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IANA Registering a SIP Resource Priority Header Field
Namespace for Local Emergency Communications
[draft-polk-local-emergency-rph-namespace-02](#)

Abstract

This document creates the new Session Initiation Protocol (SIP) Resource Priority header field namespace "esnet" for local emergency usage to a public safety answering point (PSAP), between PSAPs, and between a PSAP and first responders and their organizations, and places this namespace in the IANA registry.

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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 [[RFC2119](#)].

[1.](#) Introduction

This document creates the new Session Initiation Protocol (SIP) Resource Priority header field namespace "esnet" for local emergency usage and places this namespace in the IANA registry. The SIP Resource-Priority header field is defined in [RFC 4412](#) [[RFC4412](#)]. The new "esnet" namespace is to be used for inbound calls towards a public safety answering point (PSAP), between PSAPs, and between a PSAP and first responders or their organizations within managed IP networks. This namespace is not envisioned for use on the open public Internet because it can be trivially forged.

This new namespace can be included in SIP requests to provide an explicit priority indication within controlled environments, such as an IMS infrastructure or Emergency Services network (ESInet) where misuse can be reduced to a minimum because these types of networks

have great controls in place. The function is to facilitate differing treatment of emergency SIP requests according to local policy, or more likely, a contractual agreement between the network organizations. This indication is used solely to differentiate certain SIP requests, transactions or dialogs, from other SIP requests, transactions or dialogs that do not have the need for priority treatment. If there are differing, yet still understandable and valid Resource-Priority header values in separate SIP requests, then this indication can be used by local policy to determine which SIP request, transaction or dialog receives which treatment (likely better or worse than another).

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It can also be imagined that Application Service Providers (ASP) directly attached to an ESInet can have a trust relationship with the ESInet such that within these networks, SIP requests (thereby the session(s) they establish) make use of this "esnet" namespace for appropriate treatment.

This document merely creates the namespace, per the rules within [\[RFC4412\]](#), necessitating a Standards Track RFC for IANA registering new RPH namespaces and their relative priority-value order.

There is the possibility that within emergency services networks a Multilevel Precedence and Preemption (MLPP)-like behavior can be achieved (likely without the 'preemption' part), provided local policy supports enabling this function,. This will ensure more the important calls are established or retained; therefore the "esnet" namespace is given five priority-levels instead of just one. MLPP-like SIP signaling is not defined in this document for 911/112/999 style emergency calling, but it is not prevented either.

Within the ESInet, there will be emergency calls requiring different treatments, according to the type of call. Does a citizen's call to a PSAP require the same, a higher or a lower relative priority than a PSAP's call to a police department, or the police chief? What about either relative to a call from within the ESInet to a federal government's department of national security, such as the US Department of Homeland Security? For these additional reasons, the "esnet" namespace was given multiple priority levels.

This document does not define any of these behaviors, outside of reminding readers that the rules of [RFC 4412](#) apply - though examples of usage are included for completeness. This document IANA

registers the "esnet" RPH namespace for use within any emergency services networks, not just of those from citizens to PSAPs.

2. Rules of Usage of the Resource Priority Header field

This document retains the behaviors of the SIP Resource Priority header field, defined in [\[RFC4412\]](#), during the treatment options surrounding this new "esnet" namespace. The usage of the "esnet" namespace does not have a 'normal', or routine call level, given the environment this is to be used within (i.e., within an ESInet). That is for local jurisdictions to define within their respective parts of the ESInet, which could be islands of local administration.

[RFC 4412](#) states that modifying the relative priority ordering or the number of priority-values to a registered namespace SHOULD NOT occur within the same administrative domain due to interoperability issues with dissimilar implementations and backwards compatibility of past configurations.

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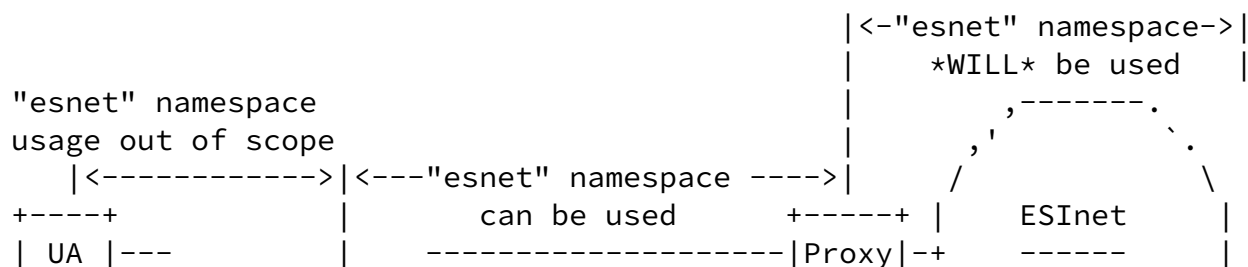
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The "esnet" namespace MUST only be used in times of an emergency, where at least one end, setting aside the placement of B2BUAs, of the signaling is within a local emergency organization. In other words, if either the originating human caller's UA, or the destination human callee's UA is part of the local emergency organization, this is a valid use of "esnet".

