

MultiNode-B HVS PTG RTG

Designed for IMS and Triple Play

Cirpack MultiNode-B from Thomson can be configured for 100% TDM services in a pure NGN architecture. It can also host VoIP interface boards and simultaneously handle both TDM and packet telephony, both in the access (class-5) or in the trunk (class-4). The same Cirpack switch can then be enhanced with specific software modules turning it into a true IMS/TISPA core platform enabling multimedia services to be easily delivered over any type of local loop.

Leveraging Thomson's world leading video technologies, Cirpack MultiNode-B is the ideal platform for delivery of primary line telephony and IPTV to increase the value of broadband services. With its SmartVision IPTV middleware, Video On Demand servers and Grass Valley network equipment for secured video encoding and streaming, Thomson is the only supplier with a comprehensive solution enabling quick time-to-market of unique Triple Play services.



HVS PTG RTG

Cirpack MultiNode-B

The Ultimate Voice Switching Platform for Massive VoIP Deployments and PSTN Migration to IMS

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Carrier-Grade Voice Switching... the NextGen Way!

Thomson's Cirpack MultiNode-B is the next-generation telephony switch operators need to launch their next-generation services: VoIP, IP Centrex, Triple Play, Fixed-Mobile Convergence, etc.



A Uniquely Modular Platform

Cirpack MultiNode-B is a highly modular, scalable, high-density platform, incorporating all the components of a powerful public telephony switch in a compact, standards-based and easy to manage shelf. It has been designed to replicate the features of legacy TDM switches, enabling existing services and equipment to be maintained in new architectures while deploying new VoIP and multimedia features over broadband local loops.

From TDM to NGN to IMS

Based on IBM's BladeCenterT, a carrier-grade version of IBM's blade server technology, Cirpack MultiNode-B offers a unique softswitch and gateway solution to expand legacy PSTN, deliver VoIP services and start migrating to an IMS architecture. It can serve as the foundation for consolidating infrastructures and applications according to the IMS model.

Voice and Video Services

Fully integrated with Thomson's world leading video technologies, IPTV service delivery platforms and residential gateway products, it is the ideal solution for telecom operators and Internet service providers to quickly deliver feature-rich broadband services that meet the most demanding reliability, modularity, ease of management and cost of ownership requirements.

Field-Proven Technologies

Cirpack MultiNode-B from Thomson is the platform handling several of the largest European VoIP deployments. It has demonstrated carrier-grade reliability, offering toll-quality telephony services across very large and complex infrastructures.

For Successful Deployments

With Cirpack MultiNode-B, Thomson is further extending its technology leadership in next-generation network platforms enabling carriers, service providers and local loop operators around the world to build powerful infrastructures for delivering profitable multimedia services.

Cirpack MultiNode-B has been designed to replicate the features of the largest TDM switches

Cirpack HVS: High Velocity SoftSwitch

Thomson's Cirpack HVS is a Carrier-Grade SoftSwitch, delivering advanced Class-4 (Transit) and Class-5 (Local Exchange) services across any legacy or broadband local loop and core network.

Small & Very Large Networks

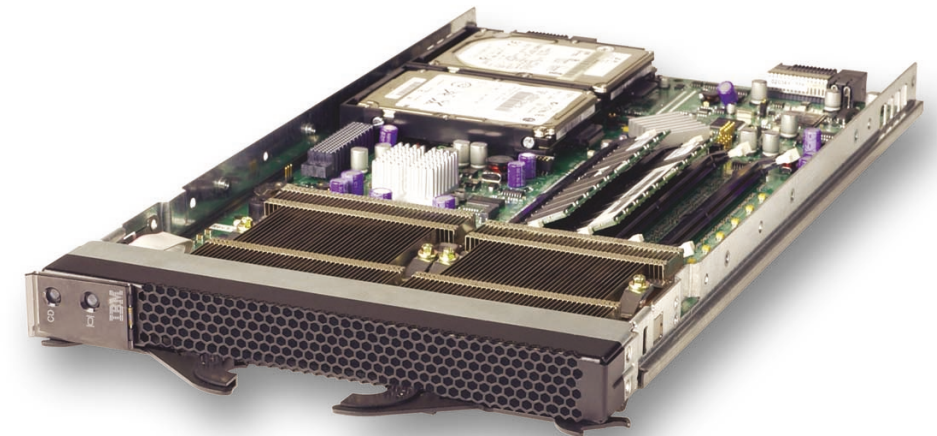
The Cirpack HVS SoftSwitch from Thomson is the call controller for the Cirpack MultiNode-B, designed to offer primary line voice services over any legacy and broadband local loop. It can handle several million call attempts per hour (BHCA) and 264,000 subscribers from a single node, thus meeting operators' demands for large and scalable voice infrastructures.

