framechannel

FrameChannel Certification Checklist

Version: 2.0
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Basics

1. The device must be able to connect easily to the Internet. We recommend Wi-Fi certification through the Wi-Fi Alliance (http://www.wi-fi.org) to ensure support across all different types of access points and encryption methods but the device must be able to connect to Wi-Fi access points of all types with encryption or not.

2. The device will request an RSS feed using a URL with the following format:

http://rss.framechannel.com/productId=XXXX/frameId=YYYY/firmware=ZZZZ/sk1=KEY

- **PRODUCTID** is supplied by Thinking Screen Media to a partner for each unique product. When you are ready to begin integration, please send an email to certprog@thinkingscreen.com with the following information about each device you are bringing to market (screen resolution, product name, cache size, what you will use for frameId and whether this device will support SignChannel product). A productId will be created for each device you plan to bring to market.

- **FRAMEID** is supplied by the device manufacturer and must be unique for every device within that product set. The frameId can be any string that is guaranteed to be unique, is difficult to guess, and which will not change over the lifetime of the device. Many partners have used a value based on the serial number or MAC address for the frameId, but the best practice is to combine this with a value that is non-sequential and difficult to guess, such as a UUID. The MAC address or serial number on its own should not be used. Contact Thinking Screen Media if you need assistance in generating a suitable frameId scheme.

- **FIRMWARE-VERSION** is included to help with customer support.

- **SECURITYKEY** is an encrypted string used to validate that the URL is coming from a genuine partner device. The security key is an HMAC-SHA256 digest (as defined in RFC 2104) of the combination of PRODUCTID-FRAMEID (exactly in that order separated by a single hyphen character), using a secret 32-character key provided by Thinking Screen Media for each productId supplied. **IMPORTANT**: the secret key should be considered confidential information, and should not be shared or exposed to the public. A leak of the security key will require an

immediate firmware update by the device partner.

3. The device will ignore any unrecognized attributes, elements, or namespaces in the RSS XML.

4. The device will fetch an updated RSS feed automatically when the number of minutes specified in the **<ttl>** element has passed since the last feed request and the playlist is complete. The <ttl> may change in subsequent feeds, so the device must evaluate this value for each feed request. In HTTP terms, the device should never perform a HEAD. It should only perform a GET every <ttl> minutes. **(Important note:** If no ttl is supplied in the feed, the device should play the feed through 3 times in full prior to requesting an update. It is also acceptable to use a default of 15 minutes in cases where no ttl is supplied in the RSS feed but the device should complete the playlist prior to update if possible)

5. The device will fetch an updated RSS feed when a user takes an action on the device, such as changing device settings or exiting and re-entering FrameChannel.

6. The device will show the username of the currently paired user account in the device UI.

7. The device will sleep (shut off the screen and stop requesting content) if the <fc:deviceaction action="sleep" /> is present in the <channel> element of the feed. The device will automatically check the feed again after the ttl expires and if the sleep variable is still present will continue to "sleep", otherwise it will return to normal operation with no user action required.

Displaying Slides

8. The device will display the media element image specified for each **<item>** in the RSS feed using the url field in the media:content element. Do not use the <link> field as this may not point to the image file.

9. The device must display images in the order in which they are specified in the feed. If the device displays the final image before expiration of the <ttl>, it should return to the first image in the feed and continue playing from the beginning.

10. The device should display each slide for the number of seconds in the item's **media:duration** attribute as defined in the FrameChannel Integration Guide. Every slide in a feed may have a different duration, so this value should be checked for each item in the feed. **(Important note:** If no duration is supplied, use a global duration set on the device or default to 10 seconds if no UI on the device is available for slide duration)

11. The device should handle images with dimensions that are different from the device's physical screen resolution. The device should scale images up or down in size to fill the screen as best as possible, without cropping or changing the aspect ratio of any image. (**Important note**: The device must ignore **height** and **width** attributes in the RSS XML.)

12. The device must be able to "play all" user channels in a slideshow that obeys all FrameChannel rules. The client device should not assemble all channels one by one but rather use the "play all" function of FrameChannel.

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Caching

The device will use a local cache to store images in the FrameChannel slideshow. The purpose of the cache is to provide better reliability, more consistent performance, and reduced bandwidth consumption.

13. The device should store each slide image in a local cache, indexed using the **<guid>** element of the RSS item. Once an image has been successfully downloaded and stored in cache, any time the device displays this slide it should use the image in cache rather than requesting the image again.

14. When the device fetches an updated RSS feed, the device should only fetch images that are not already in cache. Any items with a <guid> that matches an image already in the cache should continue to be served from cache.

15. The device must only display images that are referenced in the current feed, even if other, older images remain in the cache.

16. The device should have sufficient capacity to cache a minimum of 200 images that are 200 KB in size. Company should notify Frame Media as to the size of the cache available. The device should manage the cache, deleting old cache entries as needed to free up space, without user interaction.

17. The device must manage the cache so that it never runs out of free space or degrades performance. The cache should always have room for new images.

Error Handling

Once a user selects to play FrameChannel, the device must continue to do that during both power and network interruptions until the user takes an action on the device to have it do something else. The device should assume that wireless networks are imperfect and there will be times when it will fail to retrieve all images from the network.

18. At a minimum, the device should handle the following types of errors:
    a. HTTP errors (404 Not Found, etc.)
    b. Incomplete transfers.
    c. Empty response bodies.
    d. Timeouts.
    e. Missing “Content-length” headers.
    f. Invalid content (broken images, malformed RSS, etc.).

19. The device must not require any user interaction when there is a network failure during a slideshow and should continue to retry to connect automatically on an interval until it is successful.

20. If the device is unable to retrieve or display an image due to an error as described above, it should proceed to the next image in the feed. The device should retry the image request on the next display attempt.

21. If the device is unable to retrieve a feed due to an error as described above, it should continue to use the current feed. The device should retry the feed request every 2 minutes until it succeeds.

22. If the device loses power while FrameChannel is playing, when the power comes back on the device should automatically reconnect to the previously selected network and automatically request a new feed and being playing FrameChannel. This recovery should not require any user interaction.

23. The device must be capable of running continuously with no user interaction. For certification, a device must run for 48 hours, but the device should be engineered to run for much longer without failure.