



Senator Al Franken  
Committee on the Judiciary  
Chairman, Subcommittee on Privacy  
Technology and the Law  
United States Senate  
309 Hart Senate Office Building  
Washington, D.C. 20510

December 14, 2011

Dear Chairman Franken,

Thank you for your letter of November 30<sup>th</sup> 2011, requesting information on Carrier IQ's business and how its software is used by its customers, Network Operators (cell phone carriers) and handset manufacturers. We welcome the opportunity to respond to your questions and to provide more information about how Carrier IQ's software works and how that software helps Network Operators and handset manufacturers identify problems and improve their networks and the performance of devices on wireless networks. In the interest of providing these details, Carrier IQ has prepared an overview of its technology, entitled "Understanding Carrier IQ Technology," which is attached to this letter and is available to the public at <http://www.carrieriq.com/company/PR.20111212.pdf>.

Carrier IQ has built software that allows Network Operators to better understand how mobile devices interact with and perform on their networks. Today our technology is used by our customers in two specific ways: Network Management and Customer Care.

#### **Network Management**

Carrier IQ software provides Network Operators, and in more limited cases, device manufacturers, with diagnostic data that help them identify how their networks, and devices on those networks, are performing. This can include data on when and where calls fail; where customers have problems accessing the network; the reliability and battery performance of their make and model of device and the interaction of the mobile network with a mobile device - known as network signaling traffic. This information can be aggregated to provide performance scorecards and heat maps by market or city or by type of device.

## **Customer Care**

The diagnostic information from the phone can also be used by Network Operators to assist individual users who are experiencing problems with their device or with the network. For example, when answering a customer service call from an end user, a Network Operator may use diagnostic data about the end user's device to understand what caused the problem. Carrier IQ's software provides the Network Operator with a summary of the user's experience, which can include network performance, battery life, ability and speed to access a website (also known as "throughput"), and the usage, performance and stability of an application.

## **Diagnostic Data**

To ensure that Carrier IQ's software is cost effective for Network Operators, Carrier IQ has worked hard to design software that filters only the absolute essential information on the performance of a device and the network. This filtering of information takes place on the device, and is limited to the collection of diagnostic data, rather than content. In this way the Carrier IQ agent software on the device negates the need to upload large amounts of information for subsequent processing.

## **Responses to Specific Questions**

### *(1) Does Carrier IQ Software log user's location?*

Carrier IQ's IQ Agent software, when installed by handset manufacturers in a mobile device such as a smart phone, can be directed by our customers – predominantly Network Operators – to gather diagnostic information on the performance of the mobile device and the location where an event took place. For example, a typical use of our diagnostic capability is to identify the location of dropped calls or no service areas. This diagnostic information is held in a proprietary, binary non-human readable form for a period of time, typically 24 hours on the mobile device. It is then securely transmitted to a network server located either in the Network Operator's data center or in our secure data center facilities. The IQ agent software does not relay location of events in real-time, and our software is not used to track the location of consumers.

### *2) What other data does Carrier IQ software log?*

There are two defining factors that enable the IQ Agent software to gather diagnostic information from a device:

- a) The first is a list of metrics, which are sources of diagnostic information on a device. Examples of metrics include signal strength, battery discharge rate and call start time. A complete list of total available metrics is described in Exhibit B in "Understanding Carrier IQ Technology" – available at <http://www.carrieriq.com/reports/UnderstandingCIQ.pdf>, and attached to this letter as Appendix A. The specific metrics that are implemented on a device is decided in combination with a handset manufacturer and the Network Operator.

b) The second defining factor is a diagnostics profile. The profile, which is downloaded to a device from network servers and can be updated dynamically, defines which metrics to gather from a device and how to process these metrics prior to upload. The Carrier IQ Agent does not collect all metrics at all times for Carrier IQ's customers. Doing so would be impractical from a bandwidth, processing and storage perspective. Therefore, Network Operators request Carrier IQ to write profiles that gather metrics to help them resolve a particular issue. For example, Carrier IQ has written profiles for Network Operators that provide them with diagnostic data to detect dropped calls, poor mobile broadband throughput and device stability issues.

*Does it log:*

*a. The telephone number users dial?*

*b. The telephone numbers of individuals calling a user?*

In the process of gathering metrics on the performance of calls, the IQ Agent will collect the phone numbers dialed and received for the purpose of diagnosing and maintaining the Network Operator's network. If selected through the profile, this functionality allows a Network Operator to understand both ends of a problem. For example, Carrier IQ's software allows the Network Operator to determine in a dropped call situation which consumer's phone had the problem that caused the drop. Carrier IQ's software does not, however, collect the phone number of the device on which it is installed.

*c. The content of text messages users receive?*

*d. The content of text messages users send?*

The IQ Agent software does not intentionally gather or transmit the content of text messages, and no metrics or profiles exist for the collection of such information.

