



Open Channel® Traffic Optimization Wireless Carrier Field Trial Results

May 2014

Abstract: This document presents trial results for Open Channel Traffic Optimization.

©2014 SEVEN Networks, Inc. All rights reserved. The information contained in this document represents the current view of SEVEN Networks, Inc.

SEVEN® and Open Channel® are registered trademarks or trademarks of SEVEN Networks, Inc. in the United States and/or other countries. Other product or company names mentioned herein may be the trademarks of their respective owners.

SEVEN Networks, Inc. • 959 Skyway Road, Suite 100 • San Carlos, CA, USA

1. Introduction

SEVEN Networks works with wireless carriers to conduct trial deployments of its Open Channel Traffic Optimization software product. The product is designed to optimize data traffic with respect to mobile signaling and related bandwidth utilization, and to increase battery life in client devices. The purpose of carrier trials is to demonstrate the efficacy of the software in achieving these goals in each carrier network. This white paper describes the methodology used for trials, explains the metrics used to measure results, and presents the results of recent trials.

2. Trial Methodology

The trial methodology is designed to provide each carrier with a realistic picture of the results that it can expect to achieve in a full-scale production deployment. Trial users are chosen by the mobile operator participating in the trial, typically from among their own employees. Trial users typically number between twelve and thirty, which is sufficient to achieve the goals of the trial.

The trial methodology is designed to provide each carrier with a realistic picture of the results that it can expect to achieve in a full-scale production deployment.

The trial consists of a baseline period and an optimization period. During the baseline period, the software is present in transparent mode, without the optimization functionality activated. In the second period the optimization is turned on. The baseline and optimization periods each last about seven days, depending upon the preference of the carrier. Trial results are calculated

Trial participants are instructed to carry and use the device as if it were their own, actively using it throughout the trial period.

by comparing metrics during the baseline period with the same metrics during the optimization period. All results are normalized by user-days to account for differences in the number of active users each day or the number of days in each period, and to allow for direct comparisons between

trials. Trial participants are instructed to carry and use the device as if it were their own, actively using it throughout the trial period. No specific applications are required or requested

by SEVEN Networks – this is purely up to the customer and individual trial participants. The carrier can specify apps that are representative of those used by its actual subscriber base. This ensures that prospective carrier customers get an unbiased view of the performance of the product, without being concerned that the choice of apps may skew the results. Trial users are asked to install and use as many applications as they desire.

The mobile carriers who participated in the trials presented here have a diverse range of profiles. The results shown here include trials with tier 1 and tier 2 carriers that employ radio network technology that ranges from 2G to LTE. Two of the carriers are located in North America, two are in Europe, and two are in Asia. Their trial users used anywhere from 180 to over 350 individual apps during the trial period.

3. Trial Metrics

Several key metrics are tracked to determine trial results, as shown in the table below:

