



solution brief

HiveManager Online

Less Dollars, More Sense



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Simpli-Fi Your Wi-Fi

Today's de facto standard controller-based Wi-Fi infrastructure model is just too complicated, too expensive, and too unreliable. It's common for enterprise and mid-market network operators alike to get caught in a crossroads of compromises involving costs, complexity, features, and reliability. If they choose a consumer-class solution, there aren't enough features and reliability, but the interface is simple. If they choose an enterprise-class solution, complexity and cost are problems, but the platforms are much more feature-rich. If you've ever heard of the old adage, "good, fast, cheap: pick two" – it's somewhat fitting here. In the enterprise, when the Wi-Fi product is user-friendly and inexpensive, it's typically feature poor, and when the product is feature-rich, it's often expensive and difficult to use. If you want serious reliability, the solution expense is often doubled. Now with HiveManager Online from Aerohive Networks you can "pick three". In fact, we'll even throw in another one to sweeten the deal. Those four are user-friendly, feature-rich, resilient, and inexpensive.

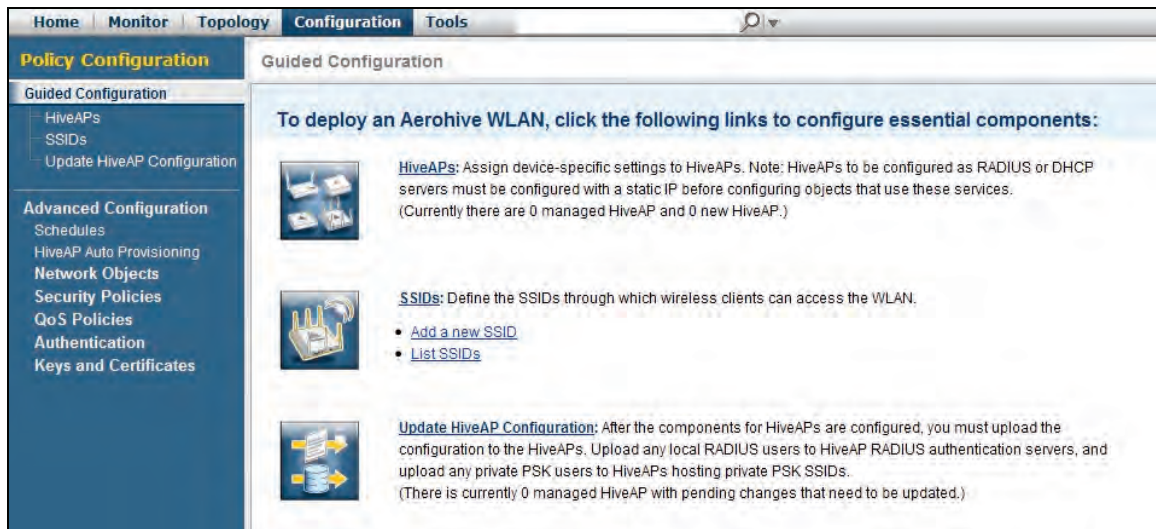
HiveManager Online is a cloud-based (Software-as-a-Service), disaster-proof wireless network management system (WNMS) designed to make a wireless network administrator's life easier. Because HiveManager Online is hosted in and across multiple data centers, it provides inherent high availability for both hardware and data. In today's über-connected world, being able to access, control, and troubleshoot your Wi-Fi infrastructure from anywhere is not only possible, but essential. Until HiveManager Online, there has been no scalable, inexpensive, and simple method to manage both mid-market and highly-distributed enterprise Wi-Fi networks alike.

It's also important to note what HiveManager Online is not. HiveManager Online is not a controller in the cloud, does not house the network control plane as controllers do, and is not required for on-going Wi-Fi network operation. HiveManager Online is a network management platform, plain and simple. That is extremely important because with an Aerohive Wi-Fi infrastructure, all control and data traffic are handled exclusively by the access points (HiveAPs), allowing unlimited scalability and eliminating bottlenecks, expensive controllers, single points of failure, and latency. HiveAPs handle all aspects of authentication, association, fast/secure roaming, data forwarding, power and channel management, etc. If the Internet pipe goes down, the Wi-Fi stays up, and you can still reach mission-critical network resources such as file servers and printers.

