AG 3100
Frequently Asked Questions

Part I – General Questions

Q. What does Nomadix do?

A. Nomadix develops its Nomadix Service Engine (NSE) software and Access Gateways that enable network providers to create intelligent public access networks, which provide transparent, secure, high-speed Internet access for venues of all sizes.

Q. What does Nomadix sell?

A. Nomadix sells a complete family of stand alone, turnkey Access Gateways. These Gateways are placed on premise between the router and the local area network and designed to enable a service provider or venue owner to deploy universal broadband connectivity that doesn't require the user to make any configuration changes or load client-side software. It allows the customer to self-provision high-speed Internet access services and gain access to local content while passing all the necessary parameters for billing and authentication to occur.

Q. What markets does Nomadix serve with the AG 3100?

A. Nomadix markets the AG 3100 to Public Access Service Operators (PASOs) and venue owners wishing to deploy public access networks in small to medium size venues (between 100 – 200 simultaneous users).

Additionally, the AG 3100 is ideally suited for Hotel Owners who wish to deploy High Speed Internet Access (HSIA) at locations that do not have a large number (less than 200) of simultaneous users / rooms. The Hospitality Module is an add-on to the NSE Core software resident on the Gateway, to tie into the hotel's Property Management System (PMS) and allow a two-way interface facilitating in room billing of service.

Q. Why is the AG 3100 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. The AG 3100 enables a cost effective, broad based deployment of high-speed Internet access.

Service providers can instantly deliver universal broadband access to any customer at a small public access location by using the AG 3100—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 3100 will then pass the necessary parameters for billing and authentication to the service provider allowing settlement to occur. The Gateway provides the intelligence necessary to capture customers on site without the need for call center support or the provisioning of expensive client-side software.

Part II – User Configuration

Q. Will the AG 3100 support all device-types, operating systems, and applications?

A. The AG 3100 will support any device using standard Internet protocols (TCP/IP), regardless of operating system or configuration. The AG 3100 requires the user's device to have a working Ethernet connection or in the case of a wireless deployment, has associated with the Access Point.

Q. What configuration changes are required on the user's device to connect to and operate in an AG 3100 enabled public access environment?

A. No configuration changes are necessary on the device for the user to connect to the public access LAN. The AG 3100 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. Additional client-side software beyond a standard web browser is not required on the user's device in order to be authenticated and gain access to the public access network.

Part III – Network Placement

Q. What is the target network topology for the AG 3100?

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 3100 is specifically designed for small and medium public access venues that need to support a maximum of 200 concurrent users. Therefore, the Network Port of the AG 3100 is typically connected to a small WAN CPE device such as a xDSL or Cable modem. The Subscriber Ports of the AG 3100 will typically link to two Wi-Fi Access Points. Alternatively, it is also possible to directly connect one Access Point and another L2 access concentration device (such as a 24 port HPNA Gateway or switch) into the second Subscriber Port to simultaneously support wired and wireless Ethernet clients.

On the billing side, the AG 3100 seamlessly interfaces with any RADIUS server and approved credit card authentication systems and can enable Global Roaming allowing one bill to follow the user as they travel about.

Additionally, for Hotel deployments; with use of the NSE Hospitality Module and the AG 3100's RS232 port, billing is easily managed and seamlessly interfaced to the property management system (PMS).

Q. Does the AG 3100 only work with Wi-Fi™ equipment?

A. No. The AG 3100 contains a customized feature set for Wi-Fi networks (e.g. secure user authentication via SSL and/or IEEE 802.1x), however, many of the other core features (Transparent Connectivity, Local Service Presentment, iNAT, etc.) can be effectively utilized in a wired Ethernet environment as well. The AG 3100 is also perfect for hybrid wired and wireless networks using credit card, in-room and/or RADIUS-based billing schemes allowing venue owners to create "public" and "private" networks at their establishment and leverage their existing network.