The "esnet" namespace has 5 priority-values, in a specified relative priority order, and is registered as a queue-based namespace in compliance with [\[RFC4412\]](#). Individual jurisdictions MAY configure their SIP entities for preemption treatment. This is OPTIONAL, subject to local policy decisions.

The following network diagram provides one example of local policy choices for the use of the "esnet" namespace:



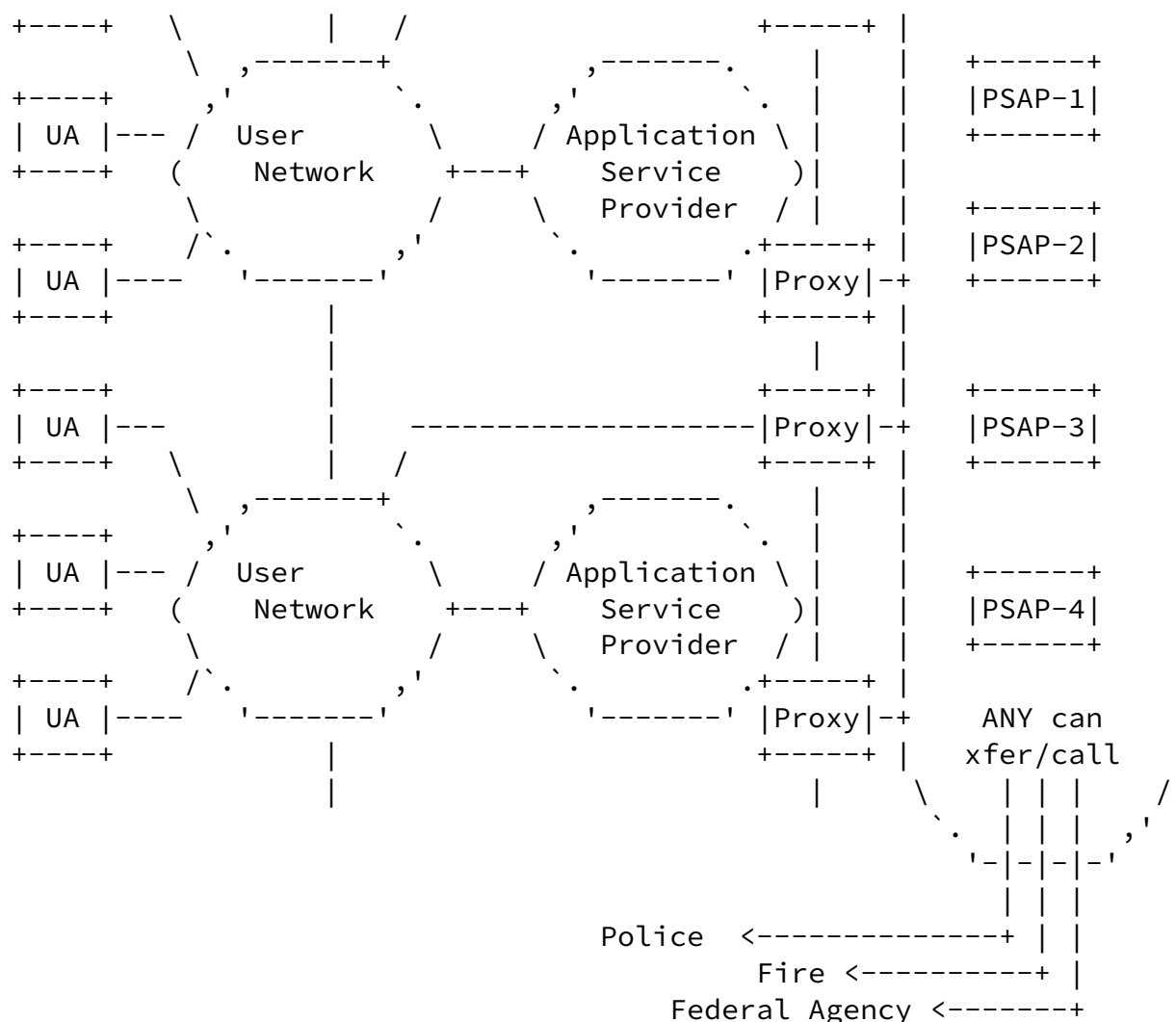


Figure 1: A possible network architecture using "esnet" namespace

In Figure 1., the "esnet" namespace is intended for usage within the ESInet on the right side of the diagram. How it is specifically utilized is out of scope for this document, and left to local jurisdictions to define. Adjacent ASPs to the ESInet MAY have a trust relationship that includes allowing this/these neighboring ASP(s) to use the "esnet" namespace to differentiate SIP requests and dialogs within the ASP's network. The exact mapping between the internal and external sides of the edge proxy at the ESInet boundaries is out of scope of this document.

