SDC
SESSION BORDER CONTROLLER

CIRPACK

# SESSION BORDER CONTROLLER

DELIVER MULTIMEDIA & INTERACTIVE COMMUNICATIONS SERVICES WHILE SECURING YOUR IP NETWORK

3M Services GmbH

Cirpack

# The right solution for enhanced network security & value-added features

## ADOPT THE ESSENTIAL

With multiple network interconnections and increasingly heterogeneous devices, network operators cannot afford to take risks with core network security. The Cirpack Session Border Controller (SBC) responds to today's crucial need for security while adding valuable, innovative features for the future. Indeed, the Cirpack SBC ensures interconnections with any other network, in compliance with international and specific national standards such as France, Germany, Italy..

## FIND THE BEST SOLUTION FOR YOUR NEEDS TODAY & IN THE FUTURE

To provide the right solution for each network,
Cirpack offers a range of options, from standalone SBC to decomposed SBC units that are fully integrated into broader solutions.
The decomposed architecture, compliant with TISPAN/3GPP specifications, makes it easy for both existing and new customers to add the Cirpack SBC to their networks.

## LEVERAGE YOUR INVESTMENT OVER TIME

Protect your SBC investment thanks to the modular, building-block design and decomposed architecture of Cirpack's portfolio of SBC products and solutions. With separate Media and Signaling planes, SBC functions and capacity can be expanded as needs evolve simply by adding additional modules to existing equipment. With Cirpack open-ended scalability, small network SBCs can easily grow,
thanks to a smart reallocation of existing equipment.

## INTRODUCE SESSION BORDER CONTROL QUICKLY & COMFORTABLY

A successful, cost-effective transition to full SIP local loop and carrier interconnect depends on reliable, responsive customer service and technical support. Cirpack professional services teams will help you configure and commission your SBC. In fact, expert Cirpack technicians have established an unequalled track record for ensuring that each customer receives rapid, personalized 24/7 support wherever and whenever needed.

## The Critical Challenges to Tackle

- **Manage heterogeneous SIP environments and codec implementations**, to handle the growing number of communications devices and provide interconnection solutions. Regardless of the underlying network (DSL or cable), the adoption of SIP as the reference open source protocol requires service for hard-phones, soft-phones and mobile phones (over Wi-Fi or LTE) as well as PBXs, modems and gateways.

- **Define clear demarcation points, create borders** to strengthen identity management and respond to growing control needs in both the access and interconnect network. With the adoption of SIP on every device and increased fixed-mobile convergence, the role of SBC is critical to maintain quality of experience and service.

- **Secure the core network and control all network accesses** to safeguard networks against potential intrusion.


# Cirpack's Session Border Controller: an innovative concept

What matters most is not always what you see first. Additional features make the difference in the field, as new service requirements arise. By partnering with customers, Cirpack has designed today's most advanced SBC to address residential, business and original equipment manufacturers (OEM) requirements.

