Device Characterization

Using the requesting device's features and capabilities, Device Characterization can help you accelerate, optimize, and fine-tune your content for each device class.

About Device Characterization

Device Characterization (DC) provides additional ways to accelerate and optimize your content based on the requesting device's features and capabilities. With DC, you can:

- Identify the characteristics of each device that requests data from your site.
- Use this information to serve content optimized for each device class.
- Fine-tune content caching.

Definitions

Forwarding—in this context, sending information about the request from the Edge Server to the origin.

Caching—storing content on the Edge Server so subsequent requests for the same content do not have to go to the origin.

How DC Uses Device Details to Speed Content Delivery

Device Characterization involves forwarding device information to the origin and caching content based on device information. The Luna Control Center’s Property Manager provides two behaviors for controlling these functions: the Forward in Header behavior and the Define Cached Content behavior.

The Forward in Header Behavior

This behavior tells DC to:

- Identify requesting devices’ characteristics.
- Tell the origin server about each device’s characteristics in the HTTP request via the `X-Akamai-Device-Characteristics` request header.

The Define Cached Content Behavior

DC allows you to select which device characteristics are used to cache content. DC creates cache keys based on the values of the characteristics you select. This makes it possible to cache content that is optimized for devices with different characteristics.

For example, you might want to cache content optimized for devices with a resolution width of 640 pixels. To do this, you would tell DC to cache based on the `resolution_width` characteristic. When a user with a 640-pixel-wide screen requests an object, DC caches content optimized for that resolution. The cache entry is labeled with a cache key that contains both the original request and the resolution width. The content will subsequently be available for other devices with the same resolution. DC creates a new cache entry for every request from a device with a different resolution width.

What a DC Header Might Look Like

The `X-Akamai-Device-Characteristics` header uses syntax identical to a cookie header’s. Below is an example of a header sent when an Android Mobile phone visits a DC-enabled page. In this case, DC is configured to send three characteristics: `brand_name`, `is_tablet`, and `device_os`.

`X-Akamai-Device-Characteristics: brand_name=Google; is_tablet=false; device_os=Android`

Typical Characteristics Available for Forwarding and Caching

Typical characteristics include:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>resolution_width</td>
<td>integer</td>
<td>The width of the screen, measured in pixels.</td>
</tr>
<tr>
<td>physical_screen_width</td>
<td>integer</td>
<td>The width of the screen, measured in millimeters.</td>
</tr>
<tr>
<td>max_image_width</td>
<td>integer</td>
<td>The maximum width, in pixels, for an image to be viewable when the page renders in a mobile-optimized format.</td>
</tr>
<tr>
<td>mobile_browser_version</td>
<td>version number</td>
<td>The requesting browser’s OS version.</td>
</tr>
<tr>
<td>device_os_version</td>
<td>version number</td>
<td>The requesting device’s OS version.</td>
</tr>
<tr>
<td>marketing_name</td>
<td>string</td>
<td>The device model’s commercial name.</td>
</tr>
<tr>
<td>is_wireless_device</td>
<td>true/false</td>
<td>Indicates if the device is a mobile device.</td>
</tr>
<tr>
<td>is_tablet</td>
<td>true/false</td>
<td>Indicates if the device is a tablet, this is a subset of mobile device.</td>
</tr>
</tbody>
</table>
Configuring Device Characterization

Before Edge Servers can forward and cache device characteristics, you'll need to create one or more rules that include the DC behaviors.

Step 1: Create a Rule and Set Its Match Criteria
As with other Property Manager rules, DC rules consist of two parts: match criteria and behaviors. To optimize content and/or cache content by device type, include one or more match criteria that use the device characteristics options.

To create a rule for your DC configuration:
1. In the Luna Control Center, go to the Property Home page.
2. Under Manage Versions and Activations, go to the Version History tab and select a version link.
3. In the Rules list, select the Add button. Select a rule template (for example, the Blank Rule Template), and select the Insert Rule button.
4. In the Criteria section, select the Add Match button, and indicate the conditions that will trigger Device Characterization.

Step 2: Configure Device-Header Forwarding
Select which device characteristics to forward to the origin. The more characteristics you select, the bigger your forward header will be, which may adversely affect performance between the Edge Server and the origin. Aim to maximize device-specific content delivery and minimize the number of characteristics you forward to do so.

1. In the Behaviors section, select the Add Behavior button.
2. Scroll through the behavior menu on the left, and select the Device Characterization - Forward in Header option. Then select the Insert Behavior button.

Step 3: Configure Characteristic-Based Caching (Optional)
Select which characteristics are used to create the cache key. Every unique combination of values of the characteristics you select will produce a separate cache entry. Therefore, it is recommended that you include only characteristics that request different content for different values. Consider how characteristics selected in this behavior relate to the device characteristics in the match criteria.

1. In the Behaviors section, select the Add Behavior button.
2. Scroll through the behavior menu, and select Device Characterization - Define Cached Content. Then click Insert Behavior. A new DC behavior appears in your rule.
3. In the Cache Based on These field, select what to include in the cache key. You can use the mouse to select from the drop-down menu, or start typing in the box to search the options. Click the X to remove a selection.

Note: Adding a greater number of characteristics to the cache key (especially if you select characteristics that have a great many values) can negatively affect performance.

Best Practices
We recommend that any characteristic you add to your cache key you also add to your list of characteristics to forward. This will allow you to use the X-Akamai-Device-Characteristics header to monitor what is being added to your cache key. Likewise, the characteristics in the rule’s match criteria should align with the characteristics used in the behaviors.

A good way to approach DC configuration is to begin by describing how you want to classify devices. For example, you might simply divide them by device type: desktop, mobile device, or tablet. Or you might also want to distinguish high-end mobile devices from low-end devices. Create a rule for each class, and use the match criteria to identify all the devices that belong in that class.

Through the online help in any device characteristics match criteria, you can access a User Agent Lookup tool for testing. Be sure to enter a complete user agent string. Partial strings will not return any results.