SRC Mobility Study

Mobility Performance Investigation

Study Overview

A Multi-AP Network has been created to test the capability of Wireless Roaming when using Ubiquiti's SuperRangeCardbus adapter. This study will show the transition times involved when switching from one Access Point to another under various circumstances.

Network Setup

A Linksys WRT55AG and a Proxim AP-700 are used as AP's, both set with the Same SSID. A Compaq Presario V3000 notebook in combination with Ubiquiti's SRC Adapter and Utility are tested.

Testing Procedure

These tests were set up with the both AP's about 10' feet apart. To reproduce fading signal of an AP, a shielded box was used. One AP, while passing some form of traffic, was lowered into the shielded box while the lid was slowly closed. This drops the signal level at a controlled pace, to simulate moving away from an AP. To provide traffic over this simple mesh network, NetIQ's Chariot software was utilized. This software uses different scripts to model throughput usage over any network.

Test Cases

Test Case 1: Baseline test to show the performance of the Non-Mobility driver

Test Case 2: This test show the performance of mobility under low bandwidth conditions

Test Case 3: This is to demonstrate the effects of high bandwidth usage on handoff times.

Test Case 1 - Baseline - Non-Mobility SRC Driver

This test was performed with our old SRC Driver/Utility set. This was done to show a baseline of before and after testing. This set has no mobility functionality. As you can see the handoff time for switching AP's is well over 4.5seconds (Figure1). This was done under maximum bandwidth load as seen in (Figure2.)