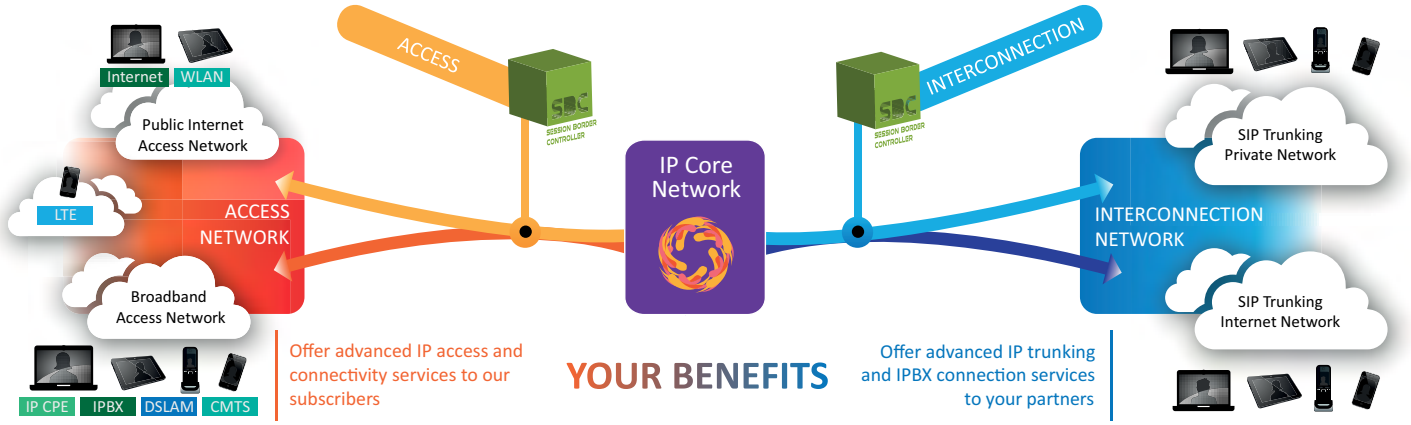
## A WIDE RANGE OF INNOVATIVE FEATURES…

- TLS sRTP encryption
- Advanced access control and traffic routing
- Field-proven and highly scalable solution: Compact, Medium, Large packages
- Robust security for signaling and media
- Customized access domain
- Fax & DTMF transcoding
- Roaming Control IP Bouncer
- Flexible solution supporting NGN and IMS architecture
- SIP trunk availabily control
- IPv4/IPv6 interworking
- Routing capabilities
- VLAN and IP@ overlap termination
- PBX connection and domain routing
- SIP SIP-I SIP-T converter
- Cloud Access SBC
- SIP over UDP and TCP fallback

## Cirpack is your best SBC partner

- Active in the SBC arena since 2005, when innovative IP Centrex services were launched and an SBC became compulsory, Cirpack brings years of experience to clients
- Client partnership approach and commitment, from product definition to field deployment.
- Renowned technical mastership thanks to strong telecom and softswitch experience
- Reliable 24x7 professional and customer services

## ... AND THE ULTIMATE SOLUTION TO PROTECT THE CORE NETWORK AGAINST AGGRESSIONS FROM ACCESS/BORDER/INTERCONNECT NETWORKS




Offer advanced IP access and connectivity services to our subscribers

**YOUR BENEFITS**

Offer advanced IP trunking and IPBX connection services to your partners

# Modular Architecture Meets Evolving Network Needs

## MAXIMUM FLEXIBILITY

Compliant with 3GPP "IP multimedia subsystem (IMS)" and ETSI "TISPAN" specifications, the software modules and hardware blocks of Cirpack's SBC solutions can be mixed or matched and configured to meet your particular functional or traffic needs. Built on a high-availability, multi-core, off-the-shelf platform, the Cirpack SBC portfolio is designed to provide maximum performance as well as scalability.

## MAXIMUM SCALABILITY

The decomposed design of Cirpack's SBC products and solutions delivers scalability, seamless network growth and cost effectiveness. You start with the Small or Compact Cirpack SBC hosting both Media and Signaling controllers in a single hardware unit. As your network grows, the Compact SBC can be transformed into a dedicated Media controller. At this stage, the Integrated SBC combines the Media plane and the Signaling plane (integrating Access and Interconnect). As your needs continue to expand, you switch to Cirpack's Dedicated SBC with the Media plane (using the Compact SBC of second stage), the Access plane (previously Integrated SBC in stage three) and a new plane dedicated to the Interconnect. You pay as you grow, repurposing existing hardware and purchasing new platforms only when they are needed.

## Cirpack Session Border Controller Components

### A Access

- Control of Registrations
- DoS/DDoS protection
- Topology hiding & Privacy
- RTCP/TCP
- Multi flavor SIP Adaptation
- Clean up non conform SIP signaling
- TLS encryption
- Roaming Control IP Bouncer
- IPv4/IPv6 interworking
- Cloud Access SBC
- VLAN

### I Interconnection

- DoS/DDoS protection
- Topology hiding & privacy
- Service infrastructure protection
- Header manipulation
- SIP-I SIP-T
- High performance routing
- TLS encryption
- IPv4/IPv6 adaptation
- RTP Route Availibility
- SIP Domain Routing
- Transit

### M Media & Transcoding*

- Media firewall in IP-to-IP communications
- Used in topology hiding
- Used in far-end NAT traversal
- sRTP encryption
- Transcoding/Fix G711 <-> G729 <-> G723
- Transcoding/Mobile G722.2 (AMR_WB) <-> G722

*Transcoding is an optional function

## Cirpack scalable SBC range: Pay as you grow!

### 1 Start little

A I M

| nb of sessions | nb of users |
|---|---|
| Small SBC S250 | |
| 250 | 2,500 |
| Small SBC S500T* | |
| 500 | 5,000 |
| Small SBC S1000T* | |
| 1,000 | 10,000 |