TDM and IP Telephony

Cirpack HVS is fully compatible with SIP and MGCP to deliver advanced telephony services over broadband infrastructures of any kind. It can deliver all POTS and ISDN services over V5.2 access networks and H.248/Megaco access gateways to ease the replacement of the largest TDM switches and legacy infrastructures.

Built-in IP Centrex & FMC

Cirpack HVS can even be enhanced with an IP Centrex software option enabling operators to launch high value hosted services targeting the enterprise market from the same platform. Leveraging its extensive support for legacy GSM protocols and WiFi roaming, Cirpack HVS also enables innovative Fixed-Mobile Convergence features for both residential and business applications.



Powerful Trunking

Working in conjunction with Cirpack media and signaling gateways installed across the voice infrastructure, Thomson's Cirpack HVS SoftSwitch also enables seamless interworking between the operator's IP infrastructure and the PSTN. It supports all SS7 local variants and its advanced voice routing mechanisms enable complex transit infrastructures to be deployed using both TDM and IP trunking.

Open & Flexible Solutions

Cirpack HVS also comes with lawful intercept, emergency numbers and local number portability features for full compliance with regulatory requirements. It can be enhanced with third party application servers connected via SIP, as well as legacy SCPs from intelligent networks via INAP CS1 to easily deliver value-added services from a single platform, leveraging the existing components of any carrier-grade infrastructure.

Cirpack PTG: Public Telephony Gateway

Cirpack PTG from Thomson is an interface board, especially designed for IBM BladeCenters, which offers unmatched port density when connecting the PSTN to VoIP networks.



Managing all Signaling Protocols

Using V5.2, R2 and ISDN, Thomson's Cirpack PTG delivers all legacy voice services over TDM local loops, enabling the replacement of the largest legacy local exchange switches. Using INAP CS1, Cirpack PTG connects legacy Intelligent Network servers to the MultiNode-B, maintaining existing service delivery platforms.

Using all flavors of SS7, Cirpack PTG manages seamless telephony between VoIP and PSTN subscribers. Using MAP and SS7, Cirpack PTG connects GSM and IP infrastructures together to deliver innovative Fixed-Mobile Convergence services.

Copper or Fiber Interfaces

Available in two configurations, Thomson's Cirpack PTG provides either fiber connectors managing 63 E1s over SDH, or copper connectors managing 16 E1s. Both can receive DSP mezzanines to offer media server capabilities to the Cirpack HVS SoftSwitch. Each E1 interface of each PTG board installed in a BladeCenter shelf can be configured to handle a different signaling protocol, offering superior modularity to meet any network topology or business model.

In its copper configuration, Thomson's Cirpack PTG is the ideal interface board for deploying small, all-integrated carrier-grade voice switching platforms. It also enables successful alternative operators to increase the capability of their media/signaling gateway according to their exact needs, starting with small capacity and adding just the right number of ports to support traffic growth at lower costs.

Up to 1,000 E1s per Shelf

In its fiber/SDH configuration, Thomson's Cirpack PTG represents a breakthrough in the market for media/signaling gateways. A fully populated BladeCenterT converts 500 E1s using any TDM signaling to as many VoIP channels. This is a total of 30,000 DS0 managed in an 8U shelf, with echo cancellation and compression across all channels. Cirpack PTG delivers performance levels that no other telecom system has ever shoehorned into such a small footprint.

Embedded Media Services

Thomson's Cirpack PTG offers much needed DSP power for media stream handling: multiparty voice conferencing, fax transmission over IP, multilingual network announcements, customized ring back-tones, and media replication for lawful intercept as required for primary line services using VoIP technology.

Integrated or Distributed Architecture

Managed by a local or remote Cirpack HVS SoftSwitch, the PTG boards support a wide variety of signaling protocols to meet the needs of any service provider and seamlessly deliver carrier-grade telephony services over TDM and IP networks simultaneously.

Cirpack RTG: Remote Telephony Gateway

Cirpack RTG from Thomson is the ideal media/signaling gateway for extending network reach to smaller locations and optimizing PSTN interconnections at lower costs.



Designed for any Collocation Room

Available in two configurations, Thomson's Cirpack RTG is a stand-alone 1U box, connecting either 8 or 16 copper E1s to the IP network. It can be AC and DC powered for easy deployment in any collocation room and it provides both copper and fiber Ethernet uplink for easy connection to any IP backbone. It is the ideal platform to collect and terminate voice traffic in each central office.

