

Peer-to-Peer Session Initiation Protocol (P2PSIP)

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Description of the Working Group:

The Peer-to-Peer (P2P) Session Initiation Protocol working group (P2PSIP WG) is chartered to develop protocols and mechanisms for the use of the Session Initiation Protocol (SIP) in settings where the service of establishing and managing sessions is principally handled by a collection of intelligent endpoints, or P2PSIP peers, rather than centralized servers as in client-server SIP as currently deployed. A number of cases where such an architecture is desirable have been documented in [1].

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The terminology and concepts draft [2] explains the terms and concepts used here. The work focuses on collections of nodes called "P2PSIP peers" and "P2PSIP clients". P2PSIP peers manifest a distributed namespace in which overlay users are identified and provides mechanisms for locating users or resources within the P2PSIP overlay. P2PSIP clients and peers use the resolution services of the peers as an alternative to the SIP correspondent discovery process of RFC 3263. Session management, messaging, and presence functions are performed using traditional SIP.

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This group's primary tasks are to produce:

1. An overview document explaining concepts, terminology, rationale, and illustrative use cases for the remaining work.

2. A proposed standard defining a P2PSIP Peer Protocol. This protocol is used between P2PSIP overlay peers, some of which may be behind NATs. This protocol will define how the P2PSIP peers collectively provide for user and resource location in a SIP environment with no or minimal centralized serves. This protocol may or may not be syntactically based on SIP, a decision to be made by the WG. The group will identify and require one base P2P algorithm (likely a particular Distributed Hash Table (DHT) algorithm), while allowing for additional optional algorithms in the future.

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3. A proposed standard defining a P2PSIP Client Protocol for use by P2PSIP clients, some of which may be behind NATs. This protocol will define how the P2PSIP clients query and/or modify, the resource location information of the overlay. While clearly a logical subset of the P2PSIP Protocol, the WG will determine if the client protocol is a syntactic subset of the peer protocol, and whether the client protocol has SIP based syntax.

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4. An applicability statement. This document will address how the protocols defined above, along with existing IETF protocols, can be used to produce systems to locate a user, identify appropriate resources to facilitate communications (for example media relays), and establish communications between the users, without relying on centralized servers.

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The work planned for the P2PSIP working group is distinct from, but requires close participation with other IETF WGs, particularly SIP, SIPING, SIMPLE, BEHAVE and MMUSIC. The group cannot modify the baseline SIP behavior, define a new version of SIP, or attempt to produce a parallel protocol for session establishment. If the group determines that any capabilities requiring an extension to SIP are needed, the group will seek to define such extensions within the SIP working group using the SIP change process (RFC 3427). Similarly, existing tools developed in the BEHAVE and MMUSIC groups will be used for NAT traversal, with extensions or changes desired to support P2PSIP created in these groups.

The working group takes it as a fact that NATs and firewalls exist in the Internet, and will ensure that the protocols produced work in their presence as much as possible. Similarly, the group will attempt not to make design decisions that preclude anonymous communications systems from being crafted using the protocols defined by this WG.

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The following topics are excluded from the Working Group's scope:

1. Issues specific to applications other than locating users and resources for SIP-based communications and presence.
2. Solving "research" type questions related to P2PSIP or P2P in general. The WG will instead forward such work to the IRTF P2PRG or other RG as appropriate. Examples include fully distributed schemes for assuring unique user identities and the development of P2P-based replacements for DNS.

3. Locating resources based on something other than URIs. In other words, arbitrary search of attributes is out of scope, but locating resources based on their URIs is in scope.

4. Multicast and dynamic DNS based approaches as the core lookup mechanism locating users and resources. These techniques may be in-scope for locating bootstrap peers/servers or for interoperation with traditional SIP.

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Goals and Milestones

Sep 2007 Submit P2PSIP overview document to the IESG (Informational)

Sep 2008 Submit P2PSIP overlay client protocol document to the IESG (Standards track)

Sep 2008 Submit P2PSIP overlay peer protocol document to the IESG (Standards track)

May 2009 Submit P2PSIP applicability statement to the IESG (Standards track)

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References

[1] D. Bryan, E. Shim, B. B. Lowekamp, "Use Cases for Peer-to-Peer Session Initiation Protocol (P2PSIP)", draft-bryan-sipping-p2p-usecases (work-in-progress),

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[2] D. Willis, D. Bryan, P. Matthews, E. Shim, "Concepts and Terminology for Peer to Peer SIP," draft-willis-p2psip-concepts (work-in-progress),

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