



Call Session Control Software

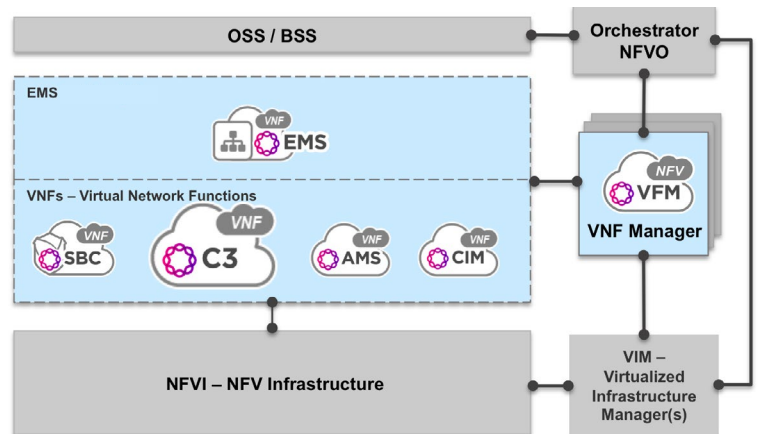
Virtual Network Function



Today's operators are challenged by multiple network types, signaling and protocols that are largely incompatible with each other. They are seeking intelligent call session and media controller solutions in the form of software Virtual Network Functions (VNFs) to deploy from their telco cloud, delivering unprecedented flexibility, agility and high value services for their customers. The C3™ Call Session Controller VNF, part of Ribbon's Call Session Controller portfolio, provides communication service providers a seamless transition to the cloud-enabled network. Ribbon C3 is deployed globally in a wide variety of network implementations, allowing operators to cap-and-grow or replace their legacy infrastructure and provide scalable solutions in greenfield applications.

Ribbon C3 as Cloud-Native VNF

Armed with an extensive array of protocol and signaling inter-working capabilities, the C3 is a versatile session and media control platform that provides service convergence and feature transparency across a wide range of wireless and wireline, IP and TDM, and core and access networks. Ribbon's C3 software is designed for ease of deployment in any virtualized open standards based NFV environments, to deliver solution scalability, elasticity, and automation, managed and supported by third party NFV orchestration, OSS/BSS and virtualization infrastructures.



C3 Call Session Control VNF

- Unique Cloud-native VNF
- Fully elastically scalable VM architecture
- Enhanced redundancy and georesiliency
- Flexible deployment – Support for physical and NFV media gateways
- Versatile VNF Manager for ease of deployment, automation and orchestration
- Simplified centralized Operational Control with Ribbon EMS
- Unique Licensing Flexibility

The C3 VNF can work in conjunction with Ribbon's Advanced Media System (AMS) VNF for high capacity media processing and transcoding solutions, and with Session Border Controller VNF for IPX and Interconnect solutions. It also supports control of both physical and NFV-based media gateways. These overall solutions provide extensive wireless and wireline codec support and SIP interfaces enabling the C3 to be a centralized transcoding control platform for networks, physically separating or decoupling media resource control from the media processing elements. This centralization allows transcoding resources to be efficiently sized and NFV scaled according to network needs.

Network Applications

- IMS/VoLTE MRF Transcoding
- IMS MGCF-MGW
- IP eXchange
- International Gateway
- IP Trunking

C3 VNF Key Attributes

- Cloud native, fully elastic, horizontally scalable VNF
- Integrated in Ribbon's VNF Manager (VFM) for automatic provisioning and life cycle management
- Full support for ETSI Orchestrator for dynamic instantiation
- Compatible in OpenStack environments, and industry standard NFVI infrastructure and VIM Managers
- VM designed for elastic scalability and enhanced geo-res and geored for better performance and cost efficiency (Database, SIP Call Manager, Facility Management, Call Persistence, and EMS)

C3 VNF Virtual Machines (VM)

