AT&T Application Resource Optimizer

Date:	Apr 4, 2015 8:53:03 PM
Trace:	2048_LTE_ScreenOn
Application(s) Name : Version:	Unknown App
Data Collector Version:	1.0.0.1
Device Make/Model:	HTC / HTC One
OS/Platform Version:	5.0.2
Network Type(s):	LTE
Profile:	AT&T LTE

SUMMARY

TESTSTATISTICS

HTTPS data not analyzed:	97.44% (277.13 KB)
Duration:	5.84 minutes
Total Data Transferred:	291,247 bytes
Energy Consumed:	540.4 J (Energy)

Trace Score

Causes:	**317** (out of 500)
Effects:	**282** (out of 500)
Total:	**599** (out of 1000)

TESTSCONDUCTED

- File Download: Text File Compression
- File Download: Duplicate Content
- File Download: Cache Control
- File Download: Content Expiration
- File Download: Content Pre-fetching
- File Download: Combine JS and CSS Requests
- File Download: Resize Images for Mobile
- File Download: Minify CSS, JS, JSON and HTML
- File Download: Use CSS Sprites for Images
- Connections: Connection Opening
- Connections: Unnecessary Connections - Multiple Simultaneous Connections
- Connections: Inefficient Connections - Periodic Transfers
- Connections: Inefficient Connections - Screen Rotation
- Connections: Inefficient Connections - Connection Closing Problems
- Connections: Inefficient Connections - Offloading to WiFi when Possible
- Connections: 400, 500 HTTP Status Response Codes
- Connections: 301, 302 HTTP Status Response Codes
- Connections: 3rd Party Scripts
- HTML: Asynchronous Load of JavaScript in HTML
- HTML: HTTP 1.0 Usage
- HTML: File Order
- HTML: Empty Source and Link Attributes
- HTML: FLASH
- HTML: "display:none" in CSS
- Other: Accessing Peripheral Applications

FILE DOWNLOAD — PASS

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Network Type(s): LTE
Profile: AT&T LTE

Reducing the usage of network for file downloads can reduce your application's battery consumption.

Test: **Text File Compression**
About: Sending compressed files over the network will speed delivery, and unzipping files on a device is a very low overhead operation. Ensure that all your text files are compressed while being sent over the network. **Learn more...**

Results: AT&T ARO detected 0 text files above 850 bytes were sent without compression. Adding compression will speed the delivery of your content to your customers. (Note: Only files larger than 850 bytes are flagged.)

Test: **Duplicate Content**
About: This test measures duplicate content. Excess duplicate content means that content was downloaded multiple times, which leads to slower applications and wasted bandwidth. **Learn more...**

Results: Your trace passes with an acceptable level of duplicate content. Your trace had less than 3 duplicate items downloaded.

Test: **Cache Control**
About: This test measures the presence of cache headers. For all content that should be stored in the cache the best practice is to make sure that your server is adding the appropriate cache headers. **Learn more...**

Results: AT&T ARO detected the absence of cache headers 50% of times. Cache headers prevent your files from being downloaded in a duplicate manner.

Test: **Content Expiration**
About: This test compares the number of "304 not modified" requests versus files that should be cached but were downloaded multiple times. **Learn more...**

Results: It appears that content expiration is being handled properly. No caching issues were detected in this trace and it passes this test.

Test: **Content Pre-fetching**
About: This test measures multiple user input bursts all in a row. Prefetching may help speed up an app in these situations. Downloading files "as needed" can slow the user experience. If a user scrolls through the main screen of your application and has to wait for images to load, the application appears slow. **Learn more...**

Results: The files in this trace seem to be downloaded in reasonable bursts, and it passes this test. Remember that this may need to change as user behavior changes.

Test: **Combine JS and CSS Requests**
About: Multiple requests for CSS or JS can slow loading. Whenever possible, combine into as few files as possible. **Learn more...**

Results: ARO found no issues with multiple CSS requests nor with multiple JavaScript requests.

Test: **Resize Images for Mobile**
About: Images that are not correctly sized for mobile can cause extreme delays in rendering. Before delivering content to a mobile, resize it to fit the available area. **Learn more...**
Results: Your trace passes. There are no image files that are 110% larger than the area specified for them.

Test: **Minify CSS, JS, JSON and HTML**
About: Many text files contain excess whitespace to allow for better human coding. Run these files through a minifier to remove the whitespace in order to reduce file size. **Learn more...**
Results: Your trace passes.

Test: **Use CSS Sprites for Images**

About: Small images can be combined into Sprites, and then rendered with CSS. This will reduce the number of HTTP requests and speed the loading of your app. **Learn more...**

Results: Your trace passes.

CONNECTIONS FAIL

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Optimizing how you use the device's radio will speed the delivery of content and reduce your application's battery consumption.

