Si3D Systems Business Overview
Converged Enterprise Communications Systems & Applications Gateway

Simplifying Convergence

Jan, 2013
Si3D’s mission is to deliver a family of Converged Enterprise Systems which enables SMB and small ISPs to simplify, value-add and cost reduce the communication and Application infrastructure.

Si3D system architecture is built around proprietary PCIe Line cards around a Intel/Linux environment. We are one of the first to port Asterisk based Call management system and Router features to operate congruently (Native).

With increased Internet & Cloud Traffic there is need for sophisticated Security Gateways (UTM Appliances)
- Currently serviced by dedicated security appliances provided by different vendors
- Especially for SMB and smaller ISPs typically handling 1/10Gbps data rate, this additional cost and added complexity to their existing communication infrastructure is expensive.
Genasis of the Products
- Key Innovations & Differentiators

Si3D’s Integrated & Converged Solutions

Current
- Telephony
  - FXS, FXO, E1/T1, GSM, VoIP
  - Users: 48-240 PSTN, 500 VoIP
- Integrated Router / Server
  - 4/8 port
  - DNS, Firewall, Wi-Fi, etc.
  - VPN Remote Management
  - Intel / Linux, scalable CPU, RAID
- Applications
  - Asterisk, FreeSwitch, Skype, G-Talk, & Open Source Business Applications

Future
- Telephony / Router / Server
  - ADSL/VDSL DSLAM: Last Mile ISP
  - Transcoders: 30-400 channels
  - WAN fallback, RIP/BGP, IPv6
  - Hot swappable & Fault tolerant
- Integrated UTM with WAN
  - 1-10 Gbps, Session Control, DPI, Secure Enterprise VPN
  - Open source / Commercial IDS/IDP, AV
- Applications
  - Virtual Machines based Business applications with partners

Proprietary and Confidential
Proprietary Modular PCIe cards to expand the Server capability
Universal PCIe card design with interchangeable Modules

Integrate diverse applications and functions like VoIP Codecs, Networking, UTM & user apps through a combination of HW accelerators, porting and virtualization to deliver optimal performance.
Si3D Proprietary S/W & System Architecture

Cloud & Virtual Applications

Host Intel Motherboard / CPU
Unified Web-based Management

Asterisk/Elastix Load Balancing
Si3D S/w (Routing / Security) Control & Management
Virtual Applications / Gateway
Cloud Support

DAHDI
SIP, IAX2

UDP, TCP, ARP, DHCP, DNS, VLAN....

IPv4 / IPv6

Telephony Drivers

PCle Fan out Card
2 Upstream Ports; 18 Downstream Ports: Hot Swappable

PSTN Line Cards
Asterisk Drivers

- FXS: 16 ports
- FXO: 16 Ports
- PRI (T1/E1): 4 ports
- GSM: 8 ports

DSP
Accelerators

- Echo TDM: 128 ms 32/64 Channels
- Echo Packet
- Transcoder: G.729/723

ADSL2+
DSLAM

- ADSL2+: 32 ports

LAN Card
(USB/PCle)

- 1 Port 10/100 (USB)
- 4 Port 10/100 (PCle)
- 8 Port 10/100 (PCle)
- 8 Port 1Gbps (PCle)

WAN Card – VPN/Security /DPI/UTM

- 1 Gbps
- 10 Gbps

* Available; *In Design
1. Patented Universal Module based Telephony PCIe Line cards for Voice, Data & Security
2. Proprietary SW on standard Intel Mother board
3. Proprietary 19 Port PCIe Hot Swappable Fan-out Card
Telephony & Networking Cards

