WHITE PAPER

An Analysis of Total Cost of Ownership for Service Providers Deploying Public WLANs

Sponsored by: Pronto Networks

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IDC OPINION

Public WLANs, or hotspots, have gained increasing relevancy over the past two years, and are fast becoming an integral part of society's information-communication fabric. However, despite their demonstrable utility — remote broadband connectivity for individual consumers and mobile workers — and rising popularity with specific segments of the market (e.g., hotel guests, frequent travelers, etc.), hotspots have yet to see pervasive deployment and usage. IDC believes this is the classic issue faced by most new technologies, in that accurately assessing end-user demand remains a significant challenge.

At present, public WLANs remain a supply-side phenomenon for the most part, their growth being driven principally by the desire of telecommunications carriers and other service providers to develop new sources of revenue. These carriers and service providers are rolling out hotspots in the belief that ubiquity and scale will drive usage — not an untenable view given that social acceptance of a new technology is often circumscribed by the conditions of its availability.

While the basic premise of a subscriber-based business model is being applied to the provisioning and management of hotspots, there are significant differences between traditional regulated telecom services and the largely unregulated rollout of hotspots. The costs, for instance, associated with product procurement, site surveys, network design, installation, provisioning, OSS/BSS, and ongoing management of hotspots are often dramatically different when compared, for example, with the roll out of a 3G mobile wireless data network.

This IDC White Paper offers an overview of hotspot growth in the United States and provides an analysis of the total cost of ownership (TCO) associated with large-scale hotspot development (i.e., hotspot projects where the number of locations is greater than 5,000). It also includes an analysis of hotspot costs that are frequently overlooked by both hotspot service providers and location owners. Finally, this research suggests a business scenario whereby telecommunications carriers may be able to more effectively manage hotspot operating expenses (OPEX) and capital expenses (CAPEX) through the use of established third-party technological solutions and services offered by Pronto Networks.

INTRODUCTION

The idea of providing mobile users with remote connectivity and communication services for a metered fee is not a new concept. It was conceived of more than 100 years ago when in 1888, William Gray filed the first of 23 telephone pay station patents, which later led to the founding of the Gray Telephone Pay Station Company in 1891. Demand for this new communications equipment and service took time to develop with widespread acceptance not occurring until Gray marketed the idea to three important institutions: the telephone companies, hotel and store owners, and the general public. Gray was able to convince the telephone companies they were losing revenue opportunities by not utilizing his product, because consumers would likely find alternative ways to communicate.

Similar to the pay telephone concept more than a century ago, today's market for public hotspots in the United States is at a rather early stage of development and is primarily being supported by an uncoordinated supply-side effort. In early 2005, hotspot market participants are still wrestling with post-hype realities and evaluating various business models as they assess usage patterns and pricing tolerances for different types of users as well as access locations. Yet, the promise and potential of this segment of the mobility landscape continues to make it a relatively attractive opportunity for service providers, wireless and wireline carriers, and large IT vendors with substantial geographic reach.

Because of the attractiveness of the market, continuous IDC research on the subject suggests that:

☒ Over the next five years, the number of available U.S. commercial hotspots will increase at a nearly 45% CAGR (compound annual growth rate). Over the 2004-2008 forecast period, consumer-oriented retail locations — from cafés and restaurants to bookstores, hotels, airports, and, potentially entire cities — will drive growth in the deployment of hotspots.

☒ The hotspot market is currently and will continue to undergo what may be termed as a "land-grab" phase marked by hotspot operators seeking to build alliances with owners of choice sites. However, while deals are being announced, actual deployment will be phased over the next three years.

☒ Remote access providers, such as aggregators, are playing a crucial role in this stage of the hotspot market's development by providing hotspot users with a broader footprint of sites than many individual hotspot operators can currently offer. Hotspot operators are also entering direct network roaming relationships to build their footprint. These roaming relationships are either bilateral in nature or multilateral via an established WLAN clearinghouse.

☒ Cometa Networks' decision in 2004 to exit the hotspot market suggests that building a nationwide wholesale network is not as inexpensive a proposition as hotspot proponents have suggested. Cometa's collapse points to the weakness of a hotspot-only business model — that of being a pure-play hotspot provider. Yet, it would be a mistake to equate the failure of one individual player with the demise of the entire hotspot market.