However, over the course of the past week, as Carrier IQ conducted extensive reviews with the Network Operators, Carrier IQ has discovered an unintended bug in a diagnostic profile to measure radio-network-to-mobile device signaling. This diagnostic profile is used to gather network conditions during voice calls to determine why they fail. Using these profiles, the IQ Agent collects "layer 3" signaling traffic between the mobile device and radio tower, to help the Network Operator determine, for example, why a call might be dropped or which radio towers are communicating with a device during a voice call. Carrier IQ has discovered that, due to this bug, in some unique circumstances, such as when a user receives an SMS during a call, or during a simultaneous data session, SMS messages may have unintentionally been included in the layer 3 signaling traffic that is collected by the IQ Agent. These messages were encoded and embedded in layer 3 signaling protocol messages and are not human readable.

Carrier IQ does not decode or process any SMS messages that may have been embedded in the layer 3 signaling traffic collected in these instances. While the entire layer 3 signaling traffic that was captured was provided to the Network Operators, either to their own data centers or to the servers hosted for them in Carrier IQ's data centers, the content of any encoded and embedded SMS is not shown or

available to Carrier IQ, its Network Operator customers or any other party. For Network Operators to view the specific content of SMS messages, Carrier IQ would need to write additional software, which has never been done. No multi-media messages (MMS), email, web, applications, photos, voice or video (or any content using the IP protocol) has been captured as a result of this profile bug, as only SMS traffic is embedded in layer-3 signaling messages to deliver SMSs to/from devices.

Carrier IQ customers have been informed of this bug, and Carrier IQ has worked with customers to fix it quickly and ensure that this information is no longer captured. Only embedded deployments of Carrier IQ's software were affected by this bug.

*e. The content of the emails they receive?*

*f. The content of the emails users send?*

No. Carrier IQ does not gather or transmit the content of emails.

*g. The URLs of the websites that users visit?*

Embedded versions of the IQ Agent allow for the collection of URLs if requested by a Network Operator in a *profile*. These can be collected together with performance metrics so that Network Operators can determine how devices on its network perform for specific web sites. For example, if a Network Operator were experiencing issues with traffic destined for a heavily used web site, this diagnostic information could help determine user impact and help the Network Operator manage resources. The profile specified by the Network Operator and loaded on the device dictates if this information is actually gathered. The IQ Agent cannot read or copy the content of a website. Only one of Carrier IQ's customers has requested a profile to collect URLs of websites visited on devices on its network. Carrier IQ understands that Network Operators notify their end users in their privacy policies that they may access URLs of websites visited on devices on their networks.

*h. The contents of users' online search queries?*

To the extent that such queries may be passed in the URL string, online search queries would be gathered if URL collection has been specified in a profile (as described in the answer to question (g)), and the IQ Agent metrics supported such a request in the specific make/model of mobile device. Only one of Carrier IQ's customers has requested a profile to collect URLs. Again, the IQ Agent cannot read or copy the content of website.

*i. The names or contact information from users' address books?*

No. Carrier IQ does not gather or transmit any details from users' address books.

*j. Any other keystrokes?*

No. Carrier IQ does not gather or transmit keystrokes. What was shown in the video by Trevor Eckhart demonstrated that the IQ Agent was passed key stroke information from software implemented by the handset manufacturer, but the IQ Agent did not log, record or transmit those keystrokes. The IQ agent

can receive numeric key presses (0-9, \*, #) dialed into the dial-pad, for the limited purpose of recognizing key code instructions for the IQ Agent to perform a specific function, such as to force an upload of current diagnostic data from the device to network servers..

*3) What if any of this data is transmitted off of a users' phone? When? In what form?*

Metrics selected in the profile are uploaded to designated servers on a schedule specified within the profile. In addition to uploading basic metrics, the profile may specify that metrics are summarized (for example, summarizing numbers of successful/unsuccessful calls). The upload interval is typically once per day, although some customers have less frequent upload requirements. To initiate an upload, the IQ Agent software requests a secure encrypted connection with network servers either in the Network Operator's control or at their request, to the customers' equipment located in Carrier IQ's data center. The data transmitted, which is typically about 200 kilobytes per day, is zero billed (meaning that the data transfer does not impact the consumer's data quota or bill).

*4) Is that data transmitted to Carrier IQ? It is transmitted to smartphone manufacturers, operating system providers, or carriers? Is it transmitted to any other third parties?*

The Carrier IQ Agent transmits diagnostic data only to the Carrier IQ customer – predominantly Network Operators and some device manufacturers – that specified a profile. In the case of one Network Operator, the diagnostic data is transferred directly from its end users' devices directly to the Network Operator's data center. In the case of other customers, Carrier IQ hosts data for its customers in Carrier IQ's data center. In these instances, Carrier IQ provides use of its server software, which processes the data, called Mobile Service Intelligence Platform (MSIP), to its customers as a managed service. Carrier IQ does not have any rights to the data that is gathered, and the information within the MSIP system is at the control of our customers. Carrier IQ does not transmit the data to any third parties, and is contractually prohibited from doing so.

