Spotwave Wireless White Paper

SpotCell™ Dramatically Improves In-Building Data Throughput

Contact: www.spotwave.com

1-877-610-9586

info@spotwave.com

SPOTWAVE
coverage made simple

SpotCell™ Dramatically Improves In-Building Data Throughput

Performance Study

Summary

Deploying SpotCell inside buildings can dramatically increase wireless data throughput. Measured results show throughput increases of up to 400%.

Introduction

New high-speed wireless data services are being introduced across North America. Sprint PCS Vision, Verizon Wireless Express Network and Bell Mobility 1X Network all offer the promise of high-speed data connections available on wireless devices. These new services, all implemented using CDMA 1xRTT technologies, offer peak speeds of up to 144 kbps, with anticipated average throughput better than that provided by dial-up Internet access (Table 1).

Service Provider	Data Service	Peak Speed (kbps)	Expected Average (kbps)
Sprint PCS	Vision	144	50-70
Verizon Wireless	Express Network	144	40-60
Bell Mobility	1X	144	86

Table 1 – 1xRTT Data Services (Source: Service Provider Web Sites)

Throughput performance is critical for commercial success. Performance was cited as the key vendor selection criterion by 89% of respondents (Yankee Group 2002 Corporate Wireless Survey).

SpotCell Improves Throughput Inside Buildings

A recent study by Spotwave Wireless shows that throughput is significantly reduced inside buildings. In 60% of locations surveyed, actual performance was below average, with measured throughput reaching only 20 to 30 kbps.

Actual throughput is directly affected by the received strength of the wireless signal and by interference (Figure 1).[1] These same factors also affect the ability to make and receive voice calls on a cellular phone.

Buildings themselves, with concrete, metal and coated glass construction materials, directly reduce signal levels and increase interference.

Interference	Low	Variable Performance	Best Throughput
	High	Worst Throughput	Variable Performance
		Weak	Strong
		Signal Strength	

Figure 1 – Interference and Signal Strength Affect Throughput

Figure 2 shows throughput measurements in typical indoor locations and highlights the effects of signal strength and interference. Throughput is good (>100 kbps) where the signal is strong and there is little interference (for example, directly beside a window). In other locations where the signal is weak or interference is high (such as interior meeting offices and meeting rooms), throughput drops to 20 to 30 kbps. This makes data services unusable inside buildings.

Deploying SpotCell improves throughput by improving signal strength and reducing interference. Figure 3 shows throughput measurements for the same locations with SpotCell installed. Throughput increases to over 100 kbps because the signal strength has increased and interference has been reduced. Figure 4 shows before-and-after throughput measurements, highlighting throughput improvements exceeding 400%.

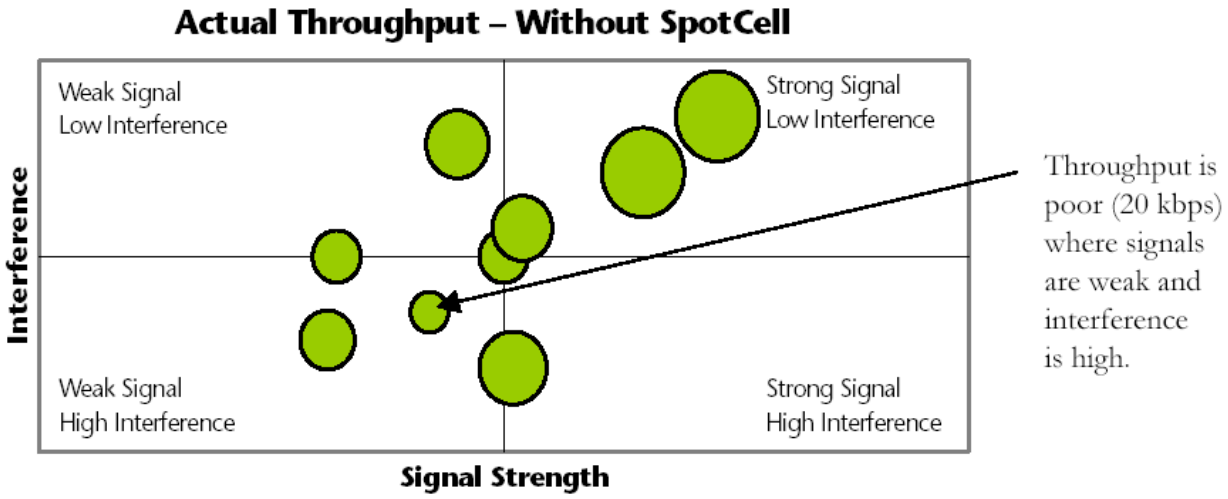

Figure 2 – Measured Throughput Without SpotCell. Circle Size Is Proportional to Throughput.

