

NOMADIX SERVICE ENGINE (NSE)

Intelligence at the Network's EDGE Enabling High Speed Profitability

The Nomadix Service Engine (NSE) offers the industry's most versatile and complete set of features to address the needs of providers and end users of High Speed Internet Access (HSIA) services. The NSE consists of an extensive patented and patent-pending portfolio of features that are needed to successfully deploy multi-use and multi-revenue public access with zero configuration by users.

Whether in Hospitality, Multi Dwelling Units, Metro, or a simple HotSpot environment, the NSE provides a centralized provisioning system versatile enough to satisfy these and a host of venues. The provider can utilize the NSE to deploy a cost effective service while keeping the EDGE of the network secure from Denial of Service (DoS) attacks. At the same time, multiple revenue streams can be maximized through a variety of billing and other up-sell capabilities including credit card billing, scratch card, and Property Management System integration.

By leveraging the NSE's secure XML API, providers can take control and integrate the NSE with back-end systems allowing flexibility and scalability as needs change.



MONETIZE PUBLIC ACCESS

- ✓ Converts a cost center into a revenue generating asset
- ✓ Solution integration through flexible billing interfaces
- ✓ Manage Hybrid, Multi-Use Properties
- ✓ Maximize Revenue Opportunities by creating localized content
- ✓ Facilitates integration of broadband into converged network and services
- ✓ Support the widest variety of billing, roaming/wholesale models
- ✓ Self Service reduces networking operating costs

FOR PROVIDERS

- ✓ Deploy a unified service offering across any size or type of HotSpot or HotZone
- ✓ Maximize multiple revenue streams from service creation
- ✓ Obtain the most from your deployments by supporting the widest range of authentication, billing and roaming options
- ✓ Augment your branding and venue-specific services to offer access to localized content.
- ✓ Facilitate integration of broadband into converged network and services

SHAPE THE USER EXPERIENCE AT THE EDGE

- ✓ VPN Plug and Play Access
- ✓ No Hassle Connectivity reduces technical support
- ✓ Mobility! Wired/Wireless Broadband Access Anytime, Anywhere
- ✓ Tunable Session through Quality of Service (QoS) Management
- ✓ User and Location-Aware, Contextualized Service Delivery
- ✓ Customizable experiences maximize customer acquisition and retention
- ✓ Added security to protect both the network and users inside the local network

FOR END USERS

- ✓ Get a problem-free connection to the internet with zero configuration changes or the need for additional software
- ✓ Gain Access to local content and applications as part of an advanced services offering
- ✓ Pay for services using a variety of mechanisms including credit card, scratch card or by signing up for a subscription-based service
- ✓ Optimized delivery through Quality of Service management

NSE CORE FEATURES

The Nomadix Service Engine (NSE) is a high performance, packet processing embedded software package. It runs in a real time environment. NSE offers a comprehensive set of features needed to deploy full service, revenue-producing public access networks. The Secure XML API and optional modules allow the NSE to be tailored to specific applications or markets. The NSE software is sold on our suite of Access Gateways (see Specifications – on last page).

AT-A-GLANCE

- * Supports up to 4000¹ users in a single unit
- * Support most authentication mechanisms
- * Variety of billing application interfaces
- * Secure the very EDGE of your network by mitigating DoS attacks
- * A stable embedded real-time appliance
- * Scalable from a HotSpot to a full Metro application
- * Highly reliable solution with a proven track record
- * Over 30,000 gateway deployments
- * A stable embedded real-time appliance



I. USER EXPERIENCE SHAPING

- Dynamic Address Translation (DAT) for zero configuration network access
- iNAT for seamless subscriber VPN experience (IPsec, PPTP)
- Transparent Proxy
- IP Upsell for better user experience
- Walled Garden
- Home/Portal Page Redirect (with parameter passing)
- Login Page fail-over
- Information and Control Console (ICC)
- External/Internal Web Server Mode
- Pop-Up (Explicit) Log Out Button
- Session Termination Redirect
- REMEMBER Me Log-in
- VoIP Support (DAT SIP)
- URL Filtering
- User-Agent Filtering
- Quality of Service Tagged packets, policies/rules
- Performance capping
- International Language Support (UTF-8)