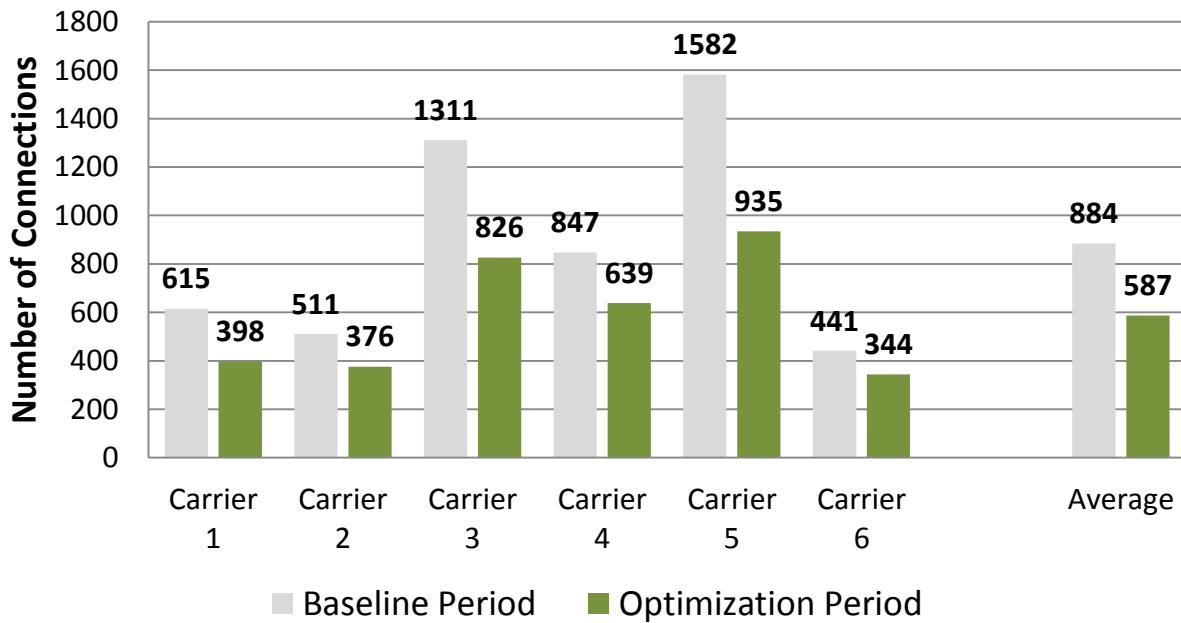
Metric	Definition	Unit of Measure
Connections	Radio state transition from idle (lowest radio power state) to connected (higher power state), triggered by a network transaction when the radio is idle. Once the device is connected, multiple network transactions can occur as long as the radio remains in a connected state.	Number of connections per trial user per day
Time connected	The total time during which a device radio remains in the connected state, and is therefore occupying network capacity. This is measured from when the connection occurs (i.e., when the radio transitions from an idle state to a connected state) to when the radio changes back to the idle state.	Minutes connected per trial user per day
Non-streaming data consumption *	Mobile data consumed by apps other than video or audio streaming. Non-streaming data traffic is isolated by excluding apps for which data consumption is greater than 750KB per connection.	Megabytes of data used per trial user per day
Battery life	The time that it takes a fully charged device battery to full discharge, assuming that it is neither turned off nor charged during this period.	Hours

* The purpose of excluding streaming traffic is to isolate the benefits of the software, which does not focus on optimizing streaming data – other solutions are available for that purpose.

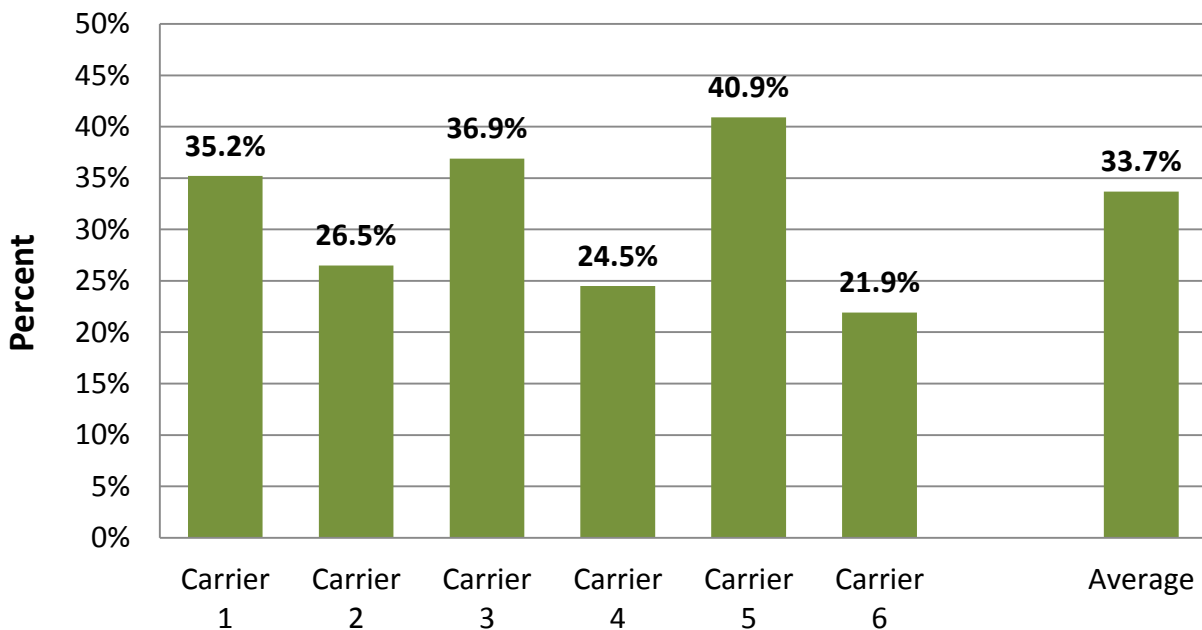
4. Trial Results

The following charts show the results across trial deployments conducted with six mobile carriers. The names and regions of the carriers are not shown to preserve confidentiality.