Easy and Easier

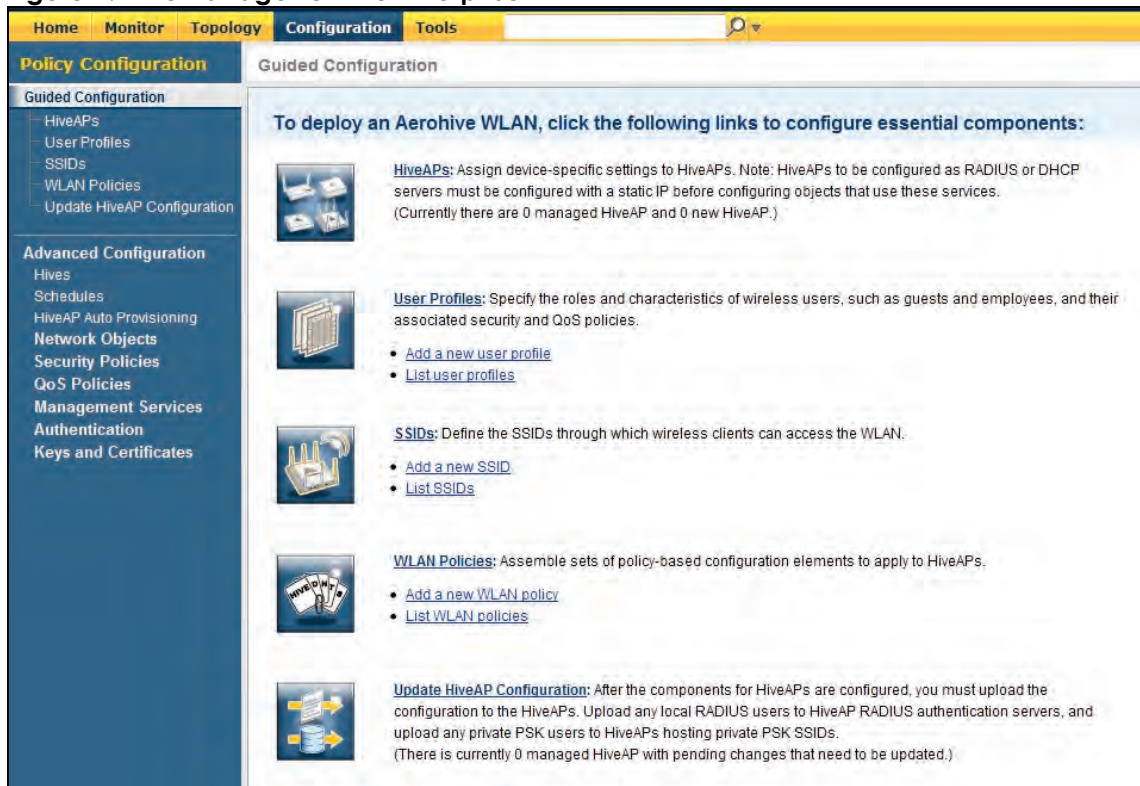
For mid-market organizations with no time or desire to gaze longingly into the eyes of our industry-leading feature set, there's a version called HiveManager Online Express, which is a full-featured enterprise-class WNMS with a GUI that's streamlined for those who don't need the ability to define sophisticated policy sets. The guts of the HiveManager Online Enterprise platform are still there in HiveManager Online Express, but they're not staring you in the face when you're configuring the system for basic connectivity. It's a case of 0-60 in 4.2 seconds – get it up and running fast. Lest you think we're honking our own horn a little too loudly, please visit our web site (URL is at the end) for a free demo so that you can see for yourself that HiveManager Online Express is the cleanest and easiest-to-use GUI the industry. If its coolness makes you smile, ping our twitter page to let us know: www.twitter.com/Aerohive.

Figure 1: HiveManager Online Express



If you choose HiveManager Online Express and later decide that you would rather have Enterprise, it's a simple online upgrade process. HiveManager Online Enterprise is an enhanced and streamlined GUI that was introduced as version 3.4. The new streamlined GUI is available for all versions of HiveManager, such as HiveManager Online, HiveManager Appliance, and HiveManager Virtual Appliance and comprises the most feature-rich and easy-to-use policy-based management system available in today's Wi-Fi market.