*5) If Carrier IQ receives this data, does it subsequently share it with third parties? With whom does it share this data? What data is shared?*

Carrier IQ does not have any rights to the diagnostic data that is gathered, and the information within the MSIP system is at the exclusive control of Carrier IQ's customers.

*6) Will Carrier IQ allow users to stop any logging and transmission of this data?*

Although Carrier IQ has the capability to support opt-in / opt-out, Carrier IQ licenses its software to Network Providers and hand set manufacturers who set collection policies, and does not have a direct relationship with end users.

*7) How long does Carrier IQ store this data?*

The length of time diagnostic data is stored on the end user's device depends on the profile requested by the customer, but averages around 24 hours. During that time, the data is stored in a proprietary binary format. After the data is uploaded, it is deleted from the device. The minimum length of time

the diagnostic data is stored in Carrier IQ's data centers is a function of Network Operators or Device Manufacturer's minimum data retention requirements, as specified in their contracts with Carrier IQ. Typical minimum retention periods for Carrier IQ's customers are 30 days, although data may be retained beyond date. Carrier IQ is continuing to investigate how long data has been stored for each customer. Due to pending litigation, Carrier IQ is taking efforts to preserve all data currently in its data center.

*8) Has Carrier IQ disclosed this data to federal or state law enforcement?*

No. To date, Carrier IQ has not received legal process to provide end user data to any federal or state agency, and Carrier IQ has not provided such data. Should such requests be made, Carrier IQ would comply with its legal obligations, and would direct such requests to its customers, which have the legal rights to the data.

*9) How does Carrier IQ protect this data against hackers and other security threats?*

Carrier IQ has rigorous standards and procedures in place to protect data and we meet or exceed the guidelines and requirements set by our customers. These standards and procedures include a physically secure data center, multiple layers of firewalls and IP security systems, restricting access to systems by IP address ranges, using SSL encryption in communications between the mobile device and the data center and the data center and Network Operators.

*10) Does Carrier IQ believe that its actions comply with the Electronic Communications Privacy Act, including the federal wiretap statute (18 U.S.C. § 2511 et seq.), the pen register statute (18 USC § 3121 et seq.) and the Stored Communications Act (18 U.S.C. § 2701 et seq.)?*

Without disclosing confidential legal advice of counsel, Carrier IQ responds as follows:

Carrier IQ believes that its actions comply with each of these statutes. As explained above, Carrier IQ licenses its software to Network Operators for integration onto mobile devices in cooperation with mobile device manufacturers. Carrier IQ's software is used for purposes relating to the operation, maintenance and testing of Network Operators' networks and ensuring quality service. Carrier IQ does not, itself, access or collect any data from phones for its own use.

Carrier IQ writes profiles at the request of its Network Operator and mobile device manufacturers, our customers, to enable the IQ Agent installed on phones to provide specified information to those customers. The Network Operators and mobile device manufacturers are responsible for ensuring that the data they specify the IQ Agent to collect is in compliance with their customer agreements and privacy policies. Several major wireless carriers, for example, inform their customers through their privacy policies that they collect information about the operation of equipment on their networks, including location information, transmission rates, and URLs and web addresses, among other information.

Carrier IQ has never written a profile with the intent to intercept the content of SMS messages, MMS messages, voice calls, email, web pages or access such content in electronic storage. The Carrier IQ

agent is used by one of Carrier IQ's Network Operator customers to gather URLs visited on devices on that customer's network, in accordance with that Network Operator's user agreement and privacy policy.

As described above Carrier IQ discovered a profile bug which may have allowed the IQ Agent in embedded deployments to capture SMS messages embedded in layer 3 signaling protocol messages in unique circumstances. Carrier IQ did not intend to capture such messages, and has never accessed such messages, nor has it been able to do so because any such messages are encoded, not human readable, and are not parsed by Carrier IQ's analytics software. Working with its customers, Carrier IQ quickly corrected this bug after discovering it.

*11) Does Carrier IQ believe that its actions comply with the Computer Fraud and Abuse Act (18 U.S.C. § 1030)? Why?*

Without disclosing confidential legal advice of counsel, Carrier IQ responds as follows:

Carrier IQ believes that its actions comply with the Computer Fraud and Abuse Act. As explained above, Carrier IQ licenses its software to its customers, Network Operators and handset manufacturers for those customers to install on mobile devices for purpose of collecting diagnostic information in compliance with those customers' privacy policies and agreements with their end users.

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We appreciate your engagement in this matter and would be happy to address any additional questions that may arise.

Sincerely,



Kelly S. Sharpe  
Chief Financial Officer

On behalf of

Larry Lenhart  
President and CEO

Carrier IQ Inc.

Attachment