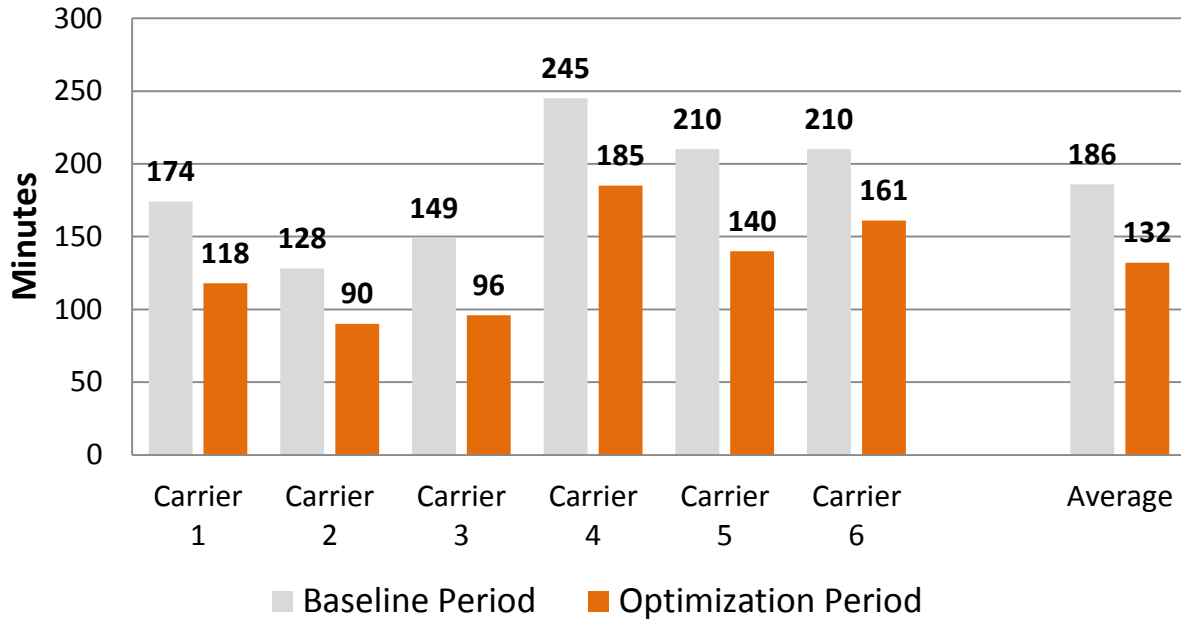
Connections per User per Day



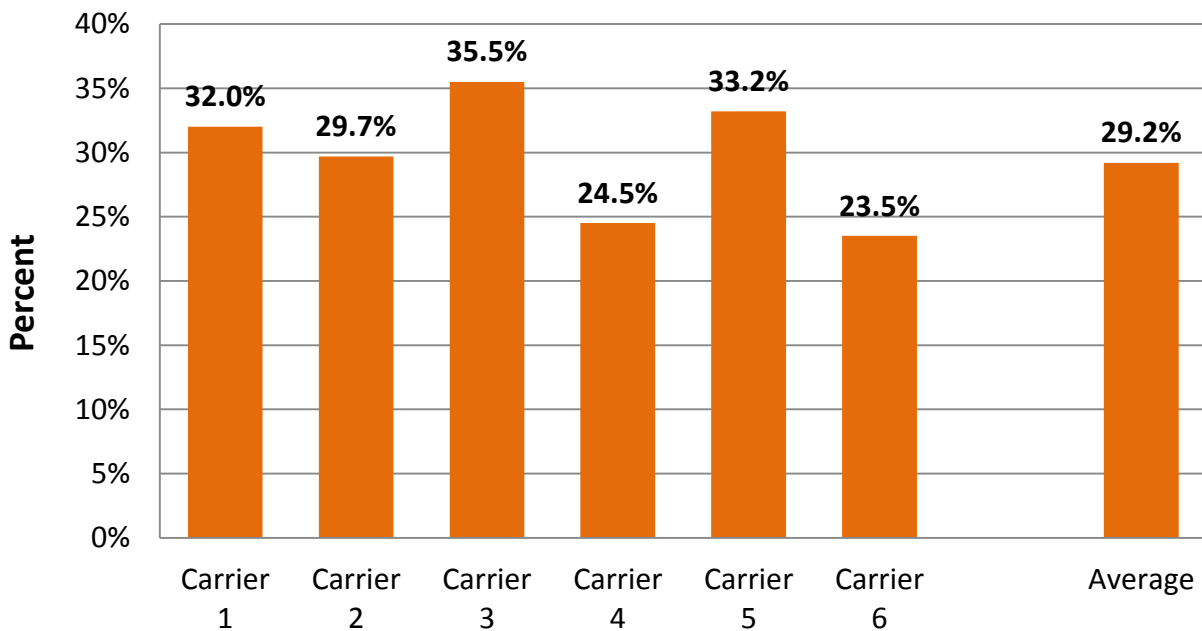