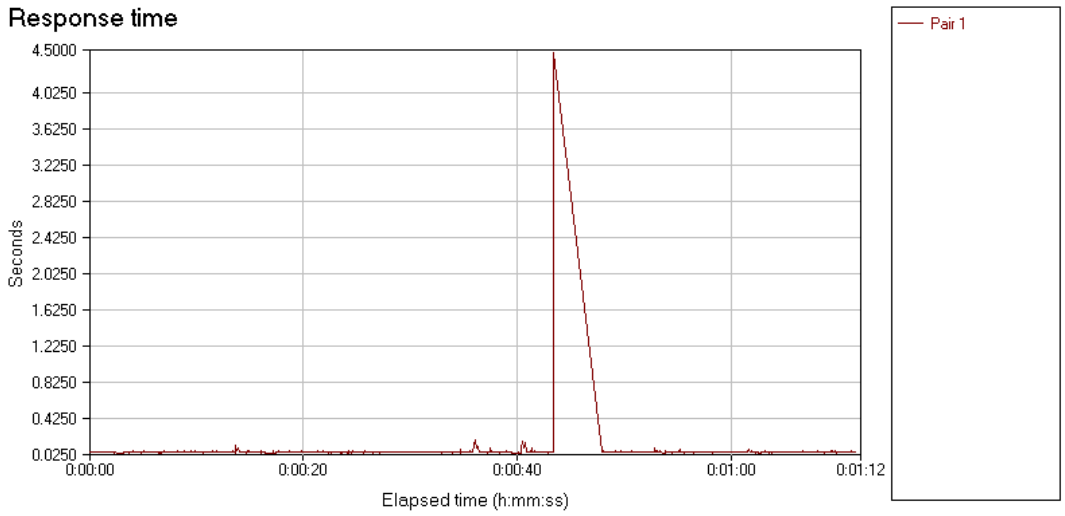


Figure 1

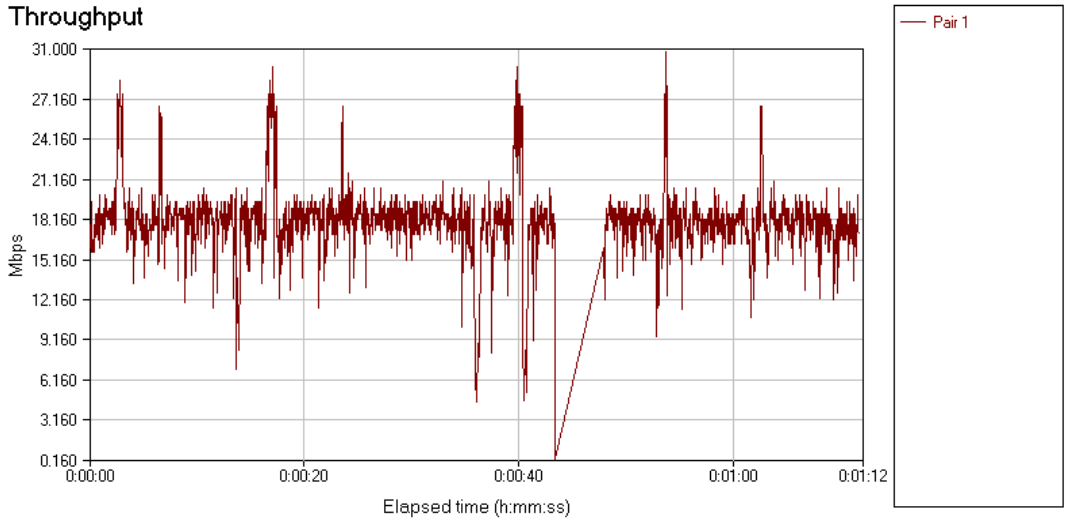
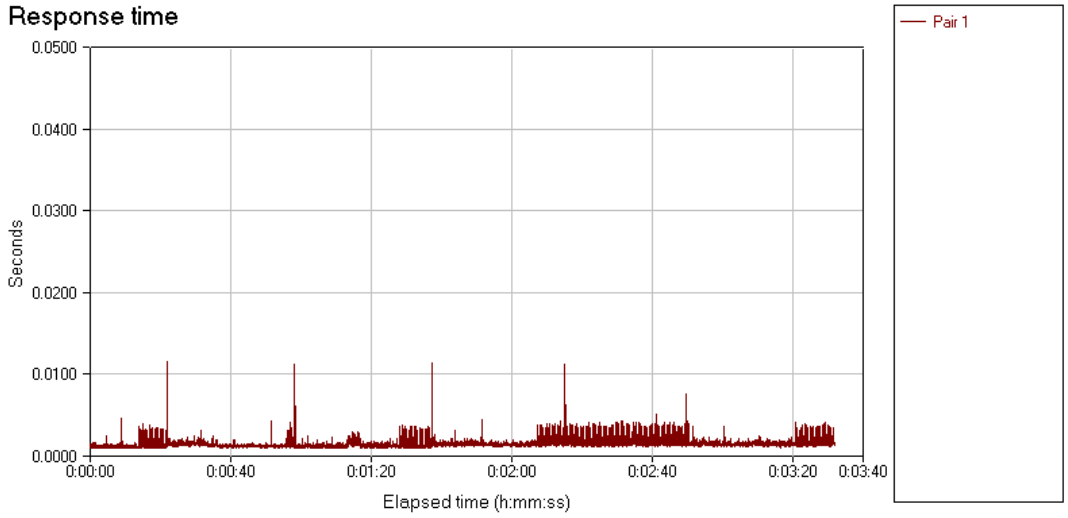


Figure 2

Test Case 2 - SRC Mobility Driver - Low BW

The test laptop was next set up with the latest SRC Mobility driver (SRX_5.4.exe). This test was ran using a modified script (VideoStream.scr), that would simulate the low bandwidth (relative to the connection capacity) of an MPEG-3 Video stream. As you can see from the graph (Figure 3) under these conditions Handoff times were down to around 12ms. The throughput averaged 1.113 Mbps (Figure 4). This would be equivalent to an HD Mpeg-3 Stream.



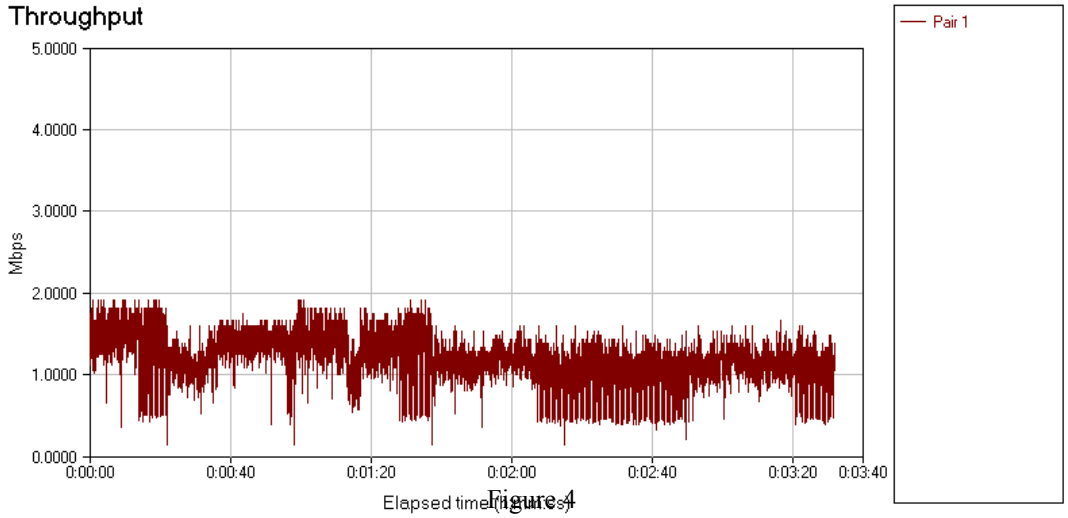


Figure 4

Test Case 3 - SRC Mobility Driver - High BW

Test 3 involved testing the handoff time under a high bandwidth load. This is to show the correlation between traffic load and handoff times to the AP. As you can see at maximum bandwidth, the TCP/IP traffic was at an average of 13Mbps witch does not include its TCP/IP overhead. The handoff time to the AP was significantly increased. The handoff time was around 870ms (Figure 5) at maximum bandwidth (Figure 6). Between the 2 Graphs you can see the difference in speed against 2 different AP's. (Ap1 is the WRT300N and Ap2 is the SRX200).