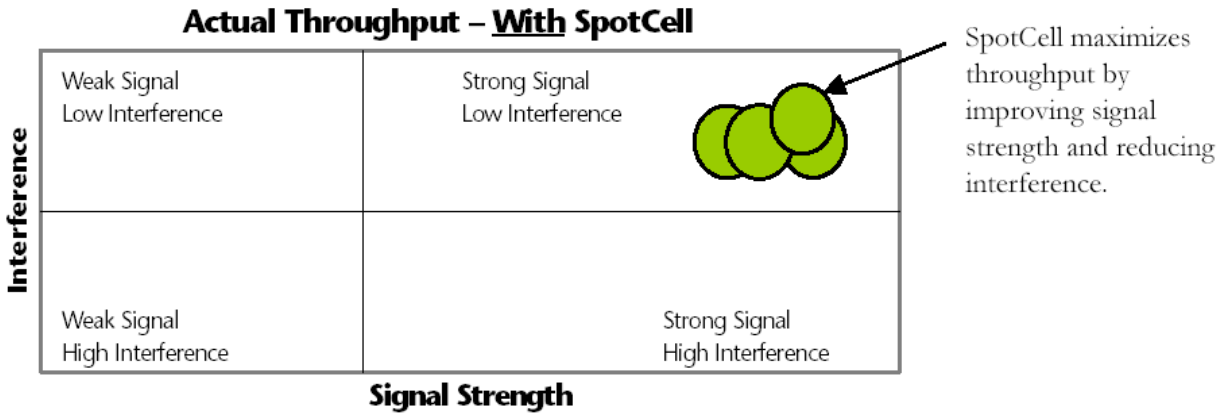

Figure 3 – Measured Throughput With SpotCell. Circle Size Is Proportional to Throughput.

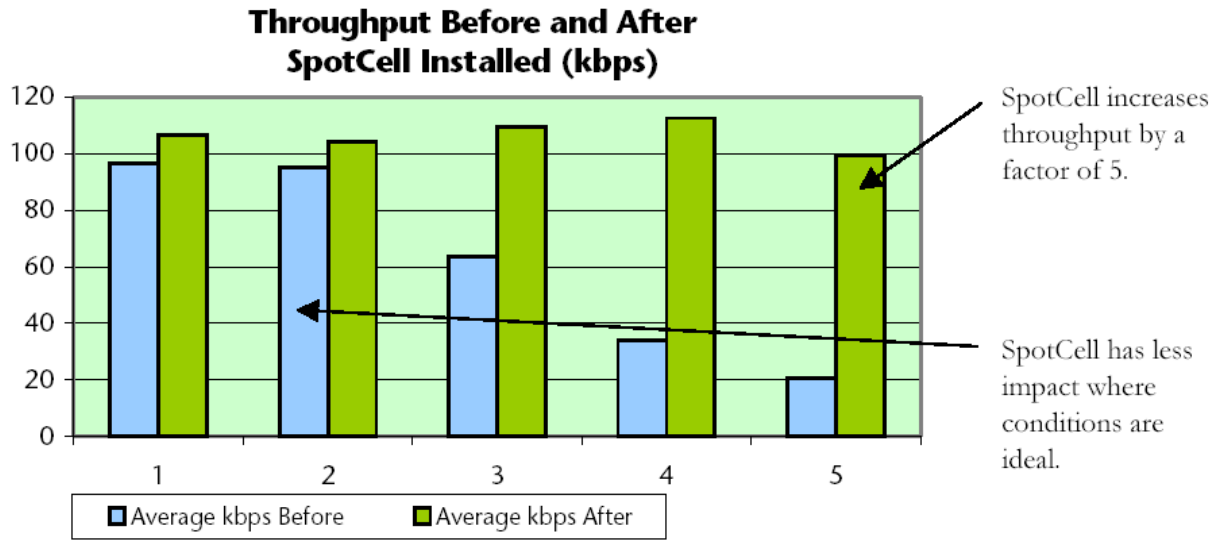

Figure 4 – Throughput Before and After SpotCell Installed at Five Different Locations

Conclusions

User satisfaction with data services is directly tied to throughput speeds. Actual throughput inside buildings can be dramatically improved through the deployment of SpotCell.