Reduction in Connections



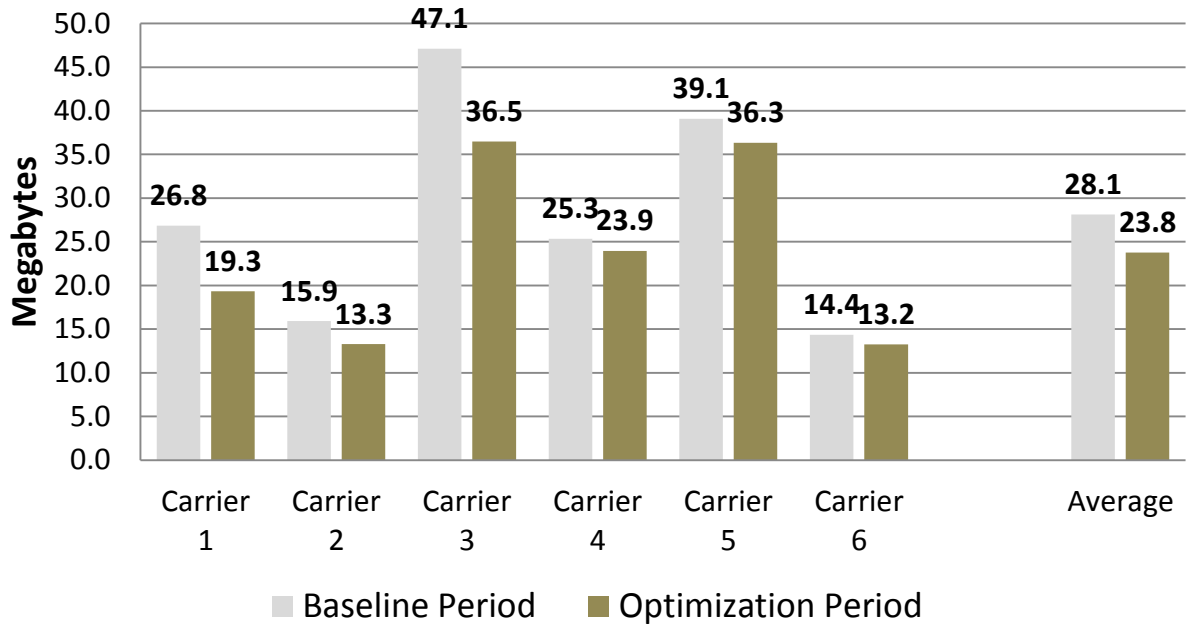
Time Connected per User per Day



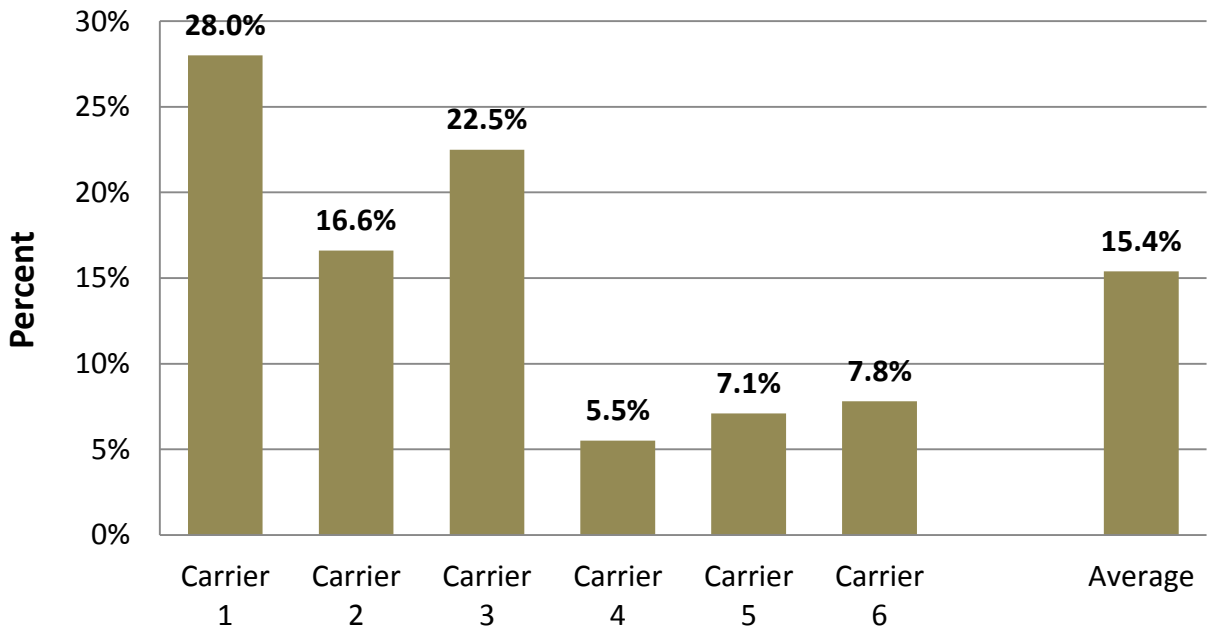