Q. How can I use the AG 3100 in my enterprise network?

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 3100 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 SSL or 802.1x allowing IT administrators to provide secure guest access without having to reconfigure their guest's computers.

Q. Can I put the AG 3100 into a hotel?

A. Yes. While the AG 3100 was designed for small to medium venues (supporting between 100-200 simultaneous users) venue, public access locations, it can be used to provide high-speed Internet access in specific areas of the hotel such as the lobby or meeting area. For hotel installations where the hotel wishes to bill directly to the guest's room using its Property Management System, it is recommended to use either the AG 3100 (200 or fewer users) or AG 5000 (greater than 200 users) and the NSE Hospitality Module for this service.

Q. Can I manage the AG 3100 remotely?

A. Yes. The AG 3100 can be managed remotely via the built-in Web Management Interface or the CLI (Telnet and serial). Also, the AG 3100 contains extensive SNMP support.

Part IV – System Architecture

Q. Is the AG 3100 a server-based product?

A. No. Unlike the vast majority of competitive devices, the AG 3100 does not contain a failure-prone hard disk. The AG 3100 is designed as a network appliance that runs a true Real-Time Operating System (RTOS) for data networking devices, i.e. VxWorks®.

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

A. User count upgrades (up to 200 users) are available for the AG 3100 or a second AG 3100 can be placed at the venue in parallel on a VLAN switch. Nomadix also offers several other public access Gateways for larger scale deployments such as the AG 5000, which can scale to support up to 2,000 concurrent users.

Q. Is there a DCHP server in the AG 3100?

A. Yes. The AG 3100 contains the same reliable DHCP server that has been proven in thousands of deployments using the Universal Subscriber Gateway. In addition, the AG 3100 can relay DHCP requests to a server of your choice.

Q. Which link-level (Layer 2) technologies does the AG 3100 work with?

A. The AG 3100 is transport agnostic, which means that it can interoperate with cable modem, DSL, Ethernet and all types of wireless networks.

Q. Where does the AG 3100 reside in the network?

A. The AG 3100 resides between the access concentration equipment (DSLAM, CMTS, Ethernet switch, wireless access point, etc.) and the network Router.

Part V – Product Features

Q. How does the AG 3100 support users in any location?

A. Nomadix' patented Dynamic Address Translation™ (DAT) provides transparent broadband network connectivity as users travel from different locations (e.g.: Hotels and coffee shops) without requiring any changes to their computer's settings or special client-side software ensuring that everyone gets access to a public access LAN. The AG 3100 enables the network to adapt to the user instead of requiring the user to adapt to a new network or location.

Q. Why is transparent connectivity important in small networks with few users?

A. The size of the network has no impact on the importance of transparent connectivity. It is more important to consider the technical capability of the end-user to correctly change their computer's settings for the public access LAN and the ability of the network operator or venue owner to staff and maintain a suitable customer service center (either call center or on-site). The AG 3100 contains Nomadix' patented Dynamic Address Translation (DAT) as well as all other proven plug-n-play functionality (e.g. H323 support, iNAT™ for transparent VPN connectivity) derived from the AG 5000. When a user accesses a public access network, they

typically only use the network for temporary periods of time, which means that setup time for the user should be minimal in order to provide the most customer friendly experience.

Q. How does user interaction occur?

A. Once connected to the public access network, the AG 3100 will automatically direct the customer to a Web site for local or personalized services, or to establish an account and pay for services.

Q. What is iNAT and why is it important?

A. Balancing the need for transparent VPN access and a cost-efficient yet consistent customer experience, Nomadix has developed its patent-pending iNAT™ feature that creates an intelligent mapping of IP Addresses and their associated VPN tunnels allowing multiple tunnels to be established to same VPN server creating a seamless connection for all the users at the public access location.

iNAT is important to public access network operators and venue owners because it allows two employees from the same company to access the same VPN termination server at the same time (e.g. at night from their respective hotel rooms). Without iNAT, the VPN server at their corporation will "see" two tunnels originating from the same IP address (the IP address of the venue's router) and would not connect them due to a potential security breach. Therefore, one or both users would not be allowed to connect back to their corporate resources creating an unsatisfactory user experience, which can result in costly customer support calls for the public access network operator.