Figure 2: HiveManager Online Enterprise



Most Wi-Fi networks start small and grow, and HiveManager Online can scale linearly starting at a single AP. Instead of the capital expenditure (CAPEX) associated with a data center based management platform, HiveManager Online transitions management of your Wi-Fi infrastructure to an operational expense (OPEX) "pay-as-you-go" model, achieving the lowest startup cost of any Wi-Fi management platform on the market. By moving the management platform into the cloud and out of your data center, you have no management appliance to install or manage, no rack space to build or house, no power consumption, and no cooling to worry about.

Simplification Sweetness

When combined with Aerohive's cooperative control protocols, HiveManager Online results in the simplest possible instantiation of enterprise Wi-Fi, making Aerohive the greenest Wi-Fi infrastructure on the planet. We've removed all unnecessary components, such as controllers (whether core, distribution, access, redundant, remote, or otherwise), controller modules, configuration/database backups, rack space/power/cooling in your data center, hardware failures, network bottlenecks, and other costs associated with them. If we were a tree, we'd gladly accept your hug right about now.

Figure 3: The Simplest Possible Instantiation of Enterprise Wi-Fi



Additionally, we've eliminated those pesky per-AP licenses and feature licenses (that go along with primary and backup/failover/clustered controllers). Having less components in the network means:

- ✓ Less components to buy (and buy again when you upgrade)
- ✓ Less components to install and configure (time savings)
- ✓ Less components that will break (points of network failure)
- ✓ Less components that need to be covered by support contracts
- ✓ Less components that need to be stocked in sparing inventory
- ✓ Less components that must be replaced after their useful lifespan
- ✓ Deployment simplification

Since HiveManager Online lives in the cloud, you can reach it anytime and from anywhere, and since the interface learning curve is extremely short, you'll be an expert overnight.

Streamlining Support

The ubiquitous availability of HiveManager Online simplifies and streamlines support to save you time and frustration. Whether you want to upgrade your corporate Wi-Fi network or any number of branch locations, the HiveAP code is already available right on the HiveManager Online platform. As with controller vendors' architectures, you won't have to go through the motions of logging into a support portal, finding the right code, downloading it, loading it onto a controller from a TFTP/FTP/SCP server, or any of the other previous headaches. You select the code from a drop-down, select the click-boxes beside the APs you want to upgrade, and then click a box to push the code to the APs at one or multiple locations – all over a completely-secure tunnel.

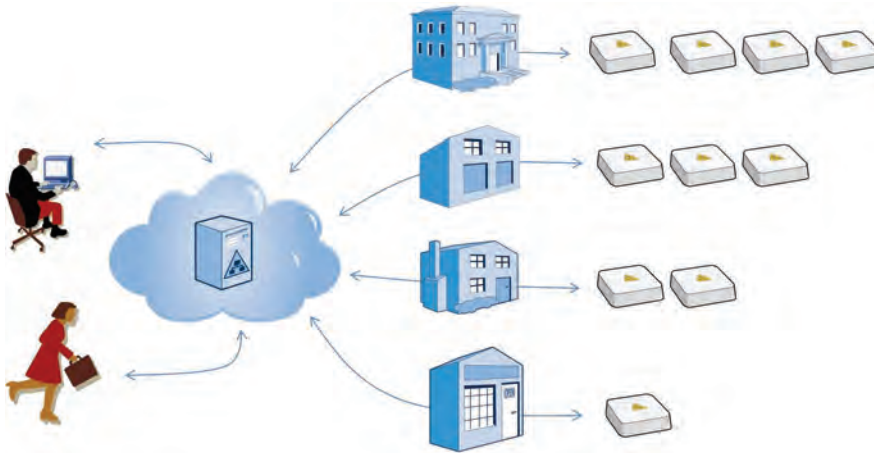
Have you ever tried to involve remote support personnel, and they couldn't access your system without you jumping through all kinds of hoops? Opening a port in the firewall, applying a port redirect, and then setting up remote access software on a PC perhaps? Maybe it was logging into the networking system via console or SSH and grabbing a 'show tech' output or setting up GoToMyPC? No matter which way you go, the whole process is just more difficult and time-consuming than it should be. Most of us have been there at one point or another. Instead, what if you could just give support a piece of identifying information and they could, with your permission, login to your system and see the problem for themselves? You wouldn't have to worry about playing middle-man, and support can both help you and show you what's going on. It's yet another advantage of cloud computing.