2-8 GSM PCIe

4 FXO + 12 FXS + EC PCIe

1-4 PRI PCIe

1 PRI + 4 FXO + EC PCIe

4-8 Ethernet PCI

Total 25 product configurations possible
<table>
<thead>
<tr>
<th>Innovations</th>
<th>Product Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiP (System-in-Package) based Modular H/W</td>
<td>Smaller size, Higher integration &amp; reliability, lower cost, scalability on customer demand</td>
</tr>
<tr>
<td>Universal Line Card with Interchangeable Modules</td>
<td>FXS, FXO, T1/E1 (PRI), GSM modules can be interchangeably slotted on the PCI/PCIe line cards providing operational flexibility, serviceability &amp; lower cost.</td>
</tr>
<tr>
<td>PCIe Fan-out card based architecture with hot-swappability</td>
<td>Plug-n-play operation, enables connection of up to 18 line cards for offering multiple features in the same box (Telephony, Wi-Fi, LAN, Router, Security / UTM)</td>
</tr>
<tr>
<td>Integrated Call Management with Router</td>
<td>Asterisk based call management integrated native with full Router features on Intel / Linux platform. Offloads CPU intensive tasks (like transcoding, Echo Cancellation, Security, etc.) on Line Cards.</td>
</tr>
<tr>
<td>True convergence of datacom &amp; server features / standards</td>
<td>Integration of IP-Telephony, Analog &amp; Wireless Telephony, Router (with advanced Routing &amp; UTM). Server resources can be scaled through upgrading CPU &amp; providing RAID for running 3rd-party business applications on supported Virtual Machine.</td>
</tr>
<tr>
<td>Remote Monitoring &amp; Support via Cloud</td>
<td>Minimizes human intervention and the time taken for support with secure VPN &amp; proprietary “ZoomIN” application.</td>
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Note:
Provisional & umbrella patents have been filed & in process.
System Products
VoIP-PSTN Gateway + Router

2 PRI, 16 FXS, 4 port Router, Wi-Fi

Network Deployment

Rear Panel View
System Products
VoiceXchange: Hybrid PBX + Router

1 PRI, 8 FXS/FXO, 16 FXS, 8 GSM
Router, Wi-Fi,

Network Deployment

Rear Panel View
Appliance Value Proposition

• Major Features
  – Unified web-based management interfaces to Asterisk, Router stack (existing)
  – Goal is to integrate UTM features
  – Capable of secure remote management
  – All host CPU intensive functions offloaded (DSP, Security, UTM)
  – PCIe based expansion from 2 PCIe 1x up to 18 PCIe – allows leverage of a range of Intel Architecture for scaling product
  – Expansion capability by cascading multiple devices using load balancing capability

• Advantages to customers
  – One stop communication appliance for all needs
  – Ease of use - avoids clutter of managing multiple devices
  – High value product with remote serviceability
  – Upgradable in a pay-as-you-go usage
VoIP & PSTN Features
- Specification

- VoIP & PSTN Features
  - Basic POTS telephony features
  - Ring Groups
  - Call Queues
  - Conferences
  - Follow-me
  - Follow-me for iPhone, Android (with Apps)
  - GTalk integration
  - Skype Connector / Gateway
  - Time-of-the-day Based Call Routing
  - Advanced Dialing Rules
  - Music on Hold
  - Call Detail Records (via Web Access)
  - TDM/SIP/IAX Trunks
  - Remote VoIP Extensions
  - Call Voice Recording

- Voicemail with RAID1 back up
- Voicemail to Email
- Fax Support
- IVR Menu System
- Paging and Intercom
- Web Access to Voicemail
- Admin Status Screen
- Software Echo Canceller – SEC.
- Voice Enhancement through proprietary DSP hardware
  - Hardware Echo Canceller Module (HECM)
  - Transcoders
  - Conference
  - NEC – Network Echo Cancellation
Gateway, Routing & Security Features: Built in Basic Features.

- **WAN**
  - Dynamic, Static, PPPoE;
  - Firewall – Access Control, MAC/IP/Port filtering, DMZ, DOS prevention, VoIP pass through
  - Support for Dynamic DNS for VPN management access – OpenVPN with certificates, PPTP

- **LAN**
  - DHCP, VLAN, QoS (capable of VoIP, Application, VLAN & Diffserv based)
  - DNS Server (Caching, Master & Slave)

- **Administration & Management**
  - Factory defaults, Backup/Restore, Syslog, Remote Syslog, SNMP support

- **Wi-Fi**
  - 11bgn, AP mode

**Advanced Features:** Optional

- Multi-ISP Failover, Load balancing
- VoIP traversals of NAT via STUN/TURN/ICE
- Advanced routing (RIP; OSPF; BGP – IPv4 & IPv6), Dual Stack, Tunneling
- Anti-Virus, Intrusion Prevention / Detection System (IDS/IPS), VPN security acceleration & Advanced Firewalls
- UTM Blade with up to 10Gbps of WAN of Deep packet inspection & De/Encryption.
# Si3D Product Family

## Current Product Family

<table>
<thead>
<tr>
<th>Gateway Products:</th>
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<tbody>
<tr>
<td>VoIP - PSTN Gateway</td>
<td></td>
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<tr>
<td>GSM Gateway</td>
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</table>

**Voice Exchange:**
Converged Hybrid-PBX & Router

**Office-in-a-Box:**
Applications Gateway Server & Voice Exchange

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<th>Card Products:</th>
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<tbody>
<tr>
<td>Telephony Cards</td>
<td></td>
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<tr>
<td>Networking Cards</td>
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</table>