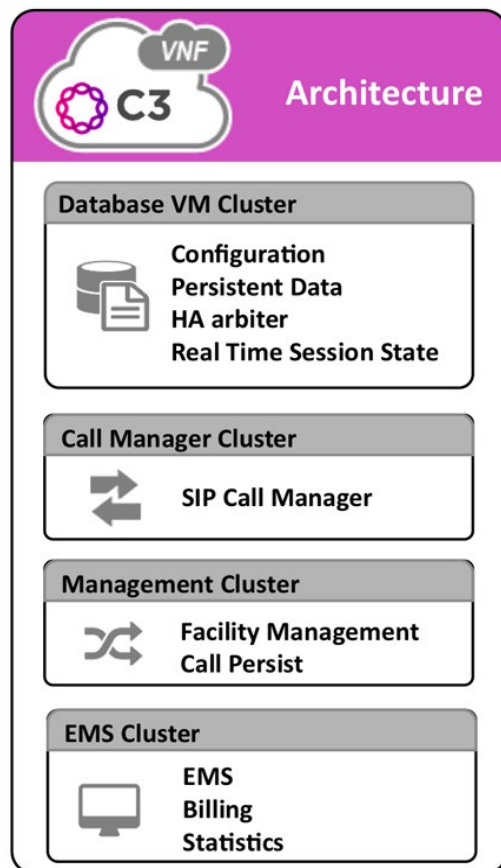
- Scalable VM's for specific C3 functions
- Call Manager VM – elastically and dynamically scales to add or reduce call processing capacity based on traffic demand
- Management VM – maintains states and configuration of all facilities, allocates resources for call origination & termination, and provides call routing and screening functions.
- EMS VM – state of the art static element management system per VNF for configuration, billing, performance monitoring and statistics reporting
- Database VM – highly efficient in-memory relational database with high throughput for persistent data store and state information to ensure service performance and resilience

C3 VNF Resiliency and Redundancy

- All VM tiers are 1+1 pairs for high availability, geo-resiliency and geo-redundancy within and across datacenters
- Share data store for persistent data and session data availability
- Active SIP Application VM's for failure tolerance
- Stateful call migration of signaling and media with no loss of service

C3 VNF Works With

- Advanced Media Software
- SBC
- G9 Media gateway
- VNF Manager
- Ribbon EMS



Interfaces and Signaling Variants

- IP: SIP, SIP-I, SIP-T, H.248, BICC
- Wireless
- SS7
- ISUP on the C3; PRI on the G9
- Access Trunks

Advanced Routing

- Flexible number translations
- Time of day routing
- TGRP routing
- Look ahead routing
- Nature of address routing
- Calling Party NOA Routing
- CIC Routing
- Re-origination
- Route Advance After ACM ANI bypass
- Announcement Provisioning
- E.164, NA numbering plan
- Percentage Based Routing

Management

- Highly Scalable
- Command Line Interface (CLI) for local and SSH access
- Intuitive Graphical User Interface (GUI) with full FCAPS capability
- Northbound interface: SNMP, CLI, TCP/IP, Telnet, FTP
- Supports any configuration – TDM, ATM or IP (IPDR, SDR)

Performance

- Each pair of C3 Call Manager VM can support over 1 million BHCA
- C3 VNF provides elastic scalability to add or reduce capacity based on traffic demand

Regulatory

- Lawful Interception
- Emergency Call Routing

C3 VNF Specifications & Characteristics

VNF	VM Name	VM Description	Resilience VM	Minimum VM Configuration
C3	DB	Database	1+1	1+1
	SIP-CIM	Call Manager	1+1 today N+M future	1+1
	MGT	Management	1+1	1+1
	EMS	Element Management System	1+1	1+1

CPU/Memory/Hard Drives

- 8GB RAM per VM
- 4 vCPU per VM
- 9TB of HDD or SSD
- Requires INTEL XEON technology

Hypervisors

- KVM on OpenStack

NFV Ecosystem

- HPE OpenNFV Technology Partner, Intel Network Builders Program, Wind River Titanium Cloud, Canonical V-PIL, RedHat, NOKIA CloudBand, Ciena Blue Planet, Amdocs and others
- Interworking into open standards based NFVI and MANO environments such as Openstack, HPE Helion OpenStack Carrier Grade, Wind River Titanium Server, Canonical, Mirantis, KVM, Intel, Kontron, Dell, HPE NFV Director, Ciena Blue Planet, Nokia Cloudband, Amdocs, Netcracker, RIFT.io, Cloudify and others

VNF Management

- Ribbon VNF Manager VFM

Contact Us

We are here to help. Let us know if you are interested in a quote or if you have any questions.