VOIP: A Comprehensive Competitive Analysis of Softswitches

EXECUTIVE SUMMARY

As the telecom recovery begins, incumbent telecom carriers face severe challenges, including the continued loss of lines and minutes to wireless operators, the need to accelerate broadband roll-outs in the face of new competition from cable companies, the regulatory mandate to unbundle local loop elements, and new long-distance competition from specialist VOIP carriers.

Incumbent telcos need new VOIP infrastructures to meet these challenges, and they now have the knowledge and spending power to start buying and deploying them as they migrate from aging Class 5 circuit-switched networks to a packet-switched infrastructure. The key element in any VOIP infrastructure deployment is the softswitch – the call-control component of a distributed-telephony or multimedia-switching solution.

VOIP: A Comprehensive Competitive Analysis of Softswitches is the most detailed and comprehensive analysis of softswitch equipment undertaken to date. In two key product categories – distributed and integrated softswitches – the report delivers granular information, in matrix format, on every important aspect of functionality and performance of each vendor's offering.

More than two dozen tables, encompassing more than 2,500 data points, enable detailed feature-by-feature comparisons of 20 different integrated and distributed softswitch products from 16 manufacturers. In total, product survey information is presented for 23 different manufacturers, including 13 public companies and 10 private companies.

Products are compared across a wide range of feature and performance specifications, including the following:

- Chassis/server size and weight
- Power consumption
- Calls set up per second
- Maximum simultaneous calls handled
- Access media gateway equipment required
- Trunk media gateway equipment required
- Scaleability
- Architecture support
- Protocol support
- Policy server support
- Interoperability
- Switching and broadband QOS features
- Codecs and signal processing features
The report also includes a detailed analysis of how softswitches and other VOIP products are used in different scenarios and maps out how VOIP architectures are evolving, identifying technology choices facing carriers and discussing the pros and cons of different approaches.