**Peripherals:**
VoIP + PSTN Phone
ATA

<table>
<thead>
<tr>
<th>Configurations</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>SOHO: 50 users</td>
<td></td>
</tr>
<tr>
<td>SME (Small): 100 - 200 users</td>
<td></td>
</tr>
<tr>
<td>SME (Medium): 200 – 500 users</td>
<td></td>
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<tr>
<td>SME (Large): 500 – 1,000 users</td>
<td></td>
</tr>
<tr>
<td>4/8/16/32 GSM Gateway with 1 PRI (E1/T1)</td>
<td></td>
</tr>
</tbody>
</table>

| 1 - 4 port PRI (E1/T1), 1 PRI with 2 - 8 FXS/FXO |  |
| 4 - 16 ports FXS/FXO, 4/8 GSM |  |
| 4/8 Eth port, 2x2 MIMO 802.11 b/g/n |  |

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<td>ATA</td>
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<th>Configurations</th>
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<tr>
<td>WAN, LAN, PSTN, 3 SIP;</td>
<td></td>
</tr>
<tr>
<td>WAN, LAN, FXS, Wi-Fi</td>
<td></td>
</tr>
</tbody>
</table>

## Product Roadmap

### System Products:
ISP Last Mile Box: with ADSL DSLAM
Office-in-a-Box with integrated UTM & VoIP Session Control
Fault-tolerant & Hot-swappable System versions

<table>
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<tr>
<th>Configurations</th>
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<tbody>
<tr>
<td>- ADSL2+, Active Ethernet, FXS, 8-port GbE WAN with resources for Centrex &amp; Billing;</td>
<td></td>
</tr>
<tr>
<td>- 1-10 Gbps, Session Control, DPI, Secure Enterprise VPN Open source / Commercial IDS/IDP, AV</td>
<td></td>
</tr>
</tbody>
</table>

### Card Products:
Voice Transcoder Cards
UTM WAN cards
1/10 GbE Network Cards

<table>
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<tr>
<th>Configurations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- 64, 128, 256 or 400 Trascoding Sessions</td>
<td></td>
</tr>
<tr>
<td>Supported codecs: G711u/a G.723 G.726 G.722 G729 AB</td>
<td></td>
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<tr>
<td>- 1-10 Gbps, Session Control, DPI, Secure Enterprise VPN Open source / Commercial IDS/IDP, AV</td>
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Si3D’s Office-in-a-Box
Integrated:
PSTN/GSM + VoIP + Apps
Telephony: Asterisk, Elastix

Cloud & Appliance based SME Applications
Google Apps, Microsoft, CRM (Oracle, SAP, Hotel), Telephony, etc.

Service Side

Office/ User Side

Network: Router/Firewall
Server: Application Layer

Mobile/Pad, SIP Audio/Video Phone, Computer, Thin Client, Soft Phone, POTS, Fax

PSTN

Internet

Support Cloud

Office Cloud

Proprietary and Confidential
# Market Verticals

<table>
<thead>
<tr>
<th>Verticals</th>
<th>Office-in-a-Box (OB-S, M, L, XL)</th>
<th>Gateway / Exchange (PSTN, VoIP, GSM)</th>
<th>Key Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hotels, Res. complex</td>
<td>Single (OB-M, OB-L)</td>
<td>Multiple (PSTN, VoIP, GSM)</td>
<td>POS, Security, Hotel Mgmt., Opera</td>
</tr>
<tr>
<td>Healthcare</td>
<td>Single (OB-L, OB-XL)</td>
<td>Multiple (PSTN, VoIP, GSM)</td>
<td>HIPAA compliant, CRM</td>
</tr>
<tr>
<td>Call Centers &amp; BPO</td>
<td>Single (OB-L, OB-XL)</td>
<td>Multiple (PSTN, VoIP, GSM)</td>
<td>Oracle, SAP, vTiger CRM</td>
</tr>
<tr>
<td>Schools, Colleges</td>
<td>Single (OB-M, OB-L)</td>
<td>Multiple (PSTN, VoIP, GSM)</td>
<td>BigBlueButton, Security Filters</td>
</tr>
<tr>
<td>IT Software Services</td>
<td>Single (OB-L, OB-XL)</td>
<td>Multiple (PSTN, VoIP, GSM)</td>
<td>Customer Specific</td>
</tr>
</tbody>
</table>

**OB-S = 50; OB-M = 200; OB-L: 500; OB-XL = 1,000;**

Proprietary and Confidential
Thank You