

# SPARK

## Intelligent management of commercial WiFi hotspots

### Complete solution to manage WiFi infrastructure

– from payments, billing and usage reports to network management.

Support of virtually any WiFi access points by SPARK controller hardware providing full server integration.

Rapid deployment of wireless Internet access – all-in-one solution.

Carrier-grade solution designed for maximum availability and no downtime.

Rich reporting capabilities – providing real time information about network usage and payments, allowing providers to select best tariffs.

Full customization – tailor system to fit your needs exactly – from look and feel of portal pages on an access point, to payment methods, tariffs and roaming.

### Product overview

SPARK has been designed in response to growing demand for building **wireless commercial Internet access** using the 802.11 WiFi standard. SPARK allows administration and management of commercial WiFi networks consisting of many geographically distributed hotspots.

SPARK is a **complete, all-in-one** solution allowing quick deployment of commercial hotspots without in-depth knowledge of commercial networks.

### Requirements for commercial WiFi networks

Commercial WiFi networks require:

- AAA (Authentication, Authorization, Accounting) services providing:
  - Network access for authorized users only.
  - Control of purchased bandwidth and usage times.
  - Archiving of subscriber session information.
- Billing and reconciliation.
- Carrier-grade availability (99,999% system up time).
- Blocking (blacklisting) of sites and specified addresses (e.g. with offensive content).
- Protected data transfer.

### Subscribers

SPARK™ allows self-registration of subscribers using a user-friendly WWW interface, displayed once association on the WiFi level has been established and a web browser is opened.

The interface provides functionality to choose a user name and password, tariff plan and payments using one of the following methods:

- Charge cards.
- SMS.
- PayPal account.
- Preprinted voucher.

Supported payment methods can be configured on an individual hotspot basis.

Subscribers can also be manually provisioned by the system operator or integrated via a well-defined programming interface.

### Portal page customization

Portal (subscriber login) page look and feel can be freely customized in terms of color schema, graphics, font sizes, placement of login dialog, etc. Multiple languages are supported including English, German, Spanish and Polish.

### Walled gardens and black lists

SPARK offers advanced functionality for access to selected sites free of charge and without a need to log into the system (walled gardens) as well as blocking of specified addresses (black lists). Both walled gardens and black lists can be configured on a per group basis or separately for each access point.

### Bandwidth and usage time control

SPARK offers bandwidth control for determining maximum allowed up- and down- stream transfer limits. Bandwidth available to each subscriber is dependent on option purchased and controlled via tariff plans which may be different for each hotspot (e.g. depending on location, bandwidth available, etc.).

### Tariff plans

SPARK allows flexible configuration of tariff plans. Each tariff plan consists of a list of combinations of transfer speeds, access times and charges (e.g. an hour of Internet access at 512kb costs 5 USD). Multiple currencies can be used. The system allows configuration of multiple tariffs and assigning them individually or on a per group basis, or separately for each access point. Tariffs are fully dynamic and can be changed at any time without system or access point downtime.

### Access points

SPARK supports any type of access points (AP) via the following controllers (please note that connected APs must work in bridge mode and provide an intra-client blocking feature):

- **USG-A** is a high performance all-in-one DSL modem, router and wireless access point that runs SPARK gateway code. Configured for use as a simple hotspot or as a gateway controller, a single USG-A will support up to 50 simultaneous users over a standard 8M ADSL circuit or up to 100 users over a 12M ADSL circuit. This model does not require any additional APs as it already contains the radio module.
- **USG-I** is the Ethernet version of the USG-A, allowing connectivity to existing IP networks where ADSL is not available or required. Operating on a similar method, multiple USG-E units may be deployed to service larger user communities.

SPARK is an all-in-one solution for building and running commercial WiFi networks. System functionality covers all areas of wireless internet service provider (WISP) activities: configuration of access points, set-up of tariffs, payment processing, billing, network management and others. SPARK is a complete solution embracing both a central server and controller hardware and software in order to support virtually all kinds of access points.

- **USG-E** is a VIA EP MiniITX-based appliance solution. Dual NIC hardware allows support for hundreds of simultaneous users running on the SPARK gateway software. The underlying operating system is an embedded version of Linux. USG-I allows multiple VLAN support where large multi-content, multi-tariff wireless deployments may be installed. USG-I units have been used at trade shows with over 700 simultaneous users.
- **USG-H** (co-located). The SPARK gateway code can run on a SPARK server equipped with dual network adapters.

Brands of access points successfully tested with SPARK controllers include: CISCO, Motorola, Orinoco, Trapeze, OSbridge, Strix Systems and others.

**Reports and billing**

SPARK provides a comprehensive set of reports, providing on-line information about system status including: AP status, subscribers logged on, bandwidth utilization, revenue and more. SPARK features a billing subsystem, capable of generating invoices and reconciliation statements.

**Security**

Security is an important aspect of SPARK. The system management interface is protected by the HTTPS protocol. Different administrative access levels can be configured and each administrative action is logged for future reference. For credit card transactions, no credit card details are stored in the system – only transaction reference numbers.

**System requirements**

SPARK runs on Linux and Solaris platforms with choice of MySQL or Oracle databases.

| SYSTEM REQUIREMENTS FOR THE PC PLATFORM*                                    |
|---|
| Linux: RedHat Enterprise, CentOS, SuSE.                                     |
| 1GB RAM (2GB recommended).  |
| Pentium IV 2 GHz Processor.   |
| 50 GB free disk space (SCSI RAID storage, with on-line backup recommended). |
| 1Gbit network interface.  |
| Database: MySQL 4 or higher, Oracle 9** or higher.                          |

| SYSTEM REQUIREMENTS FOR SUN SPARC PLATFORM*                                 |
|---|
| Solaris 2.8 or higher (Solaris 10 recommended).                             |
| Minimum 1GB RAM.  |
| UltraSPARC II 300 MHz CPU or better.  |
| 50 GB free disk space (SCSI RAID storage, with on-line backup recommended). |
| 1Gbit network interface.  |
| Database: Oracle 9** or higher.   |

\* Please contact your account representative for the latest information on supported platforms.

\*\* Oracle licenses have to be purchased separately. SPARK requires two users and a number of concurrent connections on each, depending on the size of the installation (number of access points served).

SPARK server host requires a static IP address. Verax Systems recommends hosting SPARK server with an advanced, on-line backup solution.

| FEATURES                           | BENEFITS  |
|------------------------------------|---|
| PROVEN TECHNOLOGY                  | SPARK has been built using industry-standard technologies: (Unix, HTTPS, SSL, SQL, SNMP, and RADIUS) in order to provide maximum reliability. SPARK has been deployed in numerous installations, and manages hundreds of hotspots in Europe.  |
| SECURITY                           | SPARK's management interface is entirely HTTPS based in order to ensure maximum security. In addition data is protected by database security mechanisms.  |
| SCALABILTY                         | SPARK serves about a thousand access points in a single host configuration. Further scalability can be achieved by system distribution/and or clustering. SPARKTM allows control of networks running up to a few thousands hotspots providing FCAPS functionalities and complete control over access, logins, payments, tariffs, etc. |
| HIGH AVAILABILITY                  | SPARK can be installed in clustered configuration for maximum reliability and no downtime.  |
| DETAILED USAGE REPORTS AND BILLING | SPARK allows full control over network usage and logged in connected users. It also offers facilities to trace prior usage, e.g. for legal purposes.  |
| SHORT DEPLOYMENT TIME              | SPARK is an out-of-the-box solution, ready to be deployed without any required customizations.  |