Distributed Dominion

Managing large enterprises, distributed enterprises, and mid-market networks alike is simple with HiveManager Online. As long as there's even a tiny Internet pipe at each branch location, you're ready to roll because management of HiveAPs requires minimal bandwidth.

HiveManager Online lives in the cloud, and enterprise-wide VPN tunnels (and all of the hardware, software licenses, complexity, and support that often accompany them) are no longer required for secure, remote network management. This is especially important in large distributed enterprises, where there could be thousands of locations. Your Wi-Fi infrastructure can be configured and monitored by multiple administrators who are geographically dispersed, each with appropriate permissions.

Figure 4: The Distributed Enterprise with HiveManager Online



Other vendors in the Wi-Fi market have tried several approaches in the distributed enterprise, but thus far, no one has been able to give the customer the desired functionality and simplicity at a reasonable price. Here are a few examples of how NOT to do it:

Autonomous APs –A simple, affordable start, but just not enough if you move beyond a single AP. No fast/secure roaming support without using PSK, which is a security compromise. No dynamic RF management to set channels, adjust power, and load balance clients. And even if it's just a single AP deployment, there's still often important and useful features missing - like integrated VPN, local authentication (captive web portal, 802.1X/EAP), rogue detection, and much more.

Centralized Controllers with Remote APs – Very limited functionality, high deployment complexity, often requires local authentication infrastructure, and when the WAN pipe drops, so does even more (and sometimes ALL) functionality. Controller-based vendors realized how much of a mistake this was and quickly moved on to the next option.

Branch Controllers and Controller-based APs – This is the newest controller-based approach that simply breaks the piggy bank every time. A branch controller for 1-3 APs? Are you kidding? Do the math.

Dare to Demo

With cooperative control protocols running between HiveAPs, Aerohive achieves the advantages of autonomous APs and controllers without the disadvantages of either. Placing a HiveAP at a branch location is like having a controller and a controller-based AP at each location, but at a fraction of the cost and without any of the configuration complexity.

If you would like to see HiveManager Online happen, here are two sweet options:

HiveManager Online Demo – Our wicked cool front-end software will allow you to create your very own HiveManager Online instance in the cloud. Tinker, play, learn, and see what all of the fuss is about. Did we mention the HiveAP simulator function within HiveManager Online? You can simulate a large group of local or remote APs just to see what it might look like in your

deployment. If you decide you like what you've built, then you can seamlessly move your demo instance to the production system, where you can add real APs.

A Product Evaluation or Pilot – There are various options of getting the HiveAPs into your hands in order to demonstrate just how well HiveManager Online works. You can put them through their paces. You'll be shocked at the power, simplicity, and price.

Serious Security

What happens in the cloud stays in the cloud. By that, we mean that you need not worry about security with HiveManager Online. HiveManager Online logins are protected by HTTPS, and HiveAPs connect to your HiveManager Online instance via RFC4347 Datagram Transport Layer Security (DTLS). Since everything under the sun is secured with TLS (Wi-Fi connections, browser and FTP connections, and dozens of others), you don't have to worry about anyone viewing or interrupting your HiveAP-to-HiveManager traffic. The "Datagram" part of DTLS is the clue that indicates the use of UDP for the CAPWAP connection between HiveAPs and HiveManager Online. Here's a cool picture.

Figure 5: CAPWAP Secured with DTLS

Audit	Host Name	Alarm	IP Address	Node ID	CAPWAP	AP Type	Clients	Uptime	HW Model
<input type="checkbox"/>	Bedroom	<input checked="" type="checkbox"/>	192.168.111.85	0019770D0EC0		Mesh Point	0	21 Mins 45 Secs	HiveAP320_n
<input type="checkbox"/>	Office	<input checked="" type="checkbox"/>	192.168.111.84	0019770D1140		Mesh Point	2	3 Hrs 1 Mins 13 Secs	HiveAP320_n
<input type="checkbox"/>	BatCave	<input checked="" type="checkbox"/>	192.168.111.82	0019770C9F00		Portal	0	3 Hrs 1 Mins 17 Secs	HiveAP320_n
<input type="checkbox"/>	Kitchen	<input checked="" type="checkbox"/>	192.168.111.83	0019770D05C0		Mesh Point	2	3 Hrs 1 Mins 24 Secs	HiveAP320_n

Organizations often implement policies specifying that some administrators can be allowed to make changes to the system while others may only monitor. With HiveManager Online, you can assign individual system permissions to each user or group of users.

