

Widex  
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**Using the Widget Description Exchange Service (WIDEX) over the Blocks  
Extensible Exchange Protocol (BEEP)  
draft-stirbu-widex-beep-00**

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Abstract

This document describes a lightweight implementation of a remote user interface protocol, compatible with the Widget Description Exchange Service (Widex) framework. The protocol is using the Block Extensible Exchange Protocol (BEEP) as the application transport substrate for the Widget Description Exchange Service.

## Requirements Language

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 [RFC 2119](#) [[1](#)].

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## **1. Introduction and Motivation**

The proposal in this document describes the Widex application transport binding that uses BEEP [2]. Requirements for Widex Framework and the specification in this document are outlined in Internet-Draft Widex Requirements [4].

The choice of BEEP as the transport protocol substrate is primarily driven by the need to reuse an existing, well-understood protocol with all the necessary features to support the requirements, particularly for peer-to-peer networks where is no need to bypass firewalls. The secondary reason is that BEEP offers two-way multiplexed communication that leads to reduced negotiation and network resource usage, criteria that is important for constrained devices for which it will be too costly to implement an alternative solution based around HTTP [9], ECMAScript [10] and XMLHttpRequest Object [11]. This would give the implementers a wealth of toolkits and debugging gear for use in constructing both Widex Servers and Widex Renderers.

## **2. BEEP Profile Identification**

The BEEP profile for Widex is identified as

<http://iana.org/beep/widex>

in the BEEP "profile" element during channel creation.

In BEEP, when the first channel is successfully created, the "serverName" attribute in the "start" element identifies the "virtual host" associated with the peer acting in the server role, e.g.

```
<start number='1' serverName='applicationserver.example.com'>
  <profile uri='http://iana.org/beep/widex' />
</start>
```

### **2.1. Profile Initialisation**

The initialisation is used for identifying that each channel bound to the BEEP profile for Widex provides access to a single application on the Widex Server.

The DTD syntax for the ready message and its response are:



```
<!--ELEMENT ready EMPTY>
<!--ATTRLIST ready
      application CDATA #REQUIRED>

<!--ELEMENT proceed EMPTY>
```

The ready message contains a mandatory "application" attribute, which identifies the application who's user interface is exported by the Widex Server.

If the peer acting in the server role recognises the requested resource, it replies with a proceed response.

```
C: MSG 0 1 . 52 158
C: Content-Type: application/beep+xml
C:
C: <start number='1' serverName='applicationserver.example.com'>
C:   <profile uri='http://iana.org/beep/widex'>
C:     <![CDATA[<ready application='ApplicationName' />]]>
C:   </start>
C: END
S: RPY 0 1 . 110 121
S: Content-Type: application/beep+xml
S:
S: <profile uri='http://iana.org/beep/widex'>
S:   <![CDATA[<proceed />]]>
S: </profile>
```

Otherwise, if the ready message is improperly formed, or if the requested application isn't recognised, the peer acting in the server role replies with an error message.



```
C: MSG 0 1 . 52 158
C: Content-Type: application/beep+xml
C:
C: <start number='1' serverName='applicationserver.example.com'>
C:   <profile uri='http://iana.org/beep/widex'>
C:     <![CDATA[<ready application='GameName' />]]>
C:   </start>
C: END
S: RPY 0 1 . 110 121
S: Content-Type: application/beep+xml
S:
S: <profile uri='http://iana.org/beep/widex'>
S:   <![CDATA[<error code='550'>application not supported</error>]]>
S: </profile>
```

### **3. Widex Message Packages**

The BEEP profile for Widex transmits Widex messages encoded as UTF-8 using the media type of "application/xml" according to [RFC 3023](#) [6].

### **4. Widex Message Patterns**

The BEEP profile for Widex has a one-to-one message pattern.

Each Widex Message is send using a "MSG" message, containing a valid Widex XML instance, and MUST be acknowledged when received completely by an empty "RPY" message.

### **5. URL Schemes**

This memo defines two URL schemes, "widex.beep" and "widex.beeps" which identify the use of Widex over BEEP over TCP.