Feature-Rich Gateway

Managed by a remote Cirpack HVS SoftSwitch, Thomson's Cirpack RTG supports the same signaling protocols as the Cirpack PTG interface boards (V5.2, R2, ISDN, SS7, INAP CS1, etc.) and the same media stream handling capabilities (echo cancellation, compression, tone generation, etc.). It delivers the same features but in a hardware platform ideally suited for the smallest points of presence.

Unique Deployment Strategies

Cirpack RTG pushes VoIP closer to the edge of the network. It enables operators to quickly enter new regions without deploying and maintaining SDH infrastructures. It helps to maintain legacy TDM access networks in a full IP network. When traffic grows, it allows the distribution of voice switching cost-effectively, by providing the right-sized media gateway for the application and regional requirements.

Built-in IP Centrex and Fixed-Mobile Convergence

Cirpack MultiNode-B from Thomson can be enhanced with a complete IP Centrex solution helping operators promote a seamless PBX replacement strategy with a feature-rich hosted telephony service that leverages the existing voice switching infrastructure as well as the Cirpack NAT traversal and IP security mechanisms. Designed to replicate the features of ISDN PBXs, the Cirpack IP Centrex solution also offers user-friendly web interfaces for provisioning and managing users and features, collaborative tools on PC and seamless mobility to offer more value to modern business users.

When connected to a mobile infrastructure (GSM/3G or WiFi), Cirpack MultiNode-B enables Fixed-Mobile Convergence services that offers residential and business users unique experiences such as being able to choose their fixed or mobile phone to answer incoming calls, automatic routing of inbound calls to the proper terminal in the proper location, transferring calls from the GSM phone, seamlessly placing and receiving calls over WiFi anywhere on the Internet and maintaining calls over GSM when losing WiFi signal, etc.

State-of-the-Art Carrier-Grade Switching



IBM eServer

Sophisticated Platform

Slim, hot-swappable blade servers fit into a single chassis like books in a bookshelf. Each is an independent server, with its own processors, memory, storage, network controllers, operating system and applications. Sophisticated cooling, power technologies and switches are shared across each blade server in a chassis, enabling higher density with far greater ease and lower cost of ownership. The benefits of the blade approach will be obvious to anyone tasked with running down hundreds of cables strung through racks just to add and remove servers.

Low Costs of Ownership

Leveraging the IBM BladeCenterT technology, Thomson's Cirpack MultiNode-B brings the power, innovation and cost structures of enterprise computing to the telecom marketplace. It has been designed to have no single point of failure and meet the strictest carrier-grade requirements. Using the IBM Director console, all IBM BladeCenters in an infrastructure can be managed from a single location. Entirely designed with open interfaces and standard protocols, Cirpack MultiNode-B is easy to integrate into any OSS/BSS, further contributing to lower total costs of ownership.

Class-5 Subscriber Services

Numbering Features

- Abbreviated Dialing
- Automatic dial on pickup
- Call Return
- Direct Dial-In
- Emergency Numbers
- Last Number Redial
- Local Number Portability
- Multiple Subscriber Number
- Pre-selected Carrier
- Terminal sub-addressing

CLI Features

- Caller ID (CLIP, CLIR, CNIP, CNIR, COLP, COLR)
- CLIP/CNIP on Call Waiting
- Per-call CLIR

Call Handling Features

- 3 and 6-Party conferencing
- Call Completion on Busy Subscriber (CCBS, national dependencies)
- Call Deflection
- Call Forwarding (CFB, CFNR, CFU, Unreachable)
- Call Hold / Retrieve
- Call Park
- Call Waiting (permanent, per-call)

- Do Not Disturb
- Explicit Call Transfer
- Follow Me
- General Deactivation
- Lawful Intercepts
- Missed, answered, dialed call logs
- Pre-paid/Post-paid Support

Call Barring & Call Protection

- Anonymous Call Rejection
- Black list/White list (Inbound/Outbound)
- Call Forwarding Restriction
- Incoming Call Barring
- Outgoing Call Barring
- Line Locking
- Malicious Call Identification
- Protect Against Call Forward
- Suspend Subscriber

Prompting, Messages & Music

- Change of number message
- Customized Ring Back Tone
- Feature activation prompt
- Message Waiting Indication
- Multilingual Network Announcements
- Multiple Dial Tones
- Music on Call Waiting, on Hold

- Off-hook reminder tone
- Wake-up Call (Basic and Interactive)

IP Centrex Services

- Automatic night services
- Call Pickup (SIP and MGCP)
- Call Transfer (blind or supervised)
- Click to dial
- Display and softkey customization according to RFC3149
- Hunt Groups (longest idle, cyclic, linear, random, parallel)
- Intercom Dialing
- Line Filtering by assistant (unconditional or with Black List)
- Line Supervision (SIP and MGCP)
- Multiple Call Appearances (up to 6)
- Profile substitution
- Public or Private Dialing Plan
- SIP Roaming
- Virtual Desking