Figure 6: Group or Individual Administrative Permissions

Administrators > New

Save Cancel

Name * Bob (1-32 characters)

Password * •••••• (1-32 characters)

Confirm Password * •••••• (1-32 characters)

Obscure Password

Full Name Bob Smith (0-64 characters)

E-mail Address * Bob@Smith.com (1-64 characters)

Time Zone (GMT-05:00) US/Eastern

Group Name * Configuration and Monitoring

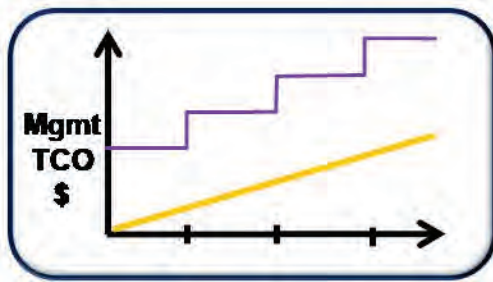
Aerohive's HiveAPs support all of today's standards-based wireless security protocols plus a role-based firewall, IPSec VPN client and server functionality, and wireless intrusion detection – just to name a few. With Aerohive's distributed control and data planes, security is implemented at the edge, for maximum security.

Gold Lining at Silver Lining Prices

Customers often find themselves paying for resources they aren't using, and may never use. When even simple Wi-Fi requirements are needed, such as radio resource management and fast/secure roaming, a controller must be introduced. Let's look at the problem this causes.

Controllers introduce a stair-stepped cost model where the customer must buy not only the controller, but also "blocks" of AP and/or feature licenses, and as they expand their network, potentially move to larger controllers.

Figure 7: Controllers Cause Stair-stepped Cost



Just for the sake of argument, suppose that a Wi-Fi infrastructure vendor sells two controllers: a smallish controller with a 6-AP license and a larger controller with license block options of 12, 25, 50, and 100.

Micro Case Studies

Case 1:

When the customer needs 3 APs, they must pay for 6 APs plus the controller hardware and feature licenses. Even though they have now over-paid for the solution, they still usually don't receive a full array of features available in the controller. For that, they must pay a per-AP feature license as well.

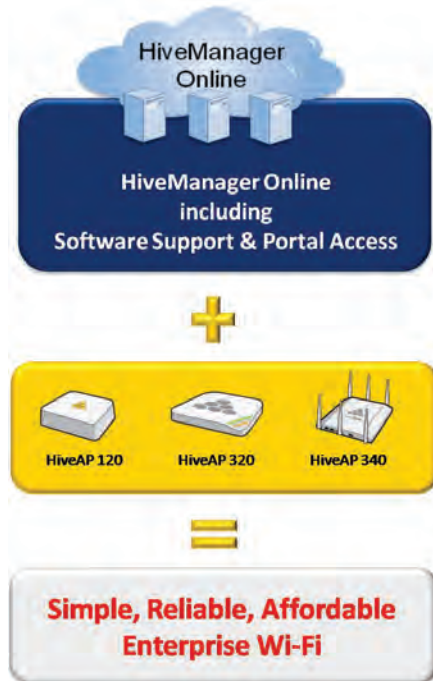
Case 2:

When the customer needs 7 APs, the controller vendor introduces a significant price increase in the form of the larger controller hardware, and then of course follows with a 12-AP license (5 of which aren't used) and those same feature licenses.

Keep in mind that we've used small scale numbers to illustrate a concept, but the concept applies even more to a large enterprise. Instead of paying for 5 APs they're not using, the customer could be paying licensing for hundreds of APs they're not using. With HiveManager Online, licensing is per-AP/year with no up-front costs. Sign up online for HiveManager Online,

buy the HiveAPs appropriate for your network, done. If you can find any extraneous components to this solution, drop us a note – we'll take them out. Our prime directive is to Simpli-Fi.

