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## IANA Registration of Enumservices for Internet Calendaring

### Abstract

This document registers Enumservices for Internet calendaring. Specifically, this document focuses on Enumservices for scheduling with iMIP (iCalendar Message-Based Interoperability Protocol) and for accessing Internet calendaring information with CalDAV (Calendaring Extensions to WebDAV).

### 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.

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## 1. Introduction

ENUM (E.164 Number Mapping, RFC 3761 [1]) is a system that uses DNS (Domain Name System, RFC 1034 [2]) to translate telephone numbers, such as '+12025550100', into URIs (Uniform Resource Identifiers, RFC 3986 [3]), such as 'mailto:user@example.com'. ENUM exists primarily to facilitate the interconnection of systems that rely on telephone numbers with those that use URIs to identify resources. The ENUM registration here could be used to allow phones, for example, to check the free/busy status of a user in their address book or propose a meeting with him or her from the user's phone number.

The Guide to Internet Calendaring [10] describes the relationship between various Internet calendaring specifications like this: "iCalendar [4] is the language used to describe calendar objects. iTIP [5] [iCalendar Transport-Independent Interoperability Protocol] describes a way to use the iCalendar language to do scheduling. iMIP [6] [iCalendar Message-Based Interoperability Protocol] describes how to do iTIP scheduling via e-mail".

Recently, another Standards Track protocol for calendar and scheduling access has appeared. CalDAV (Calendaring Extensions to WebDAV) [7] is a WebDAV (Web-based Distributed Authoring and Versioning) [8] based mechanism for manipulating Internet calendars, viewing free/busy lists, and via a planned scheduling extension [15], could be used for proposing calendar events as well in the future.

The existing 'mailto:' URI scheme (defined in RFC 3986 [3]) is already used to address iMIP compatible Calendar Services. Likewise, the existing 'http:' and 'https:' URI schemes (defined in RFC 2616 [11] and RFC 2818 [12]) are already used to address CalDAV compatible Calendar Services.

This document registers Enumservices for scheduling and accessing Internet calendaring information associated with an E.164 number.

## 2. Enumservice Registrations

As defined in RFC 3761 [1], the following templates cover the information needed for the registration of the Enumservices specified in this document:

Enumservice Name:  
    "ical-sched"  
Enumservice Type:  
    "ical-sched"  
Enumservice Subtypes:  
    "mailto"  
URI scheme(s):  
    'mailto:'  
Functional Specification:  
    This Enumservice indicates that the resource identified can be addressed by the associated URI used for scheduling using Internet calendaring via Internet mail with the iMIP [6] protocol.  
Security considerations:  
    See Section 4.  
Intended usage:  
    COMMON  
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Enumservice Name:  
    "ical-access"  
Enumservice Type:  
    "ical-access"  
Enumservice Subtypes:  
    "http"  
URI scheme(s):  
    'http:'  
Functional Specification:  
    This Enumservice indicates that the resource identified can be addressed by the associated URI in order to access a user's calendar (for example free/busy status) using the CalDAV [7] protocol for Internet calendaring.  
Security considerations:  
    See Section 4.  
Intended usage:  
    COMMON  
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Enumservice Name:  
    "ical-access"  
Enumservice Type:  
    "ical-access"  
Enumservice Subtypes:  
    "https"  
URI scheme(s):  
    'https:'  
Functional Specification:  
    This Enumservice indicates that the resource identified can be  
    addressed by the associated URI in order to access a user's  
    calendar (for example free/busy status) using the CalDAV [7]  
    protocol for Internet calendaring.  
Security considerations:  
    See Section 4.  
Intended usage:  
    COMMON  
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Note: These Enumservices use a dash "-" in the Type strings. To allow for hierarchical concepts (as required in this case), some kind of boundary needs to be in place. Neither RFC 3761 [1] nor its intended successor [17] foresee the concept of sub-subtyping. The natural solution to address this requirement is the usage of dash "-" in Type strings, which is slightly contradictory to RFC 3761 [1]. However, its intended successors [16] [17] clearly allow a dash "-" in Type strings, so that using "-" is seen as a practical way forward.

### 3. Examples

```
$ORIGIN 3.2.1.0.5.5.5.2.1.2.1.e164.arpa.  
@ NAPTR 10 100 "u" "E2U+ical-access:https" \  
    "!^.*$!https://cal.example.com/home/alice/calendars/!" .  
  
$ORIGIN 3.2.1.0.5.5.5.2.1.2.1.e164.arpa.  
@ NAPTR 20 100 "u" "E2U+ical-sched:mailto" \  
    "!^.*$!mailto:alice@example.com!" .
```

### 4. Security Considerations

The Domain Name System (DNS) does not make policy decisions about which records it provides to a DNS resolver. All DNS records must be assumed to be available to all inquirers at all times. The information provided within an ENUM record set must therefore be considered open to the public -- which is a cause for some privacy considerations.

Revealing a calendaring URI by itself is unlikely to introduce many privacy concerns, although, depending on the structure of the URI, it might reveal the full name or employer of the target. The use of anonymous URIs mitigates this risk.

As ENUM uses DNS, which in its current form is an insecure protocol, there is no mechanism for ensuring that the answer returned to a query is authentic. An analysis of threats specific to the dependence of ENUM on the DNS is provided in RFC 3761 [1], and a thorough analysis of threats to the DNS itself is covered in RFC 3833 [14]. Many of these problems are prevented when the resolver verifies the authenticity of answers to its ENUM queries via DNSSEC (DNS Security, RFC 4035 [9]) in zones where it is available.

More serious security concerns are associated with potential attacks against an underlying calendaring system (for example, unauthorized modification or viewing). For this reason, iTIP discusses a number of security requirements (detailed in RFC 2446 [5]) that call for authentication, integrity and confidentiality properties, and similar measures to prevent such attacks. Any calendaring protocol used in conjunction with a URI scheme currently meets these requirements. The use of CalDAV with the 'https:' scheme makes use of TLS (Transport Layer Security, RFC 5246 [13]) to provide server authentication, confidentiality, and message integrity.

Unlike a traditional telephone number, the resource identified by an calendaring URI is often already guessable, and it often requires that users provide cryptographic credentials for authentication and authorization before calendar data can be exchanged. Despite the public availability of ENUM records, the use of this information to reveal an unprotected calendaring resource is unlikely in practice.

## 5. IANA Considerations

This document requests registration of the "ical-sched" and "ical-access" Enumservices according to the definitions in Section 2 of this document and RFC 3761 [1].

## 6. References

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## 6.2. Informative References

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## Appendix A. Acknowledgments

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