Accounting & Billing

- Advice of Charge (AOC-D, -E, -99)
- Group Account Codes
- Individual Account Codes
- Toll Restriction

Cirpack MultiNode-B: Technical Specifications

SoftSwitch Hardware

- Cluster of IBM eServer within an IBM BladeCenterT enabling "Power-on-Demand" by just adding more Intel CPU
- Redundant servers with redundant CPU, hot swap and redundant hard drives
- Carrier-grade shelf with redundant back plane, hot swap and redundant power, cooling, GigEN switches and management modules
- 105-250V AC, -48V DC, 1300W

I/O Boards

- PTG: Designed to fit inside the IBM BladeCenterT. Converts 63 E1s (SDH) or 16 E1s (copper) to as many VoIP channels. Scalable DSP power.
- RTG: Stand-alone 1U remote gateway managed by the HVS softswitch over the IP network. Converts 8 or 16 copper E1s to as many VoIP channels (copper or fiber Ethernet). Scalable DSP power.

Capacity

- Up to 264,000 Class-5 subscribers per system
- Up to 5,000,000 BHCA
- Up to 30,000 DS0 per BladeCenterT shelf (1,000 E1s)
- More capacity by adding more shelves
- Up to 180,000 DS0 per system
- Up to 256 SS7 linksets per system, unlimited E1 per linkset, any SS7 variant simultaneously

Subscriber Database

- Subscriber profiles are stored in a separate IBM eServer within the BladeCenter
- Cluster of databases supporting several millions of subscribers shared
- Open APIs for easy integration in a provisioning & workflow system
- Same database handles TDM and IP subscribers

DSP Services

- Media stream handling
- Multilingual network announcements
- DTMF detection and generation
- RFC2833 for DTMF transparency
- Progress tones generation
- 128ms echo cancellation
- G.711 – PCM a-law
- G.723
- G.726 ADPCM

- G.729, G.729a (up to x8)
- iLBC
- T.38 fax
- Auto detect: master/slave, fax detect, etc.
- Auto switch to G.711 on tone detection
- 30 parties audio conference

Numbering Plan

- E.164 extended

TDM Signaling Protocols

- V5.1, V5.2 release 2 for controlling DLC
- Analog phone, fax, modems
- BRI, PRI - ISDN Network side
- PRI - ISDN User side
- SS7 ISUP and SS7 TUP
- R2

SS7 Signaling Protocol

- INAP CS1
- MAP
- ITU-T Q701 - Q707
- ISUP V2, V3, ISUP ETSI
- Over 30 SS7 national variants supported

ISDN Signaling Protocol

- ITU-T Q921 - Q931
- EuroISDN ETSI-1 and ETSI-2
- Over 15 ISDN national variants supported
- Q.SIG

IP Signaling Protocols

- RTP
- SIP, SIP-T
- SIP-I according to Q.1912.5
- Video support using SIP
- MGCP/NCS
- H.323 v4
- H.248/Megaco for controlling access gateways

VoIP Border Control

- IP address and topology hiding
- Complete NAT traversal engine using SIP and MGCP
- Dynamic 'pinhole' opening/closing
- Signaling and media replication for lawful intercept in VoIP to VoIP calls

QoS, Network Management and Testing

- ISDN and PSTN test call
- Generated test traffic
- Traffic measurement
- Continuity check tests
- Detailed call statistics

System Management

- Serial connection (local and modem)
- Ethernet connection
- User-friendly Web interface
- Telnet, SNMP
- Advanced Routing Profile Management
- Advanced Subscribers Profile Management

Control Services

- Automatic Congestion Control
- Location Number
- Dynamic Echo Control

Regulatory Services

- Local Number Portability
- Legal Intercept
- Emergency Numbers

Transit & Routing Services

- 800, 900 number service
- Alternate routing
- Authentication
- Backward charging message
- Basic operation and maintenance
- Basic traffic control
- Built-in media resources for announcements
- Call failure handling
- Call Detail Record generation (CDR)
- Call duration control
- Charge unit distribution and generation
- Destination call routing
- Dialed carrier code
- Directory assistance routing
- Dynamic routing
- Emergency call routing
- GMSC services
- Hot billing
- INAP SSP & SRF (Service Switching Point & Specialized Resource Function)
- International routing
- Least Cost Routing (LCR)
- Load sharing
- Local Number Portability (LNP)
- Multi conference control
- Operator service routing
- Pre subscribed code
- Routing according to origin/destination
- Signaling Transfer Point (STP)
- Service charging
- Service suspension
- Speech and signaling monitoring
- Time-based routing
- Unlimited digit analysis