

## **AG 2100 Frequently Asked Questions**

### **Part I – General Questions**

**Q. What does Nomadix do?**

- A. Nomadix sells its Nomadix Service Engine™ (NSE) software embedded on a family of Nomadix Gateways to Public Access Service Operators (PASOs), venues and service providers, allowing them to create intelligent public access networks. These public access networks can then provide transparent, secure, high-speed wired and wireless (Wi-Fi™) Internet access at HotSpots and HotZones of all sizes and types.

**Q. What is Nomadix' business model?**

- A. Nomadix sells a complete family of stand alone, turnkey Access Gateways through a two tier channel model. Our Access Gateways are placed on premise between the router and the local area network. Nomadix sells the AG 5000 for deployment in large public access locations such as airports and convention centers. The AG 5000 Metro is optimized for Digital Cities and Metropolitan HotZones. The HotSpot Gateway™ (HSG) can be used when deploying Wi-Fi service in mid-sized locations and the AG 2100 is the ideal “HotSpot in Box” for single and dual cell deployments.

**Q. What markets does Nomadix serve with the AG 2100?**

- A. Nomadix markets the AG 2100 to wireless ISPs, service providers, carriers and venue owners wishing to deploy single and dual cell public access networks with typically up to 100 concurrent users per location. The AG 2100 can support up to 100 users using its wireless and wired interfaces. The wireless interface is reliably tested for up to 50 concurrent users. An additional access point can be interfaced with the AG 2100 wired interface to support 100 simultaneous wireless users. Therefore, the AG 2100 is ideally suited for all ‘HotSpot in a Box’ service provider deployments, as well enterprise lobbies and conference facilities. Additionally, educational establishments such as schools, libraries and colleges can easily create HotSpots of wireless Internet access with the AG 2100. The product is also well suited to be deployed in smaller hospitality venues (e.g. motels) to provide low-cost temporary Internet access.

**Q. Does the AG 2100 Support Virtual Access Point (VAP) Functionality?**

- A. Yes, the AG 2100 supports VAP. VAP is an add-on Module to the NSE. The NSE can create up to 16 virtual access points (VAP) from one physical access point by assigning unique Basic Service Set Identifier (BSSID) with configurable broadcasts. Each VAP can be configured with its unique authentication and association method. Traffic from each VAP can be tagged to a unique 802.1q VLAN tag and/or bridged if required.

This allows a single service provider to offer multiple services using a single Nomadix Wireless Access Gateway. The same functionality also allows for multiple service providers

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to offer their services using a single Nomadix Wireless Access Gateway without compromising uniqueness thereby allowing unsurpassed wholesaling of the existing infrastructure.

**Q. Why is the AG 2100 important in a public access network or LAN?**

A. Enabling true ubiquitous broadband Internet access to the mobile workforce means premise owners and their service provider partners need to provide visitors with access to the Internet at a variety of locations – and then offer information and services tailored to that location. Once connected, customers need to retain the billing relationship with their chosen (or home) service provider enabling one bill to follow them wherever they travel. Service providers can instantly deliver wired or Wi-Fi public access to any customer at a small public access location by using the AG 2100 running the NSE—without requiring the user to reconfigure their computer or use special client-side software. Customers can then create accounts at the public access location in a real-time fashion and receive local content and services from the service provider or premise owner. The AG 2100 will then pass the necessary parameters for billing and authentication to the service provider allowing settlement to occur. The AG 2100 delivers the intelligence necessary to capture customers on site without the need for call center support or the provisioning of expensive client-side software.