Reduction in Time Connected



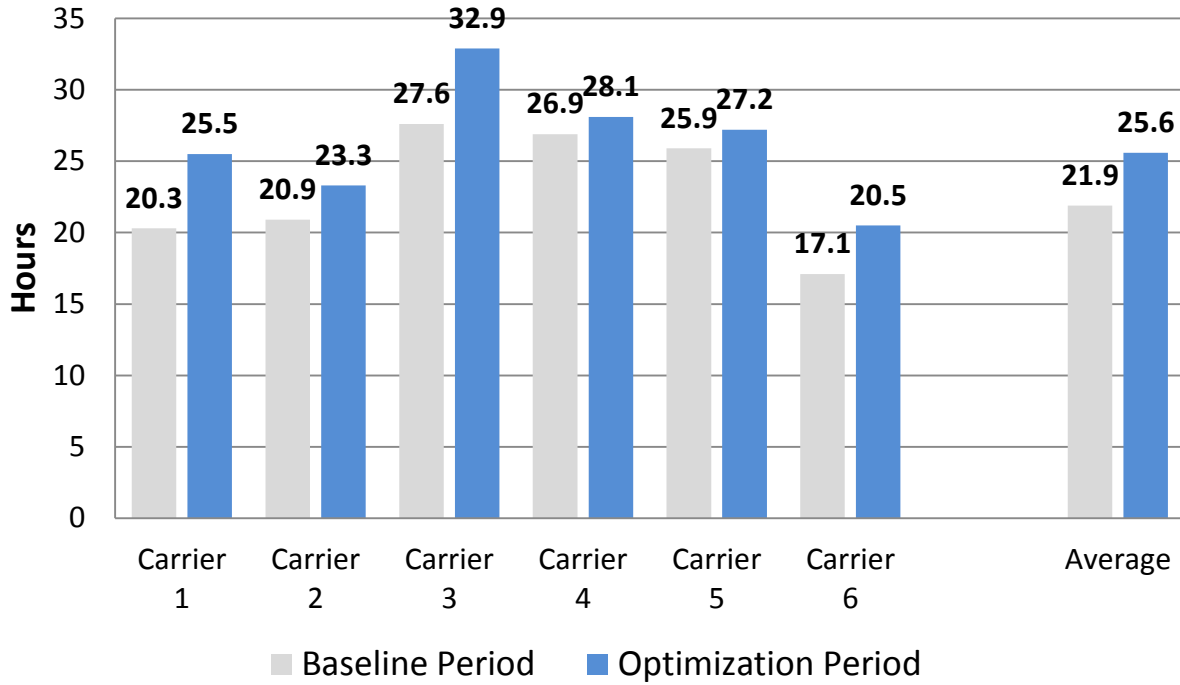
Non-Streaming Data Consumption per User per Day