⊠ Although the demand in the United States for public hotspots, if measured in terms of paying customers and network usage, remains relatively small, IT vendors, carriers, and telecommunications equipment providers are investing hundreds of millions of dollars in the market for public hotspots. Even private equity firms have invested millions of dollars in start-ups that seek to establish a brand and address one or more parts of the value chain supporting these public hotspots.

This enthusiasm and investment is visible in the United States, which has seen a fairly steady increase in the number of public hotspots. IDC believes that by year-end 2004, there were more than 22,000 hotspots in the United States. By the end of the forecast period in 2008, there are likely to be more than 65,000 commercial hotspots in the United States. Table 1 outlines hotspot categories by location and forecasts growth in each general location category over the 2004–2008 forecast period.

TABLE 1

U.S. Commercial Hotspots by Location Type, 2003-2008

	2003	2004	2005	2006	2007	2008	2003-2008 CAGR (%)
Airports	178	379	639	846	1,003	1,061	42.9
Growth (%)	NA	113	68.5	32.5	18.5	5.8	
Share (%)	1.7	1.7	1.8	1.8	1.8	1.6	
Hotels	2,642	4,874	7,195	9,101	10,812	12,153	35.7
Growth (%)	NA	84.5	47.6	26.5	18.8	12.4	
Share (%)	25.5	21.9	20.3	19.3	18.9	18.6	
Cafés and restaurants	4,891	9,415	14,688	19,681	22,831	25,570	39.2
Growth (%)	NA	92.5	56	34	16	12	
Share (%)	47.2	42.3	41.5	41.7	40	39.2	
Other	2,657	7,572	12,911	17,559	22,476	26,409	58.3
Growth (%)	NA	185	70.5	36	28	17.5	
Share (%)	25.6	34	36.4	37.2	39.3	40.5	
Total	10,368	22,241	35,432	47,188	57,122	65,193	44.4
Growth (%)	NA	114.5	59.3	33.2	21.1	14.1	

Source: IDC, 2005

Sometimes overlooked in the discussion of hotspot growth is the legitimate threat to the public hotspot market, which may be presented by competing wireless access technologies. Mobile network operators, for example, note that advances in cellular networks may make hotspots redundant in many, if not most, scenarios. For instance, the availability of 200–300Kbps speeds on CDMA 1x EV-DO networks, which can support streaming video in wide area networks to which one can easily connect with regular mobile phone handsets or PCMCIA cards, could undermine the need for a person to visit a hotspot. It is unlikely then that given such availability, users would have much enthusiasm for subscribing to both types of services and pay extra for usage and endure the inconvenience of separate billing.

Another perspective is that other broadband wireless access technologies will be complementary, not competitive, to WLAN. For example, many mobile operators are investing in 3G/Wi-Fi handoff technologies that would allow users to access the network via Wi-Fi when available and via 3G when not. This makes economic sense as Wi-Fi is less expensive and faster than 3G. Incentives for mobile operators to incorporate WLAN technology in their network is to offload capacity on their more expensive 3G network. The number of mobile operators supporting the Universal Media Access (UMA) standard is evidence of their support for this strategy. WiMAX is also viewed as another broadband wireless technology that will coexist with Wi-Fi. In the early rollout stage, WiMAX may be used primarily as backhaul for hotspots. In later stages, WiMAX will still likely complement WLAN as the cost and quality of wireless coverage will still be better with a LAN technology rather than a MAN technology.

ENVIRONMENTAL CHALLENGES FOR TODAY'S HOTSPOT MARKETPLACE

More than a century later, public wireless LAN hotspots represent for many the new "pay stations" for the 21st century, and hundreds of hotspot providers have entered the market seeking to capitalize on the revenue potential. In fact, some large telecommunication carriers, such as SBC, T-Mobile, Verizon, Bell Canada and others are also interested in becoming leaders in this nascent marketplace despite the enormous challenges and often unforgiving road ahead (i.e., building network hotspots in anticipation of subscriber growth in an unregulated environment). Some of these challenges are highlighted below:

- ☒ The race for selecting and securing the most optimal locations (e.g., hotels, airport lounges and gates, retail locations, public settings, etc.)