Figure 8: For Those Who Like Pictures



The Elevator Pitch: Less Stuff Means Less Money

If all Wi-Fi manufacturers' APs are competitively-priced and their WNMS is competitively-priced (and they both have to be in order to sell), then how can Aerohive's solution (without all of the controller-related costs) not be *significantly* less expensive?

HiveManager Online's linear, pay-as-you-grow model is the perfect cost-conscience replacement for the pay-more-now, controller-based model that is so prevalent today. We're sure you'll find some other projects on which to spend that left-over IT budget money. If not, please consider donations to www.aerohive.com/beer_fund. Let's recap Aerohive's differentiation with a simple chart.

Figure 9: WLAN Component Comparison Chart

WLAN Component	Aerohive Cost	Controller Vendor Cost
Controllers (Primary, Backup, & Remote)	-	\$\$\$\$
Controller modules	-	\$
WNMS	\$	\$\$
WNMS Operations (Setup, Backup, Upgrade)	-	\$
Access Points	\$	\$
Controller Per-AP licenses	-	\$\$
Controller Feature licenses	-	\$
Data Center Rack Space	-	\$
Data Center Cooling & Power	-	\$
TOTAL	\$	\$\$\$\$

There's always hype around the cost of APs, but in the big scheme of many of today's enterprise Wi-Fi infrastructures, APs are only one part. When it's all said and done, you have to look at the *solution cost*. One simple way to do that is to take the total solution cost and divide it by the number of APs. That gives you a per-AP solution cost that allows you to compare across vendors. It takes the marketing and pricing confusion out of the equation and allows for a simple apples-to-apples comparison. Do it. Dare to compare.

A Point of Clarification

There's something we'd like to point out about AP management licensing before someone goes and muddies the water. Controller vendors like to confuse the issue of management costs by saying that the controller is the management platform. If that were true, then they wouldn't sell Wireless Network Management Systems (WNMS). The controller is only a management device in small networks, but for large enterprise networks, a single controller can no more effectively manage a rack of other controllers than an autonomous AP can manage other autonomous APs.

Ever since the market discovered that you can't manage hundreds or thousands of autonomous APs, there have been WNMS. Once the number of controllers got *out of control*, WNMS came to the rescue again, but this time managing the controllers instead of the autonomous APs. The majority of Wi-Fi vendors who sell WNMS license it by-the-AP in one way or another.

Unfortunately for the customer, controllers are also licensed in the same way: per-AP. That means that customers pay twice for enterprise management when they buy controller-based solutions. Why twice? First, you pay for the management interface in the controller which scales to a certain point, and then you pay for a WNMS to manage the controllers. Shouldn't a controller vendor's WNMS be free if they are going to charge the customer for the management found in controllers? They certainly don't take the controller-based management aspect out of the cost model when they sell WNMS!

Conclusion

HiveManager Online is the first cloud-based, enterprise-class Wi-Fi management solution and is a breakthrough in management simplicity, flexibility, and redundancy. HiveManager Online gives financial control back to organizations by offering a linearly-scalable Wi-Fi infrastructure management platform with no up-front management costs. Combined with HiveAPs, it's the simplest possible instantiation of enterprise Wi-Fi.

Because it's web-based, giving HiveManager Online a try is as simple as filling out a web form and logging into your own HiveManager Online instance. The only question remaining is whether you'll choose Express or HiveManager Online Enterprise. You decide. www.aerohive.com/demo

About Aerohive

Aerohive Networks reduces the cost and complexity of today's networks with cloud-enabled, distributed Wi-Fi and routing solutions for enterprises and medium sized companies including branch offices and teleworkers. Aerohive's award-winning cooperative control Wi-Fi architecture, public or private cloud-enabled network management, routing and VPN solutions eliminate costly controllers and single points of failure. This gives its customers mission critical reliability with granular security and policy enforcement and the ability to start small and expand without limitations. Aerohive was founded in 2006 and is headquartered in Sunnyvale, Calif. The company's investors include Kleiner Perkins Caufield & Byers, Lightspeed Venture Partners, Northern Light Venture Capital and New Enterprise Associates, Inc. (NEA).



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