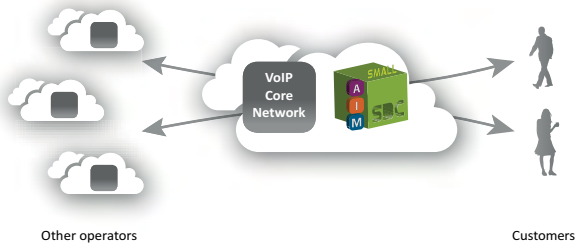
*T: Transcoding enable

**Small SBC**

Very optimized SBC solution for Signalling and Media management hosted in a very compact platform.

As a starting solution, Cirpack Small SBC delivers a full range of features for Access, SIP Trunking and Interconnection applications.

Cirpack Small SBC is a very efficient and competitive solution for remote and standalone deployment.




### 2 Grow

A I M

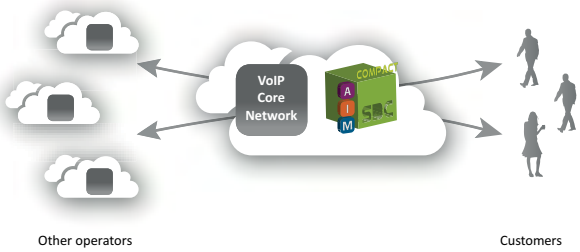
| nb of sessions | nb of users |
|---|---|
| 1,000 to 4,000 | 8,000 to 32,000 |

**Compact SBC**

Media and Signaling controller functions packaged as a standalone solution which can be installed as a first and centralized system in the Telco SIP Network.

The Compact SBC delivers a full range of features for Access, SIP Trunking and Interconnection applications.

Ideal for a «pay as you grow» business thanks to its flexibility and performance.




### 3 Get big

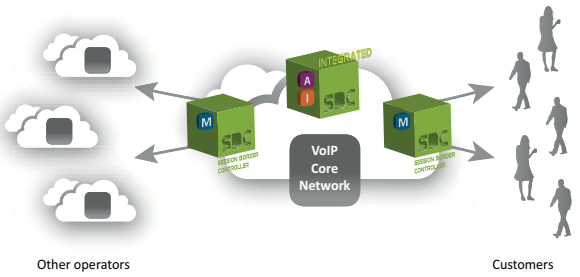
A I M

| nb of sessions max | nb of users max |
|---|---|
| 12,000 | 90,000 |

**Integrated SBC**

Media Plane on one side and, on the other side, combined Access & Interconnect controllers for mid-range systems or smart solutions such as Multi Link Trunking, where both routing and access features are activated.

When traffic grows, several Compact SBCs can be stacked. Or the Media Plane can be separated from the Signaling Plane, re-using installed hardware. An "Integrated SBC" combines all features requested at SIP level and controls the Media Plane.




### 4 And bigger

A I M

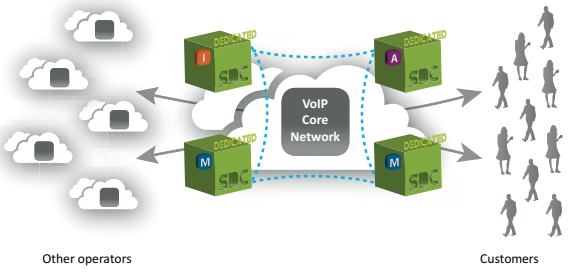
| nb of sessions (Interco SBC) | nb of users (Access SBC) |
|---|---|
| 10,000 to 64,000 | 10,000 to 250,000 |

**Dedicated SBC**

Media, Access and Interconnect Controllers hosted on dedicated hardware for full-power solutions.

For larger deployments, the signaling plane is split to best allocate resources. Dedicated Access and Interconnect SBCs are installed in relevant

locations, with capability to stack and handle national network loads.




**Media Proxy**

Decoupled from SIP signaling, the Media Controller is tailored to handle RTP streams.
Media Controllers can be installed either in the same datacenter or spread over the access network. Signaling and media planes scale up independently, to meet service providers' capacity planning and optimize OPEX and CAPEX.

**Media Transcoding**

*optional function* - signal processing is hosted on dedicated Cirpack-designed hardware components for superior performance.