Q. How is the user uniquely identified on the public access network?

A. The AG 3100 can automatically authenticate, authorize, track, and bill users for broadband access. Guests can be identified and billed according to their Media Access Control (MAC) address and/or username/password. Web-based authentication using username/password can be provided in a standard, secure, efficient, and low cost manner that is transport agnostic (wired or wireless) using SSL. This web-based authentication model overcomes the limitation of not having an authentication method standardized across multiple vendors in a public access LAN.

Q. How does the AG 3100 ensure secure user access?

A. Network security for public access LANs can be split into two parts. One, authentication security can be achieved by using the built-in SSL certificate or 802.1x support in the AG 3100. Two, post authentication security support for wireless users wishing to access their corporate resources can be achieved using the iNAT™ feature in the AG 3100.

Q. How does the AG 3100 support in-room billing in a wireless network when there is no "physical" port to connect to?

A. The NSE Hospitality Module that adds on to the base AG 3100 platform contains a unique 2-Way PMS Feature that can query most popular PMS systems for confirmation of the name and room number of the hotel guest/s. In essence, this module, acts as a 'clone' of the Micros POS system. This will allow the hotel to seamlessly deploy wireless networks or, alternatively, use low-cost wired access concentration equipment (e.g. certain HPNA gateways, DSLAMs, CMTS solutions or even plain hubs) that either do not support port-ID or do so in a proprietary format that Nomadix does not currently support and still be able to do in-room billing.

Q. What other AG 3100 applications are important in the HSIA network of the Hotel?

A. The AG 3100 supports Nomadix' Meeting Room Scheduler application and allows hotel staff to set pricing and bandwidth allocations quickly and efficiently for meeting or conference rooms. This creates a powerful additional revenue opportunity for service providers and Hotels alike. The user-friendly GUI allows easy administration and real-time communication with the AG 3100 to provision high-speed Internet service to these meeting rooms. For many hotels renting out meeting rooms to corporations constitutes a substantial revenue stream and the MRS makes this a quick and hassle-free process.

Part VI – Authentication, Authorization, and Accounting

Q. What is Authentication, Authorization, and Accounting (AAA)?

A. Authentication, Authorization, and Accounting (AAA) refers to the idea of managing subscribers by controlling their access to the network, verifying that they are who they say they are (via login name and password or MAC address) and accounting for their network usage. AAA encompasses several AG 3100 features. The internal and external web servers, XML interface, RADIUS and SNMP queries are all a part of AAA.

Q. What does the AG 3100's Internal Web Server (IWS) do?

A. The AG 3100's internal web server delivers web pages stored in flash memory. These web pages are configurable by the administrator by selecting various parameters to be displayed on the internal pages. When customers do not want to develop their own content, the internal web server is the answer. A banner at the top of each internal web server page is configurable and contains the customer's company logo or any other image file they desire.

Q. When does it make sense to use the IWS in the AG 3100?

A. The Internal Web Server in the AG 3100 is a rapid deployment tool, specifically developed to facilitate the immediate generation of revenues for the service provider or venue owner without having to write any HTML pages or ASP scripts. It can be flexibly changed to support any user interface text desired and supports basic service branding objectives. The

IWS is ideal when you do not want to wait until the customization of a portal page running on a centralized server has been completed.

Q. What does the AG 3100's External Web Server (EWS) interface do?

A. The AG 3100's EWS interface was developed for customers who want to develop and use their own content. It allows them to create a richer environment than is possible with the IWS. To use the EWS interface, Nomadix provides the customer with ASP (Active Server Page) scripts. These scripts are built into the HTML code of their content pages and allow their web pages to communicate with and control key functions of the AG 3100, such as adding and deleting users.