II ACCESS CONTROL & AUTHENTICATION

- UAM (Browser-Based over SSL)
- IEEE 802.1x
- RADIUS (AAA) Proxy
- RADIUS Client (MD-5, PAP, CHAP, MS-CHAP v1/v2)
- Port Mapping
- Exclude users from SMTP redirection
- Tri-Mode Authentication Support
- Bandwidth Management LAN
- Bandwidth Management WAN
- Internal Database

III. BILLING ENABLEMENT

- Smart Clients (Boingo, iPass and GoRemote)
- Credit Card Interface (authorize.net, Clearfusion)
- Property Management System Interfaces (MICROS: OnQ, Fideatio)
- Hobek RSI, Springer Miller and many others)
- Charge for idle time

IV. ADVANCED SECURITY

- Nomadix VSA w/ RADIUS Proxy
- EAPoL – Logoff DoS prevention
- Session Rate Limiting (SRL)
- MAC Address Filtering
- ICMP Blocking

V. NETWORK MANAGEMENT

- SSH
- SNMP/XML enhancements
- Web Management Interface (WMI)
- Command Line Interface (CLI)
- Integrated VPN Client for secure connection to NOC
- SNMPv2c
- RADIUS-Driven Configuration
- RADIUS-shared secret (up to 64 characters)
- DNS enabled configuration
- Static Port Mapping
- Multi-Level Admin Support
- Access Control List (extend to static port mapping)
- Bridge Mode
- Configurable Failover Time
- DHCP Server, relay, Client
- Multiple subnet support
- PPPoE Client Secure (port mapping restoration)
- Secure XML API over SSL
- System and subscriber syslogs
- Configure failover time
- Site naming using HTML title
- Default source IP address 172.30.30.173
- NTP Support

1. Available only with Metro Bundle

GATEWAY OPTIONS - Modules and Bundles Available:

Optional NSE Modules can be added to the NSE Core to support billing and experience shaping applications or add enhanced functionality. NSE Modules can be purchased at any time allowing the NSE to grow as your needs evolve. A special bundle aggregates several modules and user count upgrades to provide a large venue gateway solution.

MODULES

1. HOSPITALITY - AG 3xxx/5xxx

This module provides the most extensive range of CERTIFIED Property Management System (PMS) interfaces to enable in-room guest billing for High-Speed Internet Access (HSIA).

This module also includes one-way and two-way PMS interfaces for in-room billing in a WI-FI network.

Bill mirroring of records to multiple destinations is also provided within this module. In addition, a driverless printing option ("Click to Print") provides the capability for a subscriber to send print jobs to a designated server and have the charge billed to the room.

2. CREDIT CARD - AG 2xxx/3xxx/5xxx

The Nomadix Credit Card module enables payment for access services to be billed directly to a subscriber's credit card account through the use of a credit card merchant account authentication service. Bill mirroring of records to multiple destinations is also provided with this module.

The Credit Card module can be used alone to provide a direct means of customer billing without the need of an on-site billing system, or can be used in conjunction with other Nomadix billing methodologies (such as PMS or RADIUS accounting)

3. HIGH-AVAILABILITY - AG 2xxx/3xxx/5xxx

Fail-Over functionality provides expanded network uptime and service availability by utilizing a second Nomadix Gateway that is regularly updated by the primary gateway to take over if the primary device should fail.

4. ROUTED SUBSCRIBER - AG 5500

Provides additional flexibility in architecting your network by configuring an NSE enabled Access Gateway to support Layer 3, WLAN, MESH and other routed networks on the subscriber-side of the Nomadix device.

This module is useful where, for example, different corporate departments each require a separate logical network (with typical routed connections between them), but it is desired that users on each network are still able make use of the Nomadix subscriber features with respect to the public internet.