- ☒ Strategies for establishing ubiquitous access coverage across local and regional geographies

- ☒ Establishing, identifying, controlling, rating, and charging of session-based network services based on user preferences

- ☒ Developing an advanced rules-based rating solution to price next-generation communication services and addressing complex business transactions

- ☒ Managing operational efficiencies and minimizing total cost of ownership (TCO)

Many providers seeking a competitive advantage in the marketplace are cognizant of these challenges, yet most are completely unaware of the unique attributes and challenges associated with large-scale hotspot buildouts. For instance, unlike traditional mobile network voice/data infrastructures used by mobile network operators, where coverage is measured in area miles, hotspot coverage (which in the future will deliver audio, video, and voice applications) is often measured in square feet. The relative costs between the two solutions are also dramatically different. Depending on the physical location, designing and deploying a CDMA cell site, for example, can carry a million dollars in equipment and design costs, while designing and deploying a single Wi-Fi hotspot might cost a thousand dollars.

Of course, this equation does not take into consideration fixed and variable costs that are frequently overlooked and are critical considerations which make up a hotspot network TCO. The next sections of this document will examine more closely the true costs of hotspot ownership — from equipment procurement, network design, deployment, installation, and ongoing management and support — and how these complex issues might be better supported and managed by a trusted third-party partner.

The TCO for Large-Scale, Public Hotspot Networks

For the various organizations that participate in the process of site selection, network design, deployment, and ongoing management of public and private hotspot locations, capturing a truly accurate assessment of the total cost of ownership (TCO) continues to be a challenge. Unlike a static piece of depreciating computing equipment, where the TCO can be forecasted rather predictably, a similar model for a large hotspot rollout can include fixed and variable expenses that can vary widely based on separate operational agreements with different location owners, type of network equipment deployed, software, access costs, provisioning and billing, and other factors.

For the purposes of this document, a hotspot TCO model is reflective of an analysis of relevant direct and indirect costs associated with designing, building, and managing public WLAN hotspots.

Although such a cost model can be rather complex and include numerous expense items, this White Paper will consolidate these costs into two broad categories, which also correspond to sequential deployment phases:

☐ **Phase 1: Planning and Implementation.** This initial phase of a hotspot network development includes costs associated with economic and technical assessments, site development, product procurement, network design and implementation. These expenses are typically referred to as one-time capital costs.

☐ **Phase 2: Management.** Phase 2 expenses are reflective of ongoing management, network access, and maintenance and support costs, which far exceed Phase 1 expenses. These expenses can be classified as recurring annual expenses as the activities in this phase require the network operator to actively manage virtually every aspect of the hotspot's operational life cycle.

Why Measure Hotspot TCO?

How much capital is invested annually by carriers to rollout large-scale hotspot locations? What is the primary rationale on which these investment decisions are based? How much time and effort will a carrier actually spend in order develop software and provide service, support, training, software upgrades, develop operational support systems, offer real-time network management and monitoring, and introduce change management policies? For some carriers interested in the hotspot business model, answers to these questions are sometimes based on partial data or incomplete estimates, which can mask the true TCO. Understanding where hotspot costs are actually incurred and projecting how these costs might fluctuate in the future is a necessary first step in developing greater visibility and awareness of how to maximize the potential for profitable operations within the public hotspot marketplace.

A Hotspot TCO Model

In the hotspot TCO model created in Table 2, IDC examines at more depth the typical technology and financial considerations associated with rolling out 5,000 carrier-class hotspot locations. In this model, *IDC's Three-Year Total Cost of Ownership (TCO) Program Management Model for Large-Scale Hotspot Management* calculates actual and hypothetical expenses based on (a) average one-time capital costs and (2) average recurring annual expenses. Combining both expense categories provides the foundation of this three-year TCO model. [Please note, it is critically important to observe the list of *Key TCO Model Assumptions* found in Table 2 in order to fully understand the underpinnings of this model.]

As shown in Table 2, total Phase 1 One-Time Capital Costs include two distinct segments:

- ☑ **Hotspot capital expenditures**. These costs include one-time activities associated with hardware procurement and software development.

- ☑ **Hotspot installation costs.** These per-location costs are directly related to actual site survey engineering activities, equipment configuration, installation, and testing.