#### **5.1. The widex.beep URL Scheme**

The "widex.beep" URL scheme uses the "generic URI" syntax defined in [Section 3 of RFC 2396](#) [7], specifically:

- o the value "widex.beep" is used for the scheme component
- o the server-based naming authority defined in Section 3.2.2 of [7] is used for the authority component
- o the path component maps to the "application" component of the boot message sent during the profile initialisation (if absent, it defaults to "/").





The values of values of both the scheme and authority components are case-insensitive.

For example, the URL

`widex.beep://applicationserver.example.com/ApplicationName`

might result in the example shown in [Section 2.1](#).

## **[5.2.](#) The widex.beeps URL Scheme**

The "widex.beeps" URL scheme is identical to the "widex.beep" URL scheme specified in [Section 5.1](#), with the exception that prior to starting the BEEP profile for Widex, the BEEP session must be tunned for privacy.

There are two ways to perform privacy tuning on a BEEP session:

- o a transport security profile is successfully started;
- o a user authentication profile that supports transport security is successfully started.

Regardless of the method used, upon completion of the negotiation process, a tuning reset occurs in which both BEEP peers issue a new greeting.

## **[6.](#) BEEP Mapping**

The mapping of Widex in this document is specific to [RFC 3080](#) [2]. This mapping MUST use TCP as specified by [RFC 3081](#) [3].

## **[7.](#) Registrations**

### **[7.1.](#) BEEP Profile Registration**

Profile Identification: <http://iana.org/beep/widex>

Messages exchanged during Channel Creation: ready

Messages starting one-to-one exchanges: ready, Widex XML instance

Messages in positive replies: proceed

Messages in negative replies: error

Messages in one-to-many replies: none



Messages Syntax: Widex XML instances as defined by Widex Framework [5].

Messages Semantics: Widex XML instances as defined by Widex Framework [5].

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## **7.2. The widex.beep URL Scheme Registration**

URL scheme name: widex.beep

URL scheme syntax: [Section 5.1](#)

Character encoding consideration: according to the "generic URI" syntax defined in [Section 3 of RFC 2396](#) [7]

Intended usage: identifies an application on a Widex Server who's user interface is made available for rendering on a Widex Renderer using the BEEP profile for Widex

Applications using this scheme: defined in Widex Framework [5]

Interoperability considerations: n/a

Security Considerations: defined in [Section 9](#)

Relevant publications: BEEP [2] and Widex Framework [5]

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## **7.3. The widex.beeps URL Scheme Registration**

URL scheme name: widex.beeps

URL scheme syntax: [Section 5.2](#)

Character encoding consideration: according to the "generic URI" syntax defined in [Section 3 of RFC 2396](#) [7]

Intended usage: identifies an application on a Widex Server who's user interface is made available for rendering on a Widex Renderer using the BEEP profile for Widex after the BEEP session has been tuned for privacy

Applications using this scheme: defined in Widex Framework [5]



Interoperability considerations: n/a

Security Considerations: defined in [Section 9](#)

Relevant publications: BEEP [[2](#)] and Widex Framework [[5](#)]

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Author/Change controller: the IESG

## **[8.](#) IANA Considerations**

Registrations with IANA are described in [Section 7](#).

## **[9.](#) Security Considerations**

Implementers should be fully aware of the security considerations given by Widex Framework [[5](#)], BEEP [[2](#)], and TLS [[8](#)].

Clients SHOULD be prepared to use at least the following BEEP tuning profiles:

- o <http://iana.org/beep/SASL/DIGEST-MD5>, for user authentication without the need for session encryption
- o <http://iana.org/beep/TLS> using TLS\_RSA\_WITH\_3DES\_EDE\_CBC\_SHA cipher, for encryption
- o <http://iana.org/beep/TLS> using TLS\_RSA\_WITH\_3DES\_EDE\_CBC\_SHA cipher with client client-side certificates, for encryption and user authentication

Anonymous client access SHOULD be considered in one of the two methods:

1. when no authentication tuning profile has been used
2. when using the <http://iana-org/beep/SASL/ANONYMOUS> profile

Care should be taken that user authentication mechanisms do not reveal user credentials to untrusted servers. Clients MUST NOT use the <http://iana-org/beep/SASL/PLAIN> tuning profile without first encrypting the TCP session, such as by using <http://iana.org/beep/TLS> tuning profile.

[Section 9](#) of BEEP [[2](#)] contains more details on BEEP-specific security issues.



## **10. Acknowledgements**

## **11. References**

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