Excerpt 1: Distributed Softswitch – Physical Architecture

Excerpt 2: Maximum Distributed Softswitch Configuration

<table>
<thead>
<tr>
<th>VENDOR/PRODUCT</th>
<th>HIGHEST # OF LINES</th>
<th>HIGHEST BHCA</th>
<th>MAX. CALLS SET UP PER SECOND</th>
<th>MAX. # OF SIMULTANEOUS CALLS</th>
<th># OF RACKS</th>
<th># OF MEDIA GATEWAYS CONTROLLABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Alcatel 1000 Softswitches</td>
<td>2M</td>
<td>7.2M</td>
<td>2,000</td>
<td>1.8M</td>
<td>2 each</td>
<td>200,000</td>
</tr>
<tr>
<td>N Alcatel 1000 Softswitches</td>
<td>No limits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cirpack SuperNode</td>
<td>6,000 E1</td>
<td>5M</td>
<td>1,390</td>
<td>90,000</td>
<td>32 x 10U shelves</td>
<td>32</td>
</tr>
<tr>
<td>Cirpack SuperNodeB</td>
<td>6,000 E1</td>
<td>5M</td>
<td>1,390</td>
<td>90,000</td>
<td>7 x 8U shelves</td>
<td>48</td>
</tr>
<tr>
<td>Huawei SoftX3000</td>
<td>2M</td>
<td>16M</td>
<td>4,444</td>
<td>500,000</td>
<td>3</td>
<td>100K</td>
</tr>
<tr>
<td>2 x Marconi XCD5000 Call Agent</td>
<td>800,000</td>
<td>9.6M</td>
<td>Not disclosed</td>
<td>110,000</td>
<td>1 each</td>
<td>Not disclosed</td>
</tr>
<tr>
<td>Nortel Networks CS 2000</td>
<td>200,000 per softswitch</td>
<td>3M BHCA per softswitch</td>
<td>833 per softswitch</td>
<td>82,500 per softswitch</td>
<td>1 per softswitch</td>
<td>200,000 per softswitch</td>
</tr>
<tr>
<td>VENDOR/PRODUCT</td>
<td>HIGHEST # OF LINES</td>
<td>HIGHEST BHCA</td>
<td>MAX. CALLS SET UP PER SECOND</td>
<td>MAX. # OF SIMULTANEOUS CALLS</td>
<td># OF RACKS</td>
<td># OF MEDIA GATEWAYS CONTROLLABLE</td>
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<td>-------------------------------</td>
</tr>
<tr>
<td>Nuera ORCA SSC</td>
<td>Not disclosed</td>
<td>Not disclosed</td>
<td>100</td>
<td>8,000</td>
<td>1 each site</td>
<td>125</td>
</tr>
<tr>
<td>OT openCallAgent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No fixed limit</td>
</tr>
<tr>
<td>Samsung SSX5000</td>
<td>5M</td>
<td>10M</td>
<td>2,778</td>
<td>250,000</td>
<td>3 each site</td>
<td>1,250</td>
</tr>
<tr>
<td>Siemens Surpass hiE 9200 / with hiX</td>
<td>262,000</td>
<td>6.8M</td>
<td>1,900</td>
<td>120,000</td>
<td>2 x 4 racks</td>
<td>1,000</td>
</tr>
<tr>
<td>Siemens Surpass hiE 9200 / with hiG1600</td>
<td>262,000</td>
<td>6.8M</td>
<td>1,900</td>
<td>120,000</td>
<td>2 x 3 racks</td>
<td>1,500</td>
</tr>
<tr>
<td>Sonus Insignus</td>
<td>Not disclosed</td>
<td>&gt;13M</td>
<td>Not disclosed</td>
<td>Not disclosed</td>
<td>Not disclosed</td>
<td>Not disclosed</td>
</tr>
<tr>
<td>Telica PLUS MGC</td>
<td>Up to 750,000 trunk ports</td>
<td>7.5M</td>
<td>2,100</td>
<td>750,000</td>
<td>2 x 1 rack</td>
<td>224</td>
</tr>
<tr>
<td>UTStarcom Call Server</td>
<td>4000E1/5333T1</td>
<td>3M/location</td>
<td>833</td>
<td>Not disclosed</td>
<td>1 each</td>
<td>22</td>
</tr>
<tr>
<td>Veraz Networks</td>
<td>Tens of millions</td>
<td>Tens of millions</td>
<td>Tens of thousands</td>
<td>Millions</td>
<td>&gt;10 racks</td>
<td>Dependent on MG density</td>
</tr>
<tr>
<td>ControlSwitch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZTE ZXSS10 SS1b</td>
<td>6M</td>
<td>6M</td>
<td>Not disclosed</td>
<td>Not disclosed</td>
<td>1 each site</td>
<td>Not disclosed</td>
</tr>
</tbody>
</table>

**Key Findings**

Key findings from the report include the following:

**Large incumbent carriers are under increasing competitive pressure to migrate from Class 5 circuit switches to softswitches. This pressure will guarantee VOIP’s long-term success in the carrier market.** For incumbents, the main drivers for migrating to VOIP are to increase revenue and average revenue per user (ARPU) by deploying new services, to replace obsolescent circuit switches, and to lower operating expenses through site consolidation and headcount reduction. Together, these drivers make the migration to VOIP a must for carrier survival.

**Vendors are jeopardizing the short-term success of VOIP by not presenting a clear and cohesive vision regarding products and architectures.** There is still no industry-standard definition for a softswitch, with several competing and conflicting voice-over-packet architectures now being advanced. The lack of clarity won’t prevent carriers from beginning their migration from Class 5 TDM circuit switches to VOIP, but it could affect the timing of planned migrations.

**The lack of industry clarity surrounding softswitches may create future interoperability and regulatory problems for carriers – and create survivability problems for softswitch vendors as well.** Operators cannot wait for large-scale interoperability to be proved, so they will choose two or three vendors and force them to interoperate to get the business. This forced strategy will put smaller softswitch vendors at a huge disadvantage.