TABLE 2

IDC's Three-Year Total Cost of Ownership (TCO) Program Management Model for Large-Scale Hotspot Management

		Average Cost Per Location (CPL)	Total Cost (CPL x Locations or APs)	% of Total	$ Total Over 3 Years	Baseline TCO % of Total
Phase 1 — Planning and Implementation Costs (Assessment, Development, Procurement, Design and Implementation Costs - One-Time Capital Costs)						
1.0	**Hotspot Capital Expenditures**					
1.1	Hardware (access points, cables, etc.)	$504	$3,528,000	9%	$3,528,000	4%
1.2	Software developed internally for back-office applications (20 FT developers at 18 months)		$3,000,000	8%	$3,000,000	3%
2.0	**Hotspot Installation Costs**					
2.1	Site Survey per location	$450	$2,250,000	6%	$2,250,000	2%
2.2	Equipment provisioning, configuration, installation, test, shipping, travel (per AP)	$544	$2,720,000	7%	$2,720,000	3%
Total Phase 1 Capital Costs		$1,498	$11,498,000	29%	$11,498,000	12%

TABLE 2

IDC's Three-Year Total Cost of Ownership (TCO) Program Management Model for Large-Scale Hotspot Management

		Average Cost Per Location (CPL)	Total Cost (CPL x Locations or APs)	% of Total	$ Total Over 3 Years	Baseline TCO % of Total
Phase 2 — Management Costs (Ongoing Management, Network Access, and Support Costs - Recurring Annual Costs)						
3.0	**Network Access Costs**					
3.1	Monthly hotspot T1 and DSL access charges per location	$185	$11,100,000	28%	$33,300,000	35%
4.0	**Back-Office Operational Costs**					
4.1	Call center support (24x7 Level 1 & 2 support for end-users, location owners)		$10,828,800	28%	$32,486,400	34%
4.2	NOC - remote network management (24x7 monitoring; > 95% network availability; network upgrades)		$1,800,000	5%	$5,400,000	6%
4.3	Administrative support functions apportioned to business unit (finance, accounting, HR, etc.)	$189	$945,000	2%	$2,835,000	3%
5.0	**Support and Maintenance**					
5.1	Onsite support and maintenance (same-day, next-day response priority options inclusive)	$305	$503,250	1%	$1,509,750	2%
5.2	3-year technical refresh (hardware at 33% and software at 20%)					
5.2.1	Hardware (scheduled equipment refresh every third year on average)		$2,061,840	5%	$6,185,520	7%

TABLE 2

IDC's Three-Year Total Cost of Ownership (TCO) Program Management Model for Large-Scale Hotspot Management

		Average Cost Per Location (CPL)	Total Cost (CPL x Locations or APs)	% of Total	$ Total Over 3 Years	Baseline TCO % of Total
5.2.2	Software (assumes 20% of R&D staff required annually to enhance functionality)		$600,000	2%	$1,800,000	2%
Total Phase 2 Management Costs		$679	$27,838,890	71%	$83,516,670	88%
	Estimated Hotspot TCO		$39,336,890	100%	$95,014,670	100%

Key TCO Model Assumptions:

Hotspot deployments are in the contiguous United States

3,000 individual single-structure, single-level hotspot locations (one access point per location; inconsistent location dimensions)

2,000 individual single-structure, two-story hotspot locations (two access points per location; inconsistent location dimensions)

Each mixed-mode access point (WEP, WPA, WPA2 compatible) with dual Dipole Antenna (a total of 7,000 access points)

An otherwise stable existing LAN / WAN infrastructure at each location

Available electrical power to meet energy requirements

Relative fixed and variable costs are location "agnostic" (regional labor costs are stable)

Bandwidth availability is uniform throughout each location

20% of all hotspot locations have a T1 high-speed Internet connection while 80% have a DSL high-speed Internet connection

Each location will require a site survey where a radio technician trained in network design measures and analyzes the site to ensure radio coverage

Network monitoring and customer support services are delivered from one existing Network Operations Center (NOC) staffed on a 24 x 7 basis

NOC is staffed on a 24 x 7 basis, with rotating shifts (based on usage patterns, user density, etc.)

Hardware maintenance scenario assumes .33 service calls per year, per location (5,000 locations X .33 = 1,650 annual onsite maintenance visits)

Typical 3-year technology refreshment cycle is calculated in this TCO model

Scheduled hardware refresh is performed over a period of several months, with 1/3 of the locations refreshed late in year three.