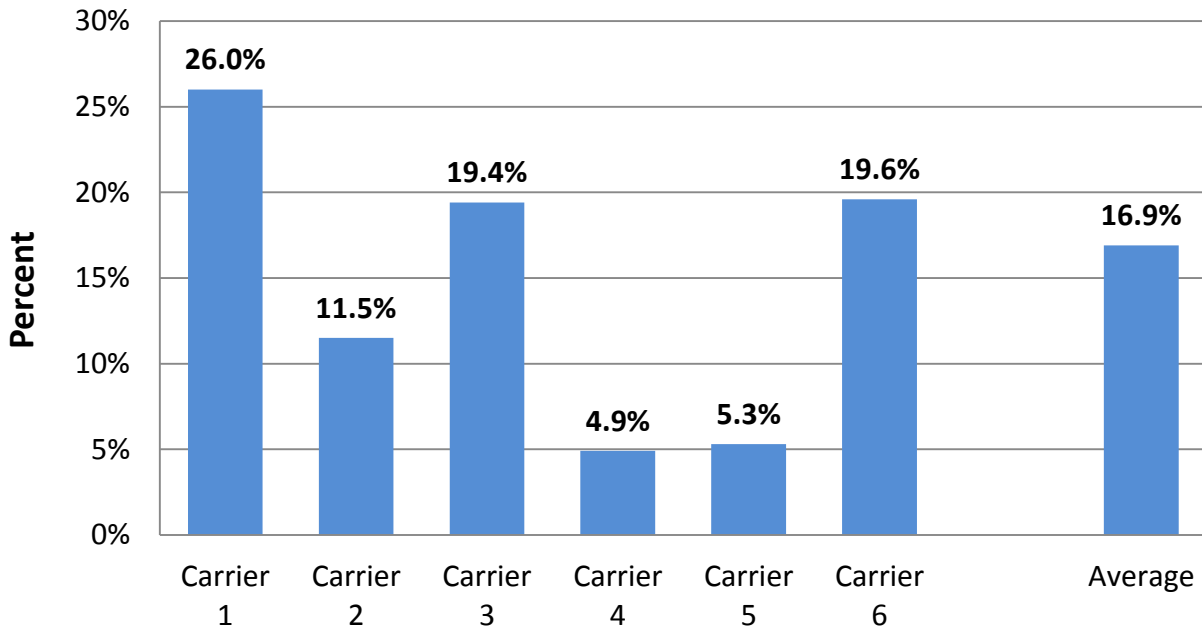
Reduction in Non-Streaming Data Consumption



Battery Life



Battery Life Improvement



5. Summary

Open Channel Traffic Optimization achieved highly favorable results across the six carrier field trials presented in this white paper. On average:

- **Number of connections** was reduced by **34%**
- **Time connected** was reduced by **29%**
- **Non-streaming data consumption** was reduced by **15%**
- **Battery life** was extended by **17%**

The results were consistently positive across six trials that covered a diverse set of carriers in terms of geography, underlying network technology, app profile, and user behavior. Taken as a whole, these results point very strongly to the potential for similarly favorable outcomes in other carrier environments.

About SEVEN Networks

SEVEN Networks software solutions deliver device-centric mobile traffic management and analytics for wireless carriers. Extending control from the network to the mobile client gives operators the power to manage and optimize data traffic before it impacts the network. Device-based analytics offer deeper and timelier insight than solutions that are solely network based. SEVEN's Open Channel products reduce operator costs, increase efficiency in the use of wireless infrastructure, and enhance end-user experience. They bring immediate capacity relief to overloaded networks, simplify the creation of innovative new service plans, and provide actionable intelligence for mobile carriers. [WPTR140527.]

For more information, visit SEVEN online at www.seven.com or follow us on Twitter at www.twitter.com/SEVEN_Networks.