**A continued lack of clarity in voice-over-packet architectures will prolong the lifespan of integrated Class 5 replacement switch products.** Products that integrate Class 5 and softswitch functionality offer a quick replacement or greenfield opportunity, are cost-effective, and are very attractive for CLECs in particular regulatory environments, such as the U.S., which favor facilities-based competitive voice services.
Integrated softswitches are especially critical for smaller, newer vendors. Integrated products represent a foot in the door to the incumbent carrier market, or even a Trojan horse that can later open up and expand to take over a larger share of the network.

Vendors that have been using their installed base of Class 5 telephone switches to sell extortionate software upgrades could be in for a big and unpleasant surprise in the softswitch market. The market for softswitches will be much more fluid than that for Class 5 switches. That means carrier customers will have more freedom to use products from different vendors. Suppliers won't be able to count as heavily on after-sale software revenues from the carrier market.

The future network cost and service revenue implications of picking a mediocre Class 5 migration vendor are enormous. Incumbent network operators of all sizes will be prepared to bite the bullet, cap their legacy systems, and migrate to a multisource solution with new vendors, rather than make a long-term commitment to a supplier with a less-acceptable product.

Incumbent operators’ insistence on major-vendor interoperability for multisource solutions will favor Chinese vendors. The major Western vendors have fallen over themselves chasing plum contracts in China that require them to interwork with equipment from Huawei, UTStarcom, and ZTE. These three vendors can now move into Western markets with an excellent set of interoperability credentials.

Report Scope and Structure

VOIP: A Comprehensive Competitive Analysis of Softswitches includes complete competitive analyses for 20 different softswitch products, including the following 16 integrated softswitches and four distributed softswitches:

**Integrated Softswitches Analyzed:**
- Alcatel 1000 Softswitch
- Cirpack SuperNode
- Cirpack SuperNode B
- Huawei SoftX3000
- Marconi SoftSwitch XCD5000 Call Agent
- Nortel Networks CS 2000
- Nuera ORCA SSC
- Open Telecommunications openCallAgent
- Samsung SSX5000
- Siemens Surpass hiE 9200/ with hiX
- Siemens Surpass hiE 9200/ with hiG1600
- Sonus Insignus
- Telica PLUS MGC
- UTStarcom Call Server
- Veraz Networks ControlSwitch
- ZTE/ZXSS10 SS1b

**Distributed Softswitches Analyzed:**
- Cirpack LEN
- MetaSwitch VP3500
- Sentito Neo Services Switch (NSS)
- Telica Compact Softswitch
This report is structured as follows:

**Section II** presents a taxonomy of softswitches, including key distinctions between distributed and integrated products and the role of softswitches in carrier migration from Class 5 circuit switches.

**Section III** analyzes softswitch network architectures, focusing on key distinctions between architectures now being promoted by different standards groups.

**Section IV** offers an overview of VOIP network applications and market drivers.

**Section V** presents a comprehensive competitive analysis of distributed softswitch products, with feature-by-feature comparisons for 17 different products from 15 manufacturers.

**Section VI** provides a competitive analysis of integrated softswitches, focusing on available products from four leading manufacturers.

**Section VII** offers a detailed analysis of how distributed and integrated softswitches can be deployed by carriers to ease the transition from network designs based on Class 5 circuit switches.

The report is essential reading for a wide range of industry participants, including the following:

- **Telecom service providers**: How have VOIP architectures evolved to meet your needs as you migrate from a Class 5 environment to a packet-based network? Which type of softswitch best meets your immediate and long-term needs? How do today’s products compare for the features and performance specifications that are most important to you? Which suppliers are best positioned to deliver the optimal Class 5 migration strategy?

- **Softswitch suppliers**: How do your products compare with the competition? What are the specific strengths of your product line that will resonate with prospective carrier buyers? Are there potential weaknesses in your product that need to be addressed?

- **Investors**: Which equipment makers are in the best position to capture market share in this important telecom industry sector? Which startups are delivering the technology that will gain market traction with carrier buyers?

**VOIP: A Comprehensive Competitive Analysis of Softswitches** is published in PDF format. A companion report, **VOIP: A Comprehensive Competitive Analysis of Media Gateways**, is also available.