Source: IDC, 2005

With Phase 2 Recurring Annual Costs, the challenges broaden to encompass a myriad of issues and financial considerations. These include:

☑ **Network access costs.** These costs include monthly hotspot T1 and DSL access charges per location. For the purposes of this analysis, 20% of all hotspot locations have a T1 high-speed Internet connection, while 80% have a DSL high-speed Internet connection.

☑ **Back-office operational costs.** The largest segment of grouped expenses is found in the "Back Office" category. Sometimes underestimated by potential hotspot developers, these costs include operational activities such as 24 x 7 call center support and network operations center functions. Also included are administrative support functions apportioned by business unit activity (e.g., finance, accounting, HR, etc.).

☑ **Ongoing support and maintenance.** Integral to the optimal performance of each hotspot location often is ongoing support and field maintenance. This often includes onsite and remote support as well as a three-year technology refresh. This technology refresh typically is conducted in a phased approach whereby hardware may be upgraded not all at once, but with a gradual location-by-location strategy. In addition, upgrades to previously developed software are performed during this phase.

Based on this model, the estimated three-year baseline TCO equation for designing, building, supporting, and managing 5,000 hotspots produces an approximate cost value of $95 million. Certainly, this figure represents a considerable investment for any carrier or other organization, particularly when hotspot revenue models and roll-out strategies remain quite unpredictable.

ECONOMIC AND MARKET-BASED REALITIES

Not all hotspot economic models produce the same type of financial returns and, if not planned for and managed effectively, a hotspot may never produce a positive cash flow for the hotspot owners. Today, financial arrangements between hotspot providers (e.g., carriers, ISPs, MSPs) and location owners (e.g., hotel chains, airports) can vary widely. Under some arrangements the hotspot provider may negotiate access rites with a location owner and will incur the cost for the deployment and management of the network infrastructure. The network provider may pay the venue a fee or revenue split for the right to own the network in the venue's location. With other arrangements, a network provider can act strictly as an integrator and is paid a fixed fee for network deployment and management and the location owner receives all of the subsequent subscriber revenue.

Another model, municipal Wi-Fi, is also emerging. Free ubiquitous Wi-Fi access in entire cities or city zones could contribute to economic development, but how various regional and national carriers can benefit without a paying subscriber-based business model remains somewhat uncertain. Additionally, widespread municipal ownership of Wi-Fi networks may present technological and logistical problems (i.e., government regulations, centralizing on certain technology, taxpayer subsidies).

However, on the positive side, many cities are deploying metro-scale Wi-Fi networks because they see efficiencies and productivity gains with first responders (e.g., fire, police) as well as city employees. As an example, a wireless network allows city employees and utility workers to spend on average two hours more per day out in the field working rather than returning to the office to submit reports.

Regardless of the specific economic terms, commercial hotspot profitability remains, to a large degree, a function of increased subscriber utilization, which is and will continue to be driven by two primary factors:

☑ **Access.** Location availability and user "traffic"

☑ **Content.** Unique content and new applications (e.g., VoWLAN, music/video downloads, affinity/loyalty programs, wireless printing, video surveillance, etc.)

And as all hotspots have certain fixed and variable costs as outlined in our TCO model, the more revenue-generating user traffic a commercial location owner is able to produce, the higher the potential profits.

The Pronto Solution to Large-Scale Hotspot Development Challenges

For many organizations and carriers considering the roll-out of large-scale public hotspot networks, the economic realities and challenges associated with designing, building and managing such an infrastructure and the operational intricacies can be daunting. While these firms can and often do build such solutions using internally developed assets and resources, there are third-party vendors that have developed software and created turn-key solutions for participants within the hotspot value chain.

Pleasanton, California-based Pronto Networks provides Operations Support Systems (OSS) that enable network operators to deploy and manage large-scale, public hotspot networks and citywide hot zones. The company's software handles provisioning, configuration, authentication, access control, security, pre-paid and post-paid billing, and roaming settlement for public WLAN networks. In addition, Pronto is capable of providing remote management and updating multivendor hardware and Wi-Fi switches. Pronto has also developed a portfolio of open and standards-based solutions that provides all the infrastructure (excluding the Ethernet backhaul connectivity) for the hotspot location and can operate all back-office operations in a hosted environment for network operators.