## Maximize Your SBC Investment

- Ensure full network security
- Compliant with TISPAN/3GPP specifications
- Insist on scalability to right-size your SBC for today and tomorrow
- Modular hardware ensures future flexibility
- Protect your investment through staged, add-on growth functions
- Select an SBC with multi-site redundancy capability
- Work with a reliable, field-proven partner with comprehensive support and services

# Cirpack Session Border Controller in action

## PBX TRUNKING: Network-wide Service Quality


SIP trunking helps reduce costs while laying the foundation for end-to-end IP communications that includes transmission of both voice and video. The Cirpack range of SBC products and solutions enables enterprise network architects to ensure homogeneous quality of service with heterogeneous end-user profiles.

Resilient, modular architecture ensures that enterprise network managers can accommodate customer growth easily and economically.

Implement the Cirpack SBC's unique PBX Trunking "multi link" feature for both multi-site enterprises and extra traffic needs.

## NETWORK INTERCONNECTION: Set up Clear Demarcation Points at Network Boundaries

With the ability to handle heterogeneous SIP implementations and codec engineering, Cirpack SBC products and solutions are just right for competitive local exchange carriers (CLEC) using SIP to peer with clients and providers and for incumbent local exchange carriers (ILEC) who need to define reference interconnection offers (RIO).

Cirpack SBC solutions make it easy for carriers to set clear network borders and ensure relevant protocol and/or media adaptations.

## PORTABLE VOIP DEVICES: Meet the engineering & security challenges

With use of tablets, smart phones, IP-phones and other wireless devices skyrocketing, network operators face growing threats to their core networks. Cirpack SBC solutions enable operators to protect their core networks by detecting nomadic devices and rigorously controlling access to network services. They help operators manage specific transcoding needs, such as AMR-to-G722 end-to-end HD sound management between mobile and fixed VoIP communication.

## CLOUD ACCESS SBC: Rent SBC Services To Other Carriers

Cirpack SBC is at the crossroad of Cloud-based network infrastructures, where end users are served wherever they are thanks to IP roaming and whatever the network topology (functions are spread over the network and not hosted by dedicated equipment units).

"Cloud Access" SBC features also secure the roaming/over-the top scenarios where the access network is not fully under your control.

In addition to the "Roaming Control IP Bouncer", the "Cloud Access" SBC features take advantage of user ID and domain-based routing to share your SBC between:

> your own subscribers
> sales partners that resell your offerings
> OEM that provide their offerings renting your SBC

## DIGITAL HOME TECHNOLOGIES: Prepare For The Boom

Prepare for the future today, with 24/7 service availability and iron-clad core network protection. Cirpack SBC solutions ensure that service providers are ready for the coming explosion in secure telephony application servers, traffic growth, portable IP devices and IPv6 software protocols.

## VALUE-ADDED SERVICE PROVIDERS: Transition To Full SIP

As value-added service providers (VASP) move the telecom layer of their networks to SIP, they need clear network demarcation points to manage the relevant SIP adaptation, as well as media transcoding and IP engineering. With topology hiding, NAT and IPv4/IPv6 adaptation, Cirpack SBC solutions help VASPs handle the transition to full SIP seamlessly and transparently. The Cirpack SBC portfolio ensures 24/7 service availability with the ability to manage multi-codec environments.

