
"PRACK"	5	020B	0005	[20]	3.2.16

"PUBLISH"	5	01A7	0007	[20]	3.2.16
"REFER"	5	0116	0005	[20]	3.2.16
"REGISTER"	5	011A	0008	[20]	3.2.16
"SUBSCRIBE"	5	0146	0009	[20]	3.2.16
"UPDATE"	5	01C6	0006	[20]	3.2.16
"100rel"	5	0531	0006	[20]	3.2.17
"early-session"	5	07CF	000D	[20]	3.2.17
"eventlist"	5	0462	0009	[20]	3.2.17
"histinfo"	5	00F8	0008	[20]	3.2.17
"join"	5	0454	0004	[20]	3.2.17
"norefersub"	5	027F	000A	[20]	3.2.17
"path"	5	0071	0004	[20]	3.2.17
"precondition"	5	0816	000C	[20]	3.2.17
"pref"	5	012E	0004	[20]	3.2.17
"replaces"	5	073F	0008	[20]	3.2.17
"resource-priority"	5	0823	0011	[20]	3.2.17
"sdp-anat"	5	087B	0008	[20]	3.2.17
"sec-agree"	5	07C7	0009	[20]	3.2.17
"tdialog"	5	03F6	0007	[20]	3.2.17
"timer"	5	073B	0005	[20]	3.2.17
"principal"	5	0475	0009	[20]	3.2.19
"attendant"	5	0881	0009	[20]	3.2.19
"msg-taker"	5	02E9	0009	[20]	3.2.19
"information"	5	05B0	000B	[20]	3.2.19
"urn:oma:xml:prs:pidf:oma-pres"	3	0556	001D	[21]	
"service-description"	4	02C8	0013	[21]	
"service-id"	4	04EC	000A	[21]	
"version"	4	0906	0007	[21]	
"willingness"	4	040C	000B	[21]	
"session-paticipation"	4	07D5	0014	[21]	
"registration-state"	4	03BE	0012	[21]	
"barring-state"	4	03D1	000D	[21]	
"overriding-willingness"	4	0401	0016	[21]	
"network-availability"	4	07F1	0014	[21]	

Figure 2: Input Strings

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