How Pronto Helps Reduce Hotspot TCO

Given the considerable investment levels associated with hotspot development and ownership, the carrier's capacity to maximize the returns from this investment by better managing the fixed and variable expenses is a critical success factor. According to the estimated impact provided below, when carriers utilize Pronto's portfolio of solutions to support and manage a large-scale (i.e., 5,000 or more locations) hotspot business model, a measurable reduction can be achieved in the TCO. Illustrated in Table 3 and within the following sections, the document identifies and describes in detail how individual elements of Pronto's solutions may drive down certain fixed and variable costs from both phases of the TCO model. This analysis is

based on estimates compiled from third-party hotspot operators, Pronto OSS customers, and Pronto's hosted service for hotspot operators.

A breakdown of the three year cost of ownership includes the following:

☑ **1.2 — Software development costs**. Instead of carriers developing back-office (OSS) software applications using internal developers at an estimated cost of $3 million, they could choose to buy Pronto's Wi-Fi OSS platform and integrate it into their current back-end systems. As Pronto's OSS platform is a commercial product, the cost of development is spread across numerous industry players. With a build-your-own proprietary approach, the cost of development is absorbed by just one operator. As such, the economies of scale associated with purchasing an off-the-shelf product and leveraging Pronto's offshore development capabilities is estimated to reduce development costs by $1.8 million. The net Pronto impact is a $1.2 million, or 60% reduction in TCO.

☑ **2.2 — Equipment provisioning, configuration, installation.** Provisioning and installing hotspots on location can cost $2.7 million when all related expenses are accounted for. With Pronto's remote autoconfiguration features, an estimated 1 hour of installation labor can be saved per access point per site. (Note: this savings assumes a $125/hour average labor rate.)

☑ **3.1 — Monthly hotspot T1 and DSL access charges per location.** As one of the largest expenses for hotspot operators, monthly T1 and DSL access charges account for approximately 35% (or $33.3 million) of all costs over the three-year TCO period. Pronto's ability to handle DHCP addresses, not just static IP addresses, helps reduce location costs by $20 per month, which produces a 9% TCO savings.

☑ **4.1 — Call center support**. Supporting hotspot location owners and users on a 24 x 7 basis with skilled response teams from a modern call center operation is estimated to cost $32.5 million over the three-year period. Pronto reports 50% fewer calls to the call center in its hotspot managed service than industry averages due to more robust monitoring and management tools which allow customer service reps (CSRs) to proactively address potential problems, often before any call is received from the end-user. As a result, the total number of incidents are dramatically reduced and fewer CSRs are required to handle the lower call volume.

☑ **5.1 — Onsite technology support and maintenance**. Due to Pronto's ability to perform updates and fixes remotely, it is estimated that significantly fewer annual on-site maintenance calls and technician visits will be required, thereby lowering TCO by approximately 33%.

☑ **5.2.1 — Three-year hardware refresh cycle.** As access point and related hardware components undergo cyclical upgrades, Pronto's autoconfiguration feature is projected to save 1 hour per location. (Note: this savings assumes an average $125/hour labor rate.)

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☒ **5.2.2 — Three-year software upgrade cycle.** Application development is usually just not a one-time cost. Firms that chose to build their own solution will need to continually invest in developing their organically grown solution to incorporate new features, services, etc. Similar to location hardware components, existing software will likely undergo a cyclical upgrade. With Pronto's software a technical refresh is included in all upgrades (as part of an 18% annual software maintenance fee); firms that build their own solution generally maintain 20% of the R&D team to ensure continuity and consistency of the application.

As shown in Table 3, the potential net economic impact of Pronto Networks' solution is an estimated 26% reduction in TCO. Based on cost savings estimates and price points and related industry data points, companies that utilize the vendor's full suite of products and services – including carriers – have the potential to achieve approximately $25 million in expense reduction over a 3-year period based on a 5,000-location network.

How Pronto Helps Increase ARPU Through New Applications

While hotspot operators are concerned about minimizing TCO in large network rollouts, they are also interested in how to generate additional revenue from subscribers. In addition to generating revenue through basic Wi-Fi access, operators are looking to increase average revenue per user (ARPU) by creating and delivering new services, such as VoIP, audio/video downloads, video surveillance, and multiplayer gaming. With Pronto's OSS platform, controlled access to and monitoring of these applications can be achieved. Pronto's OSS offers Web services/APIs, which can import and export subscriber and operational data to external applications.