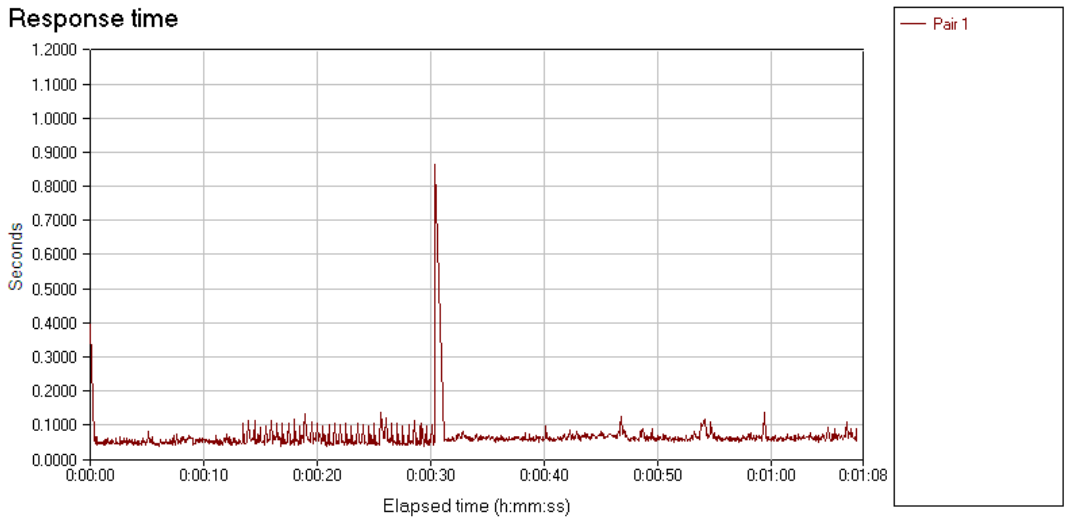


Figure 5

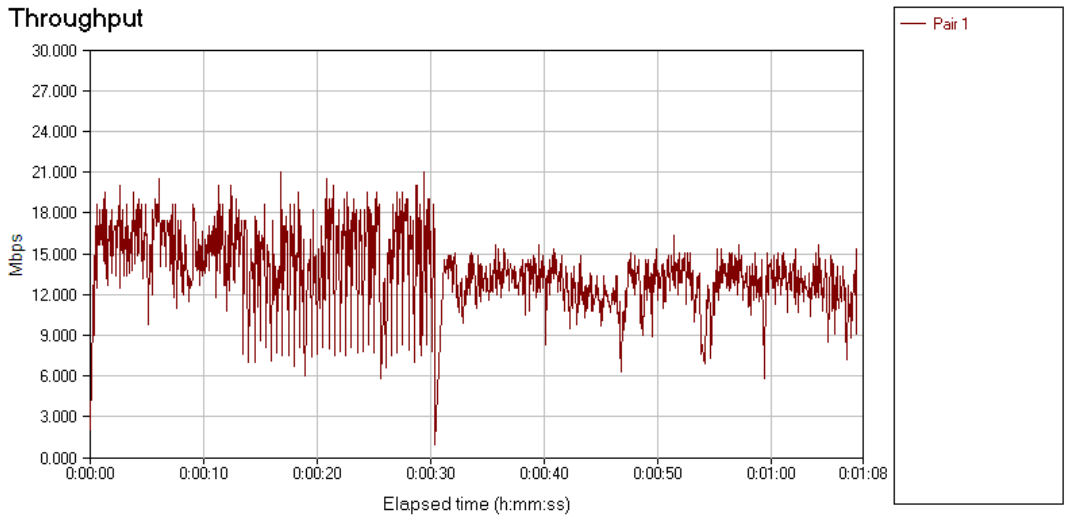


Figure 6

Conclusions

This round of tests shows the capability of the SRX driver set in regards to Mobility. Handoff time to AP's depends on a few factors, the major one being bandwidth load over the link. Another major factor is the type of AP being used. The time for handoff of the connection was also different amongst different AP's. Some AP, running more streamlined software, will receive the connection faster then some others. For SRC, under normal circumstances: i.e. normal internet surfing, VoiP, and streaming audio/video, the SRX driver performs well without any AP assisted roaming (i.e. Cisco). The roaming capabilities are robust enough for most major programs that need stable links for communications.