3. "esnet" Namespace Definition

The "esnet" namespace SHOULD NOT to be considered generic for all emergencies because there are a lot of different kinds of emergencies, some on a military scale ([\[RFC4412\]](#) defines 3 of these), some on a national scale ([\[RFC4412\]](#) defines 2 of these), some on an international scale. Each type of emergency can also have its own namespace(s), and although there are 45 defined for other uses, more are possible - so the 911/112/999 style of public user emergency calling for police or fire or ambulance (etc) does not have a monopoly on the word "emergency".

The namespace "esnet" has been chosen, roughly to stand for "Emergency Services NETwork", for a citizen's call for help from a public authority type of organization. This namespace will also be used for communications between emergency authorities, and MAY be used for emergency authorities calling public citizens. An example of the latter is a PSAP operator calling back someone who previously called 911/112/999 and the communication was terminated before it - in the PSAP operator's judgment - should have been.

Here is an example of a Resource-Priority header field using the "esnet" namespace:

Resource-Priority: esnet.0

[3.1.](#) Namespace Definition Rules and Guidelines

This specification defines one unique namespace for emergency calling scenarios, "esnet", constituting its registration with IANA. This IANA registration contains the facets defined in [Section 9 of \[RFC4412\]](#).

[3.2.](#) The "esnet" Namespace

Per the rules of [\[RFC4412\]](#), each namespace has a finite set of relative priority-value(s), listed (below) from lowest priority to highest priority. In an attempt to not limit this namespace's use in the future, more than one priority-value is assigned to the

"esnet" namespace. This document does not recommend which Priority-value is used where in which situation or scenario. That is for another document to specify. This document does RECOMMEND the choice within a national jurisdiction be coordinated by all sub-jurisdictions to maintain uniform SIP behavior throughout an

emergency calling system of that country.

The relative priority order for the "esnet" namespace is as follows:

```
(lowest)  esnet.0
          esnet.1
          esnet.2
          esnet.3
(highest) esnet.4
```

The "esnet" namespace will be designated into the priority queuing algorithm ([Section 4.5.2 of \[RFC4412\]](#)). However, as a policy decision, local jurisdiction(s) MAY configure their SIP infrastructure to use the this namespace in a preemption algorithm way, defined in [RFC 4412](#). This document does not recommend this usage, but it is permissible according to this specification.

The remaining rules originated in [RFC 4412](#) apply with regard to an RP actor, who understands more than one namespace, and MUST maintain its locally significant relative priority order.

[4.](#) IANA Considerations

[4.1](#) IANA Resource-Priority Namespace Registration

Within the "Resource-Priority Namespaces" of the sip-parameters section of IANA (created by [\[RFC4412\]](#)), the following entries will be added to this table:

Namespace	Levels	Intended Algorithm	New warn-code	New resp. code	Reference
-----	-----	-----	-----	-----	-----
esnet	5	queue	no	no	[This doc]

[4.2](#) IANA Priority-Value Registrations

Within the Resource-Priority Priority-values registry of the sip-parameters section of IANA, the following (below) is to be added to the table:

Namespace: esnet

Reference: (this document)

Priority-Values (least to greatest): "0", "1","2", "3", "4"

[5.](#) Security Considerations

The Security considerations that apply to [RFC 4412](#) [[RFC4412](#)] apply here.

Within a network that is enabled to act on the Resource-Priority header field within SIP requests, the implications of using this namespace within the field incorrectly can potentially cause a large impact on a network, given that this indication is to give preferential treatment of marked traffic great preference within the network verses other traffic. This document does not indicate this marking is intended for use by endpoints, yet protections need to be taken to prevent granting preferential treatment to unauthorized users not calling for emergency help.

A simple means of preventing this usage into an ESInet is to not allow "esnet" marked traffic to get preferential treatment unless the destination is towards the local/regional ESInet. This is not a consideration for internetwork traffic within the ESInet, or generated out of the ESInet. 911/112/999 type of calling is fairly local in nature, with a finite number of URIs that are likely to be considered valid within a portion of a network receiving SIP signaling.

[6.](#) Acknowledgements

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[7.](#) References

[7.1](#) Normative References

[RFC2119] S. Bradner, "Key words for use in RFCs to Indicate Requirement Levels", [RFC 2119](#), March 1997

[RFC4412] Schulzrinne, H., Polk, J., "Communications Resource Priority for the Session Initiation Protocol (SIP)", [RFC 4411](#), Feb 2006

[7.2](#) Informative References

none

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