T A B L E 3

IDC's Three-Year Total Cost of Ownership (TCO) and Net Impact of Pronto Networks' Solution

		Average Cost Per Location (CPL)	Total Cost (CPL x Locations or APs)	Baseline TCO % of Total	3-Year Totals	% of Total	Net Impact of Pronto Networks' Solution	% of Total	New TCO $ Total over 3 Years	Savings Potential for Using Pronto Networks	Assumptions and Description
Phase 1 — Planning and Implementation Costs (Assessment, Development, Procurement, Design and Implementation Costs - One-Time Capital Costs)											
1.0	Hotspot Capital Expenditures										
1.1	Hardware (access points, cables, etc.)	$504	$3,528,000	9%	$3,528,000	4%		4%	$3,528,000		
1.2	Software developed internally for back-office applications (20 FT developers at 18 months)		$3,000,000	8%	$3,000,000	3%	(1,800,000)	7%	$1,200,000	-60%	Pronto Networks' List Price OSS for 5000 locations is $1.2 million
2.0	**Hotspot Installation Costs**										
2.1	Site Survey per location	$450	$2,250,000	6%	$2,250,000	2%			$2,250,000		
2.2	Equipment provisioning, configuration, installation, test, shipping, travel (per AP)	$544	$2,720,000	7%	$2,720,000	3%	(625,000)	2%	$2,095,000	-23%	Pronto Networks' auto-config features saves 1 hr installation per AP per site (note: assumes $125/hr)
Total Phase 1 Planning and Implementation		$1,498	$11,498,000	29%	$11,498,000	12%	(2,425,000)	10%	$9,073,000	-21%	Impact on CAPEX

IDC's Three-Year Total Cost of Ownership (TCO) and Net Impact of Pronto Networks' Solution

		Average Cost Per Location (CPL)	Total Cost (CPL x Locations or APs)	Baseline TCO % of Total	3-Year Totals	% of Total	Net Impact of Pronto Networks' Solution	% of Total	New TCO $ Total over 3 Years	Savings Potential for Using Pronto Networks	Assumptions and Description
Phase 2 —— Management Costs (Ongoing Management, Network Access, and Support Costs - Recurring Annual Costs)											
3.0	**Network Access Costs**										
3.1	Monthly hotspot T1 and DSL access charges per location	$185	$11,100,000	28%	$33,300,000	35%	(2,880,000)	11%	$30,420,000	-9%	Lower $20/month/per locations due to ability to handle DHCP addresses, not just static IP addresses (Business grade DSL not required)
4.0	**Back-Office Operational Costs**										
4.1	Call center support (24x7 Level 1 & 2 support for end-users, location owners)		$10,828,800	28%	$32,486,400	34%	(16,243,200)	65%	$16,243,200	-50%	Carrier call center receives 50% fewer calls relative to industry avg (1 per 12 sessions vs. 1 per 6 sessions); better monitoring tools and customer care tools allow for this reduction in cost; calculations assumes economies of scale with larger call volumes

TABLE 3

IDC's Three-Year Total Cost of Ownership (TCO) and Net Impact of Pronto Networks' Solution

		Average Cost Per Location (CPL)	Total Cost (CPL x Locations or APs)	Baseline TCO % of Total	3-Year Totals	% of Total	Net Impact of Pronto Networks' Solution	% of Total	New TCO $ Total over 3 Years	Savings Potential for Using Pronto Networks	Assumptions and Description
4.2	NOC - remote network management (24x7 monitoring; > 95% network availability; network upgrades)		$1,800,000	5%	$5,400,000	6%			$5,400,000	(% Savings reflected in line above)	Better network monitoring tools enables NOC to proactively fix problems before noticed by customers; results in fewer call center support calls; savings due to better monitoring tools reflected in call center support savings
4.3	Administrative support functions apportioned to business unit (finance, accounting, HR, etc.)	$189	$945,000	2%	$2,835,000	3%			$2,835,000		
5.0	**Support and Maintenance**										
5.1	Onsite support and maintenance (same-day, next-day response priority options inclusive)	$305	$503,250	1%	$1,509,750	2%	(503,250)	2%	$1,006,500	-33%	One-third fewer annual on-site maintenance calls required, as Pronto Network's solution can perform all updates/fixes remotely.
5.2	3-Year technical refresh (hardware at 33% and software at 20%)										