**Q. What features make up the Nomadix Service Engine Core that comes standard on the AG 2100?**

A. The following components comprise the NSE Core:

<b>PUBLIC ACCESS:</b>	Universal Access Method (UAM) using SSL
50 User License Count	Smart Client Support (Boingo Wireless, iPass, GoRemote)
Dynamic Address Translation™ (DAT)	IEEE 802.1x (MD-5 / TLS / TTLS / PEAP)
Dynamic Transparent Proxy	RADIUS Client (MD-5, PAP, CHAP, MS-CHAPv1, v2)
DNS Redirection	RADIUS Proxy
Home Page Redirection (Pre and Post Authentication / Goodbye) and Portal Page Redirection	Remember-Me and RADIUS Re-authentication
iNAT™ (for seamless VPN connectivity)	PPP/L2TP Authentication
SMTP Redirection	Credit Card Support
Full Authorization, Authentication and Accounting Support with External Web Server Support	IP-Upsell
RADIUS Client	Bandwidth Management
Global Roaming Support Using NIS	Lawful Intercept Tracking Logs

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Information and Control Console and Log Out Console	IEEE 802.1d Bridging
International Language Support	PoE per IEEE 802.3af
URL Filtering/Passthrough Support	802.1q VLAN Tagging
	DHCP Server, DHCP Relay, DHCP Client
<b>SECURITY:</b>	Multiple Subnet Support
WPA/WPA2 (802.11i) Personal and Enterprise	PPPoE Client
64-bit/128-bit WEP with dynamic keying	Static Port Mapping
iNAT™	
Layer 2 Isolation	<b>MANAGEMENT:</b>
MAC Address Filtering and Session Rate Limiting	Multi-Level Administration Controls
	Integrated VPN Client (IPSec) for secure connection to a NOC
<b>AUTHENTICATION:</b>	Access Control Lists
Concurrent Tri-mode Authentication (UAM/802.1x/Smart Client)	SNMPv2c, Nomadix MIB
Internal Database, MAC Address	Secure XML API
	Auto Configuration and Upgrades
<b>NETWORKING:</b>	Syslog/AAA Log
IEEE 802.3 / 3u / 3x	

### Q. What additional Modules are available for the NSE running on the AG 2100?

- A. Optional NSE Modules that expand and build on the Core NSE Software include:
- **Credit Card Module:** Provides a secure interface over SSL to enable billing via a credit card for HSIA. This Module also includes the Bill Mirror functionality for posting of billing records to multiple sources.
  - **Wholesale Roaming:** Provides advanced NAI routing capabilities enabling multiple service providers to access a HotSpot location further supporting a Wi-Fi wholesale model. This allows the user to only interact with their chosen provider in a seamless, transparent manner.
  - **Virtual Access Point:** Allows up to 16 SSIDs with unique MAC Addresses (BSSIDs). The association and authentication mode is configurable per VAP. Each VAP supports 802.1q VLAN tags and/or bridging of subscriber traffic.

### Q. What wireless interfaces are available on the AG 2100?

- A. The AG 2100 employs one fast Ethernet port to interface with the router (network side). For subscribers, the AG 2100 supports both 802.11b and 802.11g. Additionally, for subscribers, the AG 2100 employs a fast Ethernet port for additional connectivity to an 802.11 access point, hub, or switch.

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**Part II – User Configuration**

**Q. Will the NSE running on the AG 2100 support all device-types, operating systems, and applications?**

A. The AG 2100 will support any device using standard Internet protocols (TCP/IP), regardless of operating system or configuration that the customer may be using. The AG 2100 requires the user's device to have a working wireless Ethernet connection, preferably using a Wi-Fi certified NIC card.

**Q. What configuration changes are required on the user's device to connect to and operate in an AG 2100-enabled public access environment?**

A. Once associated with the AG 2100, no configuration changes are necessary on the client device for the user to connect to the public access LAN. The AG 2100 uses patented technology to enable network access for any user regardless of configuration once authentication has occurred.

**Q. Is additional software needed on the user's device?**

A. No additional client-side software beyond a standard web browser is required on the user's device in order to be authenticated and gain access to the public access network. The NSE is also capable of supporting Smart Clients from vendors such as Boingo Wireless, GoRemote and iPass.