Test: **Connection Opening**
About: This test helps ensure connections are opened properly. Some connection startups consists of an input burst, followed by a series of bursts spread out over time which can dramatically slow down the application's response time and waste energy on the device. This is a self test. **Learn more...**
SelfEvaluation: If you see many application-initiated bursts, consider a transaction manager to group these more closely together.

Test: **Unnecessary Connections - Multiple Simultaneous Connections**
About: This test measures bursts that could be more tightly grouped. Syncing all of your data connections can help reduce the amount of time your application is on the network, reducing the battery drain. That will also make your content appear to load faster to the user. **Learn more...**
Results: 5 sets of bursts that could be more tightly grouped.

Test: **Inefficient Connections - Periodic Transfers**
About: This test helps ensure that your periodic connections are truly needed for the customer, which if not handled properly could cause excessive power drain. **Learn more...**
Results: No periodic transfers were detected in this trace. It may be worthwhile to look for connections that happened regularly, but are not at exact intervals. This can cause excessive battery drain.

Test: **Inefficient Connections - Screen Rotation**
About: This test tracks screen rotation, to see if the app is pinging the server on orientation changes, or actually completely retransmit content. If you see this in your trace - consider a new layout for existing content (rather than re-download) or sending the orientation change later as a part of a larger data transmission. **Learn more...**
Results: Either no screen rotations were noted or the screen rotations did not trigger network activity.

Test: **Inefficient Connections - Connection Closing Problems**
About: This test checks that connections are closed promptly. If not effectively closed with the last data, the server timeout can turn the radio on just to close your connections, which wastes power and bandwidth. **Learn more...**
Results: AT&T ARO detected that 77.3 Joules (23.4% of the total energy) was used to control these connections. By closing connections promptly, you will reduce battery drain.

Test: **Inefficient Connections - Offloading to WiFi when Possible**
About: This test is a check to see if you are transmitting large chunks of data. When this occurs you may consider offloading to WiFi when appropriate. **Learn more...**
Results: There were not many large bursts of data seen in this trace, and it passes this test.

Test: **400, 500 HTTP Status Response Codes**
About: HTTP status response codes in the 4xx range indicate a client request error, and 5xx codes indicate a server error. There should be zero such errors in your application. **Learn more...**
Results: No 4xx or 5xx HTTP status response codes were detected during the trace.

Test: **301, 302 HTTP Status Response Codes**
About: Redirects are an easy way to switch users to different versions of your data. However, redirects also add significant latency to your application. Use with care. **Learn more...**
Results: No 301 or 302 HTTP status response codes were detected during the trace.

Test: **3rd Party Scripts**
About: Connecting to 3rd party content can create slowdowns in your app. If these external files fail to load, you can have a huge effect on the customer experience and load times. Consider loading these in an asynchronous manner. **Learn more...**

Results: Your trace passes.

HTML — PASS

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Network Type(s): LTE
Profile: AT&T LTE

Reducing the usage of device peripherals and optimizing your HTTP connectivity can further reduce your application's battery consumption.

Test: **Asynchronous Load of JavaScript in HTML**
About: JavaScript loading blocks parallel downloads, and files downloaded in the HEAD of your HTML will block the rendering of your HTML. If you must load JavaScript in the HEAD load asynchronously. **Learn more...**

Results: AT&T ARO discovered 0 HTML files loaded synchronously and it passes the test.

Test: **HTTP 1.0 Usage**
About: This test is just review to make sure you are using HTTP 1.1, which allows multiple items to be downloaded per connection, which is more efficient for your app. **Learn more...**
Results: AT&T ARO detected 0 HTTP 1.0 headers, and it passes this test.

Test: **File Order**
About: In the HEAD of your HTML, CSS files should always be loaded before JS files to ensure faster loading of your website. **Learn more...**

Results: ARO discovered 0 HTML file where JS is loaded immediately before CSS.

Test: **Empty Source and Link Attributes**
About: Many browsers still attempt to connect even if there is no url. This can cause delays in loading your site. **Learn more...**

Results: Your trace passes.

Test: **FLASH**
About: Android and iOS platforms do not support Flash, therefore your content is unreadable to your users. Consider using an HTML5 video player instead. **Learn more...**
Results: Your trace passes.

Test: **"display:none" in CSS**
About: The CSS rule "display:none" is used to hide html objects from being shown on a page. However, this does not prevent the objects from being downloaded to the mobile device. These extra objects (that are never displayed to the user), will slow down your app and waste data. **Learn more...**

Results: ARO discovered 0 files with no CSS rule "display:none" and it passes the test.

OTHERS — PASS

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Test: **Accessing Peripheral Applications**

About: This test reviews accessing device hardware applications like cameras, GPS, Bluetooth, speakers and WiFi, which can drain the battery. That's not a problem if your app is utilizing those peripherals, but many apps access peripherals they never utilize. **Learn more...**

Results: Peripherals appear to be managed properly. Trace shows GPS was active for 0% of the time. Bluetooth was active for 0 % of the time. Camera was active for 0 % of the time.