5. QUALITY OF SERVICE (QoS) - AG 3100/5500

Quality of Service acts as a network resource reservation control mechanism. It allows subscriber traffic data packets to be classified and marked so they can be acted upon to provide different priorities or guarantee a certain level of performance based on policies.

This capability is important where network resources/capacity are critical to basic usability for example in VoIP communication.

6. VIRTUAL ACCESS POINT - AG 2x00

The Nomadix Virtual Access Point (VAP) module provides the capability to host multiple logical wireless networks on a single physical device

The module is ideally suited for environments in which open guest access needs to be segregated from protected (WPA encryption available) proprietor access while keeping infrastructure requirements to a minimum, or where the use of multiple physical access points is problematic due to RF or other limitations

BUNDLES

1. METRO BUNDLE - AG 5500

This item is a special factory part number which configures the AG 5500 and packages the Routed Subscriber, High Availability and Credit Card modules with user count upgrades to create an AG5500 Metro Gateway that supports up to 4000 users.

NOMADIX ACCESS GATEWAYS – PLATFORM SPECIFICATIONS



Model	AG 3100	AG 5500
Ports	<ul style="list-style-type: none"> * 10/100Base-T Ethernet, RJ-45 (UTP); WAN * 2-10/100base-T Ethernet, RJ-45 (UTP) ; LAN * DB9 serial : Managment Port/Aux 	<ul style="list-style-type: none"> * 10/100Base-T Ethernet, RJ-45 (UTP); WAN * 2-10/100base-T Ethernet, RJ-45 (UTP) ; LAN * DB9 serial : Managment Port/Aux
Power	* 100 to 240 VAC; 50/60 Hz	* 100 to 240 VAC; 50/60 Hz
Environment	<ul style="list-style-type: none"> * Temperature: Operating (5 – 40 C); Storage: (0 – 70 C) * Humidity: Operating (20 – 90%); Storage (5 – 95%) RH non-condensing 	<ul style="list-style-type: none"> * Temperature: Operating (5 – 40 C); Storage: (0 – 70 C) * Humidity: Operating (20 – 90%); Storage (5 – 95%) RH non-condensing
Regulatory	<ul style="list-style-type: none"> * FCC Class A, part 15; CE Mark * CENELEC EN 55022; 1998 + A1: 2000+A2: 2003 Class A * CENELEC EN 61000-3-2-2000; <li style="padding-left: 20px;">EN 61000-3-3: 1995+A1:2001 * UL Std 1950 * CSA22.2 No. 950 	<ul style="list-style-type: none"> * FCC Class A, part 15; CE Mark * CENELEC EN 55022; 1998 + A1: 2000+A2: 2003 Class A * CENELEC EN 61000-3-2-2000; <li style="padding-left: 20px;">EN 61000-3-3: 1995+A1:2001 * UL Std 1950 * CSA22.2 No. 950
Physical	<ul style="list-style-type: none"> * 1U standard 19 inch rack * 10.00"(L)x10.00"(D)x1.73"(H) * 254mm(L)x254mm(D)x44mm(H) * Weight: 5 lbs; 2.27 Kg 	<ul style="list-style-type: none"> * 1U standard 19 inch rack * 16.85"(L)x10.04"(D)x1.73"(H); * 480mm(L)x255mm(D)x44mm(H) * Weight: 6.61 lbs; 3.00 Kg
LEDS	<ul style="list-style-type: none"> * Power Indicator * 10/100 ACT/LINK for each Ethernet port 	<ul style="list-style-type: none"> * Power Indicator * 10/100 ACT/LINK for each Ethernet port
Performance	<ul style="list-style-type: none"> * User Support: 100 up to 200 concurrent users * Throughput: 85Mbit/s –Defined by RFC 1242, Sect. 3.17 	<ul style="list-style-type: none"> * User Support: 250 up to 2000 concurrent users * Throughput: 97Mbit/s –Defined by RFC 1242, Sect. 3.17