TABLE 3

IDC's Three-Year Total Cost of Ownership (TCO) and Net Impact of Pronto Networks' Solution

		Average Cost Per Location (CPL)	Total Cost (CPL x Locations or APs)	Baseline TCO % of Total	3-Year Totals	% of Total	Net Impact of Pronto Networks' Solution	% of Total	New TCO $ Total over 3 Years	Savings Potential for Using Pronto Networks	Assumptions and Description
5.2.1	Hardware (scheduled equipment refresh every third year on average)		$2,061,840	5%	$6,185,520	7%	(1,875,000)	7%	$4,310,520	-30%	Pronto Networks' auto-configuration feature saves 1-hr re-installation per location access point (assumes $125/hr)
5.2.2	Software (assumes 20% of R&D staff required annually to enhance functionality)		$600,000	2%	$1,800,000	2%	(1,152,000)	5%	$648,000	-64%	Technical refresh included in Pronto Network's upgrades, included as part of 18% annual software maintenance fee; firms that 'build their own' solution keep 20% of R&D team to maintain solution going forward.
Total Phase 2 Management Costs		$679	$27,838,890	71%	$83,516,670	88%	(22,653,450)	90%	$60,863,220	-27%	Impact on OPEX
	Estimated Hotspot TCO		$39,336,890	100%	$95,014,670	100%	(25,078,450)	100%	$69,936,220	-26%	Impact on TCO

Source: IDC, 2005

OPPORTUNITY ASSESSMENT

Through this decade, hotspots will continue to be deployed at a rapid pace, and because of the relatively low barriers to entry, the base of service providers is likely to expand. Besides specialized wireless ISPs and mobile operators, a growing number of carriers and fixed-line service providers will offer hotspot services to their subscribers. The involvement of these parties will have a positive impact on the subscriber base for hotspot services.

With an increasing number of hotspot providers in the market and low barriers to entry ensuring that even more companies will begin offering a service, hotspot operators are facing an enormous task relative to designing, building, and managing such infrastructure, as well as managing roaming and settlement relationships. This task becomes even more difficult when quality of service, security, international usage, and technical interoperability issues are concerned. This dynamic creates an obvious business opportunity for third-party firms such as Pronto Networks, which was cofounded in 2001 by Jasbir Singh and Mukesh Kacker.

To date, Pronto has raised over $16 million in venture capital and established locations in California as well as Bangalore, India. The company employs approximately 80 professionals, of which 50 are based in the Bangalore office. In addition to software development, the Bangalore office also serves as a customer support center for the firm's products.

The Pronto Solution for Managing Hotspot TCO

The three-year TCO benchmarking assessment offered in this White Paper provides a methodology and process to help more accurately determine how a large-scale hotspot owner's potential economic picture might appear based, in part, on that owner's choice to build the solution using internal resources versus buying at least part of the solution externally.

Based on the projected TCO model created for this IDC White Paper, we have demonstrated that for carriers seeking guidance in developing a profitable hotspot business model, there are capable vendor solutions available for consideration. IDC encourages carriers to consider how these solutions may be able to help:

☑ **Preserve capital.** By purchasing an external solution at a lower purchase price (but of comparatively equal quality), many firms are able to preserve capital and gain valuable insight into pinpointing areas for TCO reduction.

☑ **Lower risk.** By purchasing an external solution, many firms are able to transfer risk to a trusted third party.

☑ **Time to market.** By purchasing an external solution at a lower purchase price (but of comparatively equal quality), many firms are able to get to market more quickly.

☑ **Improve planning.** By purchasing an external solution at a lower purchase price (but of comparatively equal quality), many firms are able to conduct scenario planning in order to forecast and quantify the economic impact of new planning initiatives.

R e l a t e d   R e s e a r c h

☑ *Worldwide Hotspot 2004–2008 Forecast and Analysis: Still Spotty, But Gaining Salience* (IDC #32697, December 2004)

C o p y r i g h t   N o t i c e