Q. When do I use the EWS interface?

A. In many networks, an externally hosted centralized web server is used to serve portal pages to users. The advantages of a centralized web server are as follows:

- Ability to manage frequently changing content from one location.
- Ability to serve different pages dependent on site, sub-location (e.g. VLAN) and user.
- Ability to use comprehensive Nomadix XML API to implement more complex billing plans.
- Ability to recycle existing web page content for the centrally hosted portal page.

Q. What is the Property Management System (PMS) Interface?

A. Many hotels use a Property Management System to perform in-room billing of many services they provide their guests including room service, mini-bar, telephone usage; as well as HSIA service. The AG 3100's Hospitality Module supports a wide variety of PMS protocols used today to enable Hotels to perform in-room billing of HSIA.

Q. What is the 2-Way Property Management System (PMS) Interface?

A. The AG 3100's Hospitality Module contains a unique 2-Way PMS Feature that can query most popular PMS systems for confirmation of the name and room number of the hotel guest/s. In essence, the AG 3100 will become a 'clone' of a popular Micros POS system.

Q. What is the XML interface?

A. XML is a newer, more elegant way to use custom web content. XML is an open standard that is tied closely into the HTML standard. The AG 3100 can accept several commands that follow an XML specification that Nomadix provides to customers.

Q. What is RADIUS?

A. RADIUS stands for Remote Authentication Dial-In User Service. RADIUS is a standard that has been implemented into several software packages and networking devices. It allows user information to be sent to a central database running on a RADIUS Server, where it is verified.

   RADIUS also provides a mechanism for accounting. The AG 3100 can post accounting records (when log-on and log-off occur, how much data was transferred, etc.) to the RADIUS Server to help the service provider perform billing.

Q. How can I use the AG 3100 to make money?

A. Revenue generation is typically linked to support for an Authentication, Authorization and Accounting (AAA) technology such as RADIUS or the various Property Management System (PMS) protocols. It refers to the idea of managing users (guests / subscribers) by controlling access to the network, verifying that they are who they say they are (via user name/password, IP address or MAC address) and accounting for their network usage. AAA in the AG 3100 encompasses several features including its internal database, RADIUS client support, XML API and the optional NSE Credit Card Module and Hospitality Module.

   Typically, a network operator or venue owner would drive to offer multiple payment options at the same time to provide additional convenience to its customer / guest base. For example, a popular implementation would be to offer RADIUS-based AAA (i.e. monthly billing with user name/password) and / or in-room billing through the PMS for frequent users combined with a combination of RADIUS (pre-paid cards) and Credit Card billing for temporary network users.

Q. How do subscribers pay for the service?

A. Subscribers can be allowed to purchase service in several ways:

- Service can be offered for "no charge"
- Payment with a credit card
- Authorization and tracking via RADIUS to receive a bill from the ISP
- The billing record can be sent to a PMS system

Q. How can revenues be maximized in a public access network?

A. The AG 3100 contains a set of unique features to allow the service provider or venue owner to generate revenues at every touch-point with the user. This three step process is based on technology specific to Nomadix and allows revenue generation:

- Prior to the connectivity purchase
- During the actual connectivity purchase
- After the connectivity purchase

Q. Besides the Core NSE functionality resident on the AG 3100, what other modules are available?

A. In addition to the NSE Core Features, Nomadix offers a series of Modules to further enhance the service offering:

- **Hospitality Module**: Provides a widest range of Property Management System (PMS) interfaces to enable in-room guest billing for HSIA service. This module also includes 2-Way PMS interface for in-room billing in a Wi-Fi enabled network. This Module also includes the Bill Mirror functionality for posting of billing records to multiple sources. The NSE also supports billing over a TCP/IP connection to select PMS interfaces.
- **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.
- **High-Availability Module**: Provides enhanced network uptime and service availability when delivering high-quality Wi-Fi service by providing Fail-Over functionality allowing a secondary AG 3100 to be placed in the network that can take over if the primary device fails, ensuring Wi-Fi service remains uninterrupted.