**Part III – Network Placement**

**Q. Where does the AG 2100 reside in the network?**

A. The AG 2100 resides behind the WAN equipment (Router, xDSL modem, Cable Modem).

**Q. What is the target network topology for AG 2100?**

A. Public access networks can generally be divided into small (e.g. single or dual cell) or larger networks (e.g. containing more than 2 APs). The AG 2100 is specifically designed for single cell public access venues where it is recommended that no more than 100 concurrent users are placed per location. The AG 2100 can support up to 100 users using its wireless and wired interfaces. The wireless interface is reliably tested for up to 50 concurrent users. An additional access point can be interfaced with the AG 2100 wired interface to support 100 simultaneous wireless users. On the billing side, the AG 2100 seamlessly interfaces with any RADIUS server and approved credit card authentication systems, as well External Web Servers connecting to the AG 2100 using the NSE's secure XML API.

**Q. How can I use the AG 2100 in my enterprise network?**

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- A. Many enterprise IT administrators are being tasked to support visitors to their network. These visitors could be customers, consultants or suppliers and for security reasons, it is generally not desirable to allow these guests inside the established trusted zone, i.e. the corporate LAN infrastructure. Therefore, it is important to place a device like the AG 2100 outside the corporate firewall to maintain network security, while at the same time reducing overhead costs in providing network access through Nomadix' patented Dynamic Address Translation™ (DAT) technology. Authentication and data access security can be ensured through VLANs or 802.1x allowing IT administrators to provide secure guest access without having to reconfigure their guest's computers. Data from the users can be segmented from the corporate traffic using VLANs and the AG 2100 supports Virtual Access Point technology that lets administrators dictate unique security settings per user group.

**Q. Can I put the AG 2100 into a hotel?**

- A. Yes. While the AG 2100 was designed to specifically address the single cell HotSpot market, there are a number of PASOs that specifically target the lobby or conference areas in smaller hotels/motels as a point of profitable wireless Internet access. The AG 2100 can also be used to complement an existing wired installation in a hotel. For larger hotel installations where in-room billing will occur, Nomadix recommends the AG 5000 with the NSE Hospitality Module.

**Q. Can I manage the AG 2100 Gateway remotely?**

- A. Yes. The AG 2100 can be managed remotely via the built-in Web Management Interface or the CLI (Telnet). Also, the AG 2100 contains extensive SNMP support. New additions to the management capabilities of the NSE software that are being introduced on the AG 2100 focus on secure management and include support for SSHv2, HTTPs and IPSec peer-to-peer tunneling.

**Q. How can I remotely change the configuration files of the AG 2100 for rapid network rollout?**

- A. In addition to changing individual configuration parameters via the standard interfaces (HTTP/s, telnet, SNMP); AG 2100 also supports a unique RADIUS-based auto-configuration methodology to configure multiple AG 2100 concurrently. This innovative way of carrier-class remote management allows for the most cost- and time-efficient way to rapidly deploy and maintain configuration settings on Platforms running the NSE across large networks.

## **Part IV – Platform Architecture**

**Q. What makes the AG 2100 more reliable than competitive solutions?**

- A. The AG 2100 was designed from scratch to deliver the most reliable wireless Access Gateway for public access networks. Unlike competitive devices, it is based on a true Real-

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Time Operating System (RTOS) for data networking devices, VxWorks®, delivering superior packet processing and operating stability. From a hardware perspective, the product avoids the short-comings of standard low-end access points by using high quality components from leading networking companies such as Intel® (XScale™) and Atheros Communications® (Radio Interfaces). In addition, the AG 2100 runs Nomadix' unmatched Nomadix Service Engine software, leading the public access industry with more than 25,000 units shipped worldwide.

**Q. What can I do when my network grows beyond 100 concurrent users?**

- A. One 802.11 RF radio typically supports approximately 50 concurrent users. Since the AG 2100 supports 100 users, the wireless user count can be extended to 100 users by interfacing the wired port on the AG 2100 with an Access Point. If more than 100 users are desired it is recommended to either install a second AG 2100 or use another Nomadix platform (e.g. HSG, AG 5000) to support the higher simultaneous user count. The existing AG 2100 can easily be redeployed at another location or be turned into a standard wireless bridge, thus offering complete investment protection.