# A Full Range of Features

| | Cirpack Access SBC | Cirpack Interconnect SBC |
|---|---|---|
| **SECURITY - DOS/DDOS & INFRASTRUCTURE PROTECTION** | | |
| Protect Core Network from DoS/DDoS attack | Yes | Yes |
| Protect Core Network from traffic overloads | Yes | Yes |
| Ensure convergence of registration after a long network unavailability period | Yes | NA |
| Allow Authenticated/Registered users access while under DoS attack | Yes | Yes |
| Detect and prevent single user attack, blocking only that user | Yes | Yes |
| **SECURITY – USER ACCESS CONTROL** | | |
| Codec control, with codec authorization list | Yes * | Yes * |
| Permit access to known devices or networks | Yes | Yes |
| Permit access to/from authenticated/registered users; deny access to anonymous users | Yes | Yes |
| Dynamically accept or reject traffic per-user based on user behavior | Yes | Yes |
| **SECURITY – NETWORK TOPOLOGY HIDING & PRIVACY** | | |
| Hide core topology to prevent directed attacks to the core network and preserve core confidentiality | Yes | Yes |
| Mask user information for privacy and confidentiality | Yes | Yes |
| IPSec/TLS and sRTP | Yes* | Yes* |
| RTCP | Yes | Yes |
| **SECURITY - MONITORING & REPORTING** | | |
| SNMP traps and log generation | Yes | Yes |
| Access management is protected from unauthorized personnel | Yes | Yes |
| **SERVICES - NAT / PAT MANAGEMENT** | | |
| Enable calls to traverse NAT by discovering public/external IP addresses for signalling and media or keeping NAT pinholes open for signaling | Yes | Yes |
| **SERVICES – IP ADDRESS MANAGEMENT** | | |
| VLAN Bridge IP address spaces - private-public, private-private, public-public | Yes | Yes |
| ALG IPV4 to IPV6 translation and interworking | Yes * | Yes * |
| **SERVICES – E.164 PHONE NUMBER & SIP URI MANAGEMENT** | | |
| Enable prefix, suffix, wildcard and other telephone number manipulations to enhance/control session routing | NA | Yes |
| **SERVICES - PROTOCOL INTER-WORKING MANAGEMENT** | | |
| Signaling – provides protocol normalization and inter-working for SIP, SIP-T and SIP-I | Yes | Yes |
| Encryption – provides support and inter-working for none, TLS, IPSec, sRTP | Yes * | Yes * |
| SIP Header manipulation | Yes | Yes |

| | Cirpack Access SBC | Cirpack Interconnect SBC |
|---|---|---|
| **SERVICE LEVEL AGREEMENTS - ADMISSION CONTROL** | | |
| Admit sessions based upon signaling criteria | Yes | Yes |
| Interface to policy and bandwidth manager (Gq' to RACS, Rx to PCRF, PacketCable Application Manager) | Yes * | Yes * |
| **SERVICE LEVEL AGREEMENTS - TRAFFIC CONTROL & FAILURE DETECTION** | | |
| Load balancing of traffic | Yes | Yes |
| Reject or divert traffic based upon destination | NA | Yes |
| Manage avalanche of SIP REGISTER messages resulting from power or network failure and ensure convergence of registration | Yes | NA |
| **SERVICE LEVEL AGREEMENTS - TRANSPORT CONTROL** | | |
| Assign QoS marking / VLAN mapping | Yes | Yes |
| Release media between UE based on session timeout. | Yes | Yes |
| Release media between UE based on inactivity detection | Yes | Yes * |
| Measure QoS per session (packet loss) Report QoS information to CDR | Yes * | Yes * |
| **ROUTING & BILLING- CDR ACCOUNTING** | | |
| Generate CDRs for billing or network planning | Yes | Yes |
| Add ISUP information contained in SIP-I | NA | Yes |
| **ROUTING & BILLING – TRAFFIC ROUTING** | | |
| Interface to Cirpack least-cost routing to enable policy-based session control based on route cost, margin, preferences, ... | NA | Yes * |
| ENUM-based routing interface | NA | Yes |
| Carrier code-based routing | NA | Yes |
| Interface to Cirpack Number Portability Database | NA | Yes |
| Reselection mechanism in case of failure | NA | Yes |
| Load balancing across multiple networks | Yes | Yes |
| Specific routing/rejection mechanism for specific SIP METHOD | Yes | Yes |
| DNS RFC3263 routing | Yes | Yes |
| Routing based on ISUP information contained in on SIP-I | NA | Yes |
| **ROUTING & BILLING – EMERGENCY CALL ROUTING** | | |
| Specific routing mechanism for emergency numbers | Yes | Yes |
| Retrieve location information for emergency sessions | Yes | NA |
| **OPEN INTERFACES** | | |
| Interface to external location servers (CLF) - e2 | Yes | NA |
| Rf (Diameter) interface to billing system | Yes* | Yes* |
| Interface to External Number Portability server (ENUM) | NA | Yes |

** Planned in product roadmap – NA: Not applicable*


Cirpack is a company headquartered in Paris, France. Leveraging from 14 years of in the field experience, Cirpack offers core solutions, including the Softswitch and Session Border Controller (SBC) ranges of product catalyzed by its set of Transversal Applications. Its local presence in the French, German and Mexican offices allows close support to more than 150 worldwide telecom operators, ISP, ASP and integrators. Cirpack renowned for the robustness and reliability of its solutions, comes along with the customer' strategy offering flexibility and reactivity.

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