























PRESENCE INFORMATION: consists of one or more PRESENCE TUPLES.

PRESENCE PROTOCOL: The messages that can be exchanged between a PRESENTITY and a PRESENCE SERVICE, or a WATCHER and a PRESENCE SERVICE.

PRESENCE SERVICE: accepts, stores, and distributes PRESENCE INFORMATION.

- May require authentication of PRESENTITIES, and/or WATCHERS.
- May have different authentication requirements for different PRESENTITIES.
- May have different authentication requirements for different WATCHERS, and may also have different authentication requirements for different PRESENTITIES being watched by a single WATCHER.
- May have an internal structure involving multiple SERVERS and/or PROXIES. There may be complex patterns of redirection and/or proxying while retaining logical connectivity to a single PRESENCE SERVICE. Note that a PRESENCE SERVICE does not require having a distinct SERVER -- the service may be implemented as direct communication among PRESENTITY and WATCHERS.
- May have an internal structure involving other PRESENCE SERVICES, which may be independently accessible in their own right as well as being reachable through the initial PRESENCE SERVICE.

PRESENCE TUPLE: consists of a STATUS, an optional COMMUNICATION ADDRESS, and optional OTHER PRESENCE MARKUP.

PRESENCE USER AGENT: means for a PRINCIPAL to manipulate zero or more PRESENTITIES.

Motivation: This is essentially a "model/view" distinction: the PRESENTITY is the model of the presence being exposed, and is independent of its manifestation in any user interface. In addition, we deliberately take no position on how the PRESENCE USER AGENT, PRESENTITY, and PRESENCE SERVICE are colocated or distributed across machines.

PRESENTITY (presence entity): provides PRESENCE INFORMATION to a PRESENCE SERVICE.

Motivation: We don't like to coin new words, but "presentity" seemed worthwhile so as to have an unambiguous term for the entity of interest to a presence service. Note that the presentity is not (usually) located in the presence service: the presence service only has a recent version of the presentity's presence information. The presentity initiates changes in the presence information to be distributed by the presence service.

PRINCIPAL: human, program, or collection of humans and/or programs that chooses to appear to the PRESENCE SERVICE as a single actor, distinct from all other PRINCIPALS.

Motivation: We need a clear notion of the actors outside the system. "Principal" seems as good a term as any.

PROXY: a SERVER that communicates PRESENCE INFORMATION, INSTANT MESSAGES, SUBSCRIPTIONS and/or NOTIFICATIONS to another SERVER. Sometimes a PROXY acts on behalf of a PRESENTITY, WATCHER, or INSTANT INBOX.

SENDER: source of INSTANT MESSAGES to be delivered by the INSTANT MESSAGE SERVICE.

SENDER USER AGENT: means for a PRINCIPAL to manipulate zero or more SENDERS.

SERVER: an indivisible unit of a PRESENCE SERVICE or INSTANT MESSAGE SERVICE.

SPAM: unwanted INSTANT MESSAGES.

SPOOFING: a PRINCIPAL improperly imitating another PRINCIPAL.

STALKING: using PRESENCE INFORMATION to infer the whereabouts of a PRINCIPAL, especially for malicious or illegal purposes.

STATUS: a distinguished part of the PRESENCE INFORMATION of a PRESENTITY. STATUS has at least the mutually-exclusive values OPEN and CLOSED, which have meaning for the acceptance of INSTANT MESSAGES, and may have meaning for other COMMUNICATION MEANS. There may be other values of STATUS that do not imply anything about INSTANT MESSAGE acceptance. These other values of STATUS may be combined with OPEN and CLOSED or they may be mutually-exclusive with those values.

Some implementations may combine STATUS with other entities. For example, an implementation might make an INSTANT INBOX ADDRESS visible only when the INSTANT INBOX can accept an INSTANT MESSAGE. Then, the existence of an INSTANT INBOX ADDRESS implies OPEN, while its absence implies CLOSED.

**SUBSCRIBER:** a form of WATCHER that has asked the PRESENCE SERVICE to notify it immediately of changes in the PRESENCE INFORMATION of one or more PRESENTITIES.

**SUBSCRIPTION:** the information kept by the PRESENCE SERVICE about a SUBSCRIBER's request to be notified of changes in the PRESENCE INFORMATION of one or more PRESENTITIES.

**VISIBILITY RULES:** constraints on how a PRESENCE SERVICE makes WATCHER INFORMATION available to WATCHERS. For each WATCHER's WATCHER INFORMATION, the applicable VISIBILITY RULES are manipulated by the WATCHER USER AGENT of a PRINCIPAL that controls the WATCHER.

Motivation: We need a way of talking about hiding watcher information from people.

**WATCHER:** requests PRESENCE INFORMATION about a PRESENTITY, or WATCHER INFORMATION about a WATCHER, from the PRESENCE SERVICE. Special types of WATCHER are FETCHER, POLLER, and SUBSCRIBER.

**WATCHER INFORMATION:** information about WATCHERS that have received PRESENCE INFORMATION about a particular PRESENTITY within a particular recent span of time. WATCHER INFORMATION is maintained by the PRESENCE SERVICE, which may choose to present it in the same form as PRESENCE INFORMATION; that is, the service may choose to make WATCHERS look like a special form of PRESENTITY.

Motivation: If a PRESENTITY wants to know who knows about it, it is not enough to examine only information about SUBSCRIPTIONS. A WATCHER might repeatedly fetch information without ever subscribing. Alternately, a WATCHER might repeatedly subscribe, then cancel the SUBSCRIPTION. Such WATCHERS should be visible to the PRESENTITY if the PRESENCE SERVICE offers WATCHER INFORMATION, but will not be appropriately visible if the WATCHER INFORMATION includes only SUBSCRIPTIONS.

**WATCHER USER AGENT:** means for a PRINCIPAL to manipulate zero or more WATCHERS controlled by that PRINCIPAL.

Motivation: As with PRESENCE USER AGENT and PRESENTITY, the distinction here is intended to isolate the core functionality of a WATCHER from how it might appear to be manipulated by a product. As previously, we deliberately take no position on whether the WATCHER USER AGENT, WATCHER, and PRESENCE SERVICE are colocated or distributed across machines.

#### **4. Security Considerations**

This document provides a model and vocabulary for systems with certain intrinsic security issues. In particular, presence and instant messaging systems must deal with "the three S's": STALKING, SPOOFING, and SPAM. ACCESS RULES, VISIBILITY RULES, and WATCHER INFORMATION are intended to deal with STALKING. The several kinds of authentication mentioned for INSTANT MESSAGE SERVICE and PRESENCE SERVICE are intended to deal with SPOOFING. DELIVERY RULES are intended to deal with SPAM.

#### **5. Conclusion**

This document has provided a model for a presence and instant messaging system. The purpose of the model is to provide a common vocabulary for the further work of defining and implementing interoperable presence and instant messaging protocols.